STEPS

WHO STEPwise
Approach to
Chronic Disease
Risk-Factor
Surveillance

World Health Organization

The WHO STEPS Surveillance Manual

About the STEPS Manual

The STEPS Manual provides guidelines and supporting material for sites wishing to undertake chronic disease risk factor surveillance, using the WHO STEPwise approach to chronic disease risk factor surveillance. Sections of the manual will guide you through the process of: Planning and preparing the survey scope and environment; training staff for data collection, data entry, and data analysis; conducting a STEPS survey; capturing and analysing the data that is collected; and finally reporting and disseminating the survey results.

The STEPS manual is written in modular parts and follows the sequence of events required to implement a STEPS survey. It is divided into seven parts. Each part of the manual is divided into sections. Each part and section is introduced with a table of contents to help readers find specific topics.

Part 1: Introduction and Roles
Part 2: Planning and Set Up
Part 3: Training and Practical Guides
Part 4: Conducting the Survey, Data Entry, Data Analysis, and Reporting and Disseminating Results
Part 5: STEPS Instrument
Part 6: Templates and Forms
Part 7: Glossary and References

The WHO website describing the manual can be found at
http://www.who.int/chp/steps/manual/en/index.html . The chapters therein are arranged into smaller files, which the user may find more convenient.

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Part 1: Introduction and Roles

Section 1: Introduction

Overview

Introduction   This section is an introduction to the WHO STEPS Surveillance Manual.

Purpose   The purpose of the manual is to provide guidelines and supporting material for sites embarking on STEPS chronic disease risk factor surveillance, so they are able to:

- Plan and prepare the survey scope, sample and environment
- Train staff
- Conduct the survey
- Capture and analyse the data collected
- Report and disseminate the results

Intended audience   The manual is intended for all parties responsible for implementing STEPS chronic disease risk factor surveillance in their site. The various parties include a wide range of people from public health officials in the Ministry of Health and/or any health institutions, to field staff as well as laboratory technicians, nurses and statisticians. Interested parties will read the part and sections relevant to their role in STEPS.

Guide to using the manual   The manual has been written in modular parts and is structured to follow the sequence of events required to implement a STEPS survey. It is divided into seven parts. Each part of the manual is further divided into sections. Each part and section is introduced with a table of contents to help readers find specific topics. The manual includes guidelines and instructional material that can be extracted and used for:

- Training
- Data collection
- Data entry
- Data analysis

Page numbers have three components. The first number refers to the part, the second to the section and the third to the page number in that section. For example: 3-6-5 indicates Part 3, Section 6, Page 5.

Overview, Continued

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Planning and Implementation Overview

Introduction

For STEPS Surveillance to be effective, the whole process needs to be properly planned and organised before being implemented. Guidelines are provided below to help you plan your STEPS surveillance.

Key stages, tasks and timeframes

The optimal recommended total timeframe to conduct a STEPS survey of chronic disease risk factors is approximately six to eight months. This timeframe is based on seasonal considerations and countries ability to 'second' staff to the STEPS project for longer periods. It is by no means a hard and fast rule, but an indicative guideline.

ID	Task Name	M1	M2	M3	M4	M5	M6	M7
1	**Establishment**							
2	Establish Coordinating Committee							
3	Appoint STEPS Site Coordinator							
4	**Planning and Scoping**							
5	Identify scope of STEPS survey							
6	Develop implementation plan							
7	Design and select sample frame							
8	Tailor and translate STEPS Instrume							
9	Gain ethical approval							
10	Setup STEPS office							
11	Pilot test							
12	Schedule data collection							
13	**Recruitment and Training**							
14	Recruit staff							
15	Train teams							
16	**Data Collection**							
17	Approach selected households							
18	Obtain consent							
19	Conduct survey							
20	**Data Entry**							
21	Enter data (1st & 2nd key entry)							
22	Check and clean data							
23	Merge databases							
24	**Data Analysis**							
25	Conduct preliminary data analyses							
26	Conduct descriptive analyses							
27	Conduct comparative analyses							
28	**Reporting and Disseminating Results**							
29	Produce preliminary reports							
30	Produce fact sheet							
31	Produce site report							

Rationale for Surveillance of Chronic Disease Risk Factors

Introduction   Chronic, noncommunicable diseases are responsible for 60% of all deaths globally.

In developing countries, the burden of disease caused by chronic diseases is increasing rapidly and will have significant social, economic, and health consequences.

Main chronic diseases   The main chronic diseases attributable to the most common risk factors are:

- Heart disease
- Stroke
- Cancer
- Chronic respiratory diseases
- Diabetes

Terminology   The term "noncommunicable diseases" is used to make the distinction between these conditions and infectious or "communicable diseases".

For STEPS surveillance, the term 'chronic diseases' is used because it emphasises the following important shared features:

- The epidemics take decades to become fully established - they have their origin at young ages.
- They require a long term systematic approach to treatment.
- Given their long duration, there are multiple opportunities for prevention.
- Health services must integrate the response to these diseases with the response to infectious diseases.

The evidence   Evidence of the increasing burden of chronic disease in low and middle income countries is now very clear.

- In 2002, the major chronic, noncommunicable diseases accounted for 60% of all deaths and 47% of the global burden of disease.

- By 2020 these figures are expected to rise to 73% and 60%, respectively.

- 80% of chronic disease deaths are already occurring in low and middle income countries.

Rationale for Surveillance of Chronic Disease Risk Factors, Continued

Prevention   The key to controlling the global epidemics of chronic diseases is primary prevention based on comprehensive population-wide programmes.

The aim is to avert these epidemics wherever possible and to control them as quickly as possible where they are already present.

Basis of prevention   The basis of chronic diseases prevention is the identification of the major common risk factors and their prevention and control. The risk factors of today are the diseases of tomorrow.

Objectives of surveillance   The objectives of surveillance of chronic disease risk factors and selected chronic diseases are therefore to:

- collect consistent data across and within countries,
- develop standardised tools to enable comparisons over time and across countries/sites,
- prevent chronic disease epidemics before they occur,
- help health services plan and determine public health priorities,
- predict future caseloads of chronic diseases, and
- monitor and evaluate population-wide interventions.

Selected Risk Factors

Introduction

Common, preventable risk factors underlie most chronic diseases. These chronic disease risk factors are a leading cause of the death and disability burden in all countries, regardless of their economic development status. The leading risk factor globally is raised blood pressure, followed by tobacco use, raised total cholesterol, and low fruit and vegetable consumption. The major risk factors together account for around 80% of deaths from heart disease and stroke.

Risk factor definition

A "risk factor" refers to any:

- attribute,
- characteristic, or
- exposure of an individual,

which increases the likelihood of developing a chronic noncommunicable disease.

Major behavioural risk factors

The major (modifiable) behavioural risk factors identified in the World Health Report 2002 are:

- Tobacco use
- Harmful alcohol consumption
- Unhealthy diet (low fruit and vegetable consumption)
- Physical inactivity

Major biological risk factors

The major biological risk factors identified in the World Health Report 2002 are:

- Overweight and obesity
- Raised blood pressure
- Raised blood glucose
- Abnormal blood lipids and its subset 'raised total cholesterol'

These eight major behavioural and biological risk factors are therefore included in STEPS chronic disease risk factor surveillance.

Continued on next page

Selected Risk Factors, Continued

Rationale for inclusion of core risk factors

The rationale for including these eight core risk factors in STEPS surveillance activities is that:

- they have the greatest impact on chronic disease mortality and morbidity,
- modification is possible through effective prevention,
- measurement of risk factors has been proven to be valid, and
- measurements can be obtained using appropriate ethical standards.

WHO STEPS Overview

Introduction   The WHO STEPwise approach to surveillance (STEPS) is the WHO recommended surveillance tool for:

- chronic disease risk factors and
- chronic disease-specific morbidity and mortality.

It provides an entry point for low and middle income countries to get started on chronic diseases surveillance activities. It is also designed to help countries build and strengthen their capacity to conduct surveillance.

Basis of STEPS   STEPS is a sequential process. It starts with gathering key information on risks factors with a questionnaire, then moves to simple physical measurements and then to more complex collection of blood samples for biochemical analysis.

STEPS emphasises that small amounts of good quality data are more valuable than large amounts of poor data. It is based on the following two key premises:

- collection of standardised data, and
- flexibility for use in a variety of country situations and settings.

Population focus   STEPS uses a representative sample of the study population. This allows for results to be generalised to the population.

STEPS diagram   The following diagram illustrates the general concept of the STEPwise approach
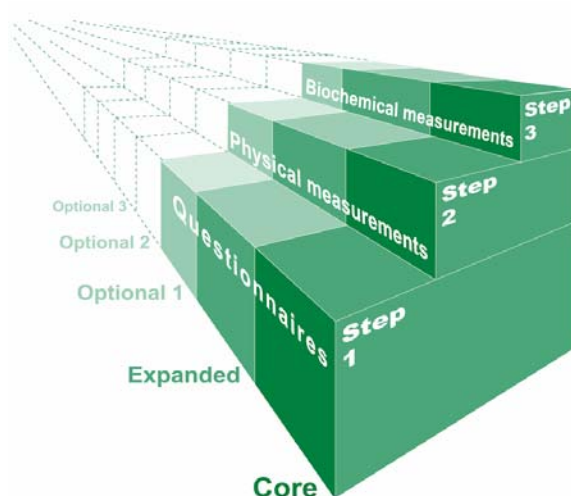
WHO STEPS Overview, Continued

STEPS Instrument

The STEPS tool used to collect data and measure chronic disease risk factors is called the **STEPS Instrument**.

The STEPS Instrument covers three different levels or 'Steps' of risk factor assessment: Step 1, Step 2 and Step 3 as follows:

Step	Description	Purpose	Recommendation
1	Gathering demographic and behavioural information by questionnaire in a household setting.	To obtain core data on: • Socio-demographic information • Tobacco and alcohol use • Nutritional status • Physical activity	All countries/sites should undertake the core items of Step 1.
2	Collecting physical measurements with simple tests in a household setting.	To build on the core data in Step 1 and determine the proportion of adults that: • are overweight and obese, and • have raised blood pressure.	Most countries/sites should undertake Step 2.
3	Taking blood samples for biochemical measurement in a clinic.	To measure prevalence of diabetes or raised blood glucose and abnormal blood lipids.	Only recommended for well resourced settings.

Core, expanded and optional items

Within each Step, there are three levels of data collection. These depend on what can realistically be accomplished (financially, logistically and in terms of human and clinical resources) in each country setting.

The core, expanded and optional levels of detail gathered for each Step are briefly described below:

Step	Core	Expanded	Optional
1	• Basic demographic information including: – age – sex – years at school • Tobacco use • Alcohol consumption • Types of physical activity • Sedentary behaviour • Fruit & vegetable consumption	• Expanded demographic information including: – ethnicity – highest level of education – employment – household income • History of tobacco use • Smokeless tobacco use • Binge drinking • Oil and fat consumption • History of raised blood pressure • History of diabetes	• Injury and violence • Mental health • Oral health

Core, expanded and optional items (continued)

Step	Core	Expanded	Optional
2	• Height and weight • Waist circumference • Blood pressure	• Hip circumference • Heart rate	• Skin fold thickness • Physical activity measure • Fitness assessment
3	• Fasting blood glucose • Total cholesterol	• HDL-cholesterol & triglycerides	• Oral glucose tolerance test • Urine tests • Salivary cotinine, etc.

WHO Recommendations

For countries that are just getting started with chronic disease surveillance, Step 1 as well as Step 2 core and expanded questions and measurements are recommended.

From surveys to surveillance

While surveys can be a one off exercise, surveillance involves commitment to data collection on an ongoing, repeated basis. Repeat surveys are essential to identify trends in the prevalence of risk factors.

The following diagram illustrates the surveillance process.
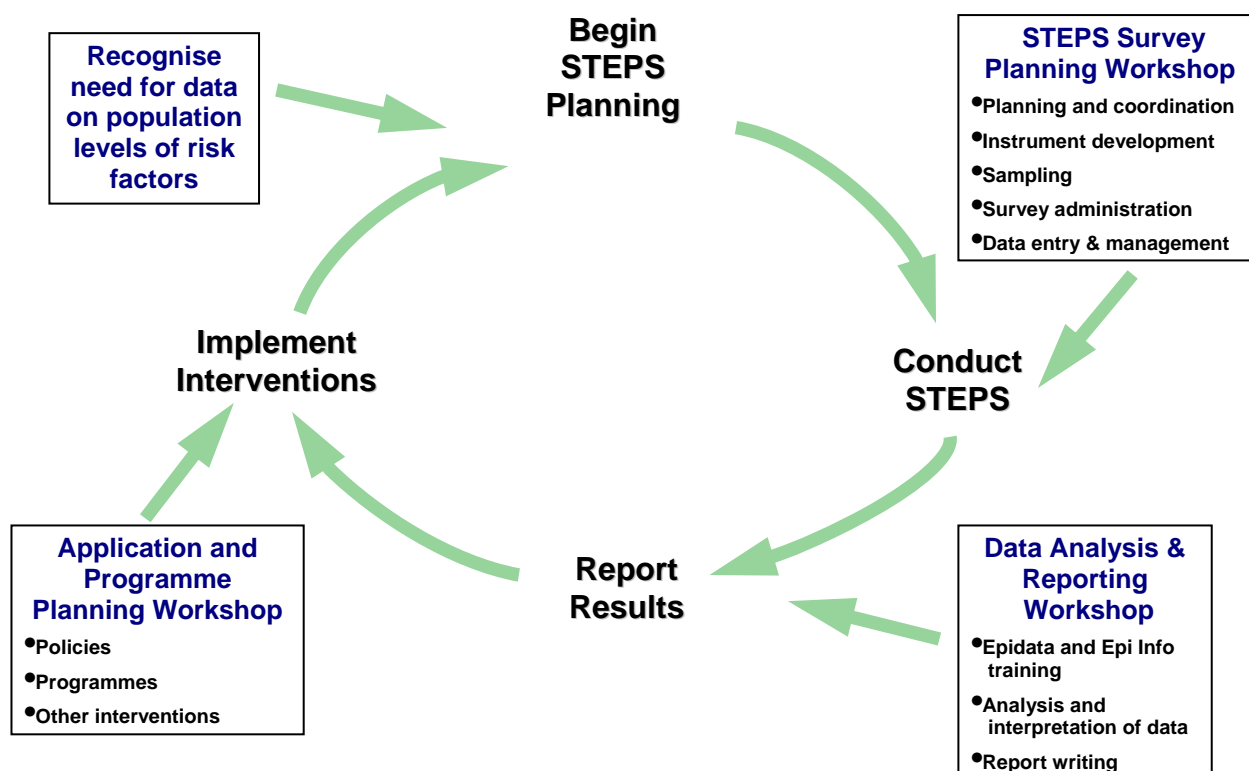
Section 2: Roles and Responsibilities

Overview

Introduction   There are a number of entities involved in STEPS surveillance at different levels including:

- country (national or subnational),
- regional, and
- global.

They all have key roles which are described below.

Purpose   The purpose of this section is to:

- provide an overview of the relationships between all those involved in a STEPS surveillance study, and
- provide a description of each of the core roles involved.

In this section   This section contains information outlining the responsibilities for the following:

Topic	See Page
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STEPS Site Coordinator	1-2-3
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Relationships Between Survey Team and WHO

Introduction   The survey team are all those involved in the data collection, management and analysis processes.

The WHO Geneva Steps team and the WHO Regional Office provide guidance and support for STEPS surveillance.

Roles and Relationships   The diagram below shows the lines of communication between all the players in a WHO STEPS Surveillance.

Communication flows up and down the pyramid

WHO at Geneva & Regional Offices

Ministry of Health and WHO Country Representative

STEPS Coordinating Committee for Surveillance & Site Coordinator

Data Collection, Data Management and Data Analysis Teams
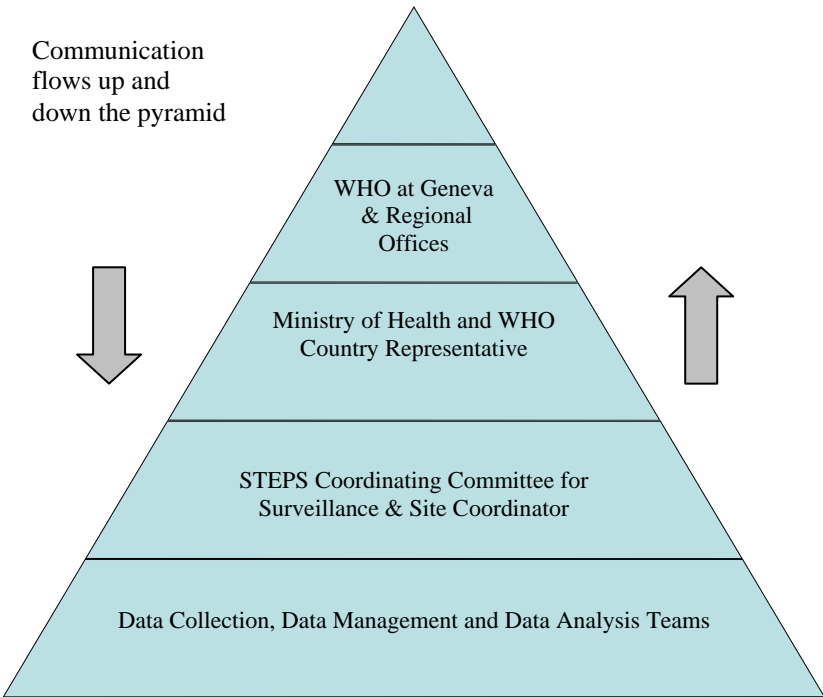
STEPS Site Coordinator

Introduction	The STEPS site coordinator is the key person responsible for planning and implementing STEPS. The STEPS site coordinator should be familiar with the entire manual to understand the whole STEPS process.

Skills and attributes

The STEPS site coordinator will need to have the following general skills and attributes:

- Good written and oral communication skills
- Ability to recruit efficient and motivated staff
- Current knowledge of the Ministry of Health, public health institutions and the personnel involved in STEPS
- Well organised and efficient planner
- Able to mobilise multiple teams over a short period to complete data collection
- Able to chair meetings of the Coordinating Committee
- Good understanding of the philosophy and objectives of the STEPS risk factor surveillance process

Level of authority

The STEPS site coordinator should have sufficient authority to:

- lead the whole process of STEPS implementation,
- negotiate and obtain resources for survey implementation,
- oversee progress of the national/subnational STEPS implementation plan,
- develop partnerships, and
- contribute to the disease prevention and health promotion activities that will arise from the data gathered by STEPS.

STEPS Site Coordinator, Continued

Core roles   The core roles of the STEPS site coordinator may include all or some of the following:

Role	Description
1	Liaising with local authorities, Coordinating Committee, WHO country representatives and other stakeholders.
2	Developing a STEPS implementation plan
3	Planning a STEPS survey
4	Coordinating the set up of a STEPS surveillance site
5	Recruiting and training field staff
6	Supervising the data collection and data entry processes
7	Reporting back results
8	Overseeing archiving of files at completion of the project
9	Planning and preparing for future surveys

Note: Information on archiving is available in Part 6 Section 4.

Coordinating Committee

Introduction   The coordinating committee for surveillance (CCS) will most likely be organised within the Ministry or Department of Health.

In countries where STEPS is nationally representative, a national committee will be established. In others, where STEPS is subnationally representative, a subnational committee will be set up.

Objectives   The main objective of the CCS is to oversee the practical and logistic issues relating to the overall implementation of the STEPwise approach to chronic disease risk factor surveillance (STEPS)

Core roles of the committee   The core roles of the CCS are to:

- Support the STEPS site coordinator
- Act as an advocacy body for chronic disease surveillance within the country
- Develop national level partnerships with MOH and other stakeholders to enhance the capacity for ongoing chronic disease risk factors surveillance
- Identify and secure local funding and / or "in kind" support
- Oversee the overall implementation of the STEPwise approach to chronic disease risk factor surveillance (STEPS)
- Assist in translating the data into policy and programmes
- Ensure the long term sustainability of STEPS surveillance

Core roles of the chairperson   The CCS chairperson is responsible for chairing meetings of the CCS and for overseeing the practical and logistic issues relating to the overall implementation of the STEPwise approach to chronic disease risk factor surveillance.

This role is usually filled by the STEPS site coordinator.

Expertise of members   Members of the coordinating committee should be selected for their expertise in the following areas:

- Public health
- Epidemiology
- Survey and statistics
- Clinical expertise in chronic diseases
- Experience as an advocate for preventing chronic diseases

Data Collection Team

Introduction   The data collection team undertakes a core function in STEPS surveillance and includes all those who have been recruited to collect the survey data.

Hiring good interviewers and other field personnel is crucial to successful data collection. The quality of data collection and the survey results depends on the consistency and quality of these workers. Training the staff is therefore a major undertaking.

Data collection supervisor roles   The data collection supervisor may be the same person as the STEPS site coordinator.

The core roles of a data collection supervisor are listed in the table below. Specific tasks are identified in Part 2 Section 3, Part 3 and Part 4 Section 1.

Role	Description
1	Training field staff.
2	Obtaining and managing household lists and maps for each area or other lists to be used as the sampling frame.
3	Informing local authorities about the survey.
4	Obtaining necessary venues, supplies and equipment.
5	Supervising the interview process and recording daily activities.
6	Ensuring data quality.
7	Managing human resource performance and issues.
8	Sending progress reports to STEPS site coordinator or regional focal point.
9	Providing completed instruments to data entry supervisor at the end of each day.

Skills and attributes   The data collection supervisor should have the following skills and attributes:

- Ability to work with teams and motivate people
- Be well organised and efficient in planning STEPS activities
- Able to mobilise multiple teams over a short period to complete data collection
- Experienced in health population based surveys
- Good understanding of the philosophy and objectives of the global STEPS risk factor surveillance process

Data Collection Team, Continued

Interviewer roles

The interviewers are all those who have been trained to conduct the survey in the household setting using Step 1 and take physical measurements for Step 2 of the STEPS Instrument.

The core roles of an interviewer include:

Role	Description
1	Select starting household in each survey site, according to sampling frame.
2	Fill out the Interview tracking form.
3	List the members of households to be interviewed.
4	Select participants for Step 3 (if applicable).
5	Obtain participant consent and enrol participants.
6	Conduct interviews and record results for Step 1.
7	Make primary check of completed Step 1 questions .
8	Take measurements and record results for Step 2.
9	Make appointments for Step 3 (if applicable).
10	Collect all necessary forms from members of each household.
11	Check all forms before handing to supervisor.
12	Report any difficulties to supervisor.

Skills and attributes

Interviewers should have the following general skills and attributes:

- Good oral and written communication skills
- Friendly manner and patience
- Good attention to detail

Clinic health professional's roles

Clinic health professionals are those people recruited to take biochemical measurements in a clinic setting for Step 3 of the STEPS Instrument.

This role does not need health professionals with full medical training. These professionals could be nurse practitioners or medical assistants.

The core roles of a survey clinic health professional include:

Role	Description
1	Checking for appropriate participant consent.
2	Taking blood samples from participants and recording results for Step 3.
3	Labelling samples and recording Participant Identification Numbers (PIDs).

Data Collection Team, Continued

Laboratory technicians

Laboratory technicians are the people responsible for analysing the tests taken in the clinic setting for Step 3.

The core role of a laboratory technician include:

Role	Description
1	Testing samples for lipids and glucose.
2	Recording results and passing records on for data entry.
3	Identifying out of range results for clinical attention.
4	Ordering supplies.

Note: In rare cases, Step 3 is done at the household level and therefore results cannot be determined on site. The technicians will need to freeze and dispatch samples to a laboratory and follow up on results.

Administrative staff

Administrative staff are required to:

• Organise supplies and venues
• Print and distribute materials
• Organise any publicity for the survey
• Send out letters of invitation
• File survey material in the STEPS coordination office

Data Management Team

Introduction   The data management team includes all those who have been recruited to enter, check, clean, correct and analyse the data gathered by the survey team.

Supervisor   The data management supervisor acts as the team leader of the data management team, planning and organising staff and workloads to ensure work proceeds smoothly.

The data management supervisor role may sometimes be filled by the STEPS site coordinator or the STEPS data analyst.

The core roles of a data management supervisor are listed in the table below. Specific tasks are identified in Part 2 Sections 2 & 4, Part 3 and Part 4 Section 2.

Role	Description
1	Training data entry staff
2	Obtaining necessary hardware and software
3	Planning, preparing and setting up the computing environment
4	Supervising the data entry and validation processes
5	Managing human resource performance and data management team issues
6	Seeking and providing advice on software support
7	Create master data set
8	Report problems or interview errors to the data collection team supervisor

Skills and attributes   Supervisors should have the following skills and attributes:

- Ability to lead a team
- Systematic work practices
- Computer skills and operational experience
- Experience in survey statistics

Continued on next page

Data Management Team, Continued

Data entry staff   The data entry staff are all those who have been recruited to enter, check and validate the data gathered by the survey team.

The core roles of data entry staff are listed in the table below. Specific tasks are identified in Part 4 Section 2.

Role	Description
1	Logging receipt of completed instruments.
2	Filing and organising paper copies of instruments.
3	Entering survey data.
4	Identifying errors and resolving problems with supervisor.

Skills and attributes   Data entry staff should have the following skills and attributes:

- Accurate keyboard (typing) skills
- Computing experience or willingness to learn
- Methodological and tidy work habits
- Clear handwriting
- Ability to follow instructions consistently but raise concerns when appropriate
- Interact efficiently with others to achieve accurate results

Statistical Adviser

Introduction   The statistical adviser plays a key role in the sampling and data management process. The statistical adviser may be part of the coordinating committee or the analysis team. If a statistical adviser within a site cannot be identified, the WHO Geneva STEPS team or the WHO Regional Office focal point will be able to advise and assist with this role.

Objectives   The statistical adviser provides an integral role in the sampling and weighting of the survey data. The objective of the adviser is to ensure that a proper sample is selected and that the sample can be weighted to make the results nationally representative.

Expertise of statistical adviser   The statistical adviser should have:

- An advanced degree in statistics
- A special interest in survey statistics
- Experience with sampling and weighting data
- An interest in population health statistics
- Ability to discuss concerns and convey advice clearly to the data analysis team

Core roles of statistical adviser   The statistical adviser, under the guidance of the coordinating committee will be responsible for:

- Collecting the sample frame
- Drawing the survey sample
- Reviewing available tracking material and adapting to site specific sample
- Applying weights to survey data
- Providing statistical advice during the analysis and reporting process

Note: The tracking material is the Interview tracking form, available in Part 6 Section 2. The statistical adviser or the supervisor will advise the data collection team on the importance of properly tracking the sample and the impact it has on making the data representative of the target population.

Data Analysis Team

Introduction   The data analysis team should work closely with the site coordinator, the data management team and the statistical adviser to produce results for inclusion in various STEPS site reports.

Data analyst   Data analysts are staff who have been assigned to undertake the descriptive and statistical analysis of data gathered using the STEPS Instrument.

Core roles   The core roles of the data analyst are listed in the table below. Specific tasks are identified in Part 4 Section 3.

Role	Description
1	Supervising and/or conducting variable checks on entered data.
2	Importing dataset, creating database, and data guardianship*.
3	Generating derived variables.
4	Undertaking exploratory data analysis.
5	Undertaking descriptive analyses (e.g. means and proportions).
6	Undertaking additional analyses if needed under the guidance of the statistical adviser.
7	Calculating weights for estimation, under guidance of statistical adviser.
8	Producing tables and graphs for reports.
9	Assisting in report preparation.

* It is common that the data analyst becomes the de-facto data guardian of the survey data and files.

Attributes and qualifications   It is desirable that the data analyst has some qualifications and experience in data analysis and statistics.

People asked to perform this role should:

• Have at least a science or computing background
• Be competent working on a computer
• Be able to understand outputs of means, proportions and confidence intervals

WHO Offices

Introduction   There are various roles and responsibilities assigned to the WHO offices in Geneva as well as to the WHO offices in the regions and countries. Each entity has a core function which is described below.

WHO Geneva STEPS team   The WHO Geneva STEPS team works closely with the WHO Regional Offices and provides global coordination for STEPS implementation across the Regions.

The WHO Geneva STEPS team is also responsible for supporting training and providing technical support to the STEPS surveillance sites.

The core roles of the WHO Geneva STEPS team include:

Role	Description
1	Providing training, tools, blood pressure monitoring devices, software, guidance and advice for all aspects of STEPS planning, implementation, analysis, and dissemination of data.
2	Communicating with the STEPS Regional focal point and with the STEPS site coordinator.
3	Developing a global strategy in chronic diseases risk factors surveillance.

WHO Regional Office   WHO Regional Offices are responsible for coordinating the implementation of STEPS in their respective region. The Regional Offices provide ongoing technical support to STEPS sites.

The core roles of the WHO Regional Office include:

Role	Description
1	Selecting a STEPS Regional focal point .
2	Identifying countries that are ready to implement STEPS.
3	Providing overall guidance on planning and coordination of STEPS in their region.
4	Funding and delivering STEPS training workshops to those sites.
5	Coordinating technical support to sites.
6	Coordinating government and agency activities at the regional and international levels.
7	Developing a regional strategy in chronic diseases prevention and control activities by promoting use of STEPS data.

WHO Offices, Continued

STEPS regional focal Point

The STEPS regional focal point is responsible for:

- Developing a strategic plan of action that addresses the immediate needs for chronic disease risk factors surveillance
- Liaising between WHO Geneva STEPS team and STEPS sites
- Suggesting improvements or developments to STEPS materials
- Providing technical support to sites

WHO country representative

The WHO country representative is the local facilitator, and is responsible for:

- Facilitating resource mobilisation for chronic disease surveillance
- Serving on the STEPS coordination committee
- Facilitating communications between the STEPS site and the WHO regional office

Note: The WHO country representative does not usually have a technical role.

Additional regional support

This consists in providing additional technical and statistical support to build capacity at the regional and country level. The primary link is through the WHO Geneva STEPS team or Regional Office focal point.

Part 2: Planning and Set Up

Overview

In this Part   This Part covers the following topics

Topic	See Page
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Section 2: Preparing the Sample	2-2-1
Section 3: Preparing a STEPS Site	2-3-1
Section 4: Preparing the Data Management Environment	2-4-1

Part 2: Planning and Set Up

Section 1: Planning and Preparing a STEPS Survey

Overview

Introduction

This section covers the tasks that need to be conducted to plan for your STEPS chronic disease risk factor survey.

Intended audience

This section is primarily designed to be used by those fulfilling the following roles:

- STEPS site coordinator
- Coordinating committee (CCS)

Tasks and timeframes

The chart below shows the main tasks and indicative timelines covered in this section.

Task Name	Duration	Month 1	Month 2	Month 3
Develop implementation plan	1 wk			
Identify scope of STEPS Survey	1 wk			
Gain ethical approval	1 wk			
Schedule data collection	2 days			
Adapting and translating STEPS Instrume	1 wk			
Pilot test	1 wk			

In this section

This section covers the following topics:

Topic	See Page
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Identifying Scope of STEPS Survey	2-1-5
Choosing a Chemistry Screening Method for Step 3	2-1-9
Applying for Ethical Approval	2-1-11
Timeframes and Data Collection Considerations	2-1-12
Number of Staff Required	2-1-14
Scheduling Data Collection	2-1-15
Adapting the STEPS Instrument	2-1-16
Translating STEPS Documents	2-1-20
Pilot Testing	2-1-22

The STEPS Implementation Plan

Introduction	You will need to create a detailed STEPS implementation plan for all stakeholders involved in the surveillance process.

Purpose	The purpose of the implementation plan is to: • Set out the scope of the surveillance and desired goals • Identify required resources • Set out an action plan • Develop a communication strategy • Provide a well planned budget as a basis for funding

Requirement	The content of the implementation plan should be developed using the guidelines in the sections below. Once complete, it should be agreed upon by the coordinating committee after wide consultation and discussion and sent to the WHO Geneva STEPS team for review.

Core topics	The topics that should be covered in the implementation plan and references to appropriate sections in the manual where guidelines can be found are listed in the table below:

Topics	Detail	Reference
Executive Summary	High level summary of main points including: • Current situation • Goals • Scope • Resources • Budget	
Current Situation	Specify: • If a risk factor survey has already been conducted in this setting. • Availability of risk factor data in this setting. • If there is an infrastructure (human capacity, equipment, other) on which STEPS could be built. • The rationale for conducting chronic disease risk factor surveillance.	Part 1 Section 1

The STEPS Implementation Plan, Continued

Core topics (continued)

Topics	Detail	Reference

Goals and Objectives	• Identify planned goals and use of the information collected, to:
	  − Describe the current levels of risk factors for chronic diseases in this population.
	  − Track the direction and magnitude of trends in risk factors.
	  − Plan or evaluate a health promotion or preventive campaign.
	  − Collect data from which to predict likely future demands for health services.
	• Specify objectives that support gathering 'essential' information only.
	• Describe the broad timeframes.
		Part 2
		Section 1

Scope	• Specify the scope of surveillance to be conducted (Step 1, Step 2 and Step 3, plus coverage of Core, Expanded and Optional items). • Specify if future STEPS surveillance can be assured.	Part 2 Section 1
Sampling methods	• Identify the sample size and sample frame that will be used.* • Identify geographical coverage. • Describe sampling design. •	Part 2 Section 2
Resources	• Specify required resources in terms of all personnel and equipment required for STEPS surveillance. • Describe resources that have already been committed or which are expected, including support from WHO. • Specify resources expected from other organisations involved.	
Action Plan	Provide a chart of the main tasks with estimated start dates and timeframes for completion of each phase.	
Communication strategy and publicity	Specify methods for informing and involving community leaders, members of the public, and media, in the STEPS surveillance project to get commitment and support.	
Reporting and Disseminating Results	Describe to whom and how the results will be reported and disseminated.	Part 4 Section 4

The STEPS Implementation Plan, Continued

Core topics (continued)

Topics	Detail	Reference
Budget	Provide a detailed budget that includes: • Total funds required for each year planned to implement all STEPS activities as identified in the Scope (including future surveys). • Source of funds. • Funding gap	

* Note: During the planning phase of the survey, it is fundamental to determine the size of the sample as this will impact on operational considerations such as the number of interviewers required. There will have to be a compromise in which the precision requirements of the estimates are weighted against various constraints such as available budget, resources and time.

Implementation plan template   A STEPS implementation plan template can be found in Part 6, Section 1.

Identifying Scope of STEPS Survey

Introduction   To develop a STEPS implementation plan, the scope of the STEPS Instrument being covered must be clearly defined.

The WHO STEPwise Instrument   The focus of the WHO STEPwise approach to surveillance of chronic disease risk factors is reflected in the core modules of the STEPS Instrument.

Step 1 core and expanded information will provide basic data on behavioural risk factors. Including Step 2 core and expanded physical measurements will provide useful additional data on excess body fat, raised blood pressure and heart rate.

Including Step 3 biochemical measurements is recommended only in countries that are well resourced and will provide data on raised blood glucose and cholesterol levels.

Note: The STEPS Instrument can be found in Part 5.

STEPS diagram   The diagram below shows each of the Steps.
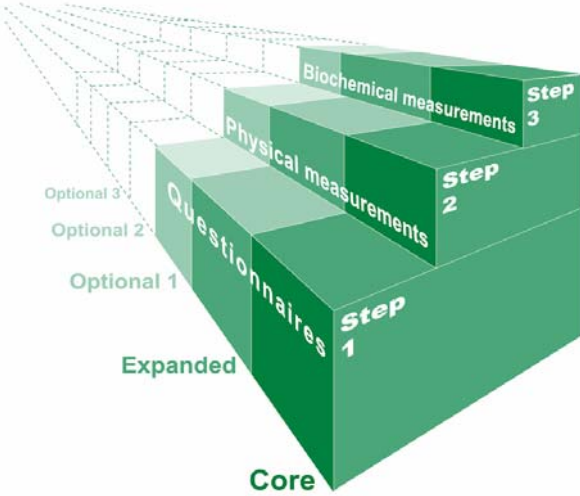
Note: For guidance on implementing each of the Steps see the pages which follow. To fully understand each item covered in the STEPS Instrument, please see the Question by Question Guide in Part 5.

Identifying Scope of STEPS Survey, Continued

Step 1 core questions

All countries should undertake the core items of Step 1. This is an affordable option that will provide basic demographic information and measures of:

- Tobacco smoking
- Alcohol consumption
- Fruit and vegetable consumption
- Physical activity

Step 1 expanded questions

Countries should undertake Step 1 expanded to:

- Describe demographic breakdowns (such as ethnicity and employment status)
- Collect information on ex-smokers and smokeless tobacco (if it is used in your country)
- Capture information on binge drinking
- Collect information about oil and fat consumption
- Describe the history of blood pressure
- Describe the history of diabetes

This level of detail is recommended for most countries/sites.

Step 2 core

Most countries/sites should undertake the core items of Step 2. This is also affordable and can be done at the same time as Step 1, using the same data collection staff. Step 2 core will provide measures of:

- Height and weight
- Waist circumference
- Blood pressure

Step 2 expanded

Countries should undertake Step 2 expanded only if they need to know more about obesity and physical fitness. Step 2 expanded will provide measures of:

- Hip circumference
- Heart rate

Continued on next page

Step 3 core   Sites should undertake Step 3 core only if well resourced and they need to detect the prevalence of diabetes and raised cholesterol. Step 3 core provides measures of:

- Blood glucose
- Total cholesterol

Note: For most countries, the cost of this option makes it not viable to survey all participants. One useful option is to conduct Step 3 tests on a sub-sample of the participants.

Step 3 expanded   Sites should undertake Step 3 expanded only if they need to know about abnormal lipid profile as a risk factor for cardiovascular diseases. Step 3 expanded provides measures of:

- Triglycerides
- HDL cholesterol

Optional questions   Some sites may wish to go beyond Step 1 and Step 2 core and expanded to describe the prevalence of other specific health problems.

This may be achieved by asking the additional 'optional' questions in Step 1, and additional 'optional' measurements in Step 2.

Step 1 and 2 optional   If you want to capture the prevalence of a particular health problem, you can add optional items to Step 1 and Step 2, for example:

If you need to	Then add
Assess a particular health problem, such as prevalence of: • injuries and violence • mental health • oral health.	Optional questions to Step 1.
Undertake physical measurements of a particular health problem such as prevalence of: • oral health.	Step 2 optional measurements.
Link the STEPS survey to other population surveys.	Appropriate optional questions.

Continued on next page

Identifying Scope of STEPS Survey, Continued

Cost considerations

When countries add additional questions to Step 1 and Step 2 to tailor the Instrument to a local context, the cost of collection, analysis and presentation of the information escalates.

Adding more questions and local information also adds to the burden on participants in the surveys, and thus threatens the level of participation in future surveys in the same population.

Step 3 core generally doubles the cost of the survey.

Note: Data checking and cleaning have been estimated to account for about 20% of the total cost of population surveys.

Choosing a Chemistry Screening Method for Step 3

Introduction Blood chemistry screening methods have been developed and are widely used in community-based screening programs and public health surveillance for the measurement of:

- Glucose (Gluc)
- Cholesterol (Chol)
- Triglycerides (Trig)
- High density lipoproteins (HDL)

Note: This section applies only to those countries undertaking Step 3.

Dry or wet chemistry? Decide whether dry (e.g. an automated machine) or wet ('gold standard' laboratory based drawing of blood samples) chemistry will be used.

Staff, training and clinic equipment will be dependent on the choice.

The table below lists the recommended devices and the advantages and disadvantages of both dry and wet chemistry.

Type	Recommended Devices	Advantages	Disadvantages
Dry	• Reflotron Single Channel • Gluc201	• Rapid results available on site • Small sample volumes • No sample transport required • No pre-analytical variables • Convenient to participant • Viable option for less-resourced and unstable settings	• Operators need good training and supervision • Insufficient quality control • Insufficient documentation • Less accurate results
Wet	Hitachi 917, 911 and 747 (Gold standard)	• Accurate results • Centralised laboratory with trained staff and good internal and external quality control • Can be calibrated by the user • Preferred method for well resourced settings	• More costly than dry methods

Choosing a Chemistry Screening Method for Step 3, Continued

Devices for Dry chemistry The table below summarises the results of a recent review of dry chemistry devices, their advantages and disadvantages.

Device	Advantages	Disadvantages
Reflotron Single Channel	• Most widely used and tested • Can analyse Chol, Trig, HDL, and Gluc • Strips can be stored at temperatures from 2 to 30°C • Provides accurate screening and precise results	• Delay between sample application and measurement should not exceed 60 seconds
HemoCue Glucose 201	• Results as plasma equivalent values, allowing comparison with wet chemistry • Provides accurate screening and precise results	• Measures glucose only
Accutrend GC	• Second generation device based on the principles of Reflotron	• Upper end limit for cholesterol measurement
Stat Site	• Small, tabletop device • Can analyse Gluc & Chol • Can be used with AC/DC power source	• Uses whole blood which is more infective to blood borne disease • Does not satisfy USA NCEP accuracy standard for cholesterol measurement
LDX Cholestec	• Compact, table top device • Uses test modules to photometrically measure Chol, Trig, HDL, & Gluc from a fingerstick of whole blood serum or plasma • Uses AC power	• More expensive than other devices

Further information For further information on dry chemistry, see the *Final Report of the Review of Biochemical Measurement Methods for Step 3 of the WHO STEPwise approach for risk factor surveillance*, available on the STEPS CD or from the STEPS website: www.who.int/chp/steps.

Applying for Ethical Approval

Introduction   Every STEPS survey proposal should undergo technical and ethical review and approval. This is to ensure that the STEPS survey:

- is conducted in a technically and ethically sound manner,
- recognises and protects the rights of participants, and
- obtains access to information used in the sampling frame.

Process   Ideally, ethical approval should be sought by submission of a proposal and application to a national ethics review committee or other relevant body.

Where no such established process exists, it is recommended that an application for ethical review be prepared and submitted through an ad hoc local mechanism within the Ministry of Health.

Informed consent   Informed consent needs to be obtained from every survey participant before conducting the interviews. See Part 4, Section 1 for more details on gaining informed consent.

Making a submission   Follow the steps below to make a submission.

Step	Action
1	Determine if the ethics committee has a template for proposals that they require researchers to use.
2	Draft a formal submission (See Part 6, Section 1 for guidance on what to include in an ethical clearance submission).
3	Identify and contact the relevant committees, seeking guidance on rules, submission processes and procedures and committee sitting times.
4	Adapt submission as necessary and submit to the appropriate committee requesting guidance on expected timeframe for approval.
5	Follow-up with committee to get clearance.

Note: The STEPS regional focal points and the WHO Geneva STEPS team can provide further advice on making a submission.

Expected timeframes   Preparing and obtaining approval for submissions to ethics committees can take weeks and even months depending on their rules of operation in the site and how often committees sit.

Timeframes and Data Collection Considerations

Introduction   Data collection should be carefully planned to take place over a defined period of time and within appropriate seasons.

General timeframes   The table below provides a guide to estimated timeframes for each phase in a STEPS survey.

Phase	Suggested timeframes
Planning and scoping	1-2 weeks
Recruitment and training	3-4 weeks
Data collection	8-10 weeks
Data entry	4-6 weeks
Data analysis and reporting	2-4 weeks

Data collection   If possible, you should aim to complete data collection within a period of eight to twelve weeks.

Some key factors to consider when identifying an appropriate time to conduct the survey include:

Factors to consider	Guidelines
Seasons	• Confine the survey period to one season to avoid dietary changes. • Avoid festive seasons (Ramadan, Christmas, and other national holidays). • Avoid rainy seasons where it may be physically difficult to get to individual households. • Avoid seasons when food is in unusually short supply.
Calendar year	Confine the survey period to one calendar year.
Major events	Avoid data collection during periods prior to local, regional or national elections to avoid confusion with political campaigners.
Civil unrest, turmoil, famine etc.	It is not appropriate to conduct STEPS during times when more pressing matters occupy the minds and lives of the population. Sometimes it may be necessary to defer or cease a STEPS survey because of an intervening event.
Collection timeframe	Keep timeframe as close as possible (within reason) to the recommended timeframe.

Timeframes and Data Collection Considerations, Continued

Data collection locations

It is recommended that both Step 1 and Step 2 are conducted in household settings.

Step 3 should be conducted in a clinic setting. This is recommended for:

- Hygiene standards when taking blood samples
- Quality control
- More accurate results

Number of Staff Required

Data collection staff   Use the following table as a guide to help determine the number of data collection staff required to interview a final sample size of 2,200 participants within an optimal eight week period.

Option	If you conduct…	Average number of interviews*	Number of interviewers	Number of supervisors
1	• Step 1 core and expanded	6-7	8-10	1-2
2	• Step 1 core and expanded • Step 2 core	4-6	10-12	2-3
3	• Step 1 core and expanded • Step 2 core and expanded	4-6	12-16	3-4
4	• Step 1 core and expanded • Step 2 core and expanded • Step 3 core (and expanded)	4-5	12-16	3-4

*Notes:
- Value represents average number of interviews or measurements by one interviewer during an eight hour working day.
- If you increase the size of the survey beyond 2,200, or extend this timeframe for data collection, these indicative numbers would change accordingly.

Data collection teams   Consider the following factors when putting together interview teams:

- Consider teams of between two to four interviewers per team, each assigned to different areas.
- In some sites, you may wish to pair male and female interviewers.
- One supervisor should be responsible for two to five teams.

Data entry staff   Use the following table to help determine the number of data entry staff required to enter the completed STEPS Instruments (twice) within an optimal four week period.

Total Instruments received per day	Average Instruments entered per staff per day	Number of data entry staff	Number of Supervisors
40 - 50	15-30 (depends on length of Instrument)	4-6	1

Scheduling Data Collection

Introduction To ensure data collection is completed within the planned 8 to 12 week timeframe, you will need to carefully schedule interviews.

When to schedule data collection Ideally, participant lists should be collated and data collection scheduled as soon as your implementation plan and funding have been approved, the STEPS materials have been translated, and the sample has been drawn.

In practical terms, however, as this is quite a big task, it is recommended that it be conducted after the recruitment and training of data collection staff. That way trained interviewers can be used to compile the lists and make contact with individual households.

Step 1 and Step 2 household settings In some settings, evenings and weekends are generally preferred for interviewing, especially in urban areas.

This needs to be adapted on a country basis as weekends in some countries are not the same days as in others.

Step 3 clinic setting Schedule participants for blood collection into early morning slots at the clinic. This is because of the fasting requirement.

Adapting the STEPS Instrument

Introduction Use of a standardised STEPS Instrument enables comparisons both within the country over time and also between countries. However, the degree to which the Instrument can be standardised across cultures or settings can be limited.

When to adapt the Instrument Adaptations may need to be made to the STEPS Instrument to provide valid data for the surveillance site or to address the needs for information on other risk factors.

The following table provides guidance on when the Instrument can be adapted to local requirements.

Item	If…	Then…	Notes
Terminology	The terms used in some core questions do not fit the cultural setting (for example, occupations).	Alter the term for local relevance, but ensure the original meaning is retained.	Changing the wording can easily alter the meaning of a question. Seek advice before changing questions.
Additional information	You require additional data on risk (for example exposure to indoor smoke) and you have available resources.	Add selective, but limited questions as expanded or optional items.	Inserting them in the middle of the core/expanded sections may alter the meaning of the questions. Insert them where they best fit so that they work with the flow of the other questions
Link to previous data	You require specific data to link to previous surveys.	Add selective, but limited questions as expanded or optional items.	Insert the questions where they best fit so that they work with the flow of the other questions
Questions not applicable	Questions asking about a particular health behaviour which are not applicable in your setting, (e.g alcohol, or smokeless tobacco).	Drop these questions.	Look first at the fact sheet analysis guide and data book to see the impact on removing questions on the analysis.
Presentation	You want the skip instructions to correspond to the question numbers.	Change the skip instructions from the code identifier to the question number.	Only change the skip patterns from the codes to the question number once the questionnaire is finalised.

Continued on next page

Adapting the STEPS Instrument, Continued

Rules There are some fundamental rules that must be observed when tailoring the STEPS Instrument. These include:

- Never delete a question or measure from the core sections (unless question is not applicable in your setting).
- Never change the standard coding numbers.
- Place additional questions or measures where they best fit within relevant section as an expanded or optional item.
- Do not place additional questions or measures in between core questions or measures.
- Code all added questions or measures with the letter 'X' (X1, X2…).
- Remove from the Instrument the expanded sections and Steps (ie 2 and or 3) that are not being covered by your site.
- Amend the skip instructions if expanded or optional items are added to the any section.
- Review all skip instructions.
- Send a draft of your tailored STEPS Instrument to the WHO Geneva STEPS team for review before finalising.

Process The process of adapting the STEPS Instrument involves the following key stages:

Stage	Description
1	Identifying questions that require local adaptation.
2	Adapting wording or adding questions and adjusting skip instructions.
3	Adapting other forms as appropriate.
4	Seeking feedback and advice.
5	Translating and back translating the adapted Instrument.
6	Pilot testing the Instrument.
7	Adapting the data entry tool, data management code, data analysis code and report templates as appropriate.

Note: Further details on each of these stages are provided in the following pages.

Available support The WHO Geneva STEPS team is available at all stages of this process for consultation and technical advice. To enable the WHO Geneva STEPS team, to assist with data entry, analyses, and weighting of the data, please ensure that they receive a copy of the Instrument prior to finalisation.

Adapting the STEPS Instrument, Continued

Common questions for adaptation

The table below provides some examples of questions in the STEPS Instrument that most commonly require local adaptation:

Question (Code)	Standard wording	Guidance for adaptation
18 (C5)	What is your [*insert relevant ethnic group/racial group/cultural subgroup/others*] background?	• Insert a list of terms that best define differences in health and health related outcomes in your country, e.g. race, religious, ethnicity, etc. • Base ethnic groups on the census definition.
19 (C6)	What is the highest level of education you have completed?	• The education categories (taken from UNESCO ISCED 1997) are designed to translate national education programmes into an internationally comparable set of categories. • If you use other categories you should document the definitions and how they relate to those in the Instrument.
20 (C7)	Which of the following best describes your main work status over the last 12 months?	• Insert categories appropriate to your setting. • Document the list of the new categories and how they relate to the Instrument.
23 (C10)	If you don't know the amount, can you give an estimate of the annual household income if I read some options to you? Is it less than… [Insert Quintile Values]?	Insert 20, 40, 60, 80% of average national income distribution obtained from an authentic source (e.g. National Income and Expenditure surveys, etc).
24 (T1)	Do you currently smoke any tobacco products, such as cigarettes, cigars or pipes?	Draft a show card that covers all tobacco products used in your country.

Note: For further guidance and details about each item in the STEPS Instrument, please see the Question by Question Guide in Part 5.

Skip patterns and question numbers

If the content of the Instrument has been adapted, you will need to review and update all the skip instructions and question numbers to ensure they are accurate.

Note: Currently the skip instructions reflect the codes, but it may be easier for the interviewers if these are changed to the finalised question numbers.

Continued on next page

Adapting the STEPS Instrument, Continued

Adapting forms, procedures & show cards

Some forms, procedures and show cards may also require tailoring to ensure local relevance.

The table below shows some common adaptations that may be required.

Item	What to adapt (or create)
Show cards	Adapt (or create) examples used for: • List of work status. • List of tobacco products. • Standard drink sizes for alcohol consumption. • Local fruit and vegetables with standardised servings. • Physical activities.
Interview tracking form.	May require adjustment according to variations in sampling design.

Note: The Interview tracking form needs to be used during the interview process. This form is needed to weight the data during the analysis process.

Translating STEPS Documents

Introduction   Many sites will require that the WHO STEPS manual and associated documents are available in more than one language. These materials are to be translated into the language(s) used in the sites by a translator and then back translated into the original language by a different translator to ensure accurate reproduction of meanings.

Documents to translate   The table below lists some of the documents that may need translating and includes part and section references.

Documents	Manual reference
STEPS Instrument	Part 5, Section 1
Question by Question Guide	Part 5, Section 2
Show Cards	Part 5, Section 3
Training and Practical Guides	Part 3
Interview tracking form, Clinic registration form	Part 6, Section 2
Participant information form	Part 6, Section 2
Consent forms.	Part 6, Section 2

Purpose   The purpose of translation and back-translation is primarily to produce a locally understandable Instrument and all supporting documents and that the original intent of the questions is maintained.

This will ensure that all interviewers ask the questions in a standardised way and all STEPS documents are clear and understandable to participants.

Language selection   There may be several recognised languages within a country. In this situation,

- interviewing materials may need to be translated into each of these and
- trained translators and interviewers will have to be available.

Notes:
- Check if another country/site has already translated the STEPS Instrument into your local language and is willing to share it.
- Your census office or another government department may help with determining other languages you need to use.

Translating STEPS Documents, Continued

Translation process

Follow the guidelines below to select appropriate translators and ensure accurate and appropriate translation of the STEPS Instrument and all other interviewing materials.

- Initial translation of material should be conducted by at least one translator, ideally a linguistic expert who can explain the terms used and suggest alternatives and has experience in health surveys.
- The Instrument must then be back-translated into the original language by another translator to ensure accurate reproduction of meanings.
- Do not use 'Interpreters of convenience', such as members of the participant's family or household, the village headman or any other convenient person present as it may lead to incorrect data being recorded.

Quality standards for translation

The following are recommended guidelines for translation:

- Translate the original intent of the questions with the most appropriate equivalent term in the local language.
- Develop an inventory of local expressions used as well as comparisons of expressions in other languages.
- Where there are many dialects and/or languages that are not available in written format, carefully plan specific translation protocols.

Pilot Testing

Introduction   A pilot test of the entire data collection process must be conducted among a limited number of people with a broad range of backgrounds prior to implementing the actual survey. It involves all aspects of the survey including:

- Approaching potential participants
- Seeking and obtaining informed consent
- Making arrangements/appointments for data collection
- Site preparation and set-up
- Collecting all needed data
- Identifying participants who may need follow-up
- Double data entry
- Basic analysis

When to conduct pilot test   Ideally, the pilot test should be conducted as soon as the translated versions of the STEPS Instrument and other interview materials are ready.

In practical terms, however, it is recommended that it be conducted after the recruitment and training of data collection staff so trained interviewers can be used during the pilot. This will ensure interviewer consistency and test interviewer skill prior to the main survey.

Test group   Identify and approach willing participants to be part of the pilot test. The test group should include the following:

- 10 - 20 people
- Both men and women
- Cover age range used in STEPS
- More than one ethnic group (if appropriate)
- People with differing levels of education
- People from a range of socio-economic groups

Test environment   Where possible conduct the pilot test under realistic field conditions.

Timeframe   When planning the pilot test, allow sufficient time for adjustments to be made prior to starting data collection.

Pilot Testing, Continued

Conducting the pilot test   Follow the steps below to conduct the pilot test with each participant.

Step	Action
1	Briefly explain the purpose and aim of STEPS chronic diseases risk factor surveillance.
2	Briefly explain the purpose of the pilot test.
3	Get each participant to read and sign the necessary consent forms.
4	Using the STEPS Instrument, conduct the interviews and record results.

Feedback   At the end of each interview, ask the participant the following questions and record their feedback:

- Did any of the questions make you feel uncomfortable?
- Did you understand all the words?
- How clear was the intent of the questions?
- Did you know what was being asked?
- How could we make it clearer?
- How else could we improve this survey?

Evaluation and refining the Instrument   On completion of the pilot test:

- compile all participants' comments into a single report,
- where necessary, adapt and refine the Instrument - taking care not to change intended meanings, and
- send the Instrument to WHO Geneva STEPS Team for comments and quality assurance.

Section 2: Preparing the Sample

Overview

Introduction

This section covers the principles, methods, and tasks that need to be conducted to prepare, design, and select the sample for your STEPS survey.

Intended audience

This section is primarily designed to be used by those fulfilling the following roles:

- Statistical adviser
- STEPS site coordinator
- Coordinating committee

Tasks and timeframes

The sample is prepared as part of the process of planning and preparing the survey. This process should take between 2 days to one week, depending on the methods chosen and availability of information needed to draw the sample.

The chart below list the main tasks and timeframes covered in this section.

Task Name	Duration	Month 1	Month 2	Month 3
Define target population	1 day			
Determine sample size	1 day			
Identify sample frame & design	1 wk			
Select sample participants	3 days			
Document sample selection	1 day			

In this section

This section covers the following topics:

Topic	See Page
Sampling Guidelines	2-2-2
Determining the Sample Size	2-2-3
Identifying the Sample Frame	2-2-5
Choosing the Sample Design	2-2-8
Selecting the Sample	2-2-14
Kish Method	2-2-17
Documenting the Sample Design	2-2-20
Preparing Data Collection Forms	2-2-21

Sampling Guidelines

Introduction

High quality survey techniques can provide a good picture of risk factors for chronic diseases in a population by using a sample of that population. This is achieved by carefully selecting the sample from the population. The sample will represent the entire target population if the sample is drawn correctly. High standards of sample design and selection are essential to achieve valuable and useful results from STEPS.

Reflecting the scope of your survey in your sample

To achieve a sample that reflects the scope of the survey you need you to:

- define a target population,
- select a sample of the population that is representative of the whole population,
- select either a random sample or sample the entire cluster, and
- use strata defined by sex and 10-year age groups to ensure that key sub-groups of the population are adequately represented in the sample.

Note: Stratification may apply before a sample is drawn, or may be adjusted for during analyses; the population to which STEPS chronic diseases risk factor surveillance usually applies is all adults aged 25 to 64 years.

Define the target population

Each site needs to define the target population for their STEPS Survey. To define your population you need to take into account the purpose and use of the survey data. (For example, do you need the survey to be representative of the entire population or a specific region?)

Sample population

The sample population is a carefully selected subset of the target population. Once you have defined the target population you select your sample of participants within the target population.

Rationale for stratification by age and sex

Most risk factors for chronic diseases increase with age, but because numbers in older age groups are generally fewer than in younger groups, they can be less well represented in samples, with consequent loss of precision in estimates.

To ensure adequate representation of each stratum, regardless of their sampling methods, all STEPS surveys should be stratified by sex and 10-year age group, effectively making a separate population survey for each stratum.

Note: Adjustments for stratification are often made after the data are collected rather than during sampling, a process termed post-stratification.

Determining the Sample Size

Introduction   A minimum target sample size of 2,000 adults aged between 25 and 64 stratified by sex and ten year age groups is required for STEPS surveillance.

Note: This basic recommendation assumes that the population is homogenous and does not allow analysis by subpopulations other than age and sex.

Over sampling for anticipated non-response   It is standard practice to increase the targeted sample size to anticipate for non-response. If only 250 people in each stratum are approached then you may not achieve your target sample size due to non-response.

Increasing numbers by approximately 10% is one means of compensating for anticipated non-response. This will ensure that the total number of people actually participating in the survey will be at least the minimum required.

The table below shows how the sample should be selected for each strata.

Age Range	Recruitment target	Selection
Men: 25 – 34 years	250	275
35 – 44	250	275
45 - 54	250	275
55 - 64	250	275
Women: 25 – 34 years	250	275
35 – 44	250	275
45 - 54	250	275
55 - 64	250	275
Totals	**2000**	**2200**

Amending the sample size   In some situations, the recommended minimum sample size may not be adequate. It may need to be increased to measure the prevalence of health problems among specific subgroups of interest.

Fewer individuals and/or wider individual variation among participants leads to reduced precision – that is, wider confidence intervals which are less useful in assessing the overall population. In amending the sample sizes, a trade-off occurs between the costs and precision - which may be partly offset by collecting quality data.

Determining the Sample Size, Continued

How to amend sample sizes   Use the table below for guidance on how to amend the STEPS recommended minimum sample sizes.

If…	Then…
You want to add an additional 10-year age decade (e.g. 15-24 years).	Add an additional stratum of 15-24 with the same sample size as the rest of the stratum. (275 for men and 275 women)
Results are required for particular subpopulations of interest such as identified by: • ethnicity, • area, or • urban-rural dwellers.	Add 275 participants for all sex*age groups for each additional subpopulation. Thus, 2 such strata will double the total survey size.
You expect there to be a high non response rate for a particular group, which may occur if you have to use an out-of-date sampling frame.	Expand the sample size by a further 10 % - 20% for that sub group.
You want to ensure a sub group is well represented (e.g. women of child bearing age).	Expand the sample size by 10% for that sub group.
Population estimates for Step 3 biochemical measurements are wanted but you cannot afford testing of the entire sample.	Either omit selected age groups (e.g. those aged under 45 years), or select a random sub-sample (e.g. 60%) of the participants in Steps 1 & 2.
Step 3 biochemical measurements are being taken specifically to measure prevalence of a particular condition, e.g. diabetes, and prevalence is expected to be low (below 5%) in a particular strata.	Expand the sample size in the strata of interest in consultation with your statistical advisor.

Note: If altering the recruitment target counts, be sure to factor in anticipated non-response by inflating your sample size as described earlier in this section.

Smaller sample sizes   In order to reduce costs, it is tempting to consider interviewing fewer people. For Step 1 or Step 2, reducing the sample sizes would seriously reduce the precision of population estimates for proportions having various risk factors, and is **not** recommended.

If it is not economically feasible to conduct Step 3 on the entire sample, you may conduct Step 3 on a reduced sample size. However this will reduce the precision of the population estimates.

Identifying the Sample Frame

Introduction	A sampling frame is a list of units or elements that defines the target population. It is from this list that the sample is drawn. A sampling frame is essential for any survey.
Finding available sampling frames	To identify available sample frames and determine which is best for your site, search for updated lists, databases, registers or other sources that give good coverage of the population you wish to survey. (For example look for population registers or census lists). Various government departments and national bodies should be consulted to establish what frames exist in your country, and if suitable, whether they may be accessed for STEPS.
Factors to consider	A sampling frame (or a collection of them) should cover all of the population (or elements or units) in the surveyed site. Good coverage means that every eligible person in the population has a chance of being included in the survey sample. Representativeness for all sub-populations should be considered when deciding which frame(s) to use. You need to watch out for the possibility that particular age, gender or ethnic groups or geographical areas are more or less likely to be included in the sampling frame. Bias will occur if there is poorer coverage for some people or groups.
Features of a good sampling frame	Some features of a good sampling frame are: • It does not contain duplicates, or if present they can easily be identified and removed. • It does not contain blanks, such as empty houses or a deceased individual. • It contains information enabling all units to be distinguished from all others and to be easily located (i.e. a complete street address). • It contains information about the number of households and number of residents by age-group and sex. • It could be made accessible to the STEPS team within a reasonable timeframe and at no large expense. **Note:** Sampling frames must be assessed for all the above features, but particularly for **completeness** and **potential bias**.

Identifying the Sample Frame, Continued

Enumeration area (EA)

The most common, widely available sampling frame uses enumeration areas (EAs). An enumeration area is a small to medium sized geographic area that has been defined in a previous census. Most countries have this information and it is the preferred sampling frame.

Multiple sampling frames

Depending on how many stages of sampling are required for your site, you may need to draw up separate sampling frames for each stage. If the information available in the sampling frame only covers the basic population for the EAs then the next stage will need another sampling frame that includes more information about the selected EAs/clusters. Use the same principles for each level of sampling.

Completed results

Your completed sampling frame should include:

- a list that represents all the individuals in the target population either individually or with associated clusters, and
- population estimates for each cluster.

Available sampling frames

Sites should have enumeration areas (or clusters that are similar to enumeration areas) that have population estimates associated with them. The sampling frames are different for each site depending on what additional information is available with the enumeration areas.

Ideally the enumeration areas will include information on:

- the inhabitants of each household, or
- the number and location of households but no details on the inhabitants of each household.

If your sampling frame does not contain this additional information for the enumeration areas you may need to look at smaller clusters for this information, such as the villages.

Continued on next page

Identifying the Sample Frame, Continued

Select your scenario

The table below presents the sampling frames that are supported in the STEPS manual. Look at the sampling frame for each scenario and identify which scenario best describes the sampling frame available.

The scenarios range in quality and precision with scenario 1 being the preferred scenario and scenario 5 being the least preferred.

✔ indicates that the information is available.
X marks indicate that this information is not available.

Requirements	Scenario				
	1	**2**	**3**	**4**	**5**
Enumeration areas (or similar clusters) have details on the inhabitants of each household.	✔	X	X	X	X
Enumeration areas (or similar clusters) have information on the number and location of households.		✔	X	X	X
Enumeration areas (or similar clusters) do not have any additional information.			✔	✔	✔
Information for smaller clusters (i.e. villages) is available and includes details of the inhabitants of each household.			✔	X	X
Information for smaller clusters (i.e. villages) is available and has information on the number and location of households.				✔	X
Information for smaller clusters (i.e. villages) is available but there is no information on the number/location of households or details on the inhabitants.					✔

Note: Take note of the scenario number that suits your site. You will use the same scenario number for selecting the sample design.

Choosing the Sample Design

Introduction The sampling design is used to select the sample from the sampling frame. In the previous section, "Identifying the Sampling Frame", you identified which sample frame was available for your site. The scenario number selected in the section will be the sample design scenario you use for this section. (i.e. if you selected scenario 2 for your sampling frame, then you will use scenario 2 in this section also).

Terms and abbreviations used Some common terms used in the sampling section are defined below.

Term	Definition
Primary sampling unit (PSU)	The first level of sampling (this should include everyone in the target population)
Secondary sampling unit: (SSU)	The second level of sampling, this only occurs for the EA/clusters selected in the PSU
Tertiary sampling unit (TSU)	The third level of the sampling
Probability proportional to size sampling (PPS)	A sampling technique commonly used in multi-stage cluster sampling. It means the probability that a particular sampling unit will be selected in the sample is proportional to a known variable such as the population size of the sampling unit. For example, larger clusters have a higher probability of being selected than smaller ones

Choosing the Sample Design, Continued

STEPS sample designs

Once you have identified an appropriate sampling frame, you need to select the sample method that is possible within the restrictions of your sampling frame.

All the sample designs begin with the same PSU (Primary Sampling Unit). The differences in the sampling methods occur at the secondary/tertiary/final stages of the sample design.

Scenario	Sample Design	Name of paragraph in "Selecting the Sample"
1	• PSU- PPS sampling to select EAs/clusters • SSU- sampling stratified by age/sex of individuals to interview	• "Selecting PSU" • "Stratified sampling of individuals"
2	• PSU- PPS sampling to select EAs/clusters • SSU- simple random selection of households • TSU- Selection of respondent using Kish method	• "Selecting PSU" • "Simple random household selection" • "Kish respondent selection"
3	• PSU- PPS sampling to select EAs/clusters • SSU- PPS sampling to select clusters within original clusters • TSU- sampling stratified by age/sex	• "Selecting PSU" • "Clustering the SSU" • "Stratified sampling of participants"
4	• PSU- PPS sampling to select EAs/clusters • SSU- PPS sampling to select clusters within original clusters • TSU - simple random selection of households • Final Unit- Selection of participants using Kish method	• "Selecting PSU" • "Clustering the SSU" • "Simple random household selection" • "Kish respondent selection"

5	• PSU- PPS sampling to select EAs/clusters
	• SSU- PPS sampling to select clusters within original clusters
	• TSU, either
	  − 5.1 sample entire cluster (every household but select 1 participant from each household using the Kish method) or
	  − 5.2 count/map all households, list all residents and in a final sampling stage, select participants using sampling stratified by age/sex of individuals to interview from the complete list of residents.
		• "Selecting PSU"
		• "Clustering the SSU"
		• "Kish respondent selection of entire cluster" or "Stratified sampling of individuals"

Continued on next page

Choosing the Sample Design, Continued

Using the information in "Selecting the sample"

The third column in the table above displays the name for the text which details how to perform all the different sampling steps within each scenario. When you are selecting your sample do the following:

- Use only the sampling methods described in your scenario.
- Perform sampling in the order presented in the third column.
- Document every step that was performed, see "Documenting the Sampling Design" on page 2-2-20.
- Contact a statistical adviser or the WHO Geneva STEPS team if you have difficulties at any stage.

Reminder: For the SSU the sampling must be applied independently to each cluster selected in the PSU. This is the same for the TSU. The sampling for the TSU must be applied independently to each cluster selected in the SSU. Independently applied means that each cluster must have its own list (sampling frame).

Detailing sample stages

The number of clusters or individuals selected at each stage of the sampling should be determined by your statistical adviser prior to beginning the sample selection.

Considerations include:

- The number of clusters or units available on each frame i.e. at each sampling stage.
- The desired sample size of the survey, and each sex*age group stratum.
- That sampling more smaller clusters is preferable to few large clusters.
- The costs of surveying at many localities.
- The impact on the sample stages of additional strata (not covered further in this manual).

Scenario examples

The scenarios outlined above are shown in diagrammatic form in the following pages. Look for your scenario and check that it matches the decisions taken for your site.

Choosing the Sample Design, Continued

Scenario 1

Target Population

EA/cluster   EA/cluster   EA/cluster   EA/cluster

Participant Participant Participant   Participant Participant Participant   Participant Participant Participant
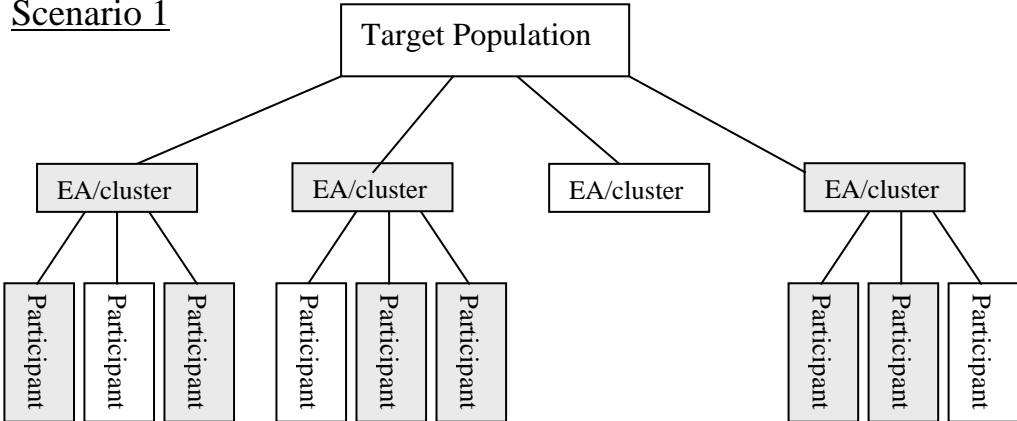
A grey box indicates that box was selected to be sampled.

Scenario 2
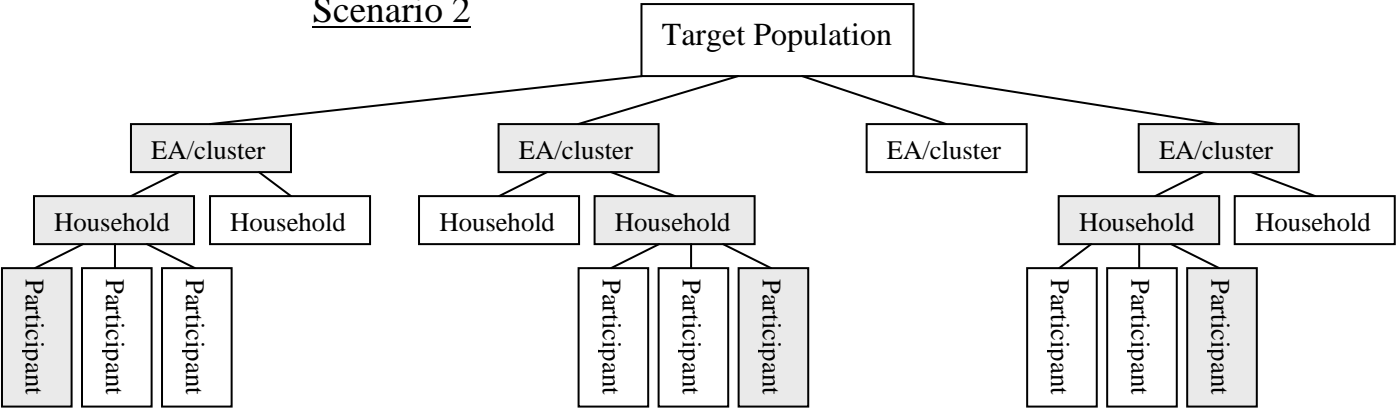
Target Population

EA/cluster   EA/cluster   EA/cluster   EA/cluster

Household Household   Household Household   Household Household

Participant Participant Participant   Participant Participant Participant   Participant Participant Participant

A grey box indicates that box was selected to be sampled.

Choosing the Sample Design, Continued

Scenario 3

```
                              Target Population
        ┌──────────────┬──────────────┬──────────────┐
   EA/cluster      EA/cluster      EA/cluster      EA/cluster
   ┌──────┐        ┌──────┐                        ┌──────┐
 Village Village  Village Village                Village Village
 ┌─┬─┬─┐                  ┌─┬─┬─┐                 ┌─┬─┬─┐
 P P P                    P P P                   P P P
```

- Village represents a smaller cluster selected from the EA. It does not necessarily have to be a village.
- A grey box indicates that box was selected to be sample.

Scenario 4

```
                              Target Population
        ┌──────────────┬──────────────┬──────────────┐
   EA/cluster      EA/cluster      EA/cluster      EA/cluster
   Village Village  Village Village            Village Village
   Household Household  Household Household     Household Household
   P P P                    P P P              P P P
```
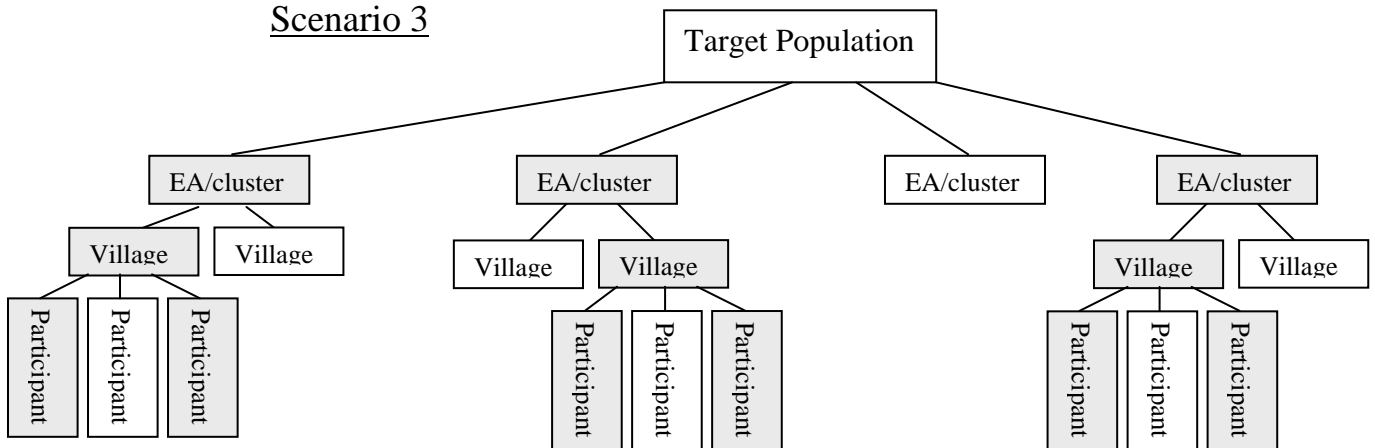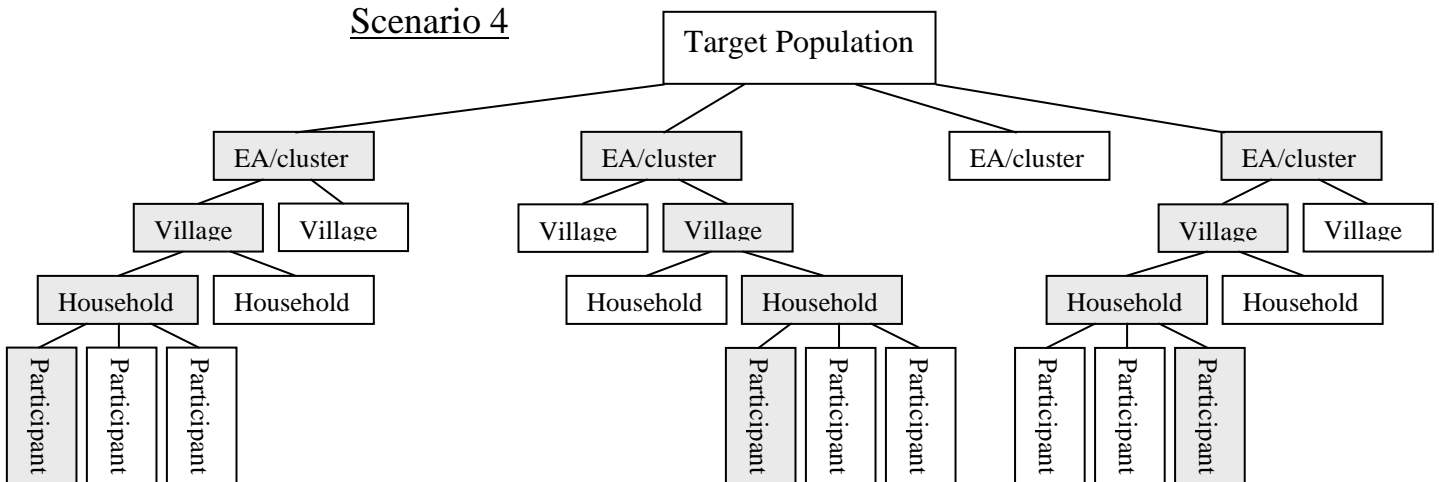
- Village represents a smaller cluster selected from the EA. It does not necessarily have to be a village.
- A grey box indicates that box was selected to be sample.

Continued on next page

Choosing the Sample Design, Continued

Scenario 5.1: Sample entire cluster
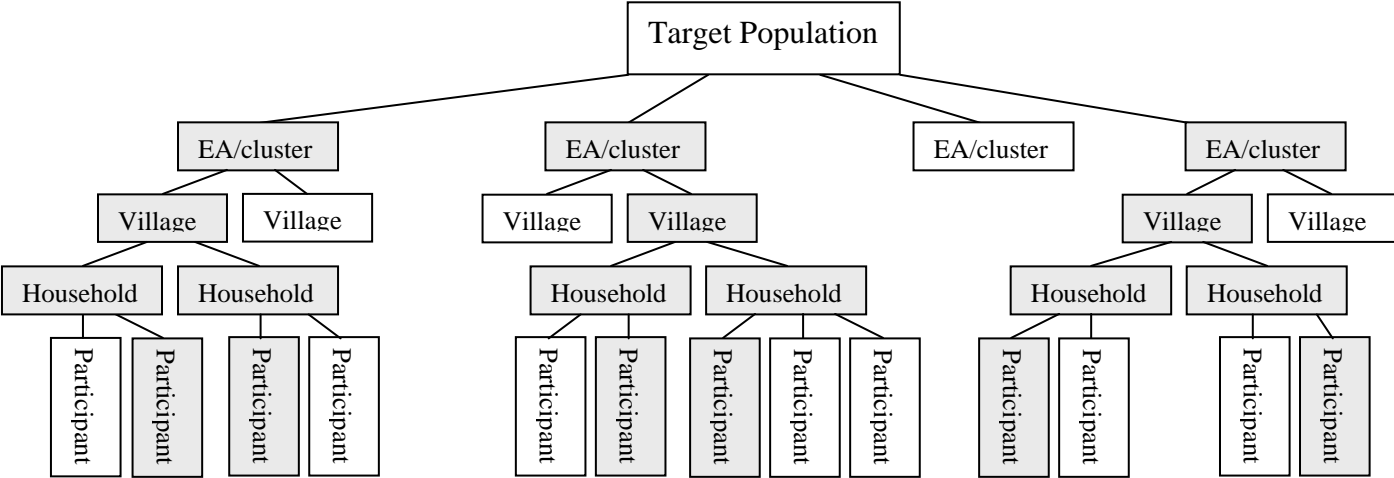
- Village represents a smaller cluster selected from the EA. It does not necessarily have to be a village.
- A grey box indicates that box was selected to be sample.

Scenario 5.2: Count/map households, randomly select household and use Kish method for participant selection
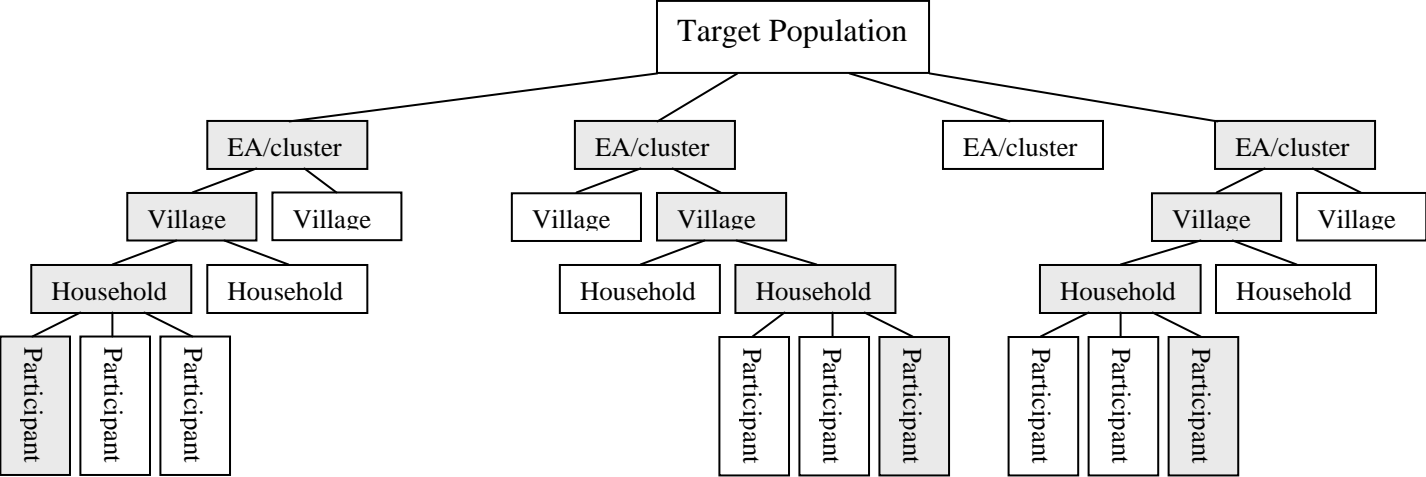
- Village represents a smaller cluster selected from the EA. It does not necessarily have to be a village.
- A grey box indicates that box was selected to be sample.

Selecting the Sample

Introduction   Once the sample design is selected you are ready to proceed with sample selection. This section provides instructions for the various sampling stages. The block title on the left matches the third column of the table from page 2-2-9. Select the different sections that are appropriate for your sampling design.

Available tools   There is an excel workbook titled "STEPS sampling" that includes spreadsheets for every stage of the sample selection. STEPSsampling.xls will:

- randomize your sample selection,
- provide probability proportional to size (PPS) sampling for primary and secondary sampling units as needed (PSU + SSU), and
- provide information for the weighting.

The spreadsheet is available on the STEPS website (www.who.int/chp/steps) and on the CD Rom.

Selecting PSUs   The PSU uses probability proportional to size (PPS) sampling. Use the table below to select the PSUs for your site.

Steps 2-8 can be automated by using the excel workbook STEPSsampling.xls and clicking on the PSU spreadsheet.

Step	Action
1	Determine the number of clusters to be selected.
2	Create a list of all the EAs/clusters with their population size, available in sampling frame. Do not place this list in any order.
3	Create a new column and in it a formula to calculate the cumulative population counts for every EA/cluster. The final total should match the total population for that area.
4	Divide the total cumulative population size (N) by the number of EAs/clusters to be selected (n) to obtain the sampling interval (k). $k = N/n$
5	Choose a random number (r= that is between 1 and the sampling interval (k)) $1 < r < k$

Continued on next page

Selecting the Sample, Continued

Selecting PSUs (continued)

Step	Action
6	Start at the top of the list and select the first EA/cluster whose cumulative population size includes the random number (r) (previously identified).
7	Select the second cluster by adding the sampling interval to the random number (r). Start counting from the previous cluster selected not the start of the list. $r+k$
8	Select the remaining clusters by adding the sampling interval, multiplied by 2, then 3 and so on, to the random number. Start counting from the previous cluster selected not the start of the list. $r+(k \times 2)$ $r+(k \times 3)$ etc
9	Continue until the end of the list is reached. Do not stop as soon as your quota is reached. To avoid bias, all units selected must be used in the survey even if quotas are complete.

Clustering the SSU

If the enumeration areas (EAs) for your sampling frame do not contain participant information (details on the inhabitants of each household or number and location of each household) then a second stage of sampling needs to occur before household or participant selection.

To perform a second clustering, follow steps 1-9 in the table above, "Selecting PSUs", or use the spreadsheet "Clustering SSU" in the STEPS sampling workbook.

Each cluster selected in the PSU should have an independent selection for the SSU clustering. This means that if there were 10 clusters selected in the PSU, there would be 10 different SSU clusters. The "Clustering SSU" spreadsheet would be used 10 times, 1 time for each identified cluster in the PSU.

Selecting the Sample, Continued

Stratified sampling of individuals

If you have household composition information available you will be able to stratify your sample by age and sex. This is ideal because it ensures that you will receive the recommended quota for each age/sex strata.

To perform a random sample stratified by age and sex:

- create a list of individuals for each cluster identified in the previous stage based on age and sex classifications. This would mean 10 different lists for each cluster, and
- follow the steps identified in the next block, Simple random household selection, for each list.

Simple random household selection

If you do not have household composition then the sample cannot be stratified by age and sex. If you have a list of household within the sampling unit, you need to randomly select the households for the sample.

To perform a simple random selection of households use the spreadsheet "Random Hhold" in the STEPS sampling workbook.

Kish respondent selection

The Kish method or randomised selection of individuals within household is used by STEPS. The Kish method, described in detail on page 2-2-17, is effective, easy to implement, and only takes minimal preparatory work.

Note: Note that in all STEPS survey designs, sampling is non-replacement, meaning that once a unit or person is selected they are not replaced with another person/unit. If you replace non-respondents or persons who are not at home for the interview you will be performing a convenience sample and your results will only represent the people sampled and not your target population.

Kish Method

Introduction   The Kish method provides a random sampling method for selecting one individual from each household.

The Kish method can be used for selection within households regardless of the sampling method used to select the households.

Over sampling for 55-64 year olds   Depending on your population structure it may be difficult to obtain the quota for the 55-64 year old age group. One possible solution to this is to over sample this age group. If you decide to do this you sample every respondent from the selected households who fall into the 55-64 age range.

If the selected household…	Then you would select…
Has an adult 55-64	2 participants
Does not have an adult 55-64	1 participant

Note: If you decide to over sample then adjust the household size to reflect this. If there are five people in a household and one is 55-64, then the household size for sampling purposes is now four. This is because the other selected respondent now has a one in four chance of being selected.

Materials   To use the Kish method for sampling within households you will need:

• Kish household cover sheet
• Kish summary of eight tables
• Kish household list

Note: All these materials are available for use in Part 6 Section 2 of this manual.

Process   The table below lists the key stages in using the Kish method for individual sampling at the household level.

Stage	Description
1	Recording household information on the Kish household cover sheet.
2	Using Kish household list to identify which table should be used for that specific household.
3	Using Kish summary of eight tables to identify which individual should be selected.

Continued on next page

Kish Method, Continued

Kish household cover sheets

The Kish household cover sheets collect the household information needed to randomly select the participant from the household. The coversheet collects information on:

- number of individuals within household,
- age, and
- sex.

Details on completing the coversheet can be found on example in Part 6 Section 2.

Note: If you are over sampling 55-64 year olds they should not be added to the household cover sheet as they are not part of the random selection process. Their participation would be 100%.

Kish household list

The Kish household list provides the information on which Kish table to select for each household.

The household number is the household code or serial number of the household within the cluster.

Household	Kish Table
1	A
2	A
3	B1
4	B2
5	C
6	C
7	D
8	D
9	E1
10	E2
11	F
12	F
13	A
Etc…	

Kish Method, Continued

Kish summary of eight tables

The Kish summary of eight tables is presented below. Use the table number from the Kish household list and the total number of adults in the household to select which individual from the household should be selected.

Table Number	If the number of adults in household is:					
	1	2	3	4	5	6 or more
	Select adult numbered:					
A	1	1	1	1	1	1
B1	1	1	1	1	2	2
B2	1	1	1	2	2	2
C	1	1	2	2	3	3
D	1	2	2	3	4	4
E1	1	2	3	3	3	5
E2	1	2	3	4	5	5
F	1	2	3	4	5	6

Preparing materials

It is best practice to prepare all the materials for Kish sampling prior to starting the actual interviews. Directions on completing the Kish paperwork can be found below on page 2-2-21, Preparing Data Collection Forms and in Part 6 Section 2.

Documenting the Sample Design

Introduction   Once a sample method has been chosen and the sample has been designed, all aspects of the sample need to be clearly documented.

Purpose   The purpose of documenting the sample design is for the data analyst to understand how the sample was designed in order to appropriately adjust the results to the target population. For example, analyses must factor in, where relevant, the:

- Stratum a participant belongs to
- Primary and secondary sampling frame where relevant
- Sample selection method at each sampling stage
- Probability of selection at each stage of sampling

Record during data collection   Sufficient records must be kept during data collection to make all data analysis adjustments possible.

Future surveys   Documenting sampling designs and processes are also important for future surveys when changes in risk factors over time are being tested, since methods chosen in future surveys may differ from this one.

Archiving documents   It is important that all relevant sampling forms be archived. This includes the:

- interview tracking forms, and
- Kish household coversheets.

Preparing Data Collection Forms

Introduction   Once the sample has been drawn the interview tracking form and the Kish household coversheets can be prepared for the data collection team.

Interview tracking form   All sites should use the interview tracking form regardless of their sampling design. This information is used for both calculating the weights and response proportions for Step 1, Step 2, and Step 3 (if applicable).

Kish household coversheet   The Kish household coversheet should be used when the data collection team needs to select participants randomly from each household. To prepare the Kish coversheets for the data collection team:

• create a coversheet for each household by filling out the information box (household number, participant ID, Cluster number), and
• use Kish household list to select which table should be used for each household and circle the table on the coversheets.

When to use forms   Which forms you use depends on which sampling scenario you used. Use the table below to determine which forms your site needs to use.

Liaise with the data collection team supervisor to designate codes for the variables on the forms, see Part 4 Section 1 page 4-1-3 for more information.

Scenario	Forms
1	• interview tracking form
2	• interview tracking form • Kish household coversheet
3	• interview tracking form
4	• interview tracking form • Kish household coversheet
5	• interview tracking form • Kish household coversheet

Section 3: Preparing a STEPS Site

Overview

Introduction   This section covers all the tasks that are needed to set up and prepare the STEPS site.

Intended audience   This section is designed for use by those fulfilling the following roles:

- STEPS site coordinator
- Data collection team supervisors
- Data management team supervisors

Tasks and timeframes   The chart below shows the main tasks and timelines (indicative) covered in this section.

Task Name	Duration	Month 1	Month 2	Month 3
Recruit staff	2 wks			
Acquire equipment and supplies	2 wks			
Acquire equipment for STEPS Office	2 wks			
Set up STEPS Office	2 days			

In this section   This section covers the following topics:

Topic	See Page
Recruiting Staff	2-3-2
Household Survey (Step 1 & 2)	2-3-4
Clinic Survey (Step 3 only)	2-3-7
Data Entry Office (Step 1, 2 & 3)	2-3-9

Recruiting Staff

Introduction	The number and qualifications of staff will depend on the scope of the STEPS survey and the size of the sample as well as the type(s) of data to be collected, e.g. whether the site is implementing Step 1, 2 and/or 3 and/or optional modules.

Data collection team

The core roles within the data collection team include some or all of the following:

- Team supervisors
- Interviewers
- Survey clinic health professionals
- Laboratory technicians
- Administrative staff

See Part 1, Section 2 for further details on these roles and responsibilities.

Data entry team

The core roles within the data entry team include:

- Team supervisors
- Data entry staff

See Part 1, Section 2 for further details on these roles and responsibilities.

Data analysis team

The core roles within the data analysis team include:

- Data analysts
- Statistical adviser

See Part 1, Section 2 for further details on these roles and responsibilities.

Gender considerations

For the data collection team, a mixture of staff of both sexes may be required for situations and communities where:

- There are strict rules about contact with members of the opposite sex.
- There is individual preference.

Language, ethnic and religious considerations

For the data collection team, a mixture of staff who are fluent in several languages and represent varied cultural, ethnic and religious groups may be valuable.

Recruiting Staff, Continued

Estimating numbers

The number and mix of staff requires careful calculation. For data collection, multiple teams should be recruited and trained to enable completion of interviews within the planned timeframe. All teams should have back-up staff available to cover for illness and other absences among members of the team.

See Part 2, Section 1: "Identifying Scope of STEPS Survey" for further details on estimating numbers of staff required.

Where to recruit people from

In many countries, recruitment is likely to be an informal process where data collection and data entry staff are 'seconded' from other duties within the Ministry of Health or other health authority responsible for undertaking the STEPS surveillance. In this situation, arrangements for their release and scheduled participation may need to be negotiated and explicitly agreed upon.

Where there is not sufficient available staff or specific skills are required (ie, for data entry and data analysis) formal recruitment may be necessary.

Required timeframes

It is recommended that staff recruitment takes place over a period of 2-3 weeks if possible, so all may participate in initial training and build a good team structure quickly.

Household Survey (Step 1 & 2)

Introduction   Most sites will conduct Step 1 and 2 within households, although in rare cases, sites may choose to invite participants to attend a central location or a clinic.

General supplies for Step 1 & Step 2   For Step 1 and Step 2 you will need to prepare the following general supplies in sufficient quantity for the whole survey:

- STEPS Instrument
- Question by Question guide
- Show cards
- Consent forms (see Part 6, Section 2)
- Participant Information form (see Part 6, Section 2)
- Interview tracking form
- Field log books to record each data collection team's daily activities
- Clipboards
- Pens, pencils
- District and area maps
- Household lists

Equipment and supplies for Step 2   For Step 2, you will need the following specific equipment:

- Adult portable height-length measuring devices
- Weighing scales
- Constant tension tape measure (for example, Figure Finder)
- Digital automatic blood pressure monitors (OMRON device is recommended), complete with small, medium, large and extra large cuffs

Note: Use of mercury sphygmomanometers is **not recommended** for general use but may be available for use if the digital blood pressure monitor:
  − is not functioning properly, or
  − needs calibration, or
  − if the largest cuff available on the digital device is too small for the participant.

Continued on next page

Household Survey (Step 1 & 2), Continued

Location for Step 2 measurements

Where STEPS is conducted entirely in a household setting, equipment and all supplies must be carried and set up as best as possible in each household. Each data collection team will carry the sets of equipment which are required.

If it is not possible to conduct the survey in each household, you may be able to identify a central location and schedule participants to visit at specified times.

Room setup for Step 2 measurements

Where a central location or public hall for taking Step 2 measurements is available, set up tables, chairs and equipment to optimise the flow of participants through the following steps:

Step	Action
1	Registration
2	Height measurement
3	Weight measurement
4	Waist circumference measurement
5	Blood pressure measurement
6	Check out (to ensure all measures are complete and that participants are properly thanked for their participation before departure)

Note: Provide seating near where blood pressure will be measured to allow 15 minutes of relaxation before blood pressure measurement.

Other factors to consider

Some other factors to consider include:

Topic	Factors to consider
Equipment availability	Equipment necessary for collecting physical measurements should be readily available and in good condition to ensure results are as accurate as possible.
Lighting	Lighting needs to be adequate to read tape-measures, scales and blood pressure meters.
Weighing scales	Weighing scales need to be set up on a flat, hard surface. Some households may have uneven floors in which case an alternative location may need to be found, or a rigid board placed under the scales.
Privacy	Areas used for taking measurements should be screened off or separated in some way to provide some privacy for participants.

Household Survey (Step 1 & 2), Continued

Pre survey site visits

It is advised that all proposed clusters/data collection sites are visited prior to conducting the survey.

This will allow a thorough understanding of operational issues that may impact on the survey, and initiate the communication strategy with the communities and other local stakeholders.

Clinic Survey (Step 3 only)

Introduction   A clinic setting is necessary to take blood tests for biochemical measurements required in Step 3 of the STEPS Instrument.

Room and clinic location requirements   The following table lists the general requirements and set up considerations for the room and location chosen for taking biochemical measurements.

Item	Description
1	The room needs to be of adequate size to accommodate staff and the flow of the expected number of participants (and accompanying people).
2	Separate areas (if possible) for: • waiting • registration • blood tests, and • checkout.
3	Consider privacy requirements for taking blood tests.
4	Provide hand washing and toilet facilities for participants and clinic staff.
5	Clearly signpost the clinic.
6	Ensure easy and adequate parking or transport provision for participants (if necessary).
7	Set up the room according to the sequence of tests.

General equipment   General equipment required in the clinic is listed in the following table:

Item	Description
Stationery	• Pens • Pencils • Paper • Specimen tube labels
Office equipment	• Filing systems • Clipboard
Furniture	• Tables • Chairs

Continued on next page

Clinic Survey (Step 3 only), Continued

Equipment and supplies

Different equipment is required depending on which type of chemistry has been selected for biochemical measurements. For further information about types of chemistry, please see Part 2, Section 1.

The table below provides a list of supplies required for the different recommended devices.

Type	Equipment	Supplies
Dry	Reflotron Single Channel	• Batch of sufficient reagent test strips • Lancet • Lancet device cotton balls • Alcohol swabs • Disposable container
	HemoCue Glucose 201	• Disposable cuvettes • Alcohol swabs • Cotton balls • Disposable container
Wet	Hitachi 917, 911 and 747 (Gold standard) • Tourniquets • Centrifuge	• Source of electric power • Ice chests (and ice) for temporary storage • Transport of specimens • Needles • Syringes • Primary and secondary specimen tubes • Pipettes • Gloves and possibly protective eyewear • Facilities for safe disposal of used equipment particularly sharp needles and bloodied swabs etc.

Data Entry Office (Step 1, 2 & 3)

Introduction   The data entry office will need to accommodate the data management team.

Room requirements   The following table lists the general requirements and set up considerations for the space chosen for data entry work.

Item	Description
1	The room or rooms need to be of adequate size to accommodate all data entry staff and computers.
2	Set up tables to optimise physical work flows.
3	Create a pleasant environment for the team who will often sit for long periods.
4	Provide boxes or folders for questionnaires awaiting data entry.
5	Provide work-space for stacking papers at different stages of processing.
6	Provide temporary storage for individual questionnaires requiring problem resolution.
7	Set up a filing system for questionnaires once data entry and checking are completed.
8	Set up computers with good ergonomic positioning, to minimise reflections on screen, and to avoid build up of heat generated by machines.

General equipment and supplies   General office equipment and supplies required for the STEPS coordination and data entry office include:

- Bench and table space
- Photocopier
- Shelving
- Filing cabinets or boxes
- Telephone
- At least one computer with internet connection
- Office stationery supplies (paper, pens, envelopes, staplers etc)

Data Entry Office (Step 1, 2 & 3), Continued

Computers

General advice for computer selection, where there is choice, is as follows:

- Choose industry-standard computers and operating systems, i.e. IBM-compatible PCs running Microsoft Windows '98 or later.

- Machines must have capability to transfer information (i.e. CD-writer, floppy disk, networked, or USB (flash disk) drive.

- Purchase from reputable dealers.

- If buying new, seek the highest specification machine(s) you can afford.

- Speed of processing, memory capacity and hard disk space are important for data analysis but machine(s) with less memory may be adequate for data entry.

- Desktop machines are usually cheaper and more easily maintained than portable machines.

- Have at least two machines available to ensure backup in case of failure.

Printers

The quality of printer required is determined by the amount and type of printing the survey materials and data entry team needs. Use the following table to help determine what type of printer to use:

If the printer is used for…	Then choose a…
Producing lists, error checking and reporting progress.	Simple black-ink printer.
High-quality letters.	Highly specified machine, possibly with colour capability.
Producing the main results, reports, tables and graphs.	

Note: If purchasing a new printer, use reputable dealers and buy well-known, industry-standard machines and accessories.

Other equipment

Other equipment that may be needed depending on the location and facilities available include:

Purpose	Equipment options
Data backup	- tape drivers, backup tapes - blank CDs - USB flash-stick - fireproof safe
Power supply	Uninterruptible power supply (UPS) machines.

Continued on next page

Data Entry Office (Step 1, 2 & 3), Continued

Software

The following is a list of software that you will need to have setup on your office computers:

- Microsoft Office '98 or higher recommended for reports, correspondence and general word processing.
- Virus scanning software (if connected to the internet and/or exchanging files outside the office).
- EpiData 3.1 (or later version) for data entry.
- EpiInfo 3.3 (or later version) for data analysis.

For further information on software, see Part 2, Section 4.

EpiData and EpiInfo software and utilities

EpiData and EpiInfo are available on the WHO STEPS CD.

You may also download these software from the STEPS website www.who.int/chp/steps.

Note: Further information about EpiData and Epi Info is provided in Part 2, Section 4.

Section 4: Preparing the Data Management Environment

Overview

Introduction   This section covers all the tasks that need to be conducted to setup, prepare and test the data files for the STEPS survey data entry.
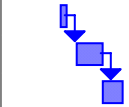
Intended audience   This section is designed for use by people who have been assigned the following roles:

- Data management team supervisor
- Data management team
- STEPS site coordinator

Note: These tasks may be commenced but not completed until the data management team has been recruited and trained.

Tasks and timeframes   The chart below shows the main tasks and timelines covered this section.

Task Name	Duration	Month 2	Month 3	Month 4	Month 5
Set up computer environment	1 day				
Modify data entry templates	3 days				
Test templates	4 days				

In this section   This section covers the following topics:

Introduction

Overview of process

The table below shows each stage in the process of preparing the data management environment.

Stage	Description
1	Creating a master computer.
2	Creating STEPS survey data file folders.
3	Accessing and installing EpiData and Epi Info.
4	Installing the data entry templates.
5	Modifying the data entry templates.
6	Testing.
7	Completing the EpiData installation.
8	Installing the 'master' data entry system on all other computers.

Note: Each of these stages is further explained below.

Terms used

This section contains many technical, programme specific terms.

The table below describes some of the basic terms used by EpiData, Epi Info and the WHO Geneva STEPS team for setting up the data management environment.

Term	Description
EpiData files	<table><tr><th>File type</th><th>Function</th></tr><tr><td>qes file (survey.qes)</td><td>Creates framework for data entry (ie. it matches data entry screen to the specific Instrument used).</td></tr><tr><td>rec file (survey.rec)</td><td>Stores the data entered into the templates.</td></tr><tr><td>chk file (survey.chk)</td><td>Tests for out of range values, or skip questions that are not applicable.</td></tr></table>
Data entry templates	All the EpiData files mentioned above combine to form the templates needed for entering the survey data.
Database	The total collection of survey data arranged into individual records that can be searched by Epi Info for analysis.
Dataset	A cluster of data, not necessarily in a database
Data file	An electronic file, does not refer to actual data.
Analysis syntax	• Syntax for Epi Info written specifically for STEPS. • Stored as a programme file (.pgm) or text file (.txt) within the Access database created for STEPS.

Software

Introduction The WHO Geneva STEPS team has selected two compatible, purpose built, free, public-domain software packages for data entry and data analysis. These products will allow users to:

- Capture the survey data
- Verify data entry accuracy
- Conduct the analysis
- Generate reports

Recommended software To enter, check and analyse the STEPS surveillance data, WHO recommends and supports the following software applications and tools.

Current versions are available on the STEPS CD or can be downloaded from: www.who.int/chp/steps

Use…	For…
EpiData 3.1	- Data entry. - Immediate comparison of second keyed data with original data.
Epi Info™ 3.3.2	Data analysis and reporting.

EpiData and Epi Info™ To help understand the rationale for choosing EpiData and Epi Info, the table below shows the advantages of each software application.

Software	Advantages
EpiData 3.1	- Windows based and compatible with other software. - Already widely used. - Makes compact and easily modifiable data files. - Checks for valid ranges during data entry, but permits values beyond ordinary ranges. - Allows double data entry and data correction. - Files exportable to 6 different file types.
Epi Info ™ 3.3.2 or later	- Windows based. - Most current release of Epi Info, supported by developers. - Has data analysis capability in line with STEPS requirements. - Can appropriately adjust for complex sampling designs.

Continued on next page

Software, Continued

Templates and analytical code

Purpose built, generic templates and analytical code have been developed to work with EpiData and Epi Info for STEPS surveillance. These are all available on the STEPS CD or website and include:

Utility	To
EpiData templates	Provide already developed code that matches the STEPS Instrument. Act as the data entry screens for entering STEPS survey data.
Epi Info syntax files	Provide already written generic analysis code that runs statistics for the STEPS fact sheet and site reports.

Note: Most of these require adaptation for specific site requirements. Each of these utilities is described in more detail below.

Other software

Where complex multi-stage sampling methods have been used, statistical packages other than Epi Info may be required for analysis purposes. This does not, however, preclude the use of EpiData for data entry and for exploratory data analysis.

Some sites may also have other software installed for which local expertise is available. Using familiar methods may be a sensible option in these situations.

If you do wish to consider using methods other than the recommended EpiData and Epi Info, carefully consider what features the programmes provide and understand that the WHO Geneva STEPS team may not be able to support alternative programmes.

Epi Info 6.04d

Epi Info 6.04d is a Dos based application and is not recommended. Sites that currently use Epi Info 6.0 should contact the WHO Geneva STEPS team. Epi Info 6.0 is compatible with EpiData and Epi Info 3.3 and existing code may be transferred to EpiData and Epi Info 3.3 as needed.

Instructions on installing and using Epi Info 6.0 are not covered in this manual.

Software, Continued

Software support

WHO provides some support for EpiData and Epi Info. The STEPS site coordinator or data management supervisor should be able to advise you on support issues. If you use software other than EpiData and Epi Info you are responsible for creating your own databases, data entry screens and obtaining suitable support.

Epi Info provides Help Desk support. To access the Help Desk go to www.epiinfo.cdc.gov or contact the WHO Geneva STEPS team at steps@who.int.

Setting up the Computer Environment

Introduction   It is important to properly set up your computer environment prior to working with the data files.

Create master computer and label others   Designate and label one of the computers in the STEPS Office as the master computer. This computer is used to install, modify and test the data entry templates prior to installing them on the other computers.

Label all the other computers; e.g. A, B, C, D, etc.

Create STEPS survey file folders   Follow the steps below to create appropriate folders on the master computer for all EpiData and Epi Info STEPS surveillance files:

Step	Action	Recommended Folder Name
1	In Windows Explorer, create a primary folder (directory) for all your STEPS files, including: • Data • Code • Documents • Other files	Use either: C:\STEPS, or D:\STEPS (if your disk is partitioned), or S:\STEPS (if you are on a network).
2	Record the address of the folder so it can be entered during the set-up process when prompted.	
3	Create a sub-folder under the STEPS primary folder to contain your data files.	C:\STEPS\data
4	Create a sub-folder under STEPS\data to contain office tracking information.	C:\STEPS\data\office
5	Create a sub-folder under STEPS\data to contain data entry reports.	C:\STEPS\data\reports
6	Create a sub-folder under STEPS to contain all the Epi Info materials.	C:\STEPS\EpiInfo

Setting up the Computer Environment, Continued

Create STEPS survey file folders (continued)

Step	Action	Recommended Folder Name
7	Create a sub-folder under the STEPS primary folder for downloaded software.	C:\STEPS\software
8	Create a backup folder in a **different** location that the primary folder.	Use either: D:\STEPS (if your disk is partitioned), or S:\STEPS (if you are on a network), or C:\BackupSTEPS (if you only have access to one drive).

Installing Software

Accessing software

Current releases of EpiData and Epi Info software and all the standardised STEPS surveillance utilities are provided to the STEPS site coordinator by the WHO STEPS Geneva team on a CD.

The software can also be downloaded directly from EpiData, Epi Info and WHO web sites. Web links are provided in the table below.

Data Software/Files	Web Site Address
EpiData 3.1	www.epidata.dk
Epi Info 3.3.2	www.cdc.gov/epiinfo/
• Templates and analysis syntax/code • Epi Info software • EpiData software	www.who.int/chp/steps

Identify computers

You need to identify which machine will be used for which function.   Most likely you will not be using all the data entry machines for analysis.

Prior to installing any software you should have identified:

• A master computer
• Data entry computers
• Data analysis computers

Installing EpiData and templates from CD

To install EpiData and the templates from the CD onto your master computer, insert the CD and follow the instructions provided.

If…	Then…
The CD does not launch.	Open Windows Explorer and click on the STEPS icon.
Your computer does not have a CD ROM drive.	Download the software from the STEPS website.
Your computer does not have a CD ROM drive or Internet access	Contact the WHO Geneva STEPS team.

Installing Software, Continued

Installing EpiData from the web

Follow the steps below to install EpiData from the STEPS website onto your master computer.

Step	Action
1	Connect to the internet and type www.who.int/chp/steps in the navigation bar.
2	Select "Download EpiData 3.1" from the menu options.
3	Save the file to C:\STEPS\software.
4	Go to and open the folder C:\STEPS\software and click on "setup_epidata.exe".
5	Click "yes" on the dialog box that says you will install the programme. Click "Next" on the welcome screen to continue installation.
6	Read the licensing screen and click "I accept the agreement" and click "Next".
7	An installation programme will start, when prompted to select a destination directory make sure the location is "C:\Program Files\EpiData". Click "Next".
8	Click "Don't create a start menu folder". Click "Next".
9	Select "Create a Desktop icon" and "Automatic filed naming" from the Select Additional Tasks page. Click "Next".
10	Review the information on the Ready to install screen. If the information is correct click "Install" if it is incorrect use the "Back" button to correct the information.

Installing EpiData templates from the web

Follow the steps below to install the EpiData templates from the STEPS website.

Step	Action
1	Connect to the internet and type www.who.int/chp/steps in the navigation bar. Click on the Resources section of the website.
2	Under the section titled EpiData templates, click on "Download generic templates for v2.0".
3	Save the file in C:\STEPS\data.
4	Open the C:\STEPS\data folder and double click the file labeled "completeEpiDatav2.0.zip".
5	The zip file will open up and display many files. Highlight these files/folders and copy them. Close the zip folder and copy these files directly into C:\STEPS\data.

Installing Software, Continued

Installing support templates

Extra templates have been created in addition to the EpiData templates. These templates are referred to throughout the Manual and need to be installed on your machine for use at a later date. The table below show where you should install these templates on your computer.

Template	Folder Name
data entry tracking	C:\STEPS\data\office
data entry log	C:\STEPS\data\office
coversheet	C:\STEPS\data\office

Note: There are additional templates that are not listed here. Those templates will have a specified folder location associated with them.

Installing Epi Info from the CD

To install Epi Info and the templates from the CD onto your master computer, insert the CD and follow the instructions provided.

If…	Then…
If the CD does not launch	Open Windows Explorer and click on the STEPS icon.
Your computer does not have a CD ROM drive	Download the software from the STEPS website.

Installing Epi Info from the web

Follow the steps below to install Epi Info from the STEPS web site onto your master computer.

Step	Action
1	Connect to the internet and type www.who.int/chp/steps in the navigation bar.
2	Select "Download Epi Info" from the menu options.
3	Save the file to C:\STEPS\software.
4	Go to and open the folder C:\STEPS\software and click on "setupEpiInfo.exe".
5	Click "Next" on the Welcome to Epi Info 3.3.2 screen.

Installing Software, Continued

Installing Epi Info from the web (continued)

Step	Action
6	Click Next on the Destination folder screen, you should use the default C:\Epi_Info.
7	Click "Next" on the selected features screen.
8	Click "Next" on the ready to install screen.

Download database

There is a generic database for STEPS in Microsoft access. It is used during the analysis stage of STEPS.

Download from …	Action
CD	Insert the CD and follow the instructions provided.
STEPS website	<table><tr><th>Step</th><th>Action</th></tr><tr><td>1</td><td>• Go to the resources section of the STEPS website: www.who.int/chp/steps</td></tr><tr><td>2</td><td>Click "Download database"</td></tr><tr><td>3</td><td>Save the file in C:\STEPS\EpiInfo.</td></tr></table>

Download interview tracking.xls

Interviewtracking.xls is available from the CD Rom and the STEPS website.

Download from …	Action
CD	Insert the CD and follow the instructions provided.
STEPS website	<table><tr><th>Step</th><th>Action</th></tr><tr><td>1</td><td>• Go to the resources section of the STEPS website: www.who.int/chp/steps</td></tr><tr><td>2</td><td>Click "Download interviewtracking.xls"</td></tr><tr><td>3</td><td>Save the file in C:\STEPS\data.</td></tr></table>

Software tutorials

There are tutorials available for EpiData and Epi Info. Please refer to Part 3 Section 6 for EpiData and Part 3 Section 7 for Epi Info.

Data Entry Templates

Introduction   Standard STEPS templates have been developed to enter survey data from completed STEP Instruments. These must be reviewed and updated if necessary to make sure they match your final tailored STEPS Instrument.

Data entry file extensions   Some of the file extensions used by EpiData specifically relate to certain tasks within the data entry process. These extensions and what they are used for are listed in the table below:

Extension	Used to
.qes	Design layout of data entry to match the Instrument.
.rec	Perform data entry and store the entered data.
.chk	Define the value ranges and skip patterns used during data entry.

Templates   The table below lists and describes the purpose of each of the five generic templates that have been created to enter the STEPS survey data in EpiData.

Template	To contain
Location	Survey information from the Instrument.
Tracking	Interview tracking form from the data collection team.
Survey *	Main STEPS Instrument data.
Consent	Personal information from the Instrument (if to be saved).
Biochemical *	Step 3 results if these are recorded elsewhere than on the STEPS Instrument.

Notes:
- *Templates that may need to be adapted to match your STEPS Instrument.
- For details on exactly what information is captured please review the EpiData guide for STEPS (available on the STEPS CD or the STEPS website www.who.int/chp/steps).

Location template   The location template collects data recorded on the upper half of the survey information on the first page of the Instrument. This includes:

- District code
- Centre/village name
- Centre/village code
- Interviewer identification
- Date of completion of the Instrument

Data Entry Templates, Continued

Tracking template

The tracking template collects data recorded on the interview tracking form. It is used to calculate consent and participation proportions and design weighting schemes. Data collected includes:

- Centre (village/cluster) Number
- Household Number
- Participant and non participant age, sex and consent status

Survey template

This template is for the main STEPS core, expanded and optional data collected during the STEPS survey. Each record in this database is uniquely identified by the Participant ID. The final structure of the template is defined by the tailored STEPS Instrument. Data collected includes:

- Core questions and measures for Step 1 and 2 (and may include Step 3)
- Expanded or optional questions

Consent template (optional)

The (optional) consent template collects the confidential data from the lower half of the Survey Information on the first page of the Instrument. This data should not be entered into any other templates and is not used for data analysis. It may be useful to store this information electronically if:

- participants need to be contacted after the interview,
- quality control procedures require follow-up contacts, or
- participants are advised to see their clinic or physician where biochemical measures results indicate medical attention (if appropriate).

Biochemical template

This template applies only to sites conducting Step 3 Biochemical Measures where data is not collected on the main STEPS Instrument but on a separate form.

The format of this template and how the biochemical data are to be entered will need to match the format used and information collected by the clinic/laboratory.

Modifying the Templates

Introduction   If you have added optional questions, adapted existing questions or changed the possible responses to a question in the STEPS Instrument, you will need to modify the generic EpiData templates and the coding guide so they accurately reflect your tailored STEPS Instrument.

Role and responsibility   The data management team supervisor should be responsible for modifying the templates. The WHO Geneva STEPS team will also help in template modification upon request.

Modification types   The modifications that can be made to the templates include:

- Altering a standard question
- Adding an optional question
- Changing the possible responses to a question

Required utilities   The STEPS utilities required to modify a template include:

- Generic EpiData qes, rec and chk files
- EpiData guide for STEPS (this includes detailed instructions and examples)

What not to modify   You must never:

- change field names for existing questions, or
- delete questions from the data entry screen (.qes file).

If these items are modified, the template will not work. This will also affect the data analysis syntax.

Translation   It is not necessary to translate the templates. This is because the codes on the Instrument are used to match the responses on the Instrument with the data entry screen without having to read the question text on the computer.

Modifying the Templates, Continued

Preparing for template modifications

Follow the steps below to prepare for template modifications:

Step	Action
1	Print out or obtain a final version of your site's tailored STEPS Instrument and the STEPS standard Instrument.
2	Carefully examine the two documents and mark your site Instrument every time there is a difference between the two Instruments.
3	Have a second person review the two Instruments to make sure that all the differences are marked.
4	Identify each section in the Instrument where changes have been made and identify the corresponding templates that need to be modified.
5	Create a copy of the data folder C:/STEPS/data by highlighting the original folder and selecting Copy, Paste from the Edit menu. <table><tr><th>Step</th><th>Action</th></tr><tr><td>A</td><td>Rename the folder to original.data.</td></tr><tr><td>B</td><td>Copy entire folder by highlighting folder and selecting "Copy" from the Edit menu.</td></tr><tr><td>C</td><td>Paste the folder by clicking on a blank space and selecting "Paste" from the Edit menu.</td></tr><tr><td>D</td><td>The copied folder will have the name "copy of original.data".</td></tr><tr><td>E</td><td>Rename copied folder data (will have original.data and data folders).</td></tr></table>
6	Modify one template (e.g. start with the survey template).
7	Test the template.
8	Repeat steps 5 to 7 until all the necessary modifications are complete.

Note: Procedures for each specific type of modification (i.e. adding a question, altering a question and changing answers) are detailed in the following pages.

Modifying the Templates, Continued

Updating the data files

To make the actual changes to the templates, you will need to modify and update appropriate data files, depending on the type of modifications. The table below shows the type of modification and what corresponding data files need to be updated.

To	Update the following data files
Alter a standard question (wording).	.qes .rec
Add an optional question.	.qes .rec .chk
Change possible responses to a question.	.chk

Modifying the qes file

To change the text of a question or alter the responses, you will need to modify the qes file. Follow the steps below to modify the qes file.

Step	Action
1	Open EpiData.
2	Click on "1.Define Data".
3	Select "open .qes file".
4	Scroll to the area where the question needs to be added or altered.
5	• If making an alteration, amend the text. • If adding a question, add it using the following basic formula: 　　　field name + question + response field _(table below)_ <table><tr><th>Formula component</th><th>Description</th></tr><tr><td>Field name</td><td>{field name} (e.g S1 would be {S1})</td></tr><tr><td>Question</td><td>Type question here</td></tr><tr><td>Response field</td><td>Open "Field Pick List" from Edit Menu or type Ctrl +Q. Select field from available options.</td></tr></table>
6	Save changes, choose "File, Save".
7	Go to the "tools" menu and click on "Revise Data File".
8	Close qes file after all new questions added.

Modifying the Templates, Continued

Modifying the rec file

To add an optional question you will need to modify the rec file. Follow the steps below to modify the rec file.

Step	Action
1	Go to Tools menu and click on "Revise Data File".
2	Click okay when screen appears that asks for file name. Keep the same file name for the new file. The old file will automatically be named exactly like the original file but old will be added before .rec (e.g. survey.rec will become survey.old.rec).

Modifying the chk file

To add an optional question, or to alter responses, you will need to modify the chk file. The chk file has code that provides many different data entry functions including:

- creating response options,
- providing range checking of values and avoid missing data, and
- providing skipping of questions.

Follow the steps below to modify the chk file.

Step	Action
1	Open EpiData.
2	Click on "3. Checks".
3	Open the rec file which needs to be modified.
4	Click on the yellow box that corresponds to the question that needs to be modified (clicking on the box turns it blue).
5	Use either the check options box directly or click the edit on the box to modify the check code.
6	Save all changes and close.

Modifying the Templates, Continued

Sample check code

Samples of the three types of check code are provided in the table below. More details are provided in the EpiData guide for STEPS.

Type of check	Sample code	Function

Create value labels.	C1
	COMMENT LEGAL
	  1 Male
	  2 Female
	 END
	 TYPE comment
	END
		Creates a list of possible response (e.g. yes/no).

Provide range checking of values and avoid missing data.	I3
	 IF (I3< 1) OR (I3> 100)
	 THEN
	HELP "Centre Code must be between 1 and 100.\n\nPlease re-enter."
	 GOTO I3
	 EXIT
	 ENDIF
	 END
	END
		Creates range of values that are acceptable for data entry. This helps create more accurate data entry (e.g. this example allows values from 1-100).

Provide skipping of questions.	S1a AFTER ENTRY IF S1a= 2 THEN GOTO S4 ENDIF END END	Mimics the skip pattern on the Instrument. It will take the data entry person directly to the next question.

File Security

Introduction	The information collected by STEPS needs to be kept in a secure location. This applies both to the paper copies and electronic information.
Paper copies	Paper copies should be locked up every night in a secure location. For more information on this see "Rules and Guidelines" in Part 3, Section 6.
Electronic information	The computers that are used for data entry and analysis need to be located in a secure location. If the computers are in a locked location it is not necessary to place a password on the machines.
	If computers are in a shared space and cannot be locked up at night, it is best to place a logon password on each machine.
	Note: If you decide to place passwords on the machine please make sure the data entry supervisor has a complete list of passwords for each machine.
Backup	At the end of **each day** of data entry you must backup all your data files. This is to avoid data loss.
	Further details on backing up the data are provided in Part 4, Section 2.

Setting up the Data Entry Process

Introduction
Prior to receiving completed Instruments in the STEPS office for data entry, you will need to set up a standard working method to ensure accurate and efficient handling of survey material and data entry.

Working method
Create a standard working method that includes the following elements:

- Labels for computers being used for data entry
- Boxes or folders for each computer to store Instruments and tracking forms
- Coversheets for computer specific folders/boxes
- Data entry guidelines and rules (protocols)
- Data entry staff assigned to specific data entry computers

Labelling computers
Where there is more than one computer being used for data entry, you will need to label each machine so you can enter and track specific information as shown in the table below.

Computer	To enter
MASTER	• Location information (I1 to I5 on the Instrument). • Tracking information (Interview tracking form).
A, B, C etc	• STEPS Instrument responses to Step 1, Step 2 and Step 3 (where appropriate). • Biochemical (if Step 3 not collected with Instrument).

Setting up the Data Entry Process, Continued

Storing and Filing Process

Establish a system of boxes or folders to store the hard copies of the Instruments that have been entered on each computer. Label these with the coversheet. The coversheet template is provided in Part 6 Section 2.

Stage	Description
1	Create generic filing/ storage area for Instruments with attached coversheets.
2	Create computer specific folders with coversheets for Instruments that are assigned to a machine but not yet entered (category: first keying).
3	Create computer specific folders with coversheets for Instruments that have been first keyed (category: second keying).
4	Create computer specific folders with coversheets for Instruments that have been second keyed (category: completed).

Note: Each folder needs to be used for only one section of the Instrument. A section refers to the defined parts of the Instrument (e.g. survey or location), see page 2-4-10 for more information. If a machine is being used to enter more than one section, a set of folders will need to be created for each section.

Protocols

Create data entry protocols to cover each of the key stages in the data entry process, including:

Process	Guidelines or rules required to
Handling incoming Instruments	Specify how to sort, label and handle the completed incoming Instruments for the data collection team.
Data entry	Specify how data entry staff will perform the data entry process and what they should do when they find unexpected or ambiguous data.
Marking and filing	Ensure any paper is easily located at any time, and all Instruments and forms show on them their stage of processing.
Handling uncertain data	Obtain a supervisor's ruling on uncertain data and a method for documenting what decisions are made.
Documentation	Ensure an audit trail of all completed and altered records.

Data entry staff

You should permanently assign data entry staff to work at a specific computer through the whole data entry process.

Documentation

Introduction   Documentation is essential for an efficient and effective STEPS survey.

Documenting data files   All data files must be documented to ensure:

- standardisation of processes and procedures among all data management team members,
- non-reliance on certain individuals to provide key information,
- easy access to essential information, regardless of absence,
- data entry and data analysis can be done when the person who created the database is not available, and
- survey data comparisons are possible in the future.

Other documentation requirements   All survey files and resources must be:

- stored systematically (both paper and electronic),
- fully documented, and
- documented continuously. Don't plan to come back later to annotate: make it a habit to place comments on your files and code as you work.

Coding guide   You will need to update the mapped Instrument section of the EpiData guide for STEPS to include all the template modifications you have made. Once complete, it may be useful to send a copy to the WHO Geneva STEPS team for review prior to testing.

Finalised, printed copies of the mapped Instrument component of the EpiData guide for STEPS should be made available to all data entry staff.

Testing

Introduction Once the templates have been set up, the data entry screen and all data entry systems and processes must be thoroughly tested to identify and correct any faults prior to data entry.

The two test phases are:

- primary testing, and
- pilot testing of all data entry processes.

Who should be involved The table below identifies who should be involved in each testing stage.

Type of test	Who should be involved
Primary test	Data entry supervisor or person responsible for modifying the templates.
Pilot test data entry processes	Data entry staff (and/or members of the data collection team if necessary) and the Data entry supervisor.

Testing timeframes The length of time required to thoroughly test data systems is as follows:

- The primary test takes a few hours.
- Pilot testing takes place over a few days.

Primary test Follow the steps below to run the primary test. This should be done on the same machine and by the same person who modified the templates.

Step	Action
1	Using the finalised STEPS Instrument, create 8-12 completed "interviews". • Use different coloured paper or otherwise distinguish between these test forms and real ones by labeling them as test. • Make them straightforward, correct and clear, but with a variety of "participants" (for example, smokers & non-smokers, active & sedentary).
2	Create a new folder titled "C:\TestSTEPS".
3	Copy the entire STEPS folder and paste it into the new test folder.

Primary test (continued)

Step	Action
4	Use the "C:\TestSTEPS" for the testing phase.
5	Run an initial test to check the templates. <table><tr><th>Step</th><th>Action</th></tr><tr><td>1</td><td>Open EpiData</td></tr><tr><td>2</td><td>Click "4. Enter Data"</td></tr><tr><td>3</td><td>Select template to test</td></tr><tr><td>4</td><td>Enter Instrument data created during step 1</td></tr></table>
6	Update the templates in "C:\STEPS" with corrections as needed.
7	If nothing needs updating skip to the secondary test otherwise continue with the primary test.
8	Repeat steps 1-6 until there are no more errors with the templates.

Pilot test

Use your trained data entry team to fully pilot test all the modified templates and data entry processes. The data entry staff should use the data entry section in Part 4, Section 2, which outlines the protocols and procedures. The table below details the testing process.

Step	Action
1	**Create a full set of data collection forms including:** • interview tracking forms. • 8 - 12 STEPS Instruments. • blood collection forms. • biochemical measurement forms (if Step 3 being used). **Include some errors in these forms too, eg:** • Torn pages • Non-existent clusters • Invalid participant ID numbers.
2	**Test all logging and sorting processes.** • Use data entry log to sort and distribute all Instruments • Use data entry tracking form to document data entry
3	**Test all error correction systems including**: • Documentation • Data recovery (practice backing up data)

Testing, Continued

Pilot test (continued)

Step	Action
4	At each step, report errors to Supervisor and refine the original EpiData template and instructions for handling different scenarios.
5	When testing is complete and error free, delete test folders from the computers.

Testing, Continued

Completing EpiData Software Installations

Introduction   After the EpiData templates have been adjusted to the local Instrument and all templates and processes have been testing on the master computer, you will need to set up all other computers that will be used for data entry.

Procedure   The Master computer should contain a clean, fully tested copy of the EpiData templates.

Follow the steps below to copy the templates and files and install EpiData on all the other computers.

Step	Action
1	On the Master computer copy the folder "C:\STEPS" and all its contents onto a CD or USB stick (flash disk).
2	Go to Machine A.
3	Open the C drive.
4	Copy folder from the CD or USB stick onto the C drive.
5	Create a backup folder in a different location than the primary folder (we recommend D\STEPS).
6	Install EpiData onto computer, see page 2-4-9 for detailed instructions and complete steps 4-10 (if not already installed on machine).
7	Repeat steps 1-5 until all data entry computer installations are complete.

Part 3: Training Guides

Overview

In this Part   This Part covers the following topics

Topic	See Page
Section 1: Trainer's Guide	3-1-1
Section 2: Interviewer's Guide	3-2-1
Section 3 Guide to Demographic Info and Behavioural Measurements (Step 1)	3-3-1
Section 4: Guide to Physical Measurements (Step 2)	3-4-1
Section 5: Guide to Biochemical Measurements (Step 3)	3-5-1
Section 6: Data Entry Guide (including EpiData)	3-6-1
Section 7: Data Analyst Guide (including Epi Info)	3-7-1

Part 3: Training and Practical Guides

Section 1: Trainer's Guide

Overview

Introduction   The trainer's guide provides guidance on how to plan, prepare for and deliver training to the data collection, data entry and data analysis teams.

Intended audience   This section is designed for use by people that fulfil the following roles:

- STEPS site coordinator
- Data collection team supervisors
- Data management team supervisors

Purpose   The purpose of the training is to:

- Explain the rationale of the STEPS surveillance
- Ensure a uniform application of the STEPS surveillance materials
- Motivate interviewers and survey staff
- Ensure good overall quality of data
- Ensure useful and meaningful results are reported

In this section   This section covers the following topics:

Topic	See Page
Training Courses	3-1-2
Training Preparation	3-1-4
Training Lesson Plan: Data collection team	3-1-7
Training Lesson Plan: Data entry staff	3-1-10
Training Lesson Plan: Data analysis staff	3-1-13
Training Delivery Tips	3-1-15

Training Courses

Introduction	A combination of formal classroom training and hands-on experience is required to adequately train staff that have been recruited to work on STEPS survey.

Training courses to follow	The following three separate trainings will need to be conducted to ensure each member of the three recruited teams receives appropriate training. • Interviewer training • Data entry training • Data analysis training

Training course phases and durations	The table below provides a guideline for each of the training phases and durations to cover the material and train participants to a good level of understanding and proficiency in their specific area. Three training courses are provided, one for each team: • Data collection • Data entry • Data analysis

Training phases	Recommended durations
Classroom training	2-4 days
Pilot test	1 day
*Refresher prior to start (optional)	1 day
Total	**4-6 days**

Notes: Refresher training is optional but may be useful if:
• there is a significant gap between when the classroom training was completed and the start of the survey, or
• the pilot test showed up lots of knowledge gaps and some aspects of the training need to be repeated.

Training content and module durations	Suggested course content and training delivery timeframes for each module of learning are provided in the lesson plans below. These may need adaptation for individual sites, for example some modules in the data entry course may be shorter if participants already have relevant experience, or longer if the participants have not used computers before.

Training Courses, Continued

Participation   The training courses are intended primarily for members of the respective teams. To help with coordination, you may wish to consider having the team supervisors attend one or more of the training courses.

It is recommended that in addition to the data analysis course, the statistical advisor should also attend the data entry course, and the data collection course too if possible.

Training Preparation

Introduction   Training preparation involves the following tasks:

Task	Description
1	Finding and setting up a suitable training room.
2	Scheduling training sessions.
3	Coordinating training tasks and events.
4	Preparing, printing and distributing training materials.
5	Informing participants about course content, date, time and location details and prerequisite requirements.

Note: Each of these tasks is described further below.

Training location requirements

A training room will need to be located and arrangements made for use over a three to four week period to train all recruited members of the data collection, data management and data analysis teams.

The room (or rooms) should be able to accommodate the number of people being trained, the number of trainers or facilitators, plus several extras, at a time.

Requirements for	Details
All rooms	• Tables • Chairs • Blackboard, white board or flip chart • Chalk, marker pens, or crayons • Multi media projector (optional) • Overhead projector (optional)
Data collection	• Sufficient room to practice taking physical measurements • Props can help with scenarios
Data entry	Computers (minimum 1:2 ratio) loaded with site specific data entry software (EpiData).
Data analysis	Computers (minimum 1:2 ratio) loaded with site specific data analysis software (Epi Info).

Scheduling training sessions

You will need to schedule training sessions for data collection and data management staff in advance to ensure each course is well attended and training is provided to all team members before the survey begins.

Provide each participant with a letter confirming the course agenda, including date and place of training.

Continued on next page

Training Preparation, Continued

Training coordination

You may need to plan for and arrange some or all of the following coordination tasks:

- Selection of a pilot community
- Order and arrange teas/coffee and lunches for classroom training sessions
- Book accommodation and arrange transport (if necessary)
- Develop and set up exercises to be used during classroom training
- Determine, develop and compile training and reference materials that will need to be used by course participants
- Obtain maps or list of households

Preparing materials

Prior to training sessions, you will need to print out one set per participant of the relevant materials from the STEPS Surveillance Manual. You may choose to print the whole manual for each participant. If you wish to print only relevant selected sections, use the table below as a guide.

Team Training	Topics	Part, Section
Data Collection	Introduction	Part 1, Section 1
	Planning and Preparing a STEPS Survey	Part 2, Section 1
	Preparing a STEPS Site	Part 2, Section 3
	Interviewer's Guide	Part 3, Section 2
	Guide to Demographic and Behavioural Measurements	Part 3, Section 3
	Guide to Physical Measurements	Part 3, Section 4
	Data Collection	Part 4, Section 1
	STEPS Instrument	Part 5
	Question by Question Guide	Part 5
	Show Cards	Part 5
	Interview, Blood Collection and Data Entry Forms	Part 6, Section 2
Data Entry	Introduction	Part 1, Section 1
	Preparing the Data Management Environment	Part 2, Section 4
	Data Entry Guide	Part 3, Section 6
	Data Entry and Data Management	Part 4, Section 2
	STEPS Instrument	Part 5
	Question by Question Guide	Part 5
	Interview and Data Entry Forms	Part 6, Section 2
Data Analysis	Introduction	Part 1, Section 1
	Preparing the Sample	Part 2, Section 2
	Preparing the Data Management Environment	Part 2, Section 4
	Data Analysts Guide	Part 3, Section 7

Training Preparation, Continued

Preparing materials (continued)

Team Training	Topics	Part, Section
Data Analysis contd.	Data Entry and Data Management	Part 4, Section 2
	Data Analysis	Part 4, Section 3
	Reporting and Disseminating Results	Part 4, Section 4
	STEPS Instrument	Part 5
	Question by Question Guide	Part 5
	Interview and Data Entry Forms	Part 6, Section 2

Participant preparation

Prior to attending a training session, all training participants will need to study the STEPS Instrument and appropriate sections in the STEPS surveillance manual.

Training Lesson Plan: Data collection team

Introduction   The following Lesson Plan is a guide for people responsible for delivering the data collection team training. This may be the STEPS site coordinator or the data collection team supervisor (if it is a different person).

Training topics	Duration	Section reference	Outcomes or competencies	Exercises
Day 1				
Introductions, warm up, agenda and expectations	9.00-10.00	3-1-15	Establish a new team, set expectations and course agenda.	
Rationale, purpose and STEPS surveillance methodology	10.00 -12.30	1-1-4	Understand chronic diseases, importance of surveillance framework, key risk factors, what STEPS wants to measure, and importance of correct sampling.	
Lunch				
The data collection team	14.00 - 14.30	3-2-3 4-1-2 to 4-1-4	Understand staff core roles and responsibilities & organisation	
Overview of data collection process and the importance of recruiting a random sample of households and/or people.	14.30 - 15.30	2-2-4 4-1-5	Understand how households are being sampled, data collection workflows, timeframes, and privacy issues. Understand the imperative of a random sample, when substitution is acceptable and when it must not occur.	Talk through how the sample is being selected. Consider possible concerns or questions & how they could be handled. Identify privacy concerns Explain that interviewer must stick to sample and not select a neighbour if their selected person is not at home
Preparing a STEPS site	15.30 - 16.30	2-3-4 to 2-3-11	List all supplies and equipment needed for data collection	
Day 2				
Review, warm up, agenda and expectations	9.00-10.00		Recognise previous day's learning. Identify and handle any queries.	

Training topics	Duration	Section reference	Outcomes or competencies	Exercises
Interview skills	10.00 - 12.30	3-2-4 to 3-2-9	Understand and demonstrate good interview practices.	Use scenarios to demonstrate how responses can be swayed by different interview techniques.
Lunch				
Approaching selected households and participants	14.00 - 16.30	4-1-7	Competently follow procedures for approaching households.	Scenarios, moving from simple & easy, to more complex/difficult.
Day 3				
Review, warm up, agenda and expectations	9.00-9.30		Recognise previous day's learning. Identify and handle any queries.	
Obtaining consent	9.30 - 11.00	4-1-11	Understand ethical considerations & their relevance for interviewing. Follow guidelines to obtain consent.	Scenarios with e.g. reluctant, objecting, unwell, over-busy, or absent respondents.
Selection criteria, recruiting, completing the interview tracking form	11.00 - 12.30	4-1-13	Understand the importance of keeping track of potential participants, demonstrate correct use of tracking form.	Role play 'households' using tracking forms
Lunch				
Using the STEPS Instrument, Q by Q Guide and Show Cards	14.00 - 16.30	3-2-10 to 3-2-11	Understand the Instrument, the different risk factors and what they aim to measure, response options (including don't know and refuse), skip instructions and show cards.	In pairs, one as an interviewer, one a participant, for a section or two of Instrument, then switch around.
Day 4				
Review, warm up, agenda and expectations	9.00-9.15			
Collecting demographic information and behavioural risk factor information (Step 1).	9.15 - 12.30	3-3-1	Understand the questions, know how to clarify. Record responses clearly and accurately, deal with difficult people, resolve inconsistencies and incomplete Instruments.	Have an "expert" interviewer & a participant, demonstrate various difficulties & strategies

Training topics	Duration	Section reference	Outcomes or competencies	Exercises
Taking and recording physical measures (Step 2)	14.00 - 15.15	3-4-2 to 3-4-14	Assemble equipment and supplies. Measure blood pressure, height, weight and waist circumference (if necessary). Clearly and accurately record participant responses.	Have stations round the room. Learn & practice on team members first, then with willing volunteers, all participants' measure independently then compare results.
Recording information and checking paperwork	15.15 - 15.45	4-1-15 to 4-1-16	Clearly and accurately record participant responses. Demonstrate ability to check a tracking sheet and completed Instrument.	Provide photocopies of a tracking sheets & Instruments & ask participant to check it. Discuss problems & how to handle them.
(Optional re-work, re-cap, questions etc)	15.45 - 16.30			
Day 5				
Pilot test	9.00 - 16.00	2-1-22 to 2-1-23	Major aspects of data collection thoroughly tested, Instrument mainly. Identify weaknesses or failures in current systems and processes.	Go to a residential area, with pre-determined sampling plan. Participants do a complete run-through of whole data collection process.
At a later date				
Refresher	9.00 - 16.00			

Training Lesson Plan: Data entry staff

Introduction   The following Lesson Plan is a guide for people responsible for delivering the data entry staff training. This will usually be the data entry team supervisor.

Training topics	Duration	Section reference	Outcomes or competencies	Exercises
Day 1				
Introductions, warm up, agenda and expectations	9.00 - 10.00	3-1-15	Establish a new team, set expectations and course agenda.	
The data entry team (office setup and workflow)	10.00 - 11.00	4-2-2	Understanding of personnel, main roles & organisation, privacy issues, workflows and timeframes	Label computers, assign staff to a computer for first keying, create folders and coversheets for each computer
Computer basics	11.00-12.00	3-6-3	Familiarisation with parts of computer & terms used, ergonomic considerations, daily essentials e.g. logging on & off, using the keyboard & mouse, printing, connecting to network &/or internet.	Everyone sits at assigned computer and sets up working environment. Log on, take a small tour, create a word document, print, log off
Lunch				
Data flow	14.00 - 15.00		Describe importance of good data flow in the office, available templates for recording data flow, present data flow for Instruments in office. Demonstrate filing & retrieval of Instruments & forms once data entry is completed each day.	Use paper copies of the Data Entry Tacking and Data Entry Log templates and show how to fill out and describe when to use
Data entry process	15.00 - 15.30	3-6-5	Understand overall data entry process.	

Training topics	Duration	Section reference	Outcomes or competencies	Exercises
Rules and guidelines for data entry	15.30 - 16.00	3-6-7	Understand and demonstrate rules and guidelines	
Day 2				
Review, warm up, agenda and expectations	9.00-9.30		Review previous learning & how that will be built on today.	
Using EpiData (data entry software)	9.30-11.30		Ability to open and run EpiData, enter data (1st and 2nd key), and create consistency reports	See Exercise "Learning EpiData"
EpiData templates	11.30 - 12.30	3-6-9	Understand the purposes of different templates, their source documents and the file structures	Take Instrument and describe different sections (according to breakdown of EpiData templates).
Lunch				
Using your supervisor	14.00-14.30		When to ask for clarification from supervisor, interactions between supervisor and data entry team, roles and responsibilities of each team member	
First and second key data entry	14.30 - 15.00	4-2-8, 4-2-9	Ability to enter data into a STEPS database, and validate by keying a second time.	Describe process of 1st keying versus 2nd keying. Assign computers to each individual and explain how to fill out and use the tracking forms and computer folders. Complete first and second keying on "Learning EpiData"
Checking and correcting errors	15.00 15.30	4-2-11	Correctly handle computer-detected errors such as out-of-range checks. Identify and correctly handle queries arising from quality of information on Instruments and forms.	Create list of possible problems with data entry and discuss with data team (i.e. missing pages, illegible writing…)

Training topics	Duration	Section reference	Outcomes or competencies	Exercises
Backing up data	15.30 - 16.00	2-3-10, 4-2-14	Understand need for file protection and safety. Demonstrate procedures for file back-up.	Complete backup data on "Learning EpiData"
Day 3				
Pilot testing (needed if using a tailor Instrument)	9.00 - 16.00	2-4-23	Fully test all processes, including batching, keying, checking, correction and back-up. Identify issues arising from pilot test, and resolve how to deal with them. Extend skills to dealing with missing records, resolving data inconsistencies, incomplete data collection, etc.	Complete exercise in section reference
At a later date				
Refresher training	Weekly meetings		Review procedures for correct processing of all forms and data. Identify weaknesses or failures in current systems, revise procedures if necessary and check consistency reports.	

Training Lesson Plan: Data analysis staff

Introduction   The following Lesson Plan is a guide for people responsible for delivering the data analysis team training.

Training topics	Duration	Section reference	Outcomes or competencies	Exercises
Day 1				
Introductions, warm up, agenda and expectations	9.00 - 9.15	3-1-15	Establish a new team, discuss details of course content.	
Data analysis process	9.15 - 9.45	4-3-4	Understanding of personnel, main roles & organisation, privacy issues, workflows and timeframes	
STEPS Instrument	9.45 - 11.00	5-1-1, 5-2-1	Become familiar with the site specific STEPS Instrument and the generic Instrument, specifically the type of data collected and the coding column	Print out and read through the site specific Instrument and the generic Instrument to identify differences
Providing analysis for site report and fact sheet	11.00-12.30	6-3D-1	Become familiar with the data book	Print out Data book and look through
Lunch	12.30 - 13.00			
Sample design and scope of STEPS survey	13.00 -14.00	2-1-5, 2-2-2	Understand the sample method chosen and scope of the survey being completed. Be able to identify the selection process & design variables that will be needed for this STEPS site.	
Introduction to Epi Info (data analysis software) and accessing survey data	14.00-16.00	3-7-4, 4-3-5	Open Epi Info, import a database & undertake basic point-and-click analyses for means & percentages (and confidence intervals), with sub-groups and strata.	Complete Introduction section of "Learning Epi Info" exercise
Day 2				
Using Epi Info code for analysis	9.00-12.00		Understand advantages in using code. Make Epi Info code, save it, recall & edit it.	Complete Basic analysis section of "Learning Epi Info"

Training topics	Duration	Section reference	Outcomes or competencies	Exercises
Lunch	12.00-13.00			
Deriving new variables in Epi Info	13.00-14.00		Successfully write code which makes new variables from existing variables.	Complete Derive variables section of "Learning Epi Info"
Create plots and graphs in Epi Info, perform more detailed analysis	14.00-15.30		Check variables thoroughly before producing results.	Complete Advanced functions section of "Learning Epi Info"
Site-specific analysis needs	15.30-16.30		Clarify needs for additional analyses required for your site based on site specific modifications to the Instrument	
Sources of advice and assistance	16.30-17.00		Know whom to contact for advice & assistance, whether for survey content, Epi Info or statistical needs.	

Training Delivery Tips

Introduction	The training delivery tips below may be useful for those that have been assigned the role of training, but are not in fact trained trainers.

Introductions and warm up

Before you start the training, it is important for team development to introduce yourself and find out a little about the people in the room. Use the table below to help with the introductions.

Step	Action
1	Introduce yourself and any other co-trainers to the participants.
2	If you don't already know everyone in the room, or they don't know each other, get each participant to briefly introduce themselves (or a person beside them).
3	Ask participants and adapt according to the class: • What they understand by "chronic noncommunicable disease risk factors". • What they think the biggest chronic disease health issues are in their country or area. • In what ways do those diseases impact on the health and welfare of the people in their communities. **Note:** Write the responses on a board. Acknowledge that there is not necessarily a "correct" answer, it varies by time and community. Encourage discussion so you can gauge the level of understanding that the staff already have. The staff can begin to learn what they and their colleagues will be working on.
4	Ask participants if they have any questions or topics they would really like to have covered in the training. **Note:** Write the responses on the board and try and answer them during the training course.

Course agenda and setting expectations

Participants will need to know what to expect in terms of training content, how long it will take and what is expected of them during the course. Use the table below (and lesson plans) to help explain the agenda and set expectations:

Step	Action
1	Explain the aim of the training.
2	Outline what will be covered.
3	Tell them how long the training will take.
4	Explain what is expected of them during training.

Training Delivery Tips, Continued

Using material   The STEPS Surveillance manual has been structured into modular sections that can be easily extracted and recompiled to provide customised manuals for training.

The Manual content has been designed for use as both training material and in the field reference.

Exercises   You will need to create exercises that:

- Are relevant to the local environment
- Support the training material
- Work through typical problems and issues that are likely to be encountered
- Allow for hands on practice

Encouraging participation   The course is not about how much you as the trainer fill it with content, but how much the participants take away in new learning and understanding of skills.
Continually encourage all attendees to participate. Use the table below for guidance.

Topic	Guidance
Comfort zones	Acknowledge that participants may be asked to do things out of their comfort zone (particularly in the interviewing course where scenarios are an important part of training).
Criticism	Ensure participants are not criticised or demoralised when offering comments and questions.
Experience	Develop or build on participants own experiences and understandings.
Fears	Recognise fears and concerns and offer strategies to handle them.
Support	Offer praise when appropriate and support when participants demonstrate feelings of inadequacy or difficulty.
Strengths and weaknesses	Assure everyone that we all have strengths and weaknesses and that they have been selected as a team, with skills that complement those of others.
Team work	Encourage teams to work together and communicate well.
Being self reliant	Once the survey starts, there will not always be an 'expert' available to answer questions. Participants must understand enough to be self reliant and know when to seek advice or help from others.

Training Delivery Tips, Continued

Beginning and ending sessions

It is always helpful to introduce each session with an introduction covering:

- The previous work that builds a foundation for this session
- The content and purpose of the session
- Briefly the resources and format to be used

At the end of the session, summarise:

- What topics and skills have been covered
- Whether that is the end of that topic or a future session will cover further material
- Acknowledge areas of good progress, but also areas where further work will be required

Handling problems and participation issues

Use the guidance in the table below to help with some typical problems encountered in the training environment.

Problem/ situation	Guidance
Late arrivals	Recap briefly what has just been covered and politely make it clear that you want all participants to be punctual.
Interruptions	Remain patient at all times
Participant does not seem to follow and understand.	Show patience and understanding. Repeat the point/topic in a different way and then ask if the participant understands better.
A participant is dominating the sessions, making it difficult for others to participate and learn.	Firstly try commenting during discussions, that you'd like everyone to contribute, even use the phrase "let's hear from someone else this time". If that does not achieve anything, take the staff member aside during a break, and suggest that others need to participate also. Give a little praise, if warranted, about their grasp of the topic, but ask that, as trainer, you need to hear from other participants too.
Participant is not keeping up with the others, or appears unable to "engage".	Again, during a break, seek out the staff member to say whether anything is wrong, or if they are finding anything particularly difficult. A short "catch-up" session may help if so or maybe they are unwell or troubled and should leave.

Training Delivery Tips, Continued

Celebrating milestones

Within the context of the training course, as in the conduct of the survey itself, recognise milestones to encourage the participants and to help develop a sense of "team-ship".

Think particularly of those who may be regarded as outsiders in any way – perhaps they are from out-of-town, are not known to other members of a group, or are of a different language group or cultural background – who may be more hesitant to participate.

You may like to have markers of effort, mastery, achievement or other contribution - use your imagination to select small gifts, snack food treats or certificates to award to participants.

Section 2: Interviewer's Guide

Overview

Introduction   This section provides generic guidelines for interviewers. It does not cover step by step instructions on approaching households and conducting interviews.

Intended audience   This section is designed for use by those fulfilling the following roles:

- Interviewers
- Data collection team supervisors
- STEPS site coordinator

In this section   This section covers the following topics:

Topic	See Page
Data Collection Team	3-2-3
Interview Skills	3-2-4
Completing the STEPS Instrument	3-2-10

Overview

Introduction   The quality of STEPS surveillance results and their usefulness for intra and intercountry comparisons largely depends on the quality of the interviews.

What you will learn   In this section, you will learn:

- The rationale and purpose of a STEPS surveillance of risk factors for chronic diseases.
- How to be part of a data collection team.
- How to interview participants.
- How to use the STEPS Instrument and complete participants' Instruments.

Learning outcomes   The learning outcome of this module is to conduct consistent and effective interviews and record accurate data.

Instructional material   For full instructional material on conducting the survey and recording results, please see Part 4, Section 1.

Other data collection materials   This Guide is to be used in conjunction with the following sections in the STEPS Surveillance Manual. These sections provide full instructional material on the following topics.

Topic	Part, Section
Preparing a STEPS site	Part 2, Section 3
Data Collection	Part 4, Section 1
Guide to Demographic Information and Behavioural Measurements	Part 4, Section 3
Guide to Physical Measurements	Part 4, Section 4

Data Collection Team

Introduction	You will be assigned to work with a team of other interviewers in a specified area for the duration of data collection.
Team identification	Each interview team will have an assigned letter (e.g. "C", "D").

You will need to use this letter on all Instruments and forms you complete. |
| **Supervision** | Each team will work with a supervisor. The Supervisor is responsible for:

• Tracking your progress
• Ensuring Instruments are completed correctly
• Keeping data collection to the specified timeframe
• Handling any issues you encounter

Note: For further details on the supervisor's role, please see Part 4, Section 1. |

Interview Skills

Introduction   The STEPS interview is about finding out and recording a list of facts and behaviours relating to selected eligible participants.

The participant needs to feel comfortable about the survey and can refuse to be interviewed as participation is voluntary. Your interview should therefore be as natural as possible and conducted politely, like a normal conversation.

Behaviour and tact   The table below provides guidelines on appropriate behaviour during an interview:

Behaviour	Guidelines
Respect confidentiality	Maintain the confidentiality of all information you collect.
Respect participants time	You are asking participants for their time so be polite and prepared to explain.
Tact	If you feel that a person is not ready to assist you, do not force them but offer to come back later.
Friendly disposition	Act as though you expect to receive friendly co-operation and behave accordingly.
Body language	Maintain good eye contact and adopt appropriate body language.
Pace of interview	Don't rush the interview. Allow the participant enough time to understand and answer a question. If pressured, a participant may answer with anything that crosses their mind.
Patience	Be patient and polite at all times during the interview.
Acceptance	No matter what the responses to questions, do not be judgemental of a participant's lifestyle. Expression of any criticism may lead to refusing or concealing important information.
Appreciation	Thank them for their help and cooperation.

Interview Skills, Continued

Asking questions

The table below provides guidelines for asking questions in an interview:

Topic	Guidelines
Issues relating to chronic diseases and their risk factors	Do not discuss or comment on issues relating to chronic diseases and their risk factors. Participants may not give correct answers to the questions but give the answers they think the interviewer is looking for.
Right or wrong answers	Point out that there are no right or wrong answers and that the interview is not a test.
Biased answers	Ask your questions according to guidelines given in the Q by Q guide to avoid biased answers and ensure comparability of data.
Read all options	All options must be read to the participant except for DK, Don't remember, Refuse, NA and other.
Reading questions	Questions should be read: • as they are written in the text, • slowly and clearly emphasising key words in bold, • in a pleasant voice that conveys interest and professionalism, and • entirely to make sure the participant has heard it completely. Do not change the: • wording, or • order of the questions.
Making assumptions	Don't make assumptions about the participants' answers with comments such as "I know this probably doesn't apply to you, but…". This practice may prevent accurate and unbiased information.

Continued on next page

Interview Skills, Continued

Providing clarification
You may need to provide clarification when the participant:

- Is unable to answer the question asked
- Does not seem to understand the question and gives an inappropriate reply
- Does not seem to have heard the question
- Is taking a long time to answer the question and hesitates
- Asks about a specific part of the question to be repeated (it is acceptable to repeat only that part)
- Asks for one option to be repeated (read all options again but you may omit one option if it has clearly been eliminated by the participant)
- Asks for one term to be clarified (refer to the explanations provided in the question by question guide)

When to probe further
You will need to probe further to get an appropriate response when the participant:

- Seems to understand the question but gives an inappropriate response
- Does not seem to understand what is asked
- Misinterprets the question
- Cannot make up his or her mind
- Digresses from the topic or gives irrelevant information
- Needs to expand on what has been said or clarify the response
- Gives incomplete information or an answer is unclear
- Says that he or she doesn't know the answer

Interview Skills, Continued

Common responses that need probing

The table below lists some common responses that may need further probing:

If the participant replies…	Then…
"I don't know" (DK)	Repeat the question.
"I still don't know"	Probe once before recording (DK), for example, ask "Could you give me your best estimate".
"I still don't know"	This may mean the participant: • Is taking time to think and wants to gain time • Does not want to answer because of personal reasons • In fact does not know or has no opinion
"Not applicable" (NA)	• Ask him/her why the question does not apply to him/her. • Write down NA if it is clear that the question is irrelevant.

Notes:
- DK, Don't remember, NA and refuse should be used only as an absolute last resort.
- If DK, NA options are not available record them in the left margin.

Probing techniques

The table below provides a few techniques to use when probing further:

Technique	Guidelines
Repeat the question	The participant may come up with the right answer if he/she hears the question a second time.
Make a pause	This gives the participant time to collect his/her thoughts and expand on his/her answer.
Repeat the participant's reply	This is often a very effective way of having the participant reflect on the answer he/she has just given.
Use neutral probes	Avoid biased responses and probes. Never give the impression that you approve or disapprove what the participant says, or that their answer is right or wrong. Instead, if you want more information, ask "anything else?", or "could you tell me more about…?

Interview Skills, Continued

Interruptions Interruptions may occur during an interview. If they become too long or too many, suggest returning at another time to complete the interview.

Take care that even if interrupted or delayed, you should remain patient and polite at all times.

Refusal to answer Some participants may refuse to be interviewed. Reasons for this are varied and differ from one participant to another. Some participants may not refuse outright but may express hesitancy, reservation or hostility.

You will learn to distinguish between refusals (for example, hesitancy from a definite refusal). Success in obtaining cooperation will depend upon your manner and resourcefulness.

Participants must not be forced to respond to the whole interview or to any part of the survey process. However, the more refusals that are made, the less representative the survey is of the whole population.

Handling refusals Be prepared to obtain co-operation from a participant who does not want to be interviewed. In general, be pleasant good-natured and professional and most participants will co-operate.

Use the table below to help you handle some refusal situations:

If...	Then…
The participant becomes defensive	• Show patience and understanding • Provide token agreement and understanding of his/her viewpoint, that is, saying something like, 'I can understand that' or 'You certainly have the right to feel that way • Convey the importance of the survey to the participant
You may have visited at a bad time	Try again later
The participant may have misunderstood the purpose of the visit	Try to explain the purpose again
You think you may get a 'no'	Try to leave and suggest coming back later before you get a partial or an absolute 'no'

Interview Skills, Continued

Language issues

Be aware that if you use 'interpreters of convenience' (such as members of the participant's family or household, the village headman, or domestic staff), you may get incorrect data being recorded.

If you don't get sufficient co-operation due to a language barrier, report this to your supervisor.

Completing the STEPS Instrument

Introduction   Once the standard STEPS Instrument has been adapted, translated and printed it is ready for use during the survey.

One Instrument is to be completed for each participant you interview and measure. All items on the Instrument must be completed for the response to be valid.

Cover page   A portion of the cover page of each Instrument contains identification information, including the participant names. It is very important that these details are kept confidential at all times and you should tell the participant that they will be kept confidential.

Core and expanded items   The Instrument contains **CORE** and **EXPANDED** items response options for each Step you will need to complete.

Introductory statements   Where a section of items has an introductory statement, read this out to the participant before asking the questions in the section.

ID codes   The table below provides some guidance on the different identification codes that need to be completed in the STEPS Instrument. The codes will be generated during the planning phase by the coordinating committee and/or the site coordinator.

Type of ID code	Description
District	Use local district codes from list provided by the Site coordinator
Centre/Village (Cluster/ Household)	Use local centre codes for urban environments and village codes for rural areas if applicable provided by the Site coordinator
Interviewer ID	Interviewer ID for Step 1 and 2*
Participant ID	Unique participant identifier
Technician ID	Technician code for Step 3 (in clinic setting)

*Note: The interviewer ID may be the same, if Step 2 is conducted by data collection teams at the same time as Step 1.

Completing the STEPS Instrument, Continued

Entering the participant's response

For each item on the Instrument, there may be one or more possible responses. Each possible response has an associated code. You will need to circle the appropriate response or fill in the appropriate response in the available box for each item. For example:

Questions		Response	Code
24	Do you currently smoke any **tobacco products**, such as cigarettes, cigars or pipes?	Yes ⌒ 1 No ② *If No, go to T 6*	T1
45	How many **servings** of fruit do you eat on **one** of those days? (*USE SHOWCARD*)	Number of servings ⌊0⌋5⌋ Don't Know 77	D2

Skip instructions

Skip instructions are located in the response column just next to the response. You will need to follow the instructions if the participant responds in a certain way to the question.

If you need to record notes, (for example, if the left arm was used instead of the right arm to take a blood pressure measurement) insert them in the left hand side margin.

"Don't know" responses

The table below shows what to enter as a last resort where the participant does not respond with a standard response.

If the participant responds with	And number of ⌊⌋ is	Then enter
Do not know Don't remember	⌊⌋	7
Do not know Don't remember	⌊⌋⌋	77
Do not know Don't remember	⌊⌋⌋⌋	777
Not applicable Refuse	⌊⌋	8
Not applicable Refuse	⌊⌋⌋	88
Not applicable Refuse	⌊⌋⌋⌋	888

Q by Q Guide

For further instructions on completing individual questions and taking measurements, see the Question by Question Guide in Part 5.

Section 3: Guide to Demographic Information and Behavioural Measurements (Step 1)

Overview

Introduction

This section provides information on the socio-economic and modifiable behavioural risk factor information collected in Step 1 and is a guide to working with the:

- Topics covered under Step 1 of the STEPS Instrument
- Question by Question Guide

Intended audience

This section is designed for use by those fulfilling the following roles:

- Data collection team trainer
- Data collection team supervisor
- Interviewers
- STEPS site coordinator
- Data analyst

In this section

This section covers the following topics:

Topic	See Page
Behavioural Risk Factor Overview	3-3-2
Question by Question Guide	3-3-3
Guide to Core Demographic Information (Step 1)	3-3-4
Guide to Behavioural Measurements (Step 1)	3-3-5
Show Cards	3-3-9

Behavioural Risk Factor Overview

Introduction

Step 1 of the STEPS Instrument covers essential socio-demographic information (such as age, sex and income) and core modifiable behavioural risk factors to help determine:

- Socio-demographic trends
- Tobacco and alcohol use
- Nutritional status
- Physical activity

What you will learn

In this section, you will learn:

- How to use the Question by Question guide
- The importance of accurately completing core socio-demographic information
- What the behavioural risk factors are what they mean
- How to use the show cards

Learning outcomes

The learning outcome of this section is to understand what the core behavioural measures are and why accurate responses need to be recorded against these measures.

What you will need

The forms you will need for this section can be found in Part 5 and include:

- STEPS instrument
- Question by Question Guide
- Relevant show cards

Question by Question Guide

Introduction	The Question by Question Guide (Q by Q) is a 'master' version of the standard STEPS instrument. It provides instructions and guidelines for each question.
	A copy of the Q by Q guide can be found in Part 5.
Purpose of the Q by Q guide	The purpose of the Q by Q guide is to provide background information, explanations and examples of correct information to help interviewers accurately complete each instrument with participants.
	It is to be used as both a training and data collection tool.
Using the guide	Before conducting the interviews, data collection team staff should:
	• Read this Guide many times over until you are comfortable with the information • Practice asking the questions • Become thoroughly familiar with the contents of the Instrument
Responding to questions for clarification	If participants request clarification about specific questions, use the Q by Q guide to help, rather than offering your own interpretations.

Guide to Core Demographic Information (Step 1)

Introduction   Accurate core demographic information is essential for analysing and reporting on the overall results of the STEPS survey.

If the age and sex of a participant has been missed out, their responses cannot be used in the analysis, as most analyses report results that are grouped by these criteria.

Dates of birth and age   In some countries, some individuals may not know their exact dates of birth and/or age. In these situations their age has to be estimated. To estimate someone's age, you will need to ask them how old, or at what stage in life they were at the time that a number of widely known major local events occurred.

Expanded demographic information   Some of the expanded demographic questions will have been adapted for your site so the terms and phrases make sense to participants in your environment.

Some of the adaptations may include relevant:

- Ethnic, racial and or cultural groups
- Highest level of education
- Categories of work
- Income level

Guide to Behavioural Measurements (Step 1)

Introduction
The behavioural measures in the STEPS Instrument relate to some aspects of how we live on a daily basis. In particular, they are designed to record details about:

- Tobacco use
- Alcohol consumption
- Fruit and vegetables consumption
- Oil and fat consumption
- Physical activity

Note: Each of these is explained in more detail below.

Expanded questions
In addition to the behavioural measures mentioned above, some related Expanded questions include:

- History of raised blood pressure
- History of diabetes

Tobacco use
Smoking is the main way tobacco is used world wide and the manufactured, filter-tipped cigarette is becoming increasingly dominant as the major tobacco product.

Other forms of tobacco (i.e. smokeless tobacco) are potentially as dangerous, although the adverse consequences of some of them are more limited because the smoke is not usually inhaled.

Tobacco is chewed, sucked or its smoke is inhaled with significant adverse effects on the local tissues. Because the major health effects of tobacco are associated with smoking, only this form of tobacco use is included in the core instrument.

Smoking related questions
The tobacco-related questions recommended for the STEPS approach are based on the WHO guidelines for tobacco use surveillance documented in the publication *'Guidelines for controlling and monitoring the tobacco epidemic'* (WHO, 1998).

The questions in the STEPS Instrument ask about current smoking or use of any tobacco products, as well as duration and quantity of daily smoking. Even though in some countries it is only men who smoke, women as well as men must be asked these questions.

Continued on next page

Guide to Behavioural Measurements (Step 1), Continued

Expanded tobacco questions

The expanded tobacco questions focus on tobacco smoking history and use of smokeless tobacco. In some settings, smokeless tobacco will be more prevalent than smoking tobacco.

Alcohol consumption

Alcohol consumption is a strong risk factor for hepatic cirrhosis and types of violence and injury. It also:

- has been consistently and positively associated with cancers, such as breast cancer.
- may have a U-shaped relationship with ischaemic heart disease (ie, a tiny bit of alcohol may be cardio protective, but more will increase the risk and outweigh any public health gain).
- is closely related to injury and haemorrhagic stroke.

The consumption of alcohol is episodic and asking individuals about their average (daily) consumption can be problematic. For a given level of average daily consumption, the pattern of drinking itself strongly influences the risk of chronic diseases.

Surveys of drinking should therefore attempt to capture both amount and pattern of drinking for ease of recall and relevance.

Patterns of drinking

While some communities abstain from alcohol entirely or may use alcohol on very rare and specific occasions, such as the birth of a baby, others usually consume it at different times of day and days of the week.

Some factors may affect usual drinking patterns, such as:

- Payment of salaries
- Wages on a weekly, fortnightly or monthly basis
- Simply the end of the working week

Drinking may also be traditionally associated with particular religious or other holidays, and may also vary in a more general way with the season of the year.

Continued on next page

Alcohol related questions

The STEPS Instrument intends to capture both frequency and quantity of alcohol consumption as pattern of drinking influences strongly risks of chronic diseases.

The definition of a "standard drink" will have been reviewed and modified by each site on the Show Cards, included in Part 5, to reflect local patterns of alcohol consumption. This will include:

- Types and strengths of products
- Common measures
- Local terms used for both

If domestic manufacture of beer, wine or spirits is common, information on the usual ethanol content of such products will also be available to help determine the volume of absolute alcohol that makes a "standard drink".

Expanded alcohol questions

The expanded alcohol questions focus on binge drinking for both men and women.

Diet (fruit and vegetable consumption)

Information about population dietary habits and how these are changing underpins planning and improvement on nutrition-related health policies and programmes.

Fruit and vegetables are important components of a healthy diet. Evidence suggests that they could prevent major diseases such as cardiovascular diseases and certain cancers principally of the digestive system.

Diet related questions

The STEPS Instrument does not attempt to measure whole diets, or overall food intake but only selected aspects of food habits. This makes it more straightforward to measure and provide both qualitative and quantitative information on intake over varying periods of time.

The nutrition show card will have been updated to show examples of fruits and vegetables considered most typical for your site. For comparative purposes, serving size is standardised to represent 80 grams. WHO recommends consumption of at least 400 grams of vegetables and fruit per day.

Expanded diet questions

The expanded diet questions ask about oil or fat used for cooking.

Physical activity

Regular physical activity has important health benefits. It can reduce the risk of:

- Heart disease
- Stroke
- Diabetes
- Depression
- Breast cancer
- Colon cancer
- Osteoporosis

It can also help in weight loss and weight maintenance and reduce the risk of falls in the elderly.

Physical activity related questions

Asking questions about patterns of physical activity is complex. The questions are therefore divided into sections to assess the level of activity in three different settings. These include:

- At work (which includes paid and unpaid work, in and outside of the home)
- For transport (to get to and from places)
- For recreation or sport

Some people will be physically active in all three settings; others may not be active in any of the settings.

The physical activity show cards will have been adapted by each site to show types of physical activities.

History of raised blood pressure

Questions ask the participants about their history of blood pressure measurements and whether or not they are receiving treatment and/or advice for raised blood pressure.

History of Diabetes

Questions ask the participants about their history of blood sugar measurements and whether or not they are receiving treatment and/or advice for diabetes.

Show Cards

Introduction	Show cards are useful tools to help explain what is meant by some of the questions on the Instrument. To be useful, they must be adapted to local settings.

Applicable show cards	For each interview you may need to have Show Cards that cover the following topics:

- List of work status
- List of tobacco products
- Alcohol consumption
- Diet (typical fruit and vegetables and serving sizes.
- Types of physical activities

Note: These Show Cards can be found in Part 5.

Instructions for use	These cards will have been adapted so they are appropriate for your setting.

Use the Show Cards to:

- Help clarify what you mean and what the terms used on the Instrument mean.
- Show participants examples of the kind of products you are talking about.

Section 4: Guide to Physical Measurements (Step 2)

Overview

Introduction   This section provides information on and is a guide to working with the topics covered under Step 2 of the STEPS Instrument.

Intended audience   This section is designed for use by those fulfilling the following roles:

- Data collection team trainer
- Data collection team supervisor
- Interviewers
- STEPS site coordinator

In this section   This section covers the following topics:

Topic	See Page
Physical Measurements Overview	3-4-2
Physical Measurements	3-4-3
Measuring Height (Core)	3-4-5
Measuring Weight (Core)	3-4-6
Measuring Waist Circumference (Core)	3-4-8
Taking Blood Pressure (Core)	3-4-10
Measuring Hip Circumference (Expanded)	3-4-13
Recording Heart Rate (Expanded)	3-4-15

Physical Measurements Overview

Introduction   Step 2 of the STEPS Instrument includes the addition of selected physical measures to determine the proportion of adults that:

- Are overweight and/or obese
- Have raised blood pressure

What you will learn   In this section, you will learn:

- What the physical measures are and what they mean
- What equipment you will need
- How to assemble and use the equipment
- How to take physical measurements and accurately record the results

Learning outcomes objectives   The learning outcome of this section is to understand what the physical measures are and how to accurately take the measurements and record the results.

Physical Measurements

Introduction   Height and weight measurements are taken from eligible participants to calculate body mass index (BMI) used to determine overweight and obesity. Blood pressure is also taken to determine raised blood pressure.

Units of measurement   The table below shows the standard units of measurement for physical measurements used in STEPS and their upper and lower limits for data entry purposes.

Physical Measure	Unit	Minimum	Maximum
Systolic blood pressure (SBP)	mmHg	40	300
Diastolic blood pressure (DBP)	mmHg	30	200
Pulse rate	beats/minute	30	200
Height	cm	100	270
Weight	Kg	20	350
BMI (body mass index)	Kg/m^2	11	75
Waist circumference	cm	30	200
Hip circumference	cm	45	300

Sequence of tests   Physical measurements should be taken from the participant in the following order:

Core
1. Height
2. Weight
3. Waist circumference
4. Blood pressure

Expanded
5. Hip circumference and heart rate (if measured)

Equipment required for tests   The equipment you will need for taking physical measurements include:

- Height measuring board
- Weighing scales
- Wooden board (in case of uneven surfaces for scales)
- Tape measure
- Pen
- Chair or coat rack for participant's clothes
- Curtain or screen to provide privacy if no private area is available for taking measurements
- Blood pressure monitor and appropriate cuff sizes

Continued on next page

Physical Measurements, Continued

Privacy

Where possible, all physical measurements should be conducted in a private area. Where this may be difficult in some settings, at a minimum, privacy should be provided with screens for waist and hip circumference measurements.

In some settings, a separate room in the household may be set up with the necessary equipment to take each measurement. Where this is not possible, a separate area should be screened off.

Allow the participant to select the degree of privacy – some may be concerned about going behind a screen or out of sight of others with people they do not know.

When to take physical measurements and record results

It is recommended that physical measurements are taken immediately after the Step 1 interviews. Results of Step 2 measures are to be recorded on the same participant Instruments.

If physical measurements are taken some time after Step 1 interviews (not recommended), care should be taken to ensure data collection forms are correctly matched with their original instruments.

Introductions and explanations

Prior to taking physical measurements, explain that you will be taking the following measurements:

For Core
- Height
- Weight
- Waist circumference
- Blood pressure

For Expanded
- Hip circumference and pulse rate

Measuring Height (Core)

Introduction   The height of eligible participants is taken to help determine their body mass index (BMI)- which is their weight relative to their height. Being overweight or obese is a significant risk factor for chronic disease.

Equipment   To measure height, you need a portable height/length measuring board.

Assembling the measuring board   Follow the steps below to assemble the measuring board:

Step	Action
1	Separate the pieces of board (3 pieces) by unscrewing the knot at the back.
2	Assemble the 3 pieces by attaching each one on top of the other in the correct order.
3	Lock the latches in the back.
4	Position the board on a firm surface against a wall.

Procedures   Follow the steps below to measure the height of a participant:

Step	Action
1	Ask the participant to remove their: • Footwear (shoes, slippers, sandals etc) • Head gear (hat, cap, hair bows, comb, ribbons, etc). **Note:** If it would be insensitive to seek removal of a scarf or veil, the measurement may be taken over light fabric.
2	Ask the participant to stand on the board facing you.
3	Ask the participant to stand with: • Feet together • Heels against the back board • Knees straight
4	Ask the participant to look straight ahead and not look up.
5	Make sure eyes are the same level as the ears.
6	Move the measure arm gently down onto the head of the participant and ask the participant to breathe in and stand tall.
7	Read the height in centimetres at the exact point.
8	Ask the participant to step away from the measuring board.
9	Record the height measurement in centimetres in the participant's Instrument.
10	Record your Technician ID code in the space provided in the participant's Instrument.

Measuring Weight (Core)

Introduction   The weight of eligible participants is taken to help determine their body mass index.

Equipment   To measure weight, you will need the following equipment:

- Portable electronic weighing scale
- If you are likely to have problems with uneven surfaces (such as dirt or mud floors or carpet) you may also need a stiff wooden board to place under the scales
- Where electricity is not guaranteed, and if electronic scales are being used, you will need a generator. Usually scales work with batteries

Set up requirements   Make sure the scales are placed on a firm, flat surface.

Do not place the scales on:

- Carpet
- Sloping surface
- Rough, uneven surface

Electronic scales   Follow the steps below to put electronic scales into operation:

Step	Action
1	Put the scale on a firm, flat surface.
2	Connect the adaptor to the main power line or generator.
3	Turn on the scale.
4	Press the [WEIGHT ONLY] key. The display will show 0.0.

Procedures   Follow the steps below to measure the weight of a participant:

Step	Action
1	Ask the participant to remove their footwear (shoes, slippers, sandals etc) and socks.
2	Ask the participant to step onto scale with one foot on each side of the scale.
3	Ask the participant to: • stand still • face forward • place arms on the side and • wait until asked to step off

Measuring Weight (Core), Continued

Procedures (continued)

Step	Action
4	Record the weight in kilograms on the participant's Instrument. If the participant wants to know his/her weight in pounds, convert by multiplying the measured weight by 2.2.

Measuring Waist Circumference (Core)

Introduction   Waist circumference measurements are also taken to provide additional information on overweight and obesity.

Equipment   To take waist circumference measurements you will need a:

- Constant tension tape (for example, Figure Finder Tape Measure)
- Pen
- Chair or coat stand for participants to place their clothes

Privacy   A private area is necessary for this measurement. This could be a separate room, or an area that has been screened off from other people within the household.

Preparing the participant   This measurement should be taken without clothing, that is, directly over the skin.

If this is not possible, the measurement may be taken over light clothing. It must not be taken over thick or bulky clothing. This type of clothing must be removed.

How to take the measurement   This measurement should be taken:

- At the end of a normal expiration
- With the arms relaxed at the sides
- Under the midline of the participant's armpit, at the midpoint between the lower part of the last rib and the top of the hip.

Continued on next page

Measuring Waist Circumference (Core), Continued

Procedure   Follow the steps below to measure the waist circumference of a participant:

Step	Action
1	Standing to the side of the participant, locate and mark the inferior margin (lowest point) of the last rib and the crest of the ilium (top of the hip bone) with a fine pen.
2	With a tape measure, find the midpoint and mark the point. This is a tape measure and mark the point.
3	Apply the tension tape over the marked midpoint and ask the participant to wrap it round themselves. **Note:** Check that the tape is horizontal across the back and front of the participant.
4	Ask the participant to: • stand with their feet together, • place their arms at their side with the palms of their hands facing inwards, and • breathe out gently.
5	Measure waist circumference and read the measurement at the level of the tape to the nearest 0.1 cm.
6	Record the measurement on the participant's Instrument. **Note:** Measure only once and record.

Taking Blood Pressure (Core)

Introduction Blood pressure is taken to assess whether the participant has a raised blood pressure. Raised blood pressure is a risk factor for chronic diseases.

Equipment To take blood pressure you will need the following:

- OMRON (Digital Automatic Blood Pressure Monitor DABPM)
- Appropriate size cuffs

Preparing the participant Ask the participant to sit quietly and rest for 15 minutes with their legs uncrossed.

Applying the cuff Follow the steps below to select an appropriate size and apply the cuff:

Step	Action
1	Place the **right arm*** of the participant on the table with the palm facing upward.
2	Remove or roll up clothing on the arm.
3	Select the appropriate cuff size for the participant using the following table:

Arm Circumference (cms)	Cuff Size
17 -22	Small (S)
22-32	Medium (M)
> 32	Large (L)

Step	Action
4	Position the cuff above the elbow aligning the mark *ART* on the cuff with the brachial artery.
5	Wrap the cuff snugly onto the arm and securely fasten with the Velcro. **Note:** The lower edge of the cuff should be placed 1.2 to 2.5 cm above the inner side of the elbow joint.
6	Keep the level of the cuff at the same level as the heart during measurement.

Note* If the left arm is used, note this in the right hand side margin on the participant's Instrument.

Continued on next page

Taking Blood Pressure (Core), Continued

Procedure OMRON

You will need to refer to the operating instructions included with the device to measure the blood pressure of a participant using an OMRON machine.

Three measurements should be taken and for analysis purposes, you will take the mean of the second and third readings. The participant will rest for three minutes between each of the readings.

- Check that all readings are correctly filled in the Instrument
- Record your technician ID code in the participant's Instrument
- Inform the participant the blood pressure readings only after the whole process is completed.

When to use a Sphygmomano-meter

The sphygmomanometer is generally **not recommended**, but may be used in the following circumstances:

- The OMRON is not functioning
- The OMRON display shows multiple errors
- To cross check OMRON blood pressure readings in various clinical states such as irregular pulse, peripheral circulatory disturbance, extreme hypotension
- For weekly calibration of the OMRON Monitor
- If an extra large cuff was needed as there was no extra large cuff for the OMRONS

Continued on next page

Taking Blood Pressure (Core), Continued

Procedure for Sphygomanometer

Follow the steps below or refer to the operating instructions included with the device to measure the blood pressure of a participant using the sphygomanometer.

Step	Action
1	Apply the cuff (as detailed above).
2	Put stethoscope earpieces in ear and set to bell.
3	Palpate pulse at either brachial or radial artery. Take a pulse count for one full minute.
4	Pump up pressure and inflate cuff until unable to feel pulse.
5	Continue to inflate cuff 30 mmHg beyond this point.
6	Apply the bell of the stethoscope to the right antecubital fossa.
7	Listen for pulse sounds while deflating the cuff slowly.
8	Record the systolic blood pressure (SBP) when a pulse is first audible.
9	Record the diastolic blood pressure (DBP) when the pulse sound disappears.
10	Deflate the cuff fully and let the arm rest for three minutes (between each of the readings).
11	Repeat Steps 2-7 twice to obtain three readings (and take the mean of the second and third readings for analysis purposes).
12	Check that all readings are correctly filled in the Instrument.
13	Record your Technician ID code in the participant's Instrument.
14	Inform the participant the blood pressure readings only after the whole process is completed.

Measuring Hip Circumference (Expanded)

Introduction   Hip circumference measurements are taken in some sites only as an Expanded option to measure overweight and obesity.

Equipment   To take hip circumference measurements you will need a:

- Constant tension tape (for example, Figure Finder Tape Measure)
- Pen
- Chair or coat stand for participant's to place their clothes

Privacy   A private area is necessary for this measurement. This could be a separate room, or an area that has been screened off from other people within the household. Hip measurements are taken immediately after waist circumferences.

Preparing the participant   This measurement should be taken without clothing, that is, directly over the skin.

If this is not possible, the measurement may be taken over light clothing. It must not be taken over thick or bulky clothing. This type of clothing must be removed.

How to take the measurement   This measurement should be taken:

- With the arms relaxed at the sides
- At the maximum circumference over the buttocks

Procedure Follow the steps below to take hip circumference measurements.

Step	Action
1	Stand to the side of the participant, and ask them to help place the tape around below their hips.
2	Position the measuring tape around the maximum circumference of the buttocks.
3	Ask the participant to: • stand with their feet together • place their arms at their side with the palms of their hands facing inwards, and breathe out gently.
4	Check that the tape position is horizontal all around the body.
5	Measure waist circumference and read the measurement at the level of the tape to the nearest 0.1 cm.
6	Record the measurement on the participant's instrument. **Note:** Measure only once and record.

Recording Heart Rate (Expanded)

Introduction   Heart rate measurements can be taken using an automated blood pressure device as well as a sphygomanometer.

Procedure   Follow the steps below to measure the heart rate of a participant using the sphygomanometer.

Step	Action
1	Put stethoscope earpieces in ear and set to bell.
2	Palpate pulse at either brachial or radial artery. Take a pulse count for one full minute.
3	Record first reading of the heart rate beats per minute on the participant's Instrument.
4	Repeat Steps 1-3 for second and third readings.

Note: If using an automated blood pressure device, the procedure is straightforward and can be done simultaneously while taking blood pressure measurements

Section 5: Guide to Biochemical Measurements (Step 3)

Overview

Introduction   This section provides information on taking biochemical measures required under Step 3 of the STEPS Instrument.

Intended audience   This section is designed for use by those fulfilling the following roles:

- Data collection team trainer
- Health professionals (for clinic setting)
- STEPS site coordinator

In this section   This section covers the following topics:

Topic	See Page
Biochemical Measurements Overview	3-5-2
Blood Collection	3-5-3
Blood Glucose Measurement (Core)	3-5-5
Blood Lipid (Cholesterol) Measurement (Core)	3-5-6
Triglyceride Measurement (Expanded)	3-5-7

Biochemical Measurements Overview

Introduction
Step 3 includes selected biochemical measurements that are determined primarily by taking blood samples.

Step 3 is usually conducted in a clinic setting and requires access to an appropriate standardised laboratory. Because of this, Step 3 is only conducted in countries where resources permit as it greatly increases the cost of the survey.

What you will learn
In this module, you will learn:

- What the biochemical measures are and what they mean
- The fasting process and instructions for participants
- What equipment you will need
- How to take biochemical measurements
- How the results are analysed
- How to record the results

Learning outcome
The learning outcome of this section is to understand what the biochemical measures are and how to accurately prepare participants and take the measurements.

Recording results
If Step 3 is conducted in a clinic setting that has the capacity to produce immediate results, the same participant instruments that have been used for Step 1 and Step 2 should be used to record the Step 3 results.

Required forms
Where Step 3 is conducted in a clinic the following forms are also to be used:

- Clinic Registration Form
- Blood Collection Form
- Biochemical Measurement Form

Note: These forms can be found in Part 6, Section 2.

Blood Collection

Introduction   Blood samples are taken from eligible participants to be used to perform simple tests to measure blood glucose and blood lipids. Raised blood glucose is a risk factor for diabetes. Blood lipids indicate cholesterol levels.

Infection control   Follow the infection control procedures appropriate for your facility.

Whole blood is more infective with regard to blood borne disease than centrifuged serum or plasma. There may be an increased risk in handling whole blood and universal precautions should be adopted.

Units of measurement   The table below shows the standard units of measurement for biochemical tests used in STEPS and their upper and lower limits for data entry purposes.

Blood Test	Unit	Minimum	Maximum
Fasting glucose	mmol/L	1	35.0
Random glucose	mmol/L	1	50.0
Total cholesterol	mmol/L	1.75	20.0
HDL	mmol/L	0.10	5.0
Triglycerides	mmol/L	0.25	50.0
Total cholesterol/HDL ratio	mmol/L	1.10	30.0

Participant fasting requirements   To obtain accurate results, participants must fast for at least eight hours before blood collection.

Most blood samples are to be taken in the morning. This means participants must not to eat or drink anything (except plain water) from 10 pm the night before.

Diabetic patients on medications are required to bring their tablets with them and to take them after their blood measurement if possible (if they have not done so, they should inform the relevant laboratory staff).

Note: Fasting Instructions for Step 3 can be found in Part 6, Section 2.

Blood Collection, Continued

Preparing the participant

After greeting the participant, and asking them to take a seat, follow the steps below to prepare the participant for a blood test:

Step	Action
1	Check if the participants have completed the Consent Form 2 for Step 3. <table><tr><td>**If...**</td><td>**Then…**</td></tr><tr><td>No</td><td>Check the Interview Tracking Form for their names.</td></tr><tr><td>They have completed the Instrument.</td><td>Ask the participant to fill in the Consent Form.</td></tr></table>
2	Check the Instrument for errors and incomplete answers. If there are any highlighted comments ensure these questions are asked again to verify the answers.
3	Record the participant details and arrival time on the Clinic Registration Form.
4	Record the time the participant last had a meal and drink on the Blood Collection Form.
5	<table><tr><td>**If...**</td><td>**Then…**</td></tr><tr><td>The participant has not fasted correctly</td><td>• Note "fasting default" on the participant's Instrument. • Explain that to get accurate results participants need to fast for a minimum of 8 hours. • Ask if they would try fasting again and come back for a blood test the following day.</td></tr><tr><td>The participant agrees to come back the following day</td><td>• Give the participant an appointment time and fasting instructions. • Obtain their contact details and record in the data collection log book. • Inform the supervisor.</td></tr></table>
6	<table><tr><td>**If...**</td><td>**Then explain to the participant that…**</td></tr><tr><td>The participant has fasted correctly</td><td>• Blood is going to be collected from a small prick on the finger. • Tests will be done on: fasting blood sugar, cholesterol and lipids.</td></tr></table>

Blood Glucose Measurement (Core)

Introduction   Blood sugar tests are taken to measure for raised blood sugar levels which are a risk factor for diabetes.

Only dry chemistry will be explained here as wet chemistry is being done directly at the laboratory.

Equipment required   Dry chemistry equipment and supplies required for blood glucose tests include:

- Blood glucose measuring device (such as: Reflotron Single Channel meter, or HemoCue Glucose 201)
- Test strips
- Sterile swabs
- Cotton balls
- Disposable container

Preparing the device   Follow the appropriate device instructions to set up, prepare and use the meter for blood glucose tests.

Blood glucose measurement procedure   Follow the steps below to take blood glucose measurements and record the results:

Step	Action
1	Remove a test strip.
2	Rub and kneed a fingertip to help withdraw blood (side of the participant's finger closest to the thumb).
3	Wipe or swab the fingertip by using a sterile swab.
4	Lance the massaged place on the fingertip with lancing device.
5	Allow a hanging blood drop to form without applying too much pressure.
6	Carefully apply the drop of blood to the yellow test field on top of the strip without touching the test field directly with the finger. **Note:** The yellow test field must be completely covered with blood. If too little blood is applied, do not rub it in or apply a second drop, but repeat the measurement with a fresh test strip.
7	Give the participant a cotton ball to press on the puncture.
8	Wait for the measurement to be displayed (after a series of beeps followed by longer beep). The blood glucose results is displayed in mmol/L.
9	Record the results of the fasting blood sugar reading in the participant's Instrument and in the Blood Collection Form.

Note: For error messages, refer to instructions provided with the device.

Blood Lipid (Cholesterol) Measurement (Core)

Introduction   Blood lipid tests are taken to measure cholesterol levels.

Equipment required   Dry chemistry equipment and supplies required for cholesterol measurements include:

- Cholesterol measuring device (such as: Reflotron Single Channel meter, or Accutrend GCT)
- Test strips
- Sterile swabs
- Cotton balls
- Disposable container

Preparing the device   Follow the appropriate device instructions to set up, prepare and use the meter for cholesterol tests.

Cholesterol measurement procedure   Follow the steps below to take cholesterol measurements and record the results:

Step	Action
1	Remove a test strip.
2	Rub and kneed a fingertip to help withdraw blood (side of your finger closest to the thumb).
3	Wipe or swab the fingertip by using a sterile swab.
4	Lance the massaged place on the fingertip with lancing device.
5	Allow a hanging blood drop to form without applying too much pressure.
6	Carefully apply the drop of blood to the yellow test field on top of the strip without touching the test field directly with the finger. **Note:** The yellow test field must be completely covered with blood. If too little blood is applied, DO NOT rub it in or apply a second drop, but repeat the measurement with a fresh test strip.
7	Give the participant a cotton ball to press on the puncture.
8	Wait for the measurement to be displayed (after a series of beeps followed by longer beep).
9	Record the cholesterol results in the participant's Instrument and in the Biochemical Measurement Form (Step 3).

Note: For error messages, refer to instructions provided with the device.

Triglyceride Measurement (Expanded)

Introduction   Triglyceride tests may be taken to measure the levels of natural fats and oils in the bloodstream. High levels of triglycerides in the bloodstream are a risk factor for heart disease and stroke.

Equipment required   Dry chemistry equipment and supplies required for triglyceride measurements includes:

- Triglyceride measuring device (such as: Reflotron Single Channel meter, or Accutrend GCT)
- Test strips
- Sterile swabs
- Cotton balls
- Disposable container

Preparing the device   Follow the appropriate device instructions to set up, prepare and use the meter for triglyceride tests.

Triglyceride measurement procedure   Follow the steps below to take triglyceride measurements and record the results:

Step	Action
1	Remove a test strip.
2	Rub and kneed a fingertip to help withdraw blood (side of your finger closest to the thumb).
3	Wipe or swab the fingertip by using a sterile swab.
4	Lance the massaged place on the fingertip with lancing device.
5	Allow a hanging blood drop to form without applying too much pressure.
6	Carefully apply the drop of blood to the yellow test field on top of the strip without touching the test field directly with the finger. **Note:** The yellow test field must be completely covered with blood. If too little blood is applied, DO NOT rub it in or apply a second drop, but repeat the measurement with a fresh test strip.
7	Give the participant a cotton ball to press on the puncture.
8	Wait for the measurement to be displayed (after a series of beeps followed by longer beep).
9	Record the triglyceride results in the Participant's instrument and in the Biochemical Measurement Form (Step 3).

Section 6: Data Entry Guide

Overview

Introduction
This section provides general guidelines for data entry staff. The step by step data entry instructions and managing results are covered in Part 4 Section 2.

Intended audience
This section is designed for use by those fulfilling the following roles:

- Data entry team supervisor
- Data entry staff
- STEPS site coordinator

In this section
This section covers the following topics:

Topic	See Page
Using the Computer	3-6-3
Data Entry Process	3-6-5
Rules and Guidelines	3-6-7
Introduction to EpiData	3-6-8
Using EpiData for Data Entry	3-6-9

Overview

Introduction
Data entry staff play a key role in ensuring that data collected and recorded on the STEPS Instruments is accurately entered into the survey databases and all Instruments and associated tracking forms are systematically sorted and filed.

Note: Please tailor this training guide according to the level of the baseline knowledge of your data entry staff.

What you will learn
In this course, you will learn about:

- Using the computer
- The data entry process
- Rules and guidelines for data entry
- How to handle queries
- Data entry and data management
- Using EpiData software and the generic templates

Learning outcomes
The learning outcome of this course is accurate and efficient entry of STEPS survey data from the STEPS Instrument and forms.

Other data entry materials
This Guide is to be used in conjunction with the following Sections in the STEPS Surveillance Manual. These sections provide full instructional material on the following topics.

Topic	Part, Section
Preparing the Data Management Environment	Part 2, Section 4
Data Entry and Data Management	Part 4, Section 2
STEPS Instrument	Part 5

Using the Computer

Introduction To use the computer for data entry, and to be able to operate the data entry software, you need to know how to:

- Work safely
- Turn the computer on
- Open up the software you will be using
- Exit from the software
- Shut down the computer

Work safely Computers are electrical equipment and must be operated in a safe manner. Guidelines for safely operating your personal computer include:

Topic	Guideline
Water and dust	Ensure that at all times the location of your computer is dry and clean. Any moisture or build-up of dust can increase the chance of electric shocks that can damage you or your computer.
Ergonomics	Ensure that your chair and the immediate environment are ergonomically placed, that your neck and back especially are not twisted or strained while operating the machine.
Food and drinks	Keep food and drinks away from the computer. Drinks spilled onto the keyboard can damage under the keys.
Electrical storms	If electrical storms occur while operating the machines, it is safest for both you and the machine to switch them off and unplug them from the power source, in order to prevent electrical surges or spikes damaging the equipment.

Turning on the computer Follow the steps below to start using your computer:

Step	Description
1	Check the computer is plugged in at the wall and the environs seem safe before turning on the main switch for your computer.
2	When turned on, you will hear a whirring from the internal fan inside the box, and the screen should light up. Some screens have an additional switch which needs to be turned on.
3	Ensure that the CAPS LOCK light is **not lit.** If the light is on, press the CAPS LOCK key to **turn it off**.
4	If prompted, enter your user ID and password. The password will be assigned to you by your supervisor and must not be shared with others.
5	The screen will show the software that has been set up for you.

Using the Computer, Continued

Running your software packages

There will be several different software icons on the Desktop. You will be using EpiData for data entry and Excel to track the stage, location and comments from Instruments as you enter them.

To open EpiData double click on the EpiData icon.

Creating folders

To properly manage all the files on your computers it is important that the data entry staff understand how to create a folder on their computers. Follow the steps below to create a folder if you have a mouse that has two buttons:

Step	Action
1	Go to the desktop space on your computer (the main screen where all the icons sit).
2	Locate an empty space and right click on the mouse.
3	Select New and then Folder from the list.
4	Type the name of the new folder below the icon for the new folder.
5	To create a folder within the new folder open the folder complete steps 2-5.

Note: If your mouse does not have 2 buttons, you can create a new folder by opening Windows Explorer and selecting File, New, Folder from the menu options.

Caring for your computer

Occasional care of your computer may be necessary including:

- Wiping the keyboard and external surfaces of the box with a soft cloth (not damp or wet) when the power is off.
- Cleaning the screen surface with a lint and static free cloth..
- Vacuuming external vents to the computer box in dusty environments to reduce chances of dust-caused faults.

Closing down your computer

At the end of the day follow the steps below to safely turn off your computer:

Step	Action
1	Close EpiData and Excel.
2	Use the cursor to go to the lower left corner of the screen.
3	Select 'Start', then 'Turn off computer'.

Note: The machine may do some processing before shutting down. The screen should turn off and then the noises from the internal fan should cease as it closes down.

Data Entry Process

Introduction   Data entry is a systematic process that covers the following main stages:

- Receiving and logging
- Data entry
- Validation
- Error correction
- Filing

Overview of process   The table below shows each stage in the data entry process.

Step	Description
1	Completed STEPS Instruments received, logged and sorted by content.
2	STEPS Instrument data first keyed, using EpiData.
3	STEPS Instrument data second keyed, using EpiData.
4	Data checked by data management team supervisor.

Note: Each of the stages above are explained in detail in Part 4, Section 2.

Using several data entry operators   To complete the survey within the given timeframe it is recommended that a team of data entry staff work together. The team needs to be well supervised and managed to ensure:

- Each person completes a varied range of tasks each day
- Good workflow to keep up with completed STEPS Instruments and forms and keep to scheduled timeframes

Handling Instruments   Data Entry staff are responsible for sorting and managing the completed Instruments and forms received from the data collection team, and for filing them when data entry is complete.

Continued on next page

Data Entry Process, Continued

Overview of handling Instruments

Instruments need to be handled systematically to ensure good workflow, make sure all problems and queries have been resolved, and originals can be easily retrieved once completed. A system should be developed that covers each of the following stages:

Step	Description
1	Received and logged by supervisor.
2	Sorted and assigned to data entry computer.
3	Data entry member logs receipt of Instruments.
4	Data entry member tracks data entry process using the data entry tracking form.
5	Data locked away each night by supervisor.

Note: Each of these stages is described in detail in Part 4, Section 2.

Handling queries

All queries should be addressed to the data management team supervisor. When you have a query make sure you:

- Collect all necessary information about the query prior to contacting your supervisor.
- Log any decision about the query on the data entry tracking form.

Rules and Guidelines

Introduction   To ensure consistency, high quality of data entry and minimise delays some general rules need to be observed during the data entry process. The table below provides some general guidelines for the data management team.

Topic	Guideline
When to start entering data	Enter main study data as soon as possible after the start of data collection and as soon as small batches of completed Instruments are available. This helps minimize delays and maximise opportunities for checking and validating data.
Confidentiality	Keep all data and information confidential. This includes not leaving paper lying where people outside of the team can see them, not discussing results or participants with anyone other than necessary to process the data, and protecting computers and files.
Data entry	When prompted with this message "No Value Entered", check the Instrument and re-enter.
Blank spaces	Blank spaces on the STEPS Instrument should not be entered as '0' they should be entered with as many 9s as needed to fill the response field. (i.e. 9, 99, 999, etc.)
Special codes	Special codes have been allocated for use in STEPS to show the reasons data is unavailable. The codes include:

Codes	For response
7, 77 or 777	Don't know
8, 88 or 888	Out of Range response
9, 99 or 999	Missing values

Topic	Guideline
Second keying	Double-keying data is required for Step 1, 2 and 3 of the STEPS Instrument and tracking forms. This entails a second data entry person keying the data a second time, and the two compared, in order to detect and correct data entry errors.
Backup	Backup all data at the end of each day.

Note: The out of range response is only for the data entry staff and is to be used when the value that the interviewer recorded on the Instrument is not allowed by the data entry tool (e.g. The interviewer recorded 1000 for weight not 100 and 1000 is not allowed by the data entry tool).

Introduction to EpiData

Introduction EpiData is a programme for data entry and documentation of data. Although you do not need to be an expert in EpiData in order to use this programme, it is important that you can navigate the programme.

Opening EpiData To open EpiData or any templates associated with EpiData you need to open the EpiData programme. To open EpiData either:

Step	Action
1	Click on the EpiData icon on your desktop, or
2	Go to C:\Program Files\EpiData and click on EpiData.exe

Note: It is not possible to open an EpiData file directly from the template (.qes file). You must open EpiData by clicking the EpiData icon.

EpiData toolbars The opening screen of EpiData is blank and contains three different toolbars at the top.

The second toolbar is the one that is important for the exercises in this section. The second toolbar contains 6 different buttons. These buttons and their functions are described in the table below.

Button	Used to…
1. Define Data	Access the qes file and make changes to the look/content of the data entry templates
2. Make Data File	Creates data entry screen from the qes file.
3. Checks	Access the chk file and define the value ranges and skip patterns used during data entry.
4. Enter Data	Enter data. Use this during the testing phase after the modifications are complete.
5. Document	Print out a codebook to provide all the information associated with a template.
6. Export	Export data after data entry is complete.

Practical exercise If you would like further training on EpiData please refer to the practical exercise "Learning EpiData". This is available on either the CD or from the STEPS Geneva website www.who.int/chp/steps .

Using EpiData for Data Entry

EpiData templates

STEPS Geneva has created generic templates for data entry. The table below lists the templates.

Template	To record
Location	• District code • Country code • Centre/village name • Centre/village code • Interviewer Code • Date of interview
Tracking	• Centre/village code • Household ID • Participant and non participant age, sex and status • Consent status
Survey	• Core questions and measures for Step 1 and 2 (and may include Step 3) • Expanded or Optional questions.
Consent	Confidential (personal identification) data.
Biochemical	Step 3 measurements if recorded on a separate form.

Note: Further details on the databases with examples are provided in Part 2, Section 4.

Continued on next page

Using EpiData for Data Entry, Continued

Entering data   There are two aspects of EpiData that you need to be familiar with for data entry purposes. These are described in the table below.

Step of Data Entry	Action
1st keying of data (first data entry)	• Click on 'Enter Data'. • Select the correct rec file. (e.g. use survey.rec to enter Step 1-3).
2nd keying of data (duplicate data entry)	Follow instructions under Second Key Entry in EpiData in Part 4, Section 2.

EpiData training   Training in EpiData will occur during the Pilot test. For more information about the Pilot Test see Part 2, Section 3.

Recommended further reading   Further reading about data entry in EpiData may be found at the EpiData website www.epidata.dk

• Detailed information about the templates and template modification can be found in the EpiData guide for STEPS which is available on the CD and the STEPS website www.who.int/chp/steps

Section 7: Data Analyst Guide

Overview

Introduction   This section provides general guidelines for the data analysis team. It does not include data analysis instructions.

Intended audience   This section is designed for use by those fulfilling the following roles:

- Data analyst
- STEPS site coordinator
- Statistical adviser

In this section   This section covers the following topics:

Topic	See Page
General Information	3-7-3
Introduction to Epi Info	3-7-4

Overview

Introduction   The data analyst is responsible for :

- Creating the database
- Cleaning and weighting the data
- Producing the data book

What you will learn   In this course you will learn how to use Epi Info.

Learning outcomes   The learning outcome of this section is to be able to use the generic Epi Info code provided by the Geneva STEPS team to perform basic calculations needed to produce the data book, which is used for the fact sheet and site report.

Other data analyst materials   This guide is to be used in conjunction with the following sections in the STEPS surveillance manual. These sections provide full background detail and instructional material on the following topics.

Topic	Part, Section
Preparing the Sample	Part 2, Section 2
Data Analysis	Part 4, Section 3
Data book template	Part 6, Section 3D

General Information

Introduction   It is important that the data analyst has some background information on the STEPS survey as this may impact the way they analyse the data. This section details the general information that the analyst needs and also where they can find this information

Scope of survey   The scope of the survey should be available in the implementation plan. The STEPS coordinator will also have this information. Make sure the data analyst understands the scope of the survey so that the results of the analysis reflect the scope.

Sample method   It is essential that the analyst understands what sampling method was used for the STEPS survey. The weighting depends on the sampling method. The analyst should be familiar with the excel spreadsheet Interviewtracking.xls and the workbook STEPSSampling.xls.

The sampling information should already be documented and available for the analyst. If it is not documented consult the STEPS coordinator and make sure the information is documented right away. It is critical information and needs to be documented.

Assisting with fact sheet and site report   The data analyst may also assist the site coordinator with the fact sheet and site report. Liaise with the site coordinator to identify the data analyst's roles and responsibilities, see Part 4 Section 4 for more information.

Introduction to Epi Info

Introduction   Epi Info is the purpose built, free, public-domain software package that has been chosen for data analysis.

Programme functions   Epi Info can be used for many different functions including:

- Data entry
- Data analysis
- Creating maps
- Creating basic reports

STEPS only uses Epi Info for data analysis. This manual only explains how to perform data analysis in Epi Info.

Topics covered   The following topics are covered in this tour of Epi Info:

- Basic terminology
- Opening Epi Info and screen components
- Software settings and basic commands
- Creating a new or derived variable
- Displaying a variable
- Recoding a variable
- Displaying data in a graph
- Running saved programmes
- Saving and printing outputs

Note: If your site has significantly altered the STEPS Instrument you will not be able to use the generic code. Please contact the WHO Geneva STEPS team to help adapt the code.

Terminology   Some of the specific Epi Info terms used are described in the table below.

Term	Description
Command	Defined term for analysis that provides Epi Info with the appropriate syntax to perform desired analysis. (i.e. frequency or list).
Programme (.pgm)	Syntax files that are saved in a table within the database.
Project	The name of the actual database (mdb file). All the programmes and data are stored within the project.
Variable	Any characteristic or attribute that can be measured.

Introduction to Epi Info, *Continued*

To open Epi Info

To open Epi Info or any templates associated with Epi Info you need to open the Epi Info programme. To open Epi Info either:

Step	Action
1	Click on the Epi Info icon on your desktop.
2	Click the "Analyze Data" on the main screen.
3	If there is no desktop icon, go to C: \Epi Info and click on "analysis.exe" (to directly launch analysis component of programme).

Note: It is not possible to open Epi Info directly from the STEPS access database (mdb).

Screen Components

The analysis section of Epi Info has three main components divided into three screens as follows:

Screen	Function
Analysis (or Analysis tree)	Contains all the commands that can be used during analysis.
Analysis Output	Displays the results of a programme once it has been run.
Programme Editor	Displays the code of saved programmes and can be used to write new programmes.

Software Settings

Follow the steps below to set Epi Info to deal with complex sample estimates.

Step	Action
1	Go to "Analysis Commands".
2	Go to "Options".
3	Go to "Set".
4	Set "Yes" as "Yes".
5	Set "No" as "No".
6	Set "Missing" as "Missing".
7	Click all six next fields.
8	Set "Statistics" to "Advanced".
9	Don't click "Include missing".
10	Set "Process records" to "Normal".
11	Click "Save all".

Continued on next page

Introduction to Epi Info, Continued

Open a dataset   Follow the steps below to open a dataset.

Step	Action
1	Go to "Analysis Commands".
2	Click on "Read" to open the Read window.
3	Set the "Data format" to "Access 2000".
4	Click on "Change Project".
5	To find and select your dataset: • In "Data Source", click "Show all" • Click on the name of your dataset from those listed (it should be a .mdb file) • Click "Ok"

Note: The file path, number of records and date/time will be displayed in the output window.

Create a new or derived variable   Follow the steps below to create a new or derived variable (i.e. BMI)

Step	Action
1	Go to "Analysis Commands".
2	Go to "Define".
3	Type a new variable name (i.e. BMI), click "OK".
4	Go to "Assign".
5	Click on the field "Assign Variable" in the pull down menu on the newly defined variable (i.e. BMI).
6	Go to the pull down menu "Available Variable".
7	Choose variable for your syntax (e.g. weight).
8	Enter the formula (e.g. Weight/Height*Height), click "OK".

Display variable in analysis output   Follow the steps below to display a variable in the analysis output.

Step	Action
1	Go to "List".
2	Choose the variable name.
3	Click "OK".
4	A list of the chosen variables will be displayed in the Analysis output.

Continued on next page

Introduction to Epi Info, Continued

Recode variable   Follow the steps below to recode a variable (e.g. age to age group).

Step	Action
1	Go to "Analysis tree".
2	Go to "Recode".
3	From the menu "From" choose your original variable (ie. age).
4	From the menu "To" choose the new variable (ie. Agegroup).
5	Enter in "Value" and "To" the range of values you wish to recode (e.g.25 and 34).
6	Enter the "Recoded value" (ie.1).
7	Press enter to recode another range of values, or
8	Click "OK" when you have finished.

Note: Alternatively you can "Fill ranges", if the ranges are the same between values.

Plot variables   Follow the steps below to plot variables and display the data in a graph.

Step	Action
1	Go to "Analysis tree".
2	Go to "Statistics".
3	Go to "Graph".
4	Enter "Graph type" (ie. bar for binary or points to depict continuous variables).
5	Under "X axis - choose main variable" choose the variable you wish to display.
6	Under "Y axis" set "show value of" to "Count" and click "OK". A graph will be displayed (e.g. showing the distribution of continuous or binary values for the chosen variable in your sample).

Introduction to Epi Info, Continued

Run programmes   Follow the steps below to run a saved programme.

Step	Action
1	Go to "Analysis Commands".
2	Go to "User Defined Commands".
3	Go to "Saved Programs".
4	Open the file path to the saved programme, which might be included in your .mdb file.
5	Choose the programme.
6	Click "OK".

Note: Alternatively, if the programme was saved as textfile (.pgm), you could enter the path where the file is stored.

Save outputs   Follow the steps below to save the output in one file.

Step	Action
1	Go to "Analysis Commands".
2	Go to "Output".
3	Go to "Routeout".
4	Define or browse an output filename where your analysis is to be stored.
5	Click "Ok".

Print outputs   Follow the steps below to print outputs.

Step	Action
1	Go to "Analysis Commands".
2	Go to "Output".
3	Go to "Printout."
4	Click "Ok". The results will be printed.

Part 4: Conducting the Survey, Data Entry, Data Analysis and Reporting and Disseminating Results

Overview

In this Part   This Part covers the following topics

Topic	See Page
Section 1: Data Collection	4-1-1
Section 2: Data Entry & Data Management	4-2-1
Section 3: Data Analysis	4-3-1
Section 4: Reporting & Disseminating Results	4-4-1

Part 4: Conducting the Survey, Data Entry, Data Analysis and Reporting and Disseminating results

Section 1: Data Collection

Overview

Introduction   This section covers all the tasks that need to be undertaken to:

- Supervise data collection
- Track participation
- Approach the selected households
- Obtain consent
- Conduct the interviews
- Take the measurements
- Record the data collected

Intended audience   This section is designed for use by those fulfilling the following roles:

- Data collection team supervisor
- Data collection staff
- STEPS site coordinator

Tasks and timeframes   The chart below shows the main tasks and timelines covered this section.

Task Name	Duration	Month 2	Month 3	Month 4	Month 5
Approach selected households	4 wks		▬▬▬		
Obtain consent	4 wks		▬▬▬		
Conduct survey	8 wks		▬▬▬▬▬		

In this section   This section covers the following topics:

Topic	See Page
Supervising Data Collection	4-1-2
Data Collection Process	4-1-5
Interviewer Tasks	4-1-6
Approaching Selected Households and Participants	4-1-7
Obtaining Consent	4-1-11
Scheduling Clinic Visits for Step 3 Measurements	4-1-12
Completing the Interview Tracking Form	4-1-13
Recording Information	4-1-15

Supervising Data Collection

Introduction   Members of the data collection team may have different levels of skills, experience and varying strengths and abilities. To ensure high standards of data collection, appoint one or more person to lead and supervise the data collection team(s) is necessary

Core tasks   The core tasks of a data collection team supervisor are provided in the checklist below. General roles are identified in Part 1, Section 2.

Tasks	Description	✔
1	Train data collection team staff.	
2	Obtain lists of the selected sample and maps for each area.	
3	Set up a tracking system for data collection teams and participants.	
4	Provide data analysts with summary sheets showing, for each cluster and stratum, details of interviews completed, non-response, etc.	
5	Make travel arrangements for data collection teams.	
6	Contact local authorities.	
7	Obtain and distribute forms and supplies to interviewers.	
8	Supervise data collection.	
9	Supervise human resources.	
10	Provide progress updates to the STEPS site coordinator and / or the STEPS coordination committee.	
11	Provide feedback.	

Note: Tasks 1-5 are further described below.

Train staff   Train the data collection team staff in:

- Interview technique
- Approaching households
- Conducting interviews for Step 1
- Taking measurements for Step 2
- Completing the Instruments
- Using the forms and available tools

Note: Details on training are discussed in Part 3 Section 2-5.

Continued on next page

Supervising Data Collection, Continued

Tracking systems

Use the interview tracking form available in Part 6, Section 2, to track household and participant response information on a daily basis. Collect the forms on a regular basis and give to the data entry team supervisor.

For other details not included on these forms, set up a log book.

Creating codes for variables

You will need to set up logical, workable codes as shown in the following table.

The codes are restricted to the values presented in this table.

Variable	Code Type	Value Range
Participant ID	Numeric	1-999999
Centre/Village code	Numeric	1-999
Data collection teams	Alpha	A-Z
Household number	Numeric	1-999
Interviewer code	Numeric	1-666
Technician code	Numeric	1-666
Device ID	Numeric	1-666

Note: Do not mix alpha and numeric codes in one ID code, because the data entry templates cannot read these.

Assign interview teams locations

Create a list of the areas to be surveyed and assign data collection teams to each location. When assigning locations:

• schedule interview teams to survey one location before moving to another,
• schedule time to revisit each location to finish interviews,
• keep a record of all interviewers that need transport and schedule the transport, and
• keep track of which locations were visited by which interview team.

Contact local authorities

The data collection team supervisor will need to contact appropriate local authorities to inform them about the survey and gain their support and cooperation.

Supervising Data Collection, Continued

Obtain and distribute forms

Ensure there are sufficient quantities of the finalised and printed Instruments, interview tracking forms, and all necessary forms and STEPS tools required for the interviewers to use.

Distribute to each interviewer all the forms and equipment required prior to interviewers going into the field.

Supervise data collection

To ensure high-quality data collection, the supervisor will need to observe a certain proportion of the interviews conducted by each interviewer, particularly at the beginning of the data collection period.

The proportion may vary depending on the interviewers experience, the timeframe and the budget involved.

The supervisors should also check that each Instrument has been completed properly.

Ensure all Instruments and other forms are accounted for and in order before sending them to the STEPS office for data entry.

Manage Human Resources

Manage and support the data collection team to ensure :

- Good quality interviews are conducted and Instruments are complete
- Interview timeframes are adhered to
- Interviewers are supported if participant issues arise
- Performance issues are dealt with appropriately
- Confidentiality of all STEPS surveillance material is respected at all times
- Feedback is provided to data collection staff
- Sick leave and annual leave is appropriately covered

Progress reports

During the data collection stage, you will need to provide regular updates to the STEPS site coordinator and /or the coordination committee. This should include:

- Updates on progress against scheduled data collection timeframes
- Issues and problems encountered

Feedback

When data collection is completed, get together with the data collection teams to debrief and gain valuable feedback. This will be useful for processing and analysing the data and for revising the Instrument and manuals for the next round of STEPS surveillance.

Data Collection Process

Introduction Data collection starts in the field only when the actual planning of the STEPS survey has been done. Each of the stages for data collection need to be undertaken appropriately to ensure accurate data is being collected.

Process Data collection covers the following stages:

Stage	Description
1	Approaching selected households and recording result on the interview tracking form.
2	Obtaining participant consent.
3	Recording eligible participants' details.
4	Conducting interviews and recording results for Step 1 (core and expanded).
5	Taking physical measurements and recording results for Step 2 (core and expanded).
6	Taking biochemical measurements and recording results for Step 3 (if required).

What you will need The forms and resources you may need for data collection are listed in the following checklist:

For Step			Form	✔
1	2		Notification of WHO STEPS surveillance visit.	
1	2		Name tags for interviewers.	
1	2		Map or list of households in sample.	
1	2	3	Participant information form.	
1	2		Kish household coversheet and Kish household list (if appropriate).	
1	2		Consent form 1.	
		3	Consent form 2.	
1	2		Interview tracking form.	
1	2	3	STEPS Instrument.	
1	2	3	Question by question guide.	
1	2		Show cards.	
		3	Clinic appointment card (with map if necessary).	
		3	Fasting instructions.	
		3	Clinic registration form.	
		3	Blood collection form.	
		3	Biochemical measurement form.	

Interviewer Tasks

Introduction   Interviewers have a key role to play in the STEPS surveillance process. The quality of the data collected and therefore the available results depends on successful interviews.

Interviewer summary task list   An overview of the *tasks* of an interviewer are included in the following checklist:

Task	Description	✓
1	Door knock selected households.	
2	Record household details on interview tracking form.	
3	Brief household members on purpose of the survey.	
4	Record names of all eligible participants on the Kish household Coversheet.	
5	Select participants for Step 3 (if applicable).	
6	Obtain participant consent and enrol participants.	
7	Conduct interviews and record results for Step 1.	
8	Make primary check of completed Step 1 questions.	
9	Take measurements and record results for Step 2 (if applicable).	
10	Make primary check of completed Step 2 questions.	
11	Make appointments for Step 3 (if applicable).	
12	Collect all necessary forms from members of each household.	
13	Check all completed forms and hand to supervisor.	
14	Report any difficulties to supervisor.	

Note: Each of these tasks is described in more detail in Part 4, Section 1, and Part 3, Sections 3, 4 and 5.

Approaching Selected Households and Participants

Introduction   For Step 1 and Step 2 of the Instrument, you will need to physically visit individual households to conduct the survey.

Contact process   See the table below for an overview of the contact process.

Stage	Description
1	Obtaining appointment lists, households with associated addresses (and map if necessary) from your supervisor.
2	Physically knocking on the door.
3	Recording on the interview tracking form if no one is home
4	Introducing yourself & exchange greetings.
5	Explaining the reason for your visit and purpose of the STEPS surveillance.
6	Explaining the method of collecting the information, the STEPS surveillance process, what participation involves and the timeframe.
7	Recording each person living in the house between the ages of 25-64 on the Kish household coversheet.
8	Selecting household participant using the Kish household Coversheet (unless pre-selected) in Step 1, 2 & / or 3 (if applicable).
9	Obtaining verbal and written consent from each person.

Note: Each of these stages is described in more detail below.

Door knocking procedure   Contact attempts must be made by actually knocking on the door of the household, simply walking by and thinking that no one is at home cannot be counted as an attempted contact.

Use the following table to help with different situations when you knock on the door.

If…	Then…
Someone is at home	Speak to the first adult you encounter in the household.
No-one answers the door-knock	Look round side of house to see if someone is nearby.
No one is at home	Leave a notification of WHO STEPS surveillance visit and record details in the interview tracking form (see below how to complete this form).
Household members are not available at the time of the first visit.	Make at least 2 different visits to obtain an interview. Choose times that are different – early morning or late afternoon.

Approaching Selected Households and Participants, Continued

Recording household details

Record if anyone is home and the date and time of the visit on the interview tracking form. See "Completing the interview tracking form" on page 4-1-13 below.

Introducing yourself

Make sure your name tag is attached and clearly visible.

Introduce yourself and explain the reason for your visit as follows:

> My name is _____ and this is_____. We are employees of the <Ministry of Health>and we are working in a team to conduct a survey on health issues. We are hoping that the people in this house will participate in this survey. We would like to find out the number of people usually residing in this house between the ages of 25-64. Can you please give me the first name of those who usually live in this house between the ages 25-64 (starting, for example, with the oldest male)?

Explaining purpose of the survey

Explain that the purpose of this study is to determine the extent of chronic noncommunicable diseases (i.e. long-standing diseases not caused by infections) major risk factors in your country. These risk factors include:

- Tobacco use
- Alcohol consumption
- Low intake of fruit and vegetable
- Physical inactivity
- Obesity
- Raised blood pressure
- Raised fasting blood glucose
- High levels of fat in the blood

Explain that once the study data has been collected and analysed, this will help your health services plan and determine public health priorities to:

- prevent chronic disease epidemics before they occur, and
- monitor and evaluate population-wide chronic disease programmes.

Continued on next page

Approaching Selected Households and Participants, Continued

Explaining collection method

Explain that you will collect information from a number of preselected participants throughout the country. Explain how data will be collected, as appropriate, i.e. through:

- Interview questions (Step 1)
- Measurements of height, weight, waist, and blood pressure (Step 2)
- Blood tests for sugar and fats (Step 3)

Explaining survey process

Use the table below to help run through the whole survey process to participants:

Stage	Description
1	Explanation of the purpose of the study and its importance.
2	Response to any questions.
3	Completion of the consent form.
4	Step 1, asking questions about each participant's: • Age • Education • Employment (if appropriate) • Income (if appropriate) • Tobacco and alcohol use • Fruit and vegetable intake • Physical activity • Knowledge and history of high blood pressure and diabetes (if appropriate)
5	Step 2, taking the following measurements: • Height • Weight • Waist circumference • Blood pressure • Hip circumference (if appropriate) • Heart rate (if appropriate)
6	Step 3 (if appropriate), taking a small amount of blood from a prick on your finger or a vein in your arm*. ***Note**: This may cause some mild pain

Continued on next page

Approaching Selected Households and Participants, Continued

Survey timeframe

It is estimated that each part (ie, Step 1, Step 2 and then, Step 3) of the survey will take approximately the following timeframes.

Step	Timeframe
1	30 minutes
2	30 to 45 minutes
3	5 minutes

Items to explain to participants

Use the table below to help explain to each participant the benefits, their rights and how confidentiality will be handled.

In terms of…	You will need to explain to each participant that…
Community benefits	The results of this study will be used to assist the Ministry of Health develop public health programmes that target efforts to lower the risk factors that lead to chronic diseases.
Individual rights	They may: • Decline to take part in the study • Withdraw their consent at any time • Not answer any questions in the interview that they do not wish to answer.
Confidentiality	• They must provide their name and contact information so they can be contacted if there is any problem following the analysis of the information and follow-up is necessary. • Participation and data provided will be completely confidential. • While the data from this study may be sent elsewhere for analysis, no personally identifiable information will be provided for this analysis. • Their name and their household or village will not be used in any report of the study.

Record each person

For each eligible person in the household record the following details on the Kish household coversheeet (See Part 6, Section 2):

• Name given
• Sex
• Age group

Part 4: Conducting the Survey, Data Entry, Data Analysis, and Reporting and Disseminating Results
Section 1: Data Collection

4-1-10

WHO STEPS Surveillance

Obtaining Consent

Introduction   Each participant must provide both verbal and written consent before taking part in the survey.

Obtain consent   For those who will take part in the study, follow the steps below to obtain verbal and written consent.

Step	Action
1	Use the following table to select the appropriate consent form for each person taking part: <table><tr><td>**In…**</td><td>**Then use Consent Form…**</td></tr><tr><td>Step 1 only</td><td>1</td></tr><tr><td>Step 1 and 2 only</td><td>1</td></tr><tr><td>Step 1, 2 and 3</td><td>2</td></tr></table> **Note:** See Part 6, Section 2 for suggested drafts of consent forms.
2	For each participant, use two copies of the consent forms as follows: • One for the participant to keep • One for the STEPS coordination office.
3	Allow the participant to read the consent form or, in case of poor eyesight or illiteracy read it out to them.
4	Use the table below to help with the following situations: <table><tr><td>**If…**</td><td>**Then...**</td></tr><tr><td>The intended participant answers NO to any question in the consent form</td><td>Ask the participant whether he/she understands the questions.</td></tr><tr><td>The participant does not understand the question</td><td>Rephrase the question.</td></tr><tr><td>The participant understands the question and the answer is still NO</td><td>Circle NO in the consent form* and record age and sex as best you can.</td></tr></table> *This means that the household member will not participate in the survey, you must still include him/her in the interview tracking form, then move to the next selected household.
5	Get the participant to sign both copies.
6	As interviewer, you must sign as a witness.
7	Thank him/her for agreeing to take part in the survey.

Scheduling Clinic Visits for Step 3 Measurements

Scheduling Step 3 measurements   If your site plans to take biochemical measurements for Step 3, you will need to schedule those that have been selected to visit the clinic for tests.

Scheduling   Follow the steps below to schedule and brief participants:

Step	Action
1	Ask the participant the day and time they would like to come in to the clinic or designated place for blood tests (Step 3) using the times assigned to your team.
2	If necessary, provide a map showing the venue.
3	Record the time in the appropriate box on the interview tracking form.
4	Provide a copy of the Fasting Instructions and explain the importance of fasting properly.
5	Remind the participant to bring to the clinic their own copy of the signed consent form as a means of identification.
6	In cases where participants need transportation to the clinic or place, make the arrangement and inform your supervisor.

Completing the Interview Tracking Form

Introduction

You need to record every household visited on the interview tracking form.

For a copy of the interview tracking form, see Part 6, Section 2.

Purpose of Interview Tracking Form

The purpose of a interview tracking form is to document and be able to report on:

- Number of households visited
- Number of eligible individuals in each household
- Participant ID
- If the Participant was at home on either the 1st or 2nd visit
- Age group and sex of the participant
- Participant eligibility for Step 1, Step 2, and Step 3 and if they consented or declined each step
- Appointment date and time for a scheduled interview
- Individual comments

Note: The interview tracking form is used during analysis. If this form is not used, you will not be able to apply weights to your data and you will not be able to calculate response proportions.

Completion guidelines

Depending on the sample design the interview tracking form may already be partially completed. If it is not completed use the following table for guidance.

Column	Guidelines for completion
Centre (Village/Cluster) Number	ID code associated with the cluster. Separate forms need to be used for different clusters.
Technician ID	ID code associated with technician for step 2 and 3.
Household Number	Use the predetermined codes, see page 4-1-3.
Number eligible in household	Record the number of eligible people (aged 25 to 64) in the household.
Participant ID	Mark the participant ID that is written on the Instrument to be used. Participant IDs are only given for participants who have consented.
At home (visit 1 and visit 2)	• If someone is at home, then mark "Y". • If no one is home, then mark "N".
Male by age group	Mark an "X" if the participant is male in the age group that matches his age.

Continued on next page

Completing the Interview Tracking Form, Continued

Completion guidelines (continued)

Column	Guidelines for completion
Female by age group	Mark an "X" if the participant is female in the age group that matches her age.
Step 1 (Eligible, Yes, Decline)	• Mark an "X" if they are eligible for the Step. • Mark an "X" if they consent to the interview (yes column). • Mark an "X" if they decline.
Step 2 (Eligible, Yes, Decline)	• Mark an "X" if they are eligible for the Step. • Mark an "X" if they consent to the physical measurements (yes column). • Mark an "X" if they decline.
Step 3 (Eligible, Yes, Decline)	• Mark an "X" if they are eligible for the Step. • Mark an "X" if they consent to the biochemical measurements (yes column). • Mark an "X" if they decline.
Appointment Time	If you schedule an appointment with a participant, record the date and time here.
Individual Comment	Free area for interviewers to record comments. Some reasons to use this field may be that the participant: • Has a communication problem (e.g. speaks Chinese only, has hearing impairment) • Refuses to consider participation • Is ill, cannot obtain consent • Has a disability • Cannot miss work • Refuses to take part in Step 3 (e.g. is afraid of needles or has cultural/religious preference not to provide blood), etc.

Note: If you altered the age range of your survey you will need to reflect those changes on the interview tracking form (for example if you sample 15-24 year olds you will need to add 2 other columns to the tracking form).

Recording Information

Introduction   All results that are recorded on the STEPS Instrument must be written as clearly as possible to avoid ambiguity and confusion when checking and entering the results.

Requirements   Some general requirements for recording survey information are as follows:

- Use a pencil, not a pen for writing
- Record the identification number on each Instrument
- Do not erase any notes made
- If a question has been skipped by mistake, correct it
- If a participant changes his/her mind on one of the options, record the new answer
- Record only answers that are relevant to the survey
- Record comments or explanations in brackets in the Instrument next to the corresponding question
- Don't get too absorbed recording. Keep the participant's interest by saying the participant's response aloud as you write it down
- Reach an agreement on how to write numbers (mainly 1s and 7s)

Handling issues   Use the table below to help with some common issues you may encounter.

If…	Then…
You are uncertain about a response	Repeat the question and record the answer exactly. Do not paraphrase a response.
A question doesn't apply or the participant doesn't know and these options are not available on the Instrument	• For "don't know" record: 7, 77, or 777 (depending on number of boxes). • For "not applicable" record 8, 88 or 888 (depending on number of boxes).
You have missed a question	Go back and ask the question, making a note in the margin that the question was asked out of sequence.
Missing data is not discovered until after the interview	If possible, re-contact the participant and ask the question. Note in the margin that the question was asked out of sequence. If not possible, for example the team has moved on from the village, then write in the skip column "missed".
The participant refuses to answer a question	Mark as a "8, 88 or 888". **Note:** Before accepting a refusal explain the objective of the question to the participant.

Continued on next page

Recording Information, Continued

Checking and editing

Before leaving the household or the clinic setting, check the Instrument and make sure that:

- All the questions have been answered and all the measurements have been taken (if applicable)
- The information recorded is clear and legible for others to read
- Probing comments are indicated
- All the information has been completed including the Participant Identification Number on every page

Section 2: Data Entry and Data Management

Overview

Introduction

This section covers all the tasks that need to be conducted to enter the STEPS surveillance data as recorded on the STEPS Instrument and check and correct data errors.

Intended audience

This section is designed for use by those fulfilling the following roles:

- Data management team supervisor
- Data management staff
- STEPS site coordinator
- Data analyst

Tasks and timeframes

The chart below shows the main tasks and timelines covered this section.

Task Name	Duration	Month 2	Month 3	Month 4	Month 5
Enter data (1st and 2nd key entry)	8 wks				
Check and clean data	8 wks				
Merge data	1 day				

In this section

This section covers the following topics:

Topic	See Page
Supervising Data Entry	4-2-2
Data Entry	4-2-7
Checking and Correcting Inconsistent Data	4-2-11
Backup and Filing	4-2-14
Reporting	4-2-15
Creating the Final Dataset	4-2-16

Supervising Data Entry

Introduction   Members of the data management team may have different levels of skills, experience and varying strengths and abilities. To ensure high standards in this environment, the appointment of one person to lead the team and supervise the work is necessary.

Core tasks   The core tasks of a data management team supervisor are listed in the table below. General roles are identified in Part 1, Section 2.

Tasks	Description
1	Train data management team staff in daily operations.
2	Receive and log Instruments from data collection team.
3	Assign data entry staff to computers and Instrument components for data entry.
4	Create folders with coversheets to track and manage entry of Instrument data.
5	Distribute and manage folders on a daily basis.
6	Check and correct data entry anomalies and review consistency reports.
7	Regularly liaise with data collection team supervisors.
8	Supervise human resources and hold regular team meetings.
9	Supervise technical requirements including: • Daily backup of data on each computer. • Regular virus scanning and virus software updates. • Software support.
10	Provide regular progress and budget updates to the STEPS site coordinator and / or the STEPS coordination committee.
11	Create final data set.

Note: Tasks 1-8 are further described below. Task 11 is described on page 4-2-16 below.

Training   For more information on training data management staff, please see Part 3, Section 6.

Supervising Data Entry, Continued

Receive and log Instruments

At the end of each day, data collection team supervisors should supply all completed instruments to the STEPS office. The data management team supervisor should receive and log them as follows:

Step	Action
1	Log receipt of instruments on the data entry log.xls.
2	Detach the first page of the Instrument.
3	Cut the first page of the Instrument along the scissor mark and place the following two parts in separate boxes or piles. • Location and date • Consent, interview language and name
4	Place the remaining parts of the Instrument in a separate box or pile.

Assign computers and staff

Set up the data entry computers and assign staff so that:

• The first two parts of the Instrument (first page cut in half) are entered into location.rec and consent.rec.
• The interview tracking form information is entered into interviewtracking.xls.
• The main Instrument data (ie Step 1, Step 2 and Step 3) are entered into survey.rec.
• Different data entry staff are assigned to conduct first key and second key entries.

Create folders (or boxes)

For each data entry computer, prepare three folders (or boxes), each with a coversheet (see coversheet template Part 6, Section 2) for Instrument sections at different stages of data entry as follows:

Folder	For Instrument data that…	Folder name
1	Is not yet entered.	1st key
2	Has been first key entered.	2nd key
3	Has been second key entered.	Completed

Note: Once folders have been assigned to a computer for data entry, they should remain with that computer.

Supervising Data Entry, Continued

Distribute and manage folders

Follow the steps below to distribute and manage the folders on a daily basis.

Step	Action
1	Each morning give data entry staff their computer folders and a pile of instruments to enter from your general folders/boxes. **Note:** We suggest 30-40 Step 1, 2 and 3 (if applicable) per staff or as many as can be realistically entered by one person in one day.
2	Log distribution of new Instruments in the data entry log.
3	At the end of each day collect all folders from each data entry staff, check that the coversheet is attached and labelled and lock these away.

Check and correct anomalies

Check and handle all data entry errors and corrections by:

- Making decisions on alterations to data entries where necessary
- Using the data entry tracking form (see in Part 6, Section 2) to record all ambiguous or unclear data entry results, questions and problems
- Clearly annotating original forms for an audit trail
- Referring to data collection staff where necessary
- Creating a list of potential problems and frequently asked questions (FAQs)
- Working with data analyst (where appropriate) to systematically work through data anomalies

Consistency report

Produce weekly consistency reports for each data entry computer and review them to detect problematic data. Steps on producing a consistency report are provided on page 4-2-11.

Follow the steps below to review consistency reports.

Step	Action
1	Read and review consistency reports and highlight any anomalies.
2	Select one computer to begin investigating (e.g computer A)

Supervising Data Entry, Continued

Consistency report (continued)

Step	Action
3	Using the data entry tracking form, retrieve and review all original material.

If the error is…	Then…
From 1st keying.	Get data entry staff to mark error on data entry tracking form.
From 2nd keying.	• Report back to data entry staff. • Mark on data entry tracking form • Correct error.
From data collection and is on the Instrument.	• Mark on data entry tracking form. • Report back to data collection team supervisor.

Step	Action
4	After investigation, return the original material to the appropriate storage place.
5	Repeat steps 2-4 until the consistency reports from all computers have been reviewed

Liaise with data collection team

Once data entry has started, you should have regular discussions with the data collection team supervisors to provide feedback on:

- Data quality
- Workflow and receipt of Instruments
- Issues and anomalies that may arise, etc.

See page 4-2-15 for further details on reporting back to the data collection team supervisor.

Manage human resources

Manage and support the data entry team to ensure :

- Good workflow
- High quality of data entry
- High level of cooperation between team members
- Daily tasks for each team member are varied so they are not sitting at a machine all day
- Different data entry operators are scheduled for first and second key entry
- Performance issues are dealt with appropriately
- Confidentiality of all STEPS surveillance material is respected at all times
- Feedback is provided to Data management staff
- Sick leave and annual leave is appropriately covered

Supervising Data Entry, Continued

Team meetings

Schedule weekly meetings to discuss the data entry process and report results to the data collection team. These meetings should be used to:

- Discuss problems with data entry team
- Collect and review data entry tracking forms
- Collect and review consistency reports
- Discuss progress with data entry team

Data Entry

Introduction	STEPS survey data on the completed instruments is to be entered by trained data entry staff into a series of predefined data entry templates using EpiData.

EpiData templates

For Step 1, 2 and 3* you will need to use the following data entry templates:

- Location
- Consent
- Survey
- Biochemical

* If Step 3 results are recorded on different forms to the main STEPS Instrument, then the biochemical template will need to be used. Otherwise, biochemical results are entered into the main survey database.

Excel template

The interview tracking form is entered into excel. The excel spreadsheet is titled interviewtracking.xls, see 2-4-11 for downloading information.

Note: The excel spreadsheet should not be modified because it will be imported into your database and used to calculate the non response weight for your data. There are automated programs that will do this for you. If you alter the excel spreadsheet you will not be able to use the programs.

Data entry process

Data entry is a systematic process that covers the following main stages:

Stage	Description
1	Receiving, logging and tracking.
2	First key data entry.
3	Second key data entry.
4	Validation and error correction.
5	Backing up.
6	Storing and filing the Instruments.

Receiving, logging and tracking

The data management team supervisor will log all received Instruments on a daily basis and distribute these in a folder with a coversheet to data entry staff. See page 4-2-3 for further details.

Once you start entering data, you will need to keep the coversheet and data entry tracking form (Excel spreadsheet) updated to track each stage of completion and any errors or problems that arise.

Continued on next page

Data Entry, Continued

First key entry in EpiData

Follow the steps below to first key data entry.

Step	Action
1	Open the EpiData programme by double clicking the icon on the desktop.
2	Click on "Enter Data".
3	Open the appropriate EpiData template (e.g. Survey) from the C:/STEPS/data folder.
4	Beginning with the Participant Identification Number (PID) at the top of the STEPS Instrument, enter data into the database **exactly** as it is written. **Note:** Missing values are not allowed for the following items: • PID (Participant Identification Number) • I1 (District code) • I3 (Centre/Village code) • I5 (Date of completion of Instrument) • C1 (Sex) • C2 or C3 (Age)
5	Log all discrepancies, questions and problems (irregularities) that you cannot resolve into the data entry tracking form. Include: • PID number • Code (general identifier for a question, e.g. T1, P5…) • Comment
6	When you have completed entering the data from your section of the Instrument, move the paper copy to the "second key" folder and update the data entry tracking form.
7	Continue entering the instruments and repeat steps 5-6.
8	At the end of the day, give the folders to the supervisor to lock up.

Note: Make sure you use the 'TAB' button to move between fields on the data entry screen. This activates the check code.

Continued on next page

Data Entry, Continued

Prepare for and second key entry

Second key data entry is also conducted in EpiData. Use a different data entry operator to that used for the first key entry, but make sure the data folders match the assigned computers.

Follow the steps below to:

- prepare for second keying,
- set up double entry verification, and
- second key data entry.

Step	Action
1	Open the EpiData programme by double clicking the icon on the desktop.
2	Select Tools, Prepare Double Entry Verification.
3	Select the original file (.rec) that needs to be second keyed.
4	Modify the 'Create Data File' text box by clicking 'match records by field' under the options box (lower left corner).
5	Double click 'id' when the 'Select key-field' box appears, then Click 'Ok'.
6	Click 'Ok' when the 'Information' box appears. Take note of the bottom half of the text box, it provides the new .rec file for the second keying. This name should be a duplicate of the original file with _dbl.rec attached to it.
7	Click '4. Enter Data'.
8	Repeat steps 1-6 from the first keying table for the second keying.
9	If a value entered does not match with the first keying, follow the guidelines below.
10	Move completed Instruments to the 'Completed folder'.

Note: Make sure you use the 'TAB' button to move between fields on the data entry screen. This activates the second keying comparisons.

Validation and error correction

During second keying if there are any discrepancies between the data from the first keying and data from the second keying the data entry programme will immediately highlight the data that does not match. Follow the guidelines below on what to do when discrepancies arise.

If…	Then…	By…
An error is found in the **second keying.**	Correct the error and continue.	Clicking '3. original' on data entry screen.
An error is found in the **first keying** and is a minor typing error.	Correct the error and continue.	Clicking '2. New' on data entry screen.

Data Entry, Continued

Validation and error correction (continued)

If…	Then…	By…
Neither the **first** nor **second keying** is correct.	Correct the error and continue.	Clicking '1. edit' on data entry screen.
You are not sure which the correct interpretation of the participant's response is.	Notify the supervisor and log any decision in the data entry tracking form.	

Backing up data

Every computer should be backup up at the end of each day. It is the responsibility of the data entry team member to back up the computer they used. For more detailed information on backing up the computers see page 4-2-14 below.

Storing and filing the Instruments

At the end of each day all folders should be placed in a secure location. For more detailed information on filing see page 4-2-14.

Checking and Correcting Inconsistent Data

Introduction   At the end of each week, each data entry team member should run a consistency report of the survey template content to check the data for:

- Skip errors
- Missed answers, unclear writing, loose or lost pages
- Surplus data
- Problematic IDs

Consistency Report   In EpiData there is a consistency check file that searches for problematic data and provides the personal identification number (PID) for each record that fails the check.   Follow the steps below to create a consistency report.

Step	Action
1	Open EpiData.
2	Select Document, Consistency Checks.
3	Select survey.rec for 'data file to check'.
4	Select consistency.chk for the 'file containing checks'.
5	Click 'Ok'.
6	Save report under C:/STEPS/data/reports and use the current date as the file name.
7	Print report for data management team supervisor.

Note: The consistency report does not provide information on data outliers. Data outliers are addressed in the analysis section in Part 4, Section 3.

Instrument not correctly filled out   The data entry protocols and guidelines will not work if the Instrument is not filled out correctly by the data collection team. If you come across an Instrument that is not correctly filled out, immediately consult your supervisor.

(For example: The participant replies that he/she does not currently smoke but then provides values for how many cigarettes they smoke each day.)

Skip errors   Skip errors will generally not be a problem because the EpiData template has been designed to hide fields that should be skipped based on individual responses to the questions on the Instrument.

Continued on next page

Checking and Correcting Inconsistent Data, Continued

Missing data   Some questions may be blank. Follow the guidelines below to handle missing data:

If…	Then…
Data is missing in any field.	Enter 9, 99, 999 accordingly.
Complete date of birth or age is not provided.	Enter 9, 99, 999 or enter what is given. If any date is available, it will usually be the year.
Year of birth (only) is provided	• Calculate the estimated age of participant (survey year - birth year) and enter into age. • Log calculation in data entry tracking form.

Note: Do not record missing data details in the data entry tracking form.

Surplus data   Follow the guidelines below if you come across data that you do not know what to do with because there is nowhere to enter it.

If…	Then...
Numbers are entered with halves (e.g. 7 ½).	Enter the 7 and ignore the ½.

IDs crossed out   If you come across a form where the PID has been crossed out and another has been written in pen, then:

- skip the entire form and start entering a new one,
- record both PIDs in the data entry tracking form and note if you entered any data,
- contact your supervisor.

Note: Data with problematic PIDs cannot be used during data analysis

Out of Range   If an Instrument contains a value that is not possible, such as 1000 for weight instead of 100, the value needs to be coded as out of range. The data entry tool will not allow an implausible value to be entered. The code for out of range is either 9, 99, 999…

Continued on next page

Checking and Correcting Inconsistent Data, Continued

Other problems   You may come across situations that are not easy to resolve. Follow the guidelines below in these situations:

If…	Then…
There is no obvious way to deal with them, and no one is around to ask.	• Do not process the form. • Skip and go on to the next one. • Record the PID number and nature of the problem. • Consult the supervisor.
You saved your editing and left out a necessary change.	• Record the PID number. • Record the EpiData record number (bottom left of the EpiData screen in the data entry mode).

Backup and Filing

Introduction   All files associated with the STEPS surveillance need to be properly filed and all electronic data backed up on a daily basis to avoid data loss.

Filing completed STEPS Instruments   At the end of each day of data entry, all the Instruments that have been entered need to be filed in the appropriate folders (first keying, second keying, completed) designated for each computer.

All data that has not been entered needs to be returned to the supervisor to be stored in the collective folders.

Backup   At the end of each day of data entry you must backup all your data files. This is to avoid data loss. Follow the steps below to back up the files electronically using Epi Data:

Step	Action
1	Select 'Data in/out', 'Backup'.
2	Select a .rec file that was used during the day for the "data file to backup" field.
3	Type ' D:\STEPS' in "destination directory" (or name of backup directory, see Part 2, Section 3).
4	Click 'Ok'.
5	Repeat steps 1-4 until all .rec files used have been backed up.

Note: Electronically backing up the data should be enough, however if your computers are not in a safe environment and you need to have another copy offsite, create a copy of the main STEPS folder for each machine on a disk once a week.

Archiving   For details on archiving all STEPS surveillance files, please see Part 6, Section 4.

Reporting

Introduction   The data management team supervisor should regularly liaise with and report progress and issues to the:

- Data collection team supervisors
- STEPS site coordinator
- STEPS coordinating committee

What to report to whom   Use the table below for guidance on what to report to whom.

What to report	To whom	When
• Inconsistencies in the data. • The consistency report is problematic. • Data collection timeframes not being met.	Data collection team supervisors.	At least weekly.
• Progress. • Issues that need resolving. • Budget and timeframe updates.	STEPS site coordinator.	Weekly.
• Progress and budget updates.	Coordinating committee.	Monthly.

Creating the Final Dataset

Introduction   Once all the survey data have been entered twice and checked on each computer, all the files used on each computer need to be combined into a single dataset (except the consent information) so the data can be analysed.

In EpiData this process is called appending and merging.

Requirements   This process should be conducted:

- By the supervisor (or a single senior staff member)
- On the Master computer
- After all data has been backed up

Process   The appending and merging process includes the following stages:

Stage	Description
1	Performing a record count for each .rec file on each data entry computer.
2	Copying files to the Master computer.
3	Listing each computer and what data will be entered on the computer.
4	Appending the data.
5	Merging the dataset.
6	Checking the appended and merged dataset.

Record count on each computer   Perform a record count for each .rec file on each data entry machine to check the record count. Follow the steps below to perform a record count:

Step	Action
1	Open EpiData.
2	Select Document, Count Records.
3	Select one of the rec files and click 'add to list'.
4	Repeat step 3 until all the rec files have been added to the list.
5	Select 'id' in the' field to evaluate' list.
6	Select 'Ok'.
7	Click Save and save document under C:/STEPS/data with the title recordcount + machine label (e.g. recordcountA).

Creating the Final Dataset, Continued

Copying files to the master computer

All the data files that have been saved under the STEPS folders on each computer must be copied to the master computer so they can be appended and merged. Follow the steps below to copy the files.

Step	Action
1	Create a new folder on the Master computer labelled: MainSTEPS (C:/MainSTEPS).
2	Under C:/MainSTEPS create a folder for each data entry computer as follows: • C:/MainSTEPS/Master • C:/MainSTEPS/A • C:/MainSTEPS/B, etc.
3	Make a copy of the STEPS folder (on the Master computer) and add to the C:/MainSTEPS/Master folder.
4	Copy and paste the STEPS folders from each machine (one at a time) and place in the folder that is labeled with the original machine name (eg STEP200X folder from computer A would be copied to C:/MainSTEPS/A on the Master computer).

Note: Never move the folders to the Master computer, create copies only. This will allow you to backtrack in case of errors.

Create list of files by computer

In a log book or somewhere safe, list each data entry computer and all the corresponding templates used for data entry. For example:

Computer	Templates used
Master	• Location • Consent • Survey
A	• Survey
B	• Survey • Biochemical

Creating the Final Dataset, Continued

Appending the data
All the files stored on the Master computer must be appended to combine all the Survey and Tracking data from each computer (A, B, C, etc.) into single files. Follow the steps below to append your data.

Step	Action
1	In EpiData, select Data in/out, Append/Merge.
2	In the dialog box, click 'Name of first data file' Select the Master computer file.
3	Click on 'Select name of second data file' Select ComputerA.
4	Click 'Ok'.
5	In the 'Resulting data file' section on the 'Append Merge data files' message box, type the appended data file name (e.g. SurveyMasterA) .
6	Click on 'append only data fields in data file B that also exist in data file A' **Note:** This is on the Append tab in the lower left-hand corner of box.
7	Click 'Append' and enter data file description (e.g. Combined Master +A)
8	Make note of the second paragraph of the Information box 'Appended and saved as:'. This tells you the new name of the appended file.
9	Repeat steps 3-8, using the new file created each time. Repeat the steps until each computer's files have been appended into one master file (e.g. SurveyMasterABCDEF).

Merging files into one dataset
All the individual computer files should now be appended into the following four master files:

- MasterLocation
- MasterSurvey
- MasterBiochemical
- MasterTracking

Follow the steps below to merge these files into one master dataset.

Step	Action
1	Select Data in/out, Append/Merge
2	In the dialog box, click 'Name of first data file'. Choose one of the new master files (e.g MasterLocation)
3	Click 'Select name of the second data file'. Choose one of the new master files (e.g MasterSurvey)

Creating the Final Dataset, Continued

Merging files into one dataset (continued)

Step	Action
4	Click 'Ok'.
5	Type in merged data file name (e.g. masterlocationSurvey) in the data file section on the Append/Merge data file message box.
6	Click on the Merge tab in the lower left-hand corner of box.
7	Select 'merge only data fields in data file B that also exist in data file A' .
8	Click 'Merge' and enter data file description (e.g. Merged location + survey).
9	Note the second paragraph of the Information box 'Merged and saved as:'. This tells you the new name of the merged file.
10	Repeat steps 3-10, using the new file created each time. Repeat the process until all the master files have been merged into one master (e.g. MasterDataSet).

Note: If the consent information was entered electronically (which is not recommended) **DO NOT** merge this information into the MasterDataSet.

Checking Append/Merge

Check the results of the Append/Merge process by evaluating the record counts and making sure they match up. Follow the steps below to perform the final record count.

Step	Action
1	Perform Record Count for MasterDataSet (complete data set), see page 4-2-16.
2	Print all the record count files of all the individual machines.
3	Add up individual machine data and compare with MasterDataSet.
4	If results match, the MasterDataSet is complete, if the results do not match further investigation is needed.

Continued on next page

Creating the Final Dataset, Continued

Export the dataset for analysis

The dataset needs to be exported into a format that is readable by Epi Info. Follow the steps below to export the dataset:

Step	Action
1	Open Epi Data.
2	Click on "6. Export Data".
3	Select "dBase III" from the list.
4	Select MasterDataSet.rec as the file to open.
5	Select C:\STEPS\data\reports\EpiInfo for "Export to:".
	From the "Export file to dBase III file" options box select: <table><tr><th>Step</th><th>Action</th></tr><tr><td>5.1</td><td>Select "all records".</td></tr><tr><td>5.2</td><td>Select "skip deleted records".</td></tr><tr><td>5.3</td><td>Click "All" from the Select Fields section.</td></tr></table>
6	Click "Ok".

Note: There are many different export formats available from EpiData. If you are using another analysis package other than Epi Info you will need to select the appropriate format from the list of formats offered in step 3.

Preparing the excel spreadsheet

The excel spreadsheet used for the interview tracking form, interviewtracking.xls needs to be put on the master computer. If the data was entered on multiple computers then you will need to merge all the different documents into one spreadsheet by copying and pasting the records from one spreadsheet into another.

The spreadsheet will be attached to the database later on and will not be part of the MasterDataSet. For more information about attaching the information to your database see Part 4 Section 3, "Data Analysis".

Technical Assistance

The WHO Geneva STEPS team will provide technical support during this process if needed. Please contact the team at steps@who.int with your questions.

Section 3: Data Analysis

Overview

Introduction

This section covers the tasks that need to be completed to analyse the STEPS survey data. The results of the analysis will be presented in a data book, which will be used to create the fact sheet and site report.

Intended audience

This section is designed for use by those fulfilling the following roles:

- Data analyst
- Statistical adviser
- STEPS site coordinator

Statistical adviser

It is important that the data analyst has access to a survey statistician for advice and support. The statistician should be a member of the coordinating committee and have regular contact with the data analyst.

If there is not a statistician available or further assistance is required please contact the WHO Geneva STEPS team at steps@who.int .

Statistical information

Additional statistical resources are available in the STEPS statistical resources guide. This is available on the STEPS CD, or can be downloaded from the STEPS website: www.who.int/chp/steps

Note: Additional information on writing syntax for Epi Info can be found in the Epi Info guide for STEPS, available on the STEPS CD or website.

Analysis reports

The following reports are the key outputs of the data analysis:

- Data book
- Fact sheet
- Site report

Overview, Continued

Timeframes for analysis

The table below is a guide to when specific parts of the analysis process should begin.

When…	Then…
The data entry templates have been tested.	Begin tailoring the Epi Info code to match your site Instrument.
The data is all entered, checked and edited.	Finalise dataset and analyses for the fact sheet, main site report, and data book.

Data analysis software

WHO STEPS recommends using Epi Info for data analysis (version 3.3 or higher), supplemented by a spreadsheet program such as Microsoft Excel.

Other software packages that are available to the data analysis team may be considered for statistical analyses. However, any alternative packages must be able to handle the implications on analysis of the sampling design and can not be supported by the WHO Geneva STEPS team.

Technical support

The WHO Geneva STEPS team will provide Epi Info support, technical assistance, and training for analysts and technical support for data cleaning, weighting, and analysis upon request.

Tasks and timeframes

The chart below shows the main tasks and timelines covered this section.

Task Name	Duration	Month 4	Month 5	Month 6
Clean the data	3 days			
Create Fach Sheet	2 days			
Produce unweighted tables	2 days			
Calculate response proportions	2 days			
Weight the data	2 days			
Produce weighted tables	2 days			

Overview, Continued

In this section   This section covers the following topics:

Topic	See Page
Data Analysis Process	4-3-4
Accessing Survey Data	4-3-5
Cleaning the Data	4-3-7
Creating the Fact Sheet	4-3-13
Creating the Data Book	4-3-14
Demographic Analysis	4-3-17
Producing Unweighted Tables	4-3-18
Calculating Response Proportions	4-3-19
Weighting the Data	4-3-20
Producing Weighted Tables (Estimates)	4-3-24
Comparative Analyses	4-3-25
STEPS Statistical Resource Guide and Epi Info Guide for STEPS	4-3-27

Data Analysis Process

Introduction   The data analysis process ranges from creating the database to producing the final results for the site report.

Data analysis should be conducted in a standard way, using the guidelines suggested by STEPS. Standardising certain aspects of the data analysis will allow trend analysis in the future between STEPS surveys and also allow comparisons between STEPS sites.

Process   The table below shows each of the stages in the data analysis process.

Stage	Description
1	Accessing the survey data and creating the database.
2	Cleaning the data.
3	Creating the fact sheet
4	Producing demographic analysis.
5	Producing unweighted tables.
6	Weighting the data.
7	Producing weighted tables (estimates).
8	Producing the final data book.

Note: Each of these stages is described in the pages following.

Accessing Survey Data

Introduction   Once data entry is complete, the data needs to be added to the STEPS database. This involves running specific Epi Info programs that import the data and attach additional information, such as interviewtracking.xls.

Import data into database   Follow the steps below to import the dataset into the STEPS database (STEPS.mdb):

Step	Action
1	Open Epi Info.
2	Select "Analyze Data".
3	Select "User-Defined Commands", "Run Saved Program" from the Analysis tree on the left hand side of the screen.
4	Select "STEPS" for the filename (click the … and select from the menu).
5	Select "ImportData" from the drop down menu and click "Ok".

In the Epi Info output screen you will see "current view: and then your record count". Make sure the record count matches the record count of the MasterDataSet in EpiData.

Import interview tracking form   To import interviewtracking.xls into the database follow the steps below:

Step	Action
1	Check that data entry for the interview tracking form is complete.
2	Open interviewtracking.xls.
3	Select the "Format Epi Info" button from the Instructions spreadsheet .
4	Open Epi Info.
5	Select "Analyze Data".
6	Select "User-Defined Commands", "Run Saved Program" from the Analysis tree on the left hand side of the screen.
7	Select "STEPS" for the filename (click the … and select from the menu).
8	Select "ImportInterviewTracking" from the drop down menu and click "Ok".

Accessing Survey Data, Continued

Create backup of database
It is important to create a backup of your database. During the analysis process you will be writing and saving different tables within your database. If something happens to your working copy of the database you will need a backup copy. Follow the steps below to create a backup of your database.

Step	Action
1	Open STEPS.mdb.
2	From the File menu click on "Back up Database".
3	Select a location on your machine to back up the database.
4	Click "Save".

Cleaning the Data

Introduction   The dataset needs to be cleaned prior to data analysis. This includes:

- Checking ranges and combinations of variables
- Detecting and handling missing data
- Detecting and handling outliers

Automated cleaning   There is some generic cleaning code included in the Epi Info programmes in the STEPS database.

The cleaning code is imbedded into the analysis programmes and will clean the data for:

- Basic outliers
- Completeness of sections (participants must have answered a certain amount of the section and answers must not conflict with each other)
- Logic (Participants whose answers conflict will be removed from the analysis of the problematic section. For example if a participant said NO to currently smoking and the Yes to smoking daily.)

Note: If you do not use the Epi Info programmes you will need to use the information below to clean your data.

Missing data   Detecting missing data has been discussed as part of data entry (see Part 4, Section 2), however, the data analyst must explore missing data in greater depth.

In general, how missing data is handled depends upon the importance of the variable and how much data is missing.

Where data is missing in less critical variables, and occurs in only a small proportion of the records, those records may be left in the database, and dropped only from the relevant analyses. Small differences in counts in each analysis may therefore occur, but are acceptable in this type of work.

Cleaning the Data, Continued

Preparing data for analysis   There are two programmes that need to be run by all sites prior to using any of the analysis programmes in the data book and fact sheet:

- AgeSex
- MissingAgeSexConsent

Function of programmes   These programmes prepare the data by:

- Creating age ranges for the records
- Recoding sex as male and female
- Checking on the consent status of each record (I7)
- Creating a Valid variable that determines if a records is valid for inclusion in analysis (consent, age and sex are valid)

Process for selecting programmes   The table below shows each of the stages used to select the correct programmes to prepare the data for analysis.

Stage	Description
1	Determine the age range used in your survey.
2	Select the programmes associated with your age range.
3	Run the Epi Info programmes.

Age Range 15-64   If the age range of your study was 15-64 follow the steps below to prepare your dataset for analysis.

Step	Action
1	Open Epi Info by clicking on the icon on your desktop.
2	Click "Analyze Data".
3	Select "User-Defined Commands", "Run Saved Program" from the Analysis tree on the left hand side of the screen.
4	Select "STEPS" for the filename (click the … and select from the menu).
5	Select "AgeRange1564" from the drop down menu and click "Ok".
6	<table><tr><td>**If the programme result is…**</td><td>**Then…**</td></tr><tr><td>There are no records missing age/sex</td><td>Run MissingAgeSexConsent</td></tr><tr><td>There are records missing age/sex that cannot be resolved</td><td>Run MissingAgeSexConsent</td></tr><tr><td>There are records missing age/sex that can be resolved</td><td>• Resolve records • Run Rerun_AgeSex1564 • Run MissingAgeSexConsent</td></tr></table>

Continued on next page

Cleaning the Data, Continued

Age Range 25-64   If the age range of your survey was 25-64 follow the steps below to prepare your dataset for analysis.

Step	Action
1	Open Epi Info by clicking on the icon on your desktop.
2	Click "Analyze Data".
3	Select "User-Defined Commands", "Run Saved Program" from the Analysis tree on the left hand side of the screen.
4	Select "STEPS" for the filename (click the … and select from the menu).
5	Select "AgeRange2564" from the drop down menu and click "Ok".
6	

If the programme result is…	Then…
There are no records missing age/sex	Run MissingAgeSexConsent
There are records missing age/sex that cannot be resolved	Run MissingAgeSexConsent
There are records missing age/sex that can be resolved	• Resolve records • Run Rerun_AgeSex2564 • Run MissingAgeSexConsent

Alternative age ranges   If the age range of your survey is not 15-64 or 25-64 you will need to tailor the Epi Info programme AgeRange2564 to match the range of your survey.

Use the Epi Info Guide for STEPS for step by step instructions.

Guidelines for handling missing data   Use the table below when considering how to handle missing data in the following situations.

If…	In…	Then…
Records have missing data.	Essential or key variables: age, sex, stratum, primary or secondary sampling unit, or any important subgroup.	Review the Instrument and all other sources of information to complete the record and avoid it being dropped from all analyses. If it is dropped, it will need to be counted as a non-responder for weighting purposes.
Data in a non-essential variable is missing.	Fewer than 2% of records in any sex by age group or stratum.	Ignore that record during analysis of that variable. This means that small differences in counts in each analysis may occur.

Continued on next page

Cleaning the Data, Continued

Guidelines for handling missing data (continued)

If…	In…	Then…
Data in a non-essential variable is missing.	2% to 10% of records in any sex by age group, stratum or their combination.	Include only individuals with non-missing data for these analyses, stating in a footnote the number omitted because of missing data.
Data in a non-essential *categorical* variable is missing.	More than 10% of records in any sex by age group, stratum or their combination.	Consider adding an additional category to the report table to show the proportion missing.
Data in a non-essential *continuous* variable is missing.	More than 10% of records in any subgroup or stratum combination.	Include only individuals with non-missing data for these analyses, stating in a footnote the number omitted because of missing data.

Imputation   An alternative method of handling missing data, that 'creates' data where none exists, is called imputation.

It is important to note that imputation should **not** be done for STEPS.

Identifying outliers   An outlier is a value of a variable that represents a real number that appears to deviate significantly from the observed values in other participants. It may be correct, and the person truly has an unusual value, or it may be incorrectly recorded or entered. Either way, in STEPS, it is good practice to investigate the outliers before analysis in order to avoid having those extreme values unduly influencing the results being reported.

Follow the steps below to identify and deal appropriately with outliers.

Step	Action
1	Detect possible outliers through plots and/or means analyses. In Epi Info, a means analysis shows the maximum and minimum values at the end, but also lists all the values and the 25% and 75% percentiles.
2	Calculate the difference between the 25% and 75% percentiles (ie the inter-quartile range).
3	Multiply the inter-quartile range by 1.5. Subtract that value from the lower quartile, and add that value to the upper quartile.
4	If the extreme observation is beyond or below the first calculated value or above the second, then it is regarded as an outlier.

Continued on next page

Cleaning the Data, Continued

Identifying outliers (continued)

Step	Action
5	If the value is outside the range permitted during data entry, then procedures set up as part of data management process should be used to review the record again.
6	If checking and error correction were not completed correctly, then follow the procedures specified for that variable to correct it or to remove the offending data point.
7	If the outlier still remains, then perform analyses with the record in, and again with it out. Determine the effect of the exclusion of the record by examining the mean and confidence intervals for the total population and for the age-sex subgroup.
8	If the change is minor (for example only about 1 or 2%, or at the first decimal point for BMI or blood pressure, or at the second decimal point for glucose or cholesterol), leave the record in the analyses and proceed as usual ignoring the outlier.
9	If the change is not minor then you will need to remove these records from the analysis.

Note: If you use the Epi Info programmes the outliers will automatically be identified for you.

Cleaning the Data, Continued

Plotting a single continuous or categorical variable

To plot a variable use a histogram to:

- See the distribution
- Examine its shape
- Answer the following questions:
  - Is it approximately normally distributed?
  - Is it skewed or bounded?
  - Are outliers a concern?
  - Does it have a single clear mode or a peak? (for continuous only)
  - Does it have a single clear mode or a uniform shape? (for categorical only)

Note: Directions on creating plots in Epi Info can be found in the Data Analyst Guide, see Part 3 Section 7.

Plotting one continuous variable against other variables

If you expect two variables to be interrelated and want to check this, plot one variable against another to see the distribution of the continuous variable(s).

For example, such a plot may be useful for look at:

- The differences in total cholesterol between men and women.
- The potential differences in blood pressure between measuring devices.
- Oil and fat consumption by season where food supply differs with season.

Creating the Fact Sheet

Introduction   The fact sheet is a short summary of key results of the STEPS Chronic disease risk factory survey.

Purpose   The purpose of the fact sheet is to provide interested parties with the key findings of the survey and to highlight the issues that the main report will cover in more depth.

Process   Generic code for Epi Info has been written to generate all the indicators presented on the fact sheet. The table below lists the process required to generate the results for the fact sheet.

Stage	Description
1	Identifying which indicators on the fact sheet you can run, using the fact Sheet Analysis Guide
2	Identifying the programme names associated with the indicators
3	Cleaning the data (page 4-3-7)
4	Running mandatory Epi Programmes (page 4-3-8)
5	Running the Epi Info programmes (page 4-3-8)
6	Entering information into the fact sheet

Creating the Data Book

Introduction The data book is a full tabulation of all the data from all questions in the STEPS Instrument. It includes both weighted and unweighted results.

Purpose The purpose of the data book is to:

- Compile a complete set of data results relating to each question and measurement in the Instrument.
- Provide the Epi Info programme names to create the tables and identify which questions from the Instrument are included in each table.
- Provide a first step in the reporting process from which results for the site report and fact sheet can be extracted.

Content of the data book The data book consists of tables that provide users with the:

- Title of the tables
- Layout of the tables (age/sex stratified, possible headings for columns)
- Definition of information provided in tables
- Analysis information
  - questions from the Instrument that were used to generate the table (uses codes not question numbers i.e T1 or C1)
  - name of Epi Info programme that will generate results for that table

Process Generic code for Epi Info has been written to generate all the tables for the data book. The table below lists the process required to generate results.

Stage	Description
1	Modifying the generic Epi Info programmes (if you used a modified STEPS Instrument).
2	Identifying which components of data book to run, using the "Analysis Information" section.
3	Running mandatory Epi Info programmes (see page 4-3-8)
4	Running the Epi Info programmes for data book.
5	Formatting output into data book tables.

Creating the Data Book, Continued

Modifying the Epi Info programmes

If you have added or altered questions in the standard Instrument, you may need to modify the generic code so the programmes run properly and generate accurate results. Follow the guidelines in the table below on what modifications you will need to make to the generic code.

If you…	Then…
Did not use the recommended coding column for the variable name.	Match and record variable names for the dataset to the recommended coding column variables.
Altered a question in the Instrument.	Add/alter code to reflect changes in variables and tables.
Added a question to the Instrument.	Add code to insert new tables and analyses in reports.

Running mandatory Epi Info Programmes

If you have not already run AgeSex and MissingAgeSexConsent , refer to page 4-3-8.

These programmes prepare the dataset for analysis. The other Epi Info programmes will not work until AgeSex and MissingAgeSexConsent have been run.

Running Epi Info programmes

The STEPS generic syntax consists of individually saved Epi Info programmes that are identifiable by their names. There is a programme name associated with each table in the data book. Follow the steps below to run the saved programmes:

Step	Action
1	Open Epi Info by clicking on the icon on your desktop.
2	Click "Analyze Data".
3	Select "User-Defined Commands", "Run Saved Program" from the Analysis tree on the left hand side of the screen.
4	Select "STEPS" for the filename (click the … and select from the menu).
5	Select the appropriate programme from the drop down menu and click "Ok".
6	Repeat STEPS 1-5 until all necessary tables have been created.

Note: The programme names indicate what the programme will produce. For more details on what each programme provides open the STEPS.mdb and open the programmes table. This table provides a summary of each programme.

Continued on next page

Creating the Data Book, Continued

Formatting output

The programmes provide output in a print format which may be used directly or formatted into tables (i.e. using the format of the data book tables).

It is recommended that the programme output be formatted into easy to read tables for future uses and reference.

Assistance

The WHO Geneva STEPS team is available for technical queries and help associated with producing the data book.

Demographic Analysis

Introduction   The demographic information can be analysed prior to weighting the data but only after the data has been cleaned (if you are using the Epi Info programmes the data will be cleaned in the programmes).

Describing the participants   A description of the participants is necessary for the readers of the report(s) to understand who the findings relate to, to usefully apply them to a population.

Producing demographics for the data book   Follow the steps below to produce tables for all the information presented in the "Demographic Information Results" section of the data book.

Step	Action
1	Identify what information you want to calculate within the constraints of the Instrument used.
2	Identify the codes associated with the demographic questions in your Instrument (use codes not question numbers).
3	Use the data book to identify which codes are needed to produce each table in the "Demographic Information Results" section of the data book.
4	After identifying which tables you will produce make a note of the Epi Info programme names associated with these tables.
5	Open Epi Info.
6	Click "Analyze Data".
7	Select "User-Defined Commands", "Run Saved Program" from the Analysis tree on the left hand side of the screen.
8	Run each programme identified in step 4 (see page 4-3-15 for detailed instructions).
9	Repeat steps 6-7 until all the tables have been produced.
10	Check that all questions in the socio-demographic section of your Instrument have been tabulated. If not, you may need to create new Epi Info code to do this.
11	Use the format of the data book as a guide to put the output results of Epi Info into more user friendly tables.

Producing Unweighted Tables

Introduction	The unweighted tables provide important information for the data analyst. They help identify if the data needs to be further cleaned.

Producing unweighted tables

Follow the steps below to produce unweighted tables :

Step	Action
1	Identify which tables from the data book can be produced within the constraints of your Instrument.
2	Identify the codes associated with your Instrument (use codes not question numbers).
3	Use the data book to identify which codes are needed to produce each table in the data book (not including the demographic section).
4	After identifying which tables you will produce, make a note of the Epi Info programme names associated with these tables.
5	Open Epi Info.
6	Click "Analyze Data".
7	Select "User-Defined Commands", "Run Saved Program" from the Analysis tree on the left hand side of the screen.
8	Run each programme identified in step 4 (see page 4-3-15 for detailed instructions). Choose the relevant Epi Info programme code without the subscript 'WT'.
9	Repeat steps 6-7 until all the tables have been produced.
10	Check that all questions in your Instrument have been tabulated. If not, you may need to create new Epi Info code to do this.
11	Use the format of the data book as a guide to put the output results of Epi Info into more user friendly tables.
12	Review all tables for discrepancies. If you find problems you will need to go back to the data and clean it a bit more.

Site tailored Instruments

If you added optional questions to your Instrument these questions will not be tabulated. You will need to create your own Epi Info programme for these tables, see Part 3 Section 7 or the Epi Info Guide for STEPS (available on the website) for help to do this.

Calculating Response Proportions

Introduction   Response proportions (often known as response rates) indicate the level of participation in your STEPS survey. They are an important indicator of the quality of your data.

Interview Tracking Form   Response proportions are calculated from the information entered in the Interview Tracking Form. This form should already have been:

- entered into interviewtracking.xls by the data entry team, see Part 4 Section 2 and
- imported into Epi Info, see page 4-3-5.

Separate proportions are needed for Step 1, Step 2, and Step 3 (if applicable). Select only the Steps that correspond with the Instrument used by your site.

Calculating response proportions in Epi Info   Follow the steps below to run the three Epi Info Programs necessary to calculate the response proportions for each Step.

Step	Action
1	Open Epi Info.
2	Click "Analyze Data".
3	Select "User-Defined Commands", "Run Saved Program" from the Analysis tree on the left hand side of the screen.
4	Select "STEPS" for the filename (click the … and select from the menu).
5	Select ResponseStep1 and click "Ok".
6	Repeat for ResponseStep2 and ResponseStep3 as appropriate.

Weighting the Data

Introduction The data from your STEPS survey only represents the participants sampled. If you want your data to be representative of the target population then you will need to apply weights to your data. You will be able to apply weights to your data if:

- you used any of the sampling scenarios describe in Part 2 Section 2, and
- the data collection team used the interview tracking form.

What is a weight A weight is a value given to a piece of data to adjust the importance given to it in analysis. It may be thought of as the number of persons in the population that are represented by each individual in the sampled unit. Weights are calculated for the following design adjustments:

- Sampling
- Non-response
- Population

Types of weights The table below lists the 3 different types of weights and where the information for these weights comes from.

Type of Weight	Used to…	Required when the…	Information available in…
Sampling weight	adjust for differential selection probabilities.	sampling design includes more than one stage or when stratified selection occurs.	STEPSsampling.xls
Non-response weight	(partially) adjust for differential response proportions.	population size is unknown within the cluster/strata so population weighting is insufficient.	Interviewtracking.xls
Population weight	adjust for deviations in the sample compared to the known population, particularly in sex and age composition.	selection probability is not proportional to size.	STEPSsampling.xls

Overall weight All the weights described in the table above are calculated for each record and multiplied together across the record. This becomes the weight used in results from Step 1 data. The individual's probability of selection for Step 2 is then multiplied by the Step 1 weight, and is used for analyses of Step 2 data, and similarly for Step 3 (if applicable).

Continued on next page

Weighting the Data, Continued

Available weighting workbook	The STEPSsampling workbook contains spreadsheets for calculating weights. The only additional information you need is the population structure by age and sex for your target population. You will only be able to use the weighting sheet if you used the STEPSsampling.xls workbook for your sampling. The weighting spreadsheets are: • Indweight • PopulationEst

Sampling weight	The individual sampling weight is available in the Indweight spreadsheet. It collects information based on the sampling and calculates the weights for you. To calculate the individual sampling weight (W1) and attach the weight to the dataset follow the steps below.

Step	Action
1	Open STEPSsampling.xls.
2	Select "Tools", "Macro", "Macros" from the Menu .
3	Select the macro "Indweight_format" and click "Run".
4	Open Epi Info.
5	Select "Analyze Data".
6	Select "User-Defined Commands", "Run Saved Program" from the Analysis tree on the left hand side of the screen.
7	Select "STEPS" for the filename (click the … and select from the menu).
8	Select "IndividualWeight" and click "Ok".

Non-response weight	The non-response weight is calculated automatically in Epi Info. It uses Interviewtracking.xls, which was imported into the database on page 4-3-5. To calculate the non-response weight (W2) and attach the weight to the dataset follow the steps below.

Step	Action
1	Open Epi Info.
2	Click "Analyze Data".
3	Select "User-Defined Commands", "Run Saved Program" from the Analysis tree on the left hand side of the screen.
4	Select "STEPS" for the filename (click the … and select from the menu).
5	Select "NonresponseWeight" and click "Ok".

Weighting the Data, Continued

Population weight

Follow the steps below to attach the population weights to your dataset.

Step	Action
1	Locate the population structure for your target population by age and sex and enter this into STEPSsampling.xls in the spreadsheet PopulationEst.
2	Open STEPSsampling.xls.
3	Select "Tools", "Macro", "Macros" from the Menu .
4	Select the macro "PopulationEst_format" and click "Run".
5	Open Epi Info.
6	Select "Analyze Data".
7	Select "User-Defined Commands", "Run Saved Program" from the Analysis tree on the left hand side of the screen.
8	Select "STEPS" for the filename (click the … and select from the menu).
9	Select "PopulationWeight" and click "Ok".

Note: Make sure you record what population structure was used for this section. This information needs to be presented in the site report.

Weighting the Data, Continued

Overall weights   There are three different overall weights, one for each Step. These weights are:

- WStep1
- WStep2
- WStep3

Calculating overall weights   Follow the steps below to run the 3 programmes necessary to calculate the overall weights.

Step	Action
1	Ensure you have calculated the sample weight, non-response weight, and the population weight.
2	Open Epi Info.
3	Click "Analyze Data".
4	Select "User-Defined Commands", "Run Saved Program" from the Analysis tree on the left hand side of the screen.
5	Select "STEPS" for the filename (click the … and select from the menu).
6	Select "WStep1" and click "Ok".
7	Repeat steps 3-5 for WStep2 and WStep3 as needed.

Producing Weighted Tables (Estimates)

Introduction   The data for the fact sheet and site report needs to be weighted. The data is weighted so that it is representative of the entire target population and not only the individuals sampled.

Overview of procedure   To produce the weighted estimates you will need to follow the steps below.

Step	Action
1	Identify which tables from the data book can be produced within the constraints of your Instrument.
2	Identify the codes associated with your Instrument (use codes not question numbers).
3	Use the data book to identify which codes are needed to produce each table in the data book (not including the demographic section).
4	After identifying which tables you will produce, make a note of the Epi Info programme names associated with these tables.
5	Open Epi Info.
6	Click "Analyze Data".
7	Select "User-Defined Commands", "Run Saved Program" from the Analysis tree on the left hand side of the screen.
8	Run each programme identified in step 4 (see page 4-3-15 for detailed instructions). Choose the relevant Epi Info programme code with the subscript 'WT'.
9	Repeat steps 6-7 until all the tables have been produced.
10	Check that all questions in your Instrument have been tabulated. If not, you may need to create new Epi Info code to do this.
11	Use the format of the data book as a guide to put the output results of Epi Info into more user friendly tables.
12	Review all tables for discrepancies. If you find problems you will need to go back to the data and clean it a bit more.

Site specific requirements   The Epi Info code provided only analyses the data for the core and expanded questions of the Instrument. If your site added optional questions, altered questions, or additional modules to their STEPS Instrument the generic analysis will not produce results for these additions.

Advice is available in the STEPS statistical resource guide and the coding guide on the principles of data analysis and also on the technical aspects of coding Epi Info. If you would like assistance please consult your statistical adviser, the WHO Regional Office, or the WHO Geneva STEPS team.

Comparative Analyses

Introduction It is likely that comparisons other than those by age and sex will be of interest. Comparisons of interest may include those between:

- smokers and non-smokers,
- rural and urban communities, or
- geographical regions.

When to conduct comparative analysis These comparisons may be conducted during the preparation of the main report, or as a subsequent analysis. However they must follow data checking and exploratory analyses of all the variables to be included in analyses.

There are limitations on which comparisons are made however, as comparisons will be invalid where the groups to be compared are defined by a single sampling unit or combination of sampling units.

For example, when comparing rural and urban communities if rural participants were selected from primary sampling units (for example villages) and they were not equally likely to be selected within the village - the samples would not necessarily be representative of the villages even if they in combination were representative of the population.

Testing for significance If the confidence intervals of different groups overlap, any difference is regarded as not statistically significant; and conversely if they do not overlap, they are regarded as statistically significant.

Comparative Analyses, Continued

Calculating prevalence of populations

In preparing the site report, it may be useful to make comparisons with results from surveys of other populations such as a neighbouring country or an earlier survey conducted. Follow the steps below to calculate prevalence between populations.

Step	Action
1	Select the most appropriate standard population.
2	Derive age-specific prevalence for the comparison population.
3	Apply the age-sex specific prevalence in your population to the age-specific counts in the standard population.
4	Calculate the confidence intervals.
5	Apply the age-sex specific prevalence and confidence intervals in the comparison population to the age-specific counts in the standard population.
6	Calculate the confidence intervals. Where the confidence intervals about the two prevalence estimates do not overlap, then they are regarded as significantly different, otherwise not.

Monitoring over time

STEPS surveillance can help to assess changes over time in a site. If analyses over time are needed, the analyst should consult the statistical adviser for advice.

Adjustments for differences in sampling design may be required, and would make analyses quite complex.

STEPS Statistical Resource Guide and Epi Info Guide for STEPS

Introduction   The STEPS statistical resource guide and the Epi Info guide for STEPS provide more detailed information about analysing survey data.

STEPS statistical resource guide   The STEPS statistical resource guide provides an overview on:

- the principles of statistics,
- equations for calculating statistics, and
- advice on when to use different types of statistics.

Epi Info guide for STEPS   The Epi Info guide for STEPS contains details on:

- existing Epi Info programmes,
- altering existing programmes, and
- writing Epi Info code.

Availability   These resources are available on the:

- STEPS CD Rom, or
- STEPS website www.who.int/chp/steps

Section 4: Reporting and Disseminating Results

Overview

Introduction

This section covers the tasks that are needed to prepare reports and disseminate the results of your STEPS survey.

Requirement

The reports need to be produced in a timely manner after the completion of your survey. The results should be presented in a clear, concise and usable way to help:

- Raise awareness about preventing chronic disease and their risk factors
- Guide public health policy and interventions to address chronic diseases
- Assist and inform future health research

Intended audience

This section is primarily designed to be used by those fulfilling the following roles:

- STEPS site coordinator
- Data analyst
- Coordinating committee

Useful resources

Some sections of the current Manual and additional resources that may be useful in compiling and disseminating the results include:

- Part 1, Section 1 : "Rationale for Surveillance of Chronic Disease Risk Factors"
- Part 2, Section 2 : "Preparing the Sample"
- Part 7, Section 1 : "Glossary of terms used in STEPS"
- STEPS statistical resources manual

Disseminating results and interpreting data

There is a useful PowerPoint presentation available on the STEPS CD and website (www.who.int/chp/steps) that provides information on interpreting data and disseminating your results. It is advised that you look at this presentation prior to writing your site report. The PowerPoint presentation includes information on:

- Making good graphics (including tables, bar graphs, line graphs and pie charts)
- Confidence intervals and standard error
- Using confidence intervals to test for subgroup differences

Overview, Continued

The reports The main reporting documents that need to be produced are listed in the table below:

Report	Brief description	Audience
Fact sheet	Short summary of key results	• Stakeholders • Media • STEPS teams
Site report	Main comprehensive report	• Stakeholders • Media • Wider community • STEPS teams
Progress report (optional)	Report on surveillance progress	• Site Coordinator • Coordinating committee • WHO Geneva STEPS team • WHO Regional Office

Reporting process The table below shows each of the key stages in the reporting process once data has been entered, checked and edited.

Stage	Description
1	Preparing and distributing the fact sheet to cover the essential results.
2	Extracting specific tables and figures from the data book that are suitably weighted and needed for the main site report.
3	Drafting the main site report, section by section, based on the content guidelines (following) and data book.
4	Circulating drafts of the site report to members of the coordinating committee, WHO and other interested parties for comment, discussion and review.
5	Reviewing and finalising the site report in light of comments and discussions.
6	Preparing circulation lists, preparing press releases and promotion fliers to announce results of the STEPS Survey.
7	Presenting results, through slide presentations and meetings with organisations and groups that have an interest and impact on population health including relevant government departments, sponsors, tertiary institutions and health conferences in order to widen awareness of the STEPS findings.

Overview, Continued

In this section   This section covers the following topics.

Preparing and Distributing the Fact Sheet

Introduction   The fact sheet is a short summary of the key results of the STEPS chronic disease risk factor survey.

Purpose   The purpose of the fact sheet is to provide stakeholders, interested parties, and the media with the key findings and signal the issues that the main report will cover more fully.

Intended audience   It is recommended that you distribute the fact sheet widely. Consider sending copies to:

- Relevant government bodies and sponsoring organisations
- Agencies and organisations who are likely to use the information to promote healthy lifestyles or determine health policies
- Public, governmental and institutional (university) libraries
- Press and other media (newspapers, radio and television)
- Websites dealing with chronic diseases and related health issues
- WHO Regional Office, STEPS focal point and the WHO Geneva STEPS team

Standardised format and results   A STEPS fact sheet template is available in Part 6, Section 3C.   Use this template to present the summarised results in a standardised format.

If you have added optional questions that are not represented in this template, only include these in the fact sheet if they are particularly significant.

Generating results   The results for the fact sheet can be generated in different ways depending on the scope of your Instrument. Follow the guidelines in the Data Analysis section, page 4-3-13, to produce the results for your site.

Preparing and Distributing the Site Report

Introduction   The site report is the main comprehensive report for the whole STEPS chronic disease risk factor survey and must be produced at the end of the STEPS survey.

Purpose   Use the site report to present the following information:

- The overall rationale
- Scope of the survey
- The sampling design used
- Detailed methods of data collection
- Detailed results of the survey
- Implications for future health and planning
- Appendices including the STEPS Instrument

Intended audience   It is recommended that you distribute the site report widely. Consider sending copies to:

- Relevant government bodies and sponsoring organisations
- Agencies and organisations that are likely to use the information to promote chronic disease prevention and control
- Public, governmental and institutional (university) libraries
- Press and other media (newspapers, radio and television)
- Websites of any sponsoring bodies
- WHO STEPS Regional Office and the WHO Geneva STEPS team

Content guide   The table below lists each of the main parts that should be included in the site report.

- Cover and content pages
- Executive summary
- Background and methodology
- Scope, sampling methods and implementation
- Analytical methods
- Results
- Conclusions and Recommendations
- Appendices

Note: Guidelines for completing each of these parts are described on the following pages.

Preparing and Distributing the Site Report, Continued

Compiling results

All the tables needed to present the results for the site report should be taken from the data book generated during the data analysis stage.

If you were able to weight your data then this information should also be presented. If you were unable to weight the data then the results from the unweighted section of the data book need to be presented.

References

Include a reference list of any sources used to write the report and during the surveillance process. Use an appropriate format for referencing in the document (i.e. Harvard Style).

Appendices

Attach all relevant documents that have been used in the STEPS surveillance. These include:

- STEPS Instrument including the Question by Question Guide
- STEPS implementation plan
- Fact sheet

Cover and Content Pages

Introduction   The pages at the front of the site report provide the formal information needed for library indexing and purchasing, and give the reader an idea of the structure and content of the report.

Content guide   Follow the guidelines in the table below to help prepare the title page and other leading pages.

Page	Include
Title page	• Title of the report • Authors' names • Institution(s) involved • Release date
Publication details	• Copyright details and a statement about the use of the results and acknowledgments • Publishing and indexing information • Address to obtain further copies
Table of Contents	• Part and/or section headings with page numbers • Sub level headings or lists of tables • Appendices
Other leading pages (optional)	• List of abbreviations or terms used • Brief notes about the authors • Preface or forward from a leading authority who endorses the report
Acknowledgments	• All sponsors, including government and other bodies • Consultants and advisers • Staff who have contributed to the survey and the report • Others providing services &/or support • Participants in the survey

Executive Summary

Introduction The executive summary provides an overview of the entire report in one to two pages. It should outline the rationale, methodology, key results and recommendations.

Content guide Follow the guidelines in the table below to help complete summaries under each of the given headings in the executive summary.

Heading	Guidelines for completion
Rationale	Outline the main reasons for STEPS surveillance.
Methodology	Briefly describe: • The scope of the surveillance. • The sampling method used. • The study population and its characteristics. • How the results are presented, for example "weighted to represent the total national population aged 25 to 64 years". • The survey process, including details of the data collection team, training and location of data collection.
Key results	• Select the most important variables (chosen according to those of most relevance to chronic diseases in your country) and present the key results for those variables. • Mention the other variables that are also included in the report, but limit results for them. • Identify the reasons why these findings are important, and the impact they are likely to be having on the health of the population.
Recommendations	Briefly discuss how the results may be useful and recommended actions.

Introduction

Introduction The introduction should include introductory comments to the report, outlining the background and purpose for your STEPS surveillance, and provide a brief description of STEPS and what the survey results will be used for.

Content guide Follow the guidelines in the table below to help complete summaries under each of the given headings.

Heading	Guidelines for completion
Introduction	• Introduce the Site Report as the main report of your STEPS survey.
Purpose	• Explain the purpose of STEPS surveillance in your site and how you intend to apply the results.
Description of STEPS	• Provide a brief description of what STEPS is. (i.e. surveillance of key risk factors for chronic disease)
Representation	• Explain who the results/findings will represent.
Chronic Disease Prevention	• Briefly discuss current and proposed chronic disease prevention issues in your site/country that the STEPS surveillance is intended help address.

Methods

Introduction   The methods should explain the scope of the STEPS survey, the methods used for data collection, and the implementation process. Also describe the sample and analytical methods in sufficient detail to demonstrate that the survey results are reliable and represent the intended population(s).

Identify where issues have arisen during data collection or analysis that may mean caution is needed when interpreting some results.

Content guide   Follow the guidelines in the table below to help complete summaries under each of the given headings.

Heading	Guidelines for completion
Scope	• Identify which core Steps (1-3) were covered and any expanded and optional items. • Specify languages used (and translation issues) in the survey.
Study population	• Describe the population of the STEPS survey (age, gender etc). • If strata were used, describe why and how these were defined. • Name the regions or areas surveyed, and the number of centres that were selected, their size and geographical coverage. • If the whole country was not covered, explain the reasons.
Instrument	• Describe the STEPS Instrument used and which Steps were included (1, 2, 3). • Outline which core and expanded items were covered. • Describe any adaptations made to the standard STEPS Instrument and any optional items added.
Sampling	• Describe the sampling method used for the survey. • Describe how the sampling frame / sampling units were derived, and how this was applied in the field. • Indicate the initial and actual sample size. • Detail the use of clusters (if relevant).
Staff recruitment and training	• Describe the training programmes provided for the survey personnel, the number of persons trained, and the background of trainees. • Describe the format, content and duration of the training sessions as well as the training provided for the pilot survey and for the full survey.

Methods, Continued

Content guide (continued)

Heading	Guidelines for completion
Survey implementation	• Describe the organisation of data collection teams including supervision, numbers involved, quality control, timeframe for data collection, etc. • Explain how and where the data collection teams made contact with survey participants. Describe the data collection setting(s). • Describe the data collection process and timeframes taken. Include information on the starting and completion dates of the survey. • Describe the data entry processes, method(s), timeframes and software used. • Describe the data analysis processes, method(s), timeframes and software used. Refer to the software capability to handle complex sample data for multi stage sampling techniques.
Analysis information	• Explain that most results generated are presented as means or percentages, with associated standard errors and derived confidence intervals weighted to represent the population. • Describe which statistical tests were used, if any, to test for differences between groups.
Response proportions	• Describe how response proportions were calculated. • Discuss the impact on interpretation of the results of sampling or participation issues.
Weighting	• Describe which methods (e.g. weighting) were used to adjust the results for the sampling design so they represent the population. • If additional strata were used then outline how weighting was amended for presentation of the stratum-specific results (post stratification weighting for age and sex). • Insert the weighting formulas used.
Comparisons with earlier surveys	• Describe which (if any) earlier surveys have been used for comparative purposes. • Where the STEPS survey follows an earlier survey, and statistical comparisons are made or trends over time are presented, describe how this was done.

Results

Introduction	The results should describe the actual sample obtained and the levels of participation achieved. Describe the demographic characteristics of the participants, as well as the results for each risk factor covered in the Instrument and their importance.

Demographic and sampling information	Follow the guidelines in the table below to help prepare content to describe the levels of participation under each of the following topic headings.

Heading	Guidelines for completion
Demographic characteristics	Describe the demographic characteristics of the participants, using the data book for examples. Include: – age-sex distribution – geographic distribution – ethnic groups
Population distribution	In a pyramid chart, show the age groups and sex distribution of the population at the last census if available.
Response proportions	Present in a table the response proportions achieved for Step 1, 2, 3 as appropriate, using the data book for examples.
Comment on participation	If there are any issues about low participation such as: • The participation levels varied between population groups such as older vs younger men. • If recruiting did not proceed as planned and a non-random sample was selected. • Discuss the impact on the interpretation of results of any sampling or participation issues.

Results, Continued

Risk factors   Introduce each of the following individual risk factors covered in the
Instrument with a brief note that explains its relevance.

- Tobacco use
- Alcohol consumption
- Low fruit and vegetable consumption
- Physical inactivity
- Overweight and obesity
- Raised blood pressure
- Raised blood glucose
- Abnormal blood lipids (subset raised total cholesterol)

**Risk factor
content guide**   Follow the guidelines in the table below to help prepare content for each of
the risk factors outlined above.

Heading	Guidelines for completion
Relevance of risk factor	Briefly outline the relevance of the risk factor for chronic diseases in your site. Use country specific data if possible.
Text description of main findings	• State the main findings in relation to each risk factor. • Describe any key subgroup differences, based on confidence intervals. • Refer for detail to specific tables from the data book.
Tables	• Present in tables, plots or graphs as appropriate the results, by age and gender groups. Use the data book as a guide on how to present information in tables. • If the strata were used, and results vary by strata, then show the strata results as separate tables. Otherwise, it is usually sufficient to combine strata. • Include total number (N) (total sample size). • Label carefully to identify if the data are weighted. • Include measures of confidence when appropriate (confidence intervals or standard deviations).
Additional description	• Describe in words any interesting results. • If these vary by age or sex, then consider presenting separately.

Continued on next page

Results, Continued

Combined risk factors

Follow the guidelines in the table below to help prepare content on combined risk factors.

Heading	Guidelines for completion
Relevance of combining risk factors	Briefly outline the relevance of looking at a combination of risk factors in your site. See data book and fact sheet for the risk factors to combine.
Text description of main findings	State the main findings in relation to both low risk (none of the risk factors present) and raised risk (presence of three or more of the selected risk factors). Describe any key subgroup differences. Refer for detail to specific tables from the data book.
Tables	• Present in table, plots or graphs as appropriate the results, by age and gender group. Use the data book as a guide on how to present information in tables. • If the strata were used, and results vary by strata, then show the strata results as separate tables. Otherwise, it is usually sufficient to combine strata. • Include total number (N) (total sample size). • Label carefully to identify if the data are weighted. • Include measures of confidence when appropriate (confidence intervals or standard deviations).
Additional description	• Describe in words any interesting results. • If these vary by age or sex, then consider presenting separately. • If the results differ by strata, then describe the differences in general terms, since this may impact on planned interventions.

Conclusions and Recommendations

Introduction   The conclusion and recommendations should discuss any new knowledge and why the findings are important. Discuss the strengths and weaknesses of the results presented, and any reservations in their interpretation or use.

Content guide   Follow the guidelines in the table below to help prepare content to describe the conclusions and recommendations under each of the following topic headings.

Heading	Guideline
Representation	Comment on the extent to which the results apply to the whole population or only to the individuals who were surveyed (depends on if data are weighted).
Methods	Comment on the quality of the survey and measures, and therefore their reliability.
Previous surveys	Mention any previous STEPS surveys or related surveys and how the findings relate.
New knowledge	Include, for example: • What was known before about these topics for this population? • What is added by this report? • What are the key new findings of importance and why are these important? • What impact will these have on the health of the population, in particular in respect to the burden of chronic noncommunicable diseases either currently or in the future?
Recommendations	Include for example: • Policies that might be impacted upon by these findings. • Actions that are derived from these findings. • Who should be appraised of the findings. • Any further research that is recommended to be undertaken.

Progress Report

Introduction   A progress report may be prepared, but only where interviewing takes longer than the usual eight week time period. The report should explain the reason for delays and provide an update on participation rates and data collection quality.

Intended audience   Progress reports are intended for the STEPS team and coordinating committee only, although details may be used to inform stakeholders of progress.

Content guide   Progress reports should be prepared in conjunction with data collection teams and the data entry supervisor.

Follow the guidelines in the table below to help prepare content for a progress report.

Heading	Guidelines for completion

Tables and plots	Describe in tables and/or plots:
	• Locations where interviewing is:
	  − complete
	  − ongoing
	  − awaited
	• Number of people selected in the sample to date.
	• Number and proportion who have completed.
	• Number who have refused or are not able to be contacted (non-response).
	• Number for whom no attempt has yet been made to contact.

Successes and problems	Identify successes and problems with: • Data collection • Data management • Data analysis
Weighting	Do not attempt to weight the records (for sampling or non-response) at this stage, as any calculation will be misleading and will be recalculated when the final data is available.

Part 5: STEPS Instrument

Overview

In this Part   This Part covers the following topics

Part 5: STEPS Instrument

STEPS

WHO STEPS Instrument (Core and Expanded)

World Health Organization

STEPS Instrument

Overview

Introduction	This is the generic STEPS Instrument template which sites/countries will use to develop their tailored instrument. It contains the: • CORE items (unshaded boxes) • EXPANDED items (shaded boxes) • Response options for Step 1, Step 2 and Step 3
Core items	The Core items for each section ask questions required to calculate basic variables. For example: • Current daily smokers • Mean BMI **Note:** All the core questions should be asked, removing core questions will impact the analysis.
Expanded items	The Expanded items for each section ask more detailed information. These should be included in your instrument if you want to focus specifically on. Examples include: • Use of smokeless tobacco • History of raised blood pressure
Guide to the columns	The table below is a brief guide to each of the columns in the Instrument.

Column	Description	Site Tailoring
Number	This question reference number is designed to help interviewers find their place if interrupted.	Renumber the instrument sequentially once the content has been finalised.
Question	Each question is to be read to the participants	• Select sections to use. • Add expanded and optional questions as desired.
Response	This column lists the available response options which the interviewer will be circling or filling in the text boxes. The skip instructions are shown on the right hand side of the responses and should be carefully followed during interviews.	• Add site specific responses for demographic responses (e.g. C5). • Change skip question identifiers from code to question number.
Code	The column is designed to match data from the instrument into the data entry tool, data analysis syntax, data book, and fact sheet.	This should never be changed or removed. The code is used as a general identifier for the data entry and analysis.

Note: It is recommended that you use both the core and expanded questions.

WHO STEPS Instrument
for Chronic Disease
Risk Factor Surveillance

<insert country/site name>

Survey Information

Location and Date		Response	Code
1	District code	⎣⎯⎣⎯⎣⎯⎣	I1
2	Centre/Village name		I2
3	Centre/Village code	⎣⎯⎣⎯⎣⎯⎣	I3
4	Interviewer Identification	⎣⎯⎣⎯⎣⎯⎣	I4
5	Date of completion of the instrument	⎣⎯⎣⎯⎣ ⎣⎯⎣⎯⎣ ⎣⎯⎣⎯⎣⎯⎣ dd mm year	I5

✂ - ✂

		Participant Id Number ⎣⎯⎣⎯⎣⎯⎣⎯⎣⎯⎣⎯⎣	
Consent, Interview Language and Name		**Response**	**Code**
6	Consent has been read out to participant	Yes 1 No 2 **If NO, read consent**	I6
7	Consent has been obtained (verbal or written)	Yes 1 No 2 **If NO, END**	I7
8	Interview Language [Insert Language]	English 1 [Add others] 2 [Add others] 3 [Add others] 4	I8
9	Time of interview (24 hour clock)	⎣⎯⎣⎯⎣ : ⎣⎯⎣⎯⎣ hrs mins	I9
10	Family Name		I10
11	First Name		I11
Additional Information that may be helpful			
12	Contact phone number where possible		I12
13	Specify whose phone	Work 1 Home 2 Neighbour 3 Other (specify) 4	I13
		Other ⎣⎯⎣⎯⎣⎯⎣⎯⎣⎯⎣⎯⎣⎯⎣	I13 other

Record and file identification information (I6 to I13) separately from the completed questionnaire.

Step 1 | Demographic Information

CORE: Demographic Information		
Questions	**Response**	**Code**
14	Sex (*Record Male / Female as observed*)	Male 1 Female 2	C1
15	What is your date of birth? *Don't Know 77 777 7777*	⊔⊔ ⊔⊔ ⊔⊔⊔⊔ *If known, go to C4* dd mm year	C2
16	How old are you?	Years ⊔⊔⊔	C3
17	In total, how many years have you spent at school or in full-time study (excluding pre-school)?	Years ⊔⊔⊔	C4

EXPANDED: Demographic Information			Response	Code
18	What is your [*insert relevant ethnic group / racial group / cultural subgroup / others*] <u>background</u>?		[*Locally defined*] 1 [*Locally defined*] 2 [*Locally defined*] 3 Refused 8	C5
19	What is the highest level of education you have completed? [*INSERT COUNTRY-SPECIFIC CATEGORIES*]		No formal schooling 1 Less than primary school 2 Primary school completed 3 Secondary school completed 4 High school completed 5 College/University completed 6 Post graduate degree 7 Refused 8	C6
20	Which of the following best describes your <u>main</u> work status over the last 12 months? [*INSERT COUNTRY-SPECIFIC CATEGORIES*] (*USE SHOWCARD*)		Government employee 1 Non-government employee 2 Self-employed 3 Non-paid 4 Student 5 Homemaker 6 Retired 7 Unemployed (able to work) 8 Unemployed (unable to work) 9 Refused 88	C7
21	How many people older than 18 years, including yourself, live in your household?		Number of people ⊔⊔⊔	C8
22	Taking **the past year**, can you tell me what the average earnings of the household have been? (*RECORD ONLY ONE, NOT ALL 3*)		Per week ⊔⊔⊔⊔⊔⊔⊔ *Go to T1* OR per month ⊔⊔⊔⊔⊔⊔⊔ *Go to T1* OR per year ⊔⊔⊔⊔⊔⊔⊔ *Go to T1* Refused 8	C9a C9b C9c C9d
23	If you don't know the amount, can you give an **estimate** of the annual household income if I read some options to you? Is it [*INSERT QUINTILE VALUES*] (*READ OPTIONS*)		≤ Quintile (Q) 1 1 More than Q 1, ≤ Q 2 2 More than Q 2, ≤ Q 3 3 More than Q 3, ≤ Q 4 4 More than Q 4 5 Don't Know 7 Refused 8	C10

Step 1	Behavioural Measurements

CORE: Tobacco Use

Now I am going to ask you some questions about various health behaviours. This includes things like smoking, drinking alcohol, eating fruits and vegetables and physical activity. Let's start with tobacco.

Questions		Response	Code
24	Do you currently smoke any **tobacco products**, such as cigarettes, cigars or pipes?	Yes 1 No 2 *If No, go to T6*	T1
25	**If Yes,** Do you currently smoke tobacco products **daily**?	Yes 1 No 2 *If No, go to T6*	T2
26	How old were you when you **first started** smoking daily?	Age (years) Don't remember 777 ⎣_⎦_⎦_⎦ *If Known, go to T5a*	T3
27	Do you remember how long ago it was? (RECORD ONLY 1, NOT ALL 3) Don't remember 777	In Years ⎣_⎦_⎦_⎦ *If Known, go to T5a*	T4a
		OR in Months ⎣_⎦_⎦_⎦ *If Known, go to T5a*	T4b
		OR in Weeks ⎣_⎦_⎦_⎦	T4c
28	On average, **how many** of the following do you smoke each day? (RECORD FOR EACH TYPE) Don't remember 777	Manufactured cigarettes ⎣_⎦_⎦_⎦	T5a
		Hand-rolled cigarettes ⎣_⎦_⎦_⎦	T5b
		Pipes full of tobacco ⎣_⎦_⎦_⎦	T5c
		Cigars, cheroots, cigarillos ⎣_⎦_⎦_⎦	T5d
		Other ⎣_⎦_⎦_⎦ *If other, go to T5 other*	T5e
		Other (please specify): ⎣_⎦_⎦_⎦_⎦_⎦_⎦	T5other

EXPANDED: Tobacco Use

Questions		Response	Code
29	In the past, did you **ever** smoke **daily**?	Yes 1 No 2 *If No, go to T9*	T6
30	**If Yes,** How old were you when you **stopped** smoking **daily**?	Age (years) Don't remember 777 ⎣_⎦_⎦_⎦ *If Known, go to T9*	T7
31	How **long ago** did you stop smoking daily? (RECORD ONLY 1, NOT ALL 3) Don't remember 777	Years ago ⎣_⎦_⎦_⎦ *If Known, go to T9*	T8a
		OR Months ago ⎣_⎦_⎦ *If Known, go to T9*	T8b
		OR Weeks ago ⎣_⎦_⎦	T8c
32	Do you **currently use** any **smokeless tobacco** such as [snuff, chewing tobacco, betel]?	Yes 1 No 2 *If No, go to T12*	T9
33	**If Yes,** Do you **currently use smokeless tobacco** products **daily?**	Yes 1 No 2 *If No, go to T12*	T10

EXPANDED: Tobacco Use, contd.

Questions		Response		Code
34	On average, how many **times a day** do you use ….	Snuff, by mouth	⎿⎽⏌⎽⏌⎽⏌	T11a
		Snuff, by nose	⎿⎽⏌⎽⏌⎽⏌	T11b
		Chewing tobacco	⎿⎽⏌⎽⏌⎽⏌	T11c
	(RECORD FOR EACH TYPE)	Betel, quid	⎿⎽⏌⎽⏌⎽⏌	T11d
	Don't Know 777	Other	⎿⎽⏌⎽⏌⎽⏌ *If Other, go to T11 other*	T11e
		Other (specify)	⎿⎽⏌⎽⏌⎽⏌⎽⏌⎽⏌⎽⏌	T11other
35	In the past, did you **ever use** smokeless tobacco such as [*snuff, chewing tobacco, or betel*] **daily**?	Yes	1	T12
		No	2	

CORE: Alcohol Consumption

The next questions ask about the consumption of alcohol.

Questions		Response		Code
36	Have you consumed alcohol (such as beer, wine, spirits, fermented cider or *[add other local examples]* within the **past 12 months**? *(USE SHOWCARD OR SHOW EXAMPLES)*	Yes	1	A1
		No	2 *If No, go to D1*	
37	In the past 12 months, **how frequently** have you had at least one drink? *(READ RESPONSES USE SHOWCARD)*	Daily	1	A2
		5-6 days per week	2	
		1-4 days per week	3	
		1-3 days per month	4	
		Less than once a month	5	
38	When you drink alcohol, **on average**, how many drinks do you have during one day?	Number	⎿⎽⏌⎽⏌	A3
		Don't know 77		
39	Have you consumed alcohol (such as beer, wine, spirits, fermented cider or *[add other local examples]* within the **past 30 days**? *(USE SHOWCARD OR SHOW EXAMPLES)*	Yes	1	A4
		No	2 *If No, go to A 6*	
40	During each of the **past 7 days**, how many standard drinks of any alcoholic drink did you have each day?	Monday	⎿⎽⏌⎽⏌	A5a
		Tuesday	⎿⎽⏌⎽⏌	A5b
		Wednesday	⎿⎽⏌⎽⏌	A5c
	(RECORD FOR EACH DAY USE SHOWCARD)	Thursday	⎿⎽⏌⎽⏌	A5d
		Friday	⎿⎽⏌⎽⏌	A5e
	Don't Know 77	Saturday	⎿⎽⏌⎽⏌	A5f
		Sunday	⎿⎽⏌⎽⏌	A5g

EXPANDED : Alcohol Consumption

Questions		Response		Code
41	In the past 12 months, what was the **largest number** of drinks you had on a single occasion, counting all types of standard drinks together?	Largest number	⎿_⏌_⏌	A6
42	**For men only:** In the past 12 months, on how many days did you have **five or more** standard drinks in a single day?	Number of days	⎿_⏌_⏌_⏌	A7
43	**For women only**: In the past 12 months, on how many days did you have **four or more** standard drinks in a single day?	Number of days	⎿_⏌_⏌_⏌	A8

CORE: Diet

The next questions ask about the fruits and vegetables that you usually eat. I have a nutrition card here that shows you some examples of local fruits and vegetables. Each picture represents the size of a serving. As you answer these questions please think of a typical week in the last year.

Questions		Response		Code
44	In a typical week, on how many days do you **eat fruit**? *(USE SHOWCARD)*	Number of days ⎿_⏌_⏌ *If Zero days, go to D3* Don't Know 77		D1
45	How many **servings** of fruit do you eat on **one** of those days? *(USE SHOWCARD)*	Number of servings ⎿_⏌_⏌ Don't Know 77		D2
46	In a typical week, on how many days do you **eat vegetables**? *(USE SHOWCARD)*	Number of days ⎿_⏌_⏌ *If Zero days, go to D5* Don't Know 77		D3
47	How many **servings** of vegetables do you eat on one of those days? *(USE SHOWCARD)*	Number of servings ⎿_⏌_⏌ Don't Know 77		D4

EXPANDED: Diet

		Response		Code
48	What type of **oil or fat is most often** used for meal preparation in your household? *(USE SHOWCARD SELECT ONLY ONE)*	Vegetable oil 1 Lard or suet 2 Butter or ghee 3 Margarine 4 Other 5 *If Other, go to D5 other* None in particular 6 None used 7 Don't know 7 7		D5
		Other ⎿_⏌_⏌_⏌_⏌_⏌_⏌_⏌		D5other

CORE: Physical Activity

Next I am going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically active person.

Think first about the time you spend doing work. Think of work as the things that you have to do such as paid or unpaid work, study/training, household chores, harvesting food/crops, fishing or hunting for food, seeking employment. *[Insert other examples if needed].* In answering the following questions 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate, 'moderate-intensity activities' are activities that require moderate physical effort and cause small increases in breathing or heart rate.

Questions		Response	Code
Activity at work			
49	Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like *[carrying or lifting heavy loads, digging or construction work*] for at least 10 minutes continuously? *[INSERT EXAMPLES] (USE SHOWCARD)*	Yes 1 No 2 *If No, go to P 4*	P1
50	In a typical week, on how many days do you do vigorous-intensity activities as part of your work?	Number of days ⌴_⌴	P2
51	How much time do you spend doing vigorous-intensity activities at work on a typical day?	Hours : minutes ⌴_⌴_⌴ : ⌴_⌴_⌴ hrs mins	P3 (a-b)
52	Does your work involve moderate-intensity activity, that causes small increases in breathing or heart rate such as brisk walking *[or carrying light loads*] for at least 10 minutes continuously? *[INSERT EXAMPLES] (USE SHOWCARD)*	Yes 1 No 2 *If No, go to P 7*	P4
53	In a typical week, on how many days do you do moderate-intensity activities as part of your work?	Number of days ⌴_⌴	P5
54	How much time do you spend doing moderate-intensity activities at work on a typical day?	Hours : minutes ⌴_⌴_⌴ : ⌴_⌴_⌴ hrs mins	P6 (a-b)
Travel to and from places			
The next questions exclude the physical activities at work that you have already mentioned. Now I would like to ask you about the usual way you travel to and from places. For example to work, for shopping, to market, to place of worship. [insert other examples if needed]			
55	Do you walk or use a bicycle (*pedal cycle*) for at least 10 minutes continuously to get to and from places?	Yes 1 No 2 *If No, go to P 10*	P7
56	In a typical week, on how many days do you walk or bicycle for at least 10 minutes continuously to get to and from places?	Number of days ⌴_⌴	P8
57	How much time do you spend walking or bicycling for travel on a typical day?	Hours : minutes ⌴_⌴_⌴ : ⌴_⌴_⌴ hrs mins	P9 (a-b)
Recreational activities			
The next questions exclude the work and transport activities that you have already mentioned. Now I would like to ask you about sports, fitness and recreational activities (leisure), [insert relevant terms].			
58	Do you do any vigorous-intensity sports, fitness or recreational (*leisure*) activities that cause large increases in breathing or heart rate like [*running or football,*] for at least 10 minutes continuously? *[INSERT EXAMPLES] (USE SHOWCARD)*	Yes 1 No 2 *If No, go to P 13*	P10
59	In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational (*leisure*) activities?	Number of days ⌴_⌴	P11
60	How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?	Hours : minutes ⌴_⌴_⌴ : ⌴_⌴_⌴ hrs mins	P12 (a-b)

CORE: Physical Activity (recreational activities) contd.

	Questions	Response	Code
61	Do you do any moderate-intensity sports, fitness or recreational (leisure) activities that causes a small increase in breathing or heart rate such as brisk walking,(cycling, swimming, volleyball)for at least 10 minutes continuously? [INSERT EXAMPLES] (USE SHOWCARD)	Yes 1 No 2 If No, go to P16	P13
62	In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational (leisure) activities?	Number of days ⎵⎵	P14
63	How much time do you spend doing moderate-intensity sports, fitness or recreational (leisure) activities on a typical day?	Hours : minutes ⎵⎵⎵ : ⎵⎵⎵ hrs mins	P15 (a-b)

Sedentary behaviour

The following question is about sitting or reclining at work, at home, getting to and from places, or with friends including time spent [sitting at a desk, sitting with friends, travelling in car, bus, train, reading, playing cards or watching television], but do not include time spent sleeping. [INSERT EXAMPLES] (USE SHOWCARD)

64	How much time do you usually spend sitting or reclining on a typical day?	Hours : minutes ⎵⎵⎵ : ⎵⎵⎵ hrs min s	P16 (a-b)

EXPANDED: History of Raised Blood Pressure

	Questions	Response		Code
65	When was your blood pressure last measured by a health professional?	Within past 12 months	1	H1
		1-5 years ago	2	
		Not within past 5 years	3	
66	During the past 12 months have you been told by a doctor or other health worker that you have raised blood pressure or hypertension?	Yes	1	H2
		No	2	
67	Are you currently receiving any of the following treatments for raised blood pressure prescribed by a doctor or other health worker as well as any advice?			
	Drugs (medication) that you have taken in the last 2 weeks	Yes	1	H3a
		No	2	
	Special prescribed diet	Yes	1	H3b
		No	2	
	Advice or treatment to lose weight	Yes	1	H3c
		No	2	
	Advice or treatment to stop smoking	Yes	1	H3d
		No	2	
	Advice to start or do more exercise	Yes	1	H3e
		No	2	
68	During the past 12 months have you seen a traditional healer for raised blood pressure or hypertension	Yes	1	H4
		No	2	
69	Are you currently taking any herbal or traditional remedy for your raised blood pressure?	Yes	1	H5
		No	2	

EXPANDED: History of Diabetes			
Questions		**Response**	**Code**
70	Have you had your blood sugar measured in the last 12 months?	Yes 1 No 2	H6
71	During the past 12 months, have you ever been told by a doctor or other health worker that you have diabetes?	Yes 1 No 2	H7
72	Are you currently receiving any of the following treatments for diabetes prescribed by a doctor or other health worker as well as any advice?		
	Insulin	Yes 1 No 2	H8a
	Oral drug (medication) that you have taken in the last 2 weeks	Yes 1 No 2	H8b
	Special prescribed diet	Yes 1 No 2	H8c
	Advice or treatment to lose weight	Yes 1 No 2	H8d
	Advice or treatment to stop smoking	Yes 1 No 2	H8e
	Advice to start or do more exercise	Yes 1 No 2	H8f
73	During the past 12 months have you seen a traditional healer for diabetes?	Yes 1 No 2	H9
74	Are you currently taking any herbal or traditional remedy for your diabetes?	Yes 1 No 2	H10

Step 2 — Physical Measurements

CORE: Height and Weight		Response	Code
75	Interviewer ID	⎣_⎦_⎦_⎦	M1
76	Device IDs for height and weight	Height ⎣_⎦_⎦	M2a
		Weight ⎣_⎦_⎦	M2b
77	Height	in Centimetres (cm) ⎣_⎦_⎦_⎦ . ⎣_⎦	M3
78	Weight *If too large for scale, code 666.6*	in Kilograms (kg) ⎣_⎦_⎦_⎦ . ⎣_⎦	M4
79	*(For women)* Are you pregnant?	Yes 1 *If Yes, go to M 8* No 2	M5
CORE: Waist			
80	Device ID for waist	⎣_⎦_⎦	M6
81	Waist circumference	in Centimetres (cm) ⎣_⎦_⎦_⎦ . ⎣_⎦	M7
CORE: Blood Pressure			
82	Interviewer ID	⎣_⎦_⎦_⎦	M8
83	Device ID for blood pressure	⎣_⎦_⎦	M9
84	Cuff size used	Small 1 Medium 2 Large 3	M10
85	Reading 1	Systolic (mmHg) ⎣_⎦_⎦_⎦	M11a
		Diastolic (mmHg) ⎣_⎦_⎦_⎦	M11b
86	Reading 2	Systolic (mmHg) ⎣_⎦_⎦_⎦	M12a
		Diastolic (mmHg) ⎣_⎦_⎦_⎦	M12b
87	Reading 3	Systolic (mmHg) ⎣_⎦_⎦_⎦	M13a
		Diastolic (mmHg) ⎣_⎦_⎦_⎦	M13b
88	During the past two weeks, have you been treated for raised blood pressure with drugs (medication) prescribed by a doctor or other health worker?	Yes 1 No 2	M14

EXPANDED: Hip Circumference and Heart Rate				
89	Hip circumference	in Centimetres (cm)	⎣_⎦_⎦_⎦ . ⎣_⎦	M15
90	Heart Rate (Record if automatic blood pressure device is used)			
	Reading 1	Beats per minute	⎣_⎦_⎦_⎦	M16a
	Reading 2	Beats per minute	⎣_⎦_⎦_⎦	M16b
	Reading 3	Beats per minute	⎣_⎦_⎦_⎦	M16c

Step 3 — Biochemical Measurements

CORE: Blood Glucose		Response	Code
91	During the last 12 hours have you had anything to eat or drink, other than water?	Yes 1 No 2	B1
92	Technician ID	└─┴─┴─┴─┘	B2
93	Device ID	└─┴─┴─┘	B3
94	Time of day blood specimen taken (24 hour clock)	Hours : minutes └─┴─┴─┘ : └─┴─┴─┘ hrs mins	B4
95	Fasting blood glucose	mmol/l └─┴─┴─┘ . └─┴─┴─┘	B5

CORE: Blood Lipids			Code
96	Device ID	└─┴─┴─┘	B6
97	Total cholesterol	mmol/l └─┴─┴─┘ . └─┴─┴─┘	B7

EXPANDED: Triglycerides and HDL Cholesterol			
98	Triglycerides	mmol/l └─┴─┴─┘ . └─┴─┴─┘	B8
99	HDL Cholesterol	mmol/l └─┴─┘ . └─┴─┴─┘	B9

World Health Organization

Question by Question Guide

World Health Organization

WHO STEPS Instrument (Core and Expanded)

STEPS Question by Question (Q by Q) Guide

Overview

Introduction This section includes the STEPS Instrument as well as the Question by Question Guide which field staff will be using during fieldwork. There is a brief explanation for each of the questions.

Purpose The purpose of the question by question instruction guide is to provide background information to the interviewers and supervisors as to what is intended by each question.

Interviewers can use this information when participants request clarification about specific questions or they do not know the answer.

Interviewers and supervisors should refrain from offering their own interpretations.

Guide to the columns The table below is a brief guide to each of the columns in the Instrument.

Column	Description	Site Tailoring
Number	This question reference number is designed to help interviewers find their place if interrupted.	Renumber the instrument sequentially once the content has been finalised
Question	Each question is to be read to the participants	• Select sections to use. • Add expanded and optional questions as desired.
Response	This column lists the available response options which the interviewer will be circling or filling in the text boxes. The skip instructions are shown on the right hand side of the responses and should be carefully followed during interviews.	• Add site specific responses for demographic responses (e.g. C5). • Change skip question identifiers from code to question number.
Code	The column is designed to match data from the instrument into the data entry tool, data analysis syntax, data book, and fact sheet.	This should never be changed or removed. The code is used as a general identifier for the data entry and analysis.

Note: It is recommended that you use both the core and expanded questions.

STEPS Q by Q Guide
for Chronic Disease Risk Factor Surveillance
<insert country/site name>

Survey Information

	Location and Date	Response	Code
1	District code *Record District code from list provided*	⊔⊔⊔	I1
2	Centre/Village name *Insert Centre or Village Name as appropriate*		I2
3	Centre/Village code *Record Centre or Village code from list provided*	⊔⊔⊔	I3
4	Interviewer Identification *Record interviewer's identification*	⊔⊔⊔	I4
5	Date of completion of the instrument *Record date when instrument actually completed*	⊔⊔ ⊔⊔ ⊔⊔⊔⊔ dd mm year	I5

✂ - ✂

For further guidance on obtaining Consent, see Part 4, Section 1, Page 4-1-11.

		Participant Id Number ⊔⊔⊔⊔⊔⊔	
	Consent, Interview Language and Name	**Response**	**Code**
6	Consent has been read out to participant *Circle relevant response*	Yes 1 No 2 **If NO, read consent**	I6
7	Consent has been obtained (verbal or written) *Circle relevant response*	Yes 1 No 2 **If NO, END**	I7
8	Interview Language [Insert Language] *Circle relevant response*	English 1 [Add others] 2 [Add others] 3 [Add others] 4	I8
9	Time of interview (24 hour clock) *Record time interview started*	⊔⊔ : ⊔⊔ hrs mins	I9
10	Family Name *Write family name (reassure the participant on the confidentiality nature of this information and is only needed for follow up)*		I10
11	First Name *Write first name of respondent*		I11
Additional Information that may be helpful			
12	Contact phone number where possible *Record phone number*		I12
13	Specify whose phone *Circle relevant response*	Work 1 Home 2 Neighbour 3 Other (specify) 4	I13
		Other ⊔⊔⊔⊔⊔⊔⊔⊔	I13 other

Record and file identification information (I6 to I13) separately from the completed questionnaire.
WHO STEPwise approach to chronic disease risk factor surveillance- Instrument v2.0

Step 1 Demographic Information

For further guidance on completing demographic information, see Part 3, Section 3, Page 3-3-1,.

CORE: Demographic Information

Questions		Response		Code
14	Sex (*Record Male / Female as observed*) *Circle Male / Female as observed*	Male 1 Female 2		C1
15	What is your date of birth? *Record date of birth of participant* *Don't Know 77 777 7777*	⎵⎵⎵ ⎵⎵⎵ ⎵⎵⎵⎵ *If known, Go to C4* dd mm year		C2
16	How old are you? *Help participant estimate their age by interviewing them about their recollection of widely known major events*	Years	⎵⎵⎵	C3
17	In total, how many years have you spent at school or in full-time study (excluding pre-school)? *Record total number of years of education (excluding pre-school and kindergarten)*	Years	⎵⎵⎵	C4

EXPANDED: Demographic Information

#	Question	Response		Code
18	What is your [*insert relevant ethnic group / racial group / cultural subgroup / others*] background? *Circle the relevant ethnic/cultural group the participant belongs to*	[*Locally defined*] 1 [*Locally defined*] 2 [*Locally defined*] 3 Refused 8		C5
19	What is the highest level of education you have completed? *If a person attended a few months of the first year of secondary school but did not complete the year, record "primary school completed". If a person only attended a few years of primary school, record "less than primary school".* *Circle appropriate response* [INSERT COUNTRY-SPECIFIC CATEGORIES]	No formal schooling 1 Less than primary school 2 Primary school completed 3 Secondary school completed 4 High school completed 5 College/University completed 6 Post graduate degree 7 Refused 8		C6
20	Which of the following best describes your main work status over the last 12 months? *The purpose of this question is to help answer other questions such as whether or not health status contributes to unemployment, or whether people in different kinds of occupations may be confronted with different risk factors.* *Circle appropriate response* [INSERT COUNTRY-SPECIFIC CATEGORIES] (USE SHOWCARD)	Government employee 1 Non-government employee 2 Self-employed 3 Non-paid 4 Student 5 Homemaker 6 Retired 7 Unemployed (able to work) 8 Unemployed (unable to work) 9 Refused 88		C7
21	How many people older than 18 years, including yourself, live in your household? *Record the total number of people living in the household who are 18 years or older*	Number of people ⎵⎵⎵		C8
22	Taking **the past year**, can you tell me what the average earnings of the household have been? *(RECORD ONLY ONE, NOT ALL 3)* *Write down first total earnings (in local currency) of all household members and then average them out and record the average earnings. If refused to answer skip to C10*	Per week ⎵⎵⎵⎵⎵⎵⎵ *Go to T1* OR per month ⎵⎵⎵⎵⎵⎵⎵ *Go to T1* OR per year ⎵⎵⎵⎵⎵⎵⎵ *Go to T1* Refused 8		C9a C9b C9c C9d

23	If you don't know the amount, can you give an **estimate** of the annual household income if I read some options to you? Is it [INSERT QUINTILE VALUES IN LOCAL CURRENCY] (READ OPTIONS) *Circle the quintile value which is the closest to the annual household income.*	≤ Quintile (Q) 1 1 More than Q 1, ≤ Q 2 2 More than Q 2, ≤ Q 3 3 More than Q 3, ≤ Q 4 4 More than Q 4 5 Don't Know 7 Refused 8	C10

Step 1	Behavioural Measurements

For further guidance on completing Behavioural Measures, see Part 3, Section 3, Page 3-3-1,.

CORE: Tobacco Use

Now I am going to ask you some questions about various health behaviours. This includes things like smoking, drinking alcohol, eating fruits and vegetables and physical activity. Let's start with tobacco.

Questions		Response	Code
24	Do you currently smoke any **tobacco products**, such as cigarettes, cigars or pipes? *Think of any tobacco products the participant is smoking currently*	Yes 1 No 2 *If No, go to T6*	T1
25	**If Yes,** Do you currently smoke tobacco products **daily**? *This question is only for current smokers/users of tobacco products.*	Yes 1 No 2 *If No, go to T6*	T2
26	How old were you when you **first started** smoking daily? *For daily smokers/users of tobacco products only. Think of the time the participant started to smoke any tobacco products daily*	Age (years) Don't remember 777 ⎣__⎦__⎦ *If Known, go to T5a*	T3
27	Do you remember how long ago it was? *This question is for daily smokers/users of tobacco products only. If the participant doesn't remember his/her age, then record the time in weeks, months or years as appropriate* (RECORD ONLY 1, NOT ALL 3) Don't remember 777	In Years ⎣__⎦__⎦ *If Known, go to T5a*	T4a
		OR in Months ⎣__⎦__⎦ *If Known, go to T5a*	T4b
		OR in Weeks ⎣__⎦__⎦	T4c
28	On average, **how many** of the following do you smoke each day? *Specify zero if no products were used in each category instead of leaving categories blank.* (RECORD FOR EACH TYPE) Don't remember 777	Manufactured cigarettes ⎣__⎦__⎦	T5a
		Hand-rolled cigarettes ⎣__⎦__⎦	T5b
		Pipes full of tobacco ⎣__⎦__⎦	T5c
		Cigars, cheroots, cigarillos ⎣__⎦__⎦	T5d
		Other ⎣__⎦__⎦ *If other, go to T5 other*	T5e
		Other (please specify): ⎣__⎦__⎦__⎦__⎦__⎦__⎦	T5other

EXPANDED: Tobacco Use			
Questions		**Response**	**Code**
29	In the past, did you **ever** smoke **daily**? *Think of the time when the participant may have been smoking tobacco products on a daily basis.*	Yes 1 No 2 *If No, go to T9*	T6
30	**If Yes,** How old were you when you **stopped** smoking **daily**? *Think of the time when the participant stopped smoking any tobacco products on a daily basis.*	Age (years) Don't remember 777 ⎍⎍⎍ *If Known, go to T9*	T7
31	How **long ago** did you stop smoking daily? *If the participant doesn't remember his/her age, then record the time duration in weeks, months or years as appropriate.* *(RECORD ONLY 1, NOT ALL 3)* Don't remember 777	Years ago ⎍⎍⎍ *If Known, go to T9*	T8a
		OR Months ago ⎍⎍ *If Known, go to T9*	T8b
		OR Weeks ago ⎍⎍	T8c
32	Do you **currently use** any **smokeless tobacco** such as [*snuff, chewing tobacco, betel*]? *Think of any smokeless tobacco products the participant is using currently*	Yes 1 No 2 *If No, go to T12*	T9
33	**If Yes,** Do you **currently use smokeless tobacco** products **daily?** *For daily users of smokeless tobacco products only.*	Yes 1 No 2 *If No, go to T12*	T10
34	On average, how many **times a day** do you use …. *Record for each type of smokeless tobacco products* *(RECORD FOR EACH TYPE)* Don't Know 777	Snuff, by mouth ⎍⎍⎍	T11a
		Snuff, by nose ⎍⎍⎍	T11b
		Chewing tobacco ⎍⎍⎍	T11c
		Betel, quid ⎍⎍⎍	T11d
		Other ⎍⎍⎍ *If Other, go to T11 other*	T11e
		Other (specify) ⎍⎍⎍⎍⎍⎍⎍	T11other
35	In the past, did you **ever use** smokeless tobacco such as [*snuff, chewing tobacco, or betel*] **daily**? *Think of the time when the participant may have been using smokeless tobacco products on a daily basis.*	Yes 1 No 2	T12

CORE: Alcohol Consumption

The next questions ask about the consumption of alcohol.

	Questions	Response		Code
36	Have you consumed alcohol (such as beer, wine, spirits, fermented cider) or *[add other local examples]* within the **past 12 months**? *Think of any drinks that contains alcohol* *(USE SHOWCARD OR SHOW EXAMPLES)*	Yes No	1 2 *If No, go to D1*	A1
37	In the past 12 months, **how frequently** have you had at least one drink? *(READ RESPONSES USE SHOWCARD)* *Think of the past year only*	Daily 5-6 days per week 1-4 days per week 1-3 days per month Less than once a month	1 2 3 4 5	A2
38	When you drink alcohol, **on average**, how many drinks do you have during one day? *Help the respondent by averaging out the total number of drinks*	Number Don't know 77	⎵⎵⎵	A3
39	Have you consumed alcohol (such as beer, wine, spirits, fermented cider or *[add other local examples]* within the **past 30 days**? *Think of the past 30 days only* *(USE SHOWCARD OR SHOW EXAMPLES)*	Yes No	1 2 *If No, go to A 6*	A4
40	During each of the **past 7 days**, how many standard drinks of any alcoholic drink did you have each day? *Think of the past week, only.* *A "standard drink" is the amount of ethanol contained in standard glasses of beer, wine, fortified wine such as sherry, and spirits.* *Depending on the country, these amounts will vary between 8 and 13 grams of ethanol.* *Record for each day the number of standard drinks. If no drinks record 00.* *(USE SHOWCARD)* Don't Know 77	Monday ⎵⎵⎵ Tuesday ⎵⎵⎵ Wednesday ⎵⎵⎵ Thursday ⎵⎵⎵ Friday ⎵⎵⎵ Saturday ⎵⎵⎵ Sunday ⎵⎵⎵		A5a A5b A5c A5d A5e A5f A5g

EXPANDED : Alcohol Consumption

	Questions	Response		Code
41	In the past 12 months, what was the **largest number** of drinks you had on a single occasion, counting all types of standard drinks together? *Think of the past year only*	Largest number	⎵⎵⎵	A6
42	**For men only:** In the past 12 months, on how many days did you have **five or more** standard drinks in a single day? *To be asked to men only and think of the past year only*	Number of days	⎵⎵⎵⎵	A7
43	**For women only**: In the past 12 months, on how many days did you have **four or more** standard drinks in a single day? *To be asked to women only and think of the past year only*	Number of days	⎵⎵⎵⎵	A8

CORE: Diet			
The next questions ask about the fruits and vegetables that you usually eat. I have a nutrition card here that shows you some examples of local fruits and vegetables. Each picture represents the size of a serving. As you answer these questions please think of a typical week in the last year.			
Questions		**Response**	**Code**
44	In a typical week, on how many days do you **eat fruit**? *(USE SHOWCARD)* *Think of any fruit on the show card. "Typical week" means a week when a person is eating fruit and not an average over a period*	Number of days Don't Know 77 └─┴─┘ *If Zero days, go to D3*	D1
45	How many **servings** of fruit do you eat on **one** of those days? *(USE SHOWCARD)* *Think of one day the participant can recall easily*	Number of servings └─┴─┘ Don't Know 77	D2
46	In a typical week, on how many days do you **eat vegetables**? *(USE SHOWCARD)* *Think of any vegetable on the show card. "Typical week" means a week when a person is eating vegetable and not an average over a period*	Number of days Don't Know 77 └─┴─┘ *If Zero days, go to D5*	D3
47	How many **servings** of vegetables do you eat on one of those days? *Think of one day the participant can recall easily* *(USE SHOWCARD)*	Number of servings └─┴─┘ Don't Know 77	D4

EXPANDED: Diet			
48	What type of **oil or fat is most often** used for meal preparation in your household? *Circle the appropriate response* *(USE SHOWCARD SELECT ONLY ONE)*	Vegetable oil 1 Lard or suet 2 Butter or ghee 3 Margarine 4 Other 5 *If Other, go to D5other* None in particular 6 None used 7 Don't know 7 7	D5
		Other └─┴─┴─┴─┴─┴─┴─┘	D5other

CORE: Physical Activity

Next I am going to ask you about the time you spend doing different types of physical activity in a typical week. Please answer these questions even if you do not consider yourself to be a physically active person. There are various domains of activity which need to be included; work, activities in and around the home and garden, to get from place-to-place (transport-related) and recreation (discretionary or leisure-time) exercise or sports activities. This opening statement **should not** be omitted.

The respondent will have to think first about the time she/he spends doing work. Work includes things that he/she has to do such as paid or unpaid work, household chores, harvesting food, fishing or hunting for food, seeking employment. [Insert other examples if needed]

In answering the following questions 'vigorous-intensity activities' are activities that require hard physical effort and cause large increases in breathing or heart rate, 'moderate-intensity activities' are activities that require moderate physical effort and cause small increases in breathing or heart rate.

Questions		Response	Code
Activity at work			
49	Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like *[carrying or lifting heavy loads, digging or construction work*] for at least 10 minutes continuously? *Activities are regarded as vigorous intensity if they cause a large increase in breathing and/or heart rate.* [INSERT EXAMPLES] (USE SHOWCARD)	Yes 1 No 2 *If No, go to P 4*	P1
50	In a typical week, on how many days do you do vigorous-intensity activities as part of your work? *"Typical week" means a week when a person is doing vigorous intensity activities and not an average over a period Valid responses range from 1-7.*	Number of days ⎣_⎦	P2
51	How much time do you spend doing vigorous-intensity activities at work on a typical day? *Think of one day you can recall easily. Consider only those activities undertaken continuously for 10 minutes or more. Probe very high responses (over 4 hrs) to verify*	Hours : minutes ⎣_⎦_⎦ : ⎣_⎦ hrs mins	P3 (a-b)
52	Does your work involve moderate-intensity activity, that causes small increases in breathing or heart rate such as brisk walking *[or carrying light loads]* for at least 10 minutes continuously? *Activities are regarded as moderate intensity if they cause a small increase in breathing and/or heart rate.* [INSERT EXAMPLES] (USE SHOWCARD)	Yes 1 No 2 *If No, go to P 7*	P4
53	In a typical week, on how many days do you do moderate-intensity activities as part of your work? *Valid responses range from 1-7*	Number of days ⎣_⎦	P5
54	How much time do you spend doing moderate-intensity activities at work on a typical day? *Think of one day you can recall easily. Consider only those activities undertaken continuously for 10 minutes or more. Probe very high responses (over 4 hrs) to verify*	Hours : minutes ⎣_⎦_⎦ : ⎣_⎦ hrs mins	P6 (a-b)
Travel to and from places			
The next questions exclude the physical activities at work that you have already mentioned. Now I would like to ask you about the usual way you travel to and from places. For example to work, for shopping, to market, to place of worship. [insert other examples if needed] *The introductory statement to the following questions on transport-related physical activity is very important. It asks and helps the participant to now think about how they travel around getting from place-to-place. This statement **should not** be omitted.*			
55	Do you walk or use a bicycle (*pedal cycle*) for at least 10 minutes continuously to get to and from places? *Circle the appropriate response*	Yes 1 No 2 *If No, go to P 10*	P7
56	In a typical week, on how many days do you walk or bicycle for at least 10 minutes continuously to get to and from places? *Valid responses range from 1-7*	Number of days ⎣_⎦	P8
57	How much time do you spend walking or bicycling for travel on a typical day? *Think of one day you can recall easily. Consider the total amount of time walking or bicycling for trips of 10 minutes or more. Probe very high responses (over 4 hrs) to verify.*	Hours : minutes ⎣_⎦_⎦ : ⎣_⎦ hrs mins	P9 (a-b)

	Recreational activities		
	The next questions exclude the work and transport activities that you have already mentioned. Now I would like to ask you about sports, fitness and recreational activities (leisure),[insert relevant terms]. *This introductory statement directs the participant to think about recreational activities. This can also be called discretionary or leisure time. It includes sports and exercise but is not limited to participation competitions. Activities reported should be done regularly and not just occasionally. It is important to focus on only recreational activities and not to include any activities already mentioned. This statement **should not** be omitted.*		
58	Do you do any vigorous-intensity sports, fitness or recreational (*leisure*) activities that cause large increases in breathing or heart rate like [*running or football,*] for at least 10 minutes continuously? [INSERT EXAMPLES] (USE SHOWCARD) ? *Activities are regarded as vigorous intensity if they cause a large increase in breathing and/or heart rate.*	Yes 1 No 2 *If No, go to P 13*	P10
59	In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational (*leisure*) activities? *Valid responses range from 1-7*	Number of days └─┘	P11
60	How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day? *Think of one day you can recall easily. Consider the total amount of time doing vigorous recreational activities for periods of 10 minutes or more. Probe very high responses (over 4 hrs).*	Hours : minutes └─┴─┘ : └─┴─┘ hrs mins	P12 (a-b)
61	Do you do any moderate-intensity sports, fitness or recreational (*leisure*) activities that causes a small increase in breathing or heart rate such as brisk walking,(*cycling, swimming, volleyball*)for at least 10 minutes continuously? *Activities are regarded as moderate intensity if they cause a small increase in breathing and/or heart rate.* [INSERT EXAMPLES] (USE SHOWCARD)	Yes 1 No 2 *If No, go to P16*	P13
62	In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational (*leisure*) activities? *Valid responses range from 1-7*	Number of days └─┘	P14
63	How much time do you spend doing moderate-intensity sports, fitness or recreational (*leisure*) activities on a typical day? *Think of one day you can recall easily. Consider the total amount of time doing moderate recreational activities for periods of 10 minutes or more. Probe very high responses (over 4 hrs).*	Hours : minutes └─┴─┘ : └─┴─┘ hrs mins	P15 (a-b)
	Sedentary behaviour		
	The following question is about sitting or reclining at work, at home, getting to and from places, or with friends including time spent [sitting at a desk, sitting with friends, travelling in car, bus, train, reading, playing cards or watching television], but do not include time spent sleeping. [INSERT EXAMPLES] (USE SHOWCARD)		
64	How much time do you usually spend sitting or reclining on a typical day? *Consider total time spent at work sitting, in an office, reading, watching television, using a computer, doing hand craft like knitting, resting etc. Do not include time spent sleeping.*	Hours : minutes └─┴─┘ : └─┴─┘ hrs min s	P16 (a-b)

EXPANDED: History of Raised Blood Pressure

Questions		Response	Code
65	When was your blood pressure last measured by a health professional?	Within past 12 months 1	H1
		1-5 years ago 2	
		Not within past 5 years 3	
66	During the past 12 months have you been told by a doctor or other health worker that you have raised blood pressure or hypertension?	Yes 1	H2
		No 2	
67	Are you currently receiving any of the following treatments/advice for high blood pressure prescribed by a doctor or other health worker?		
	Drugs (medication) that you have taken in the last 2 weeks	Yes 1	H3a
		No 2	
	Special prescribed diet	Yes 1	H3b
		No 2	
	Advice or treatment to lose weight	Yes 1	H3c
		No 2	
	Advice or treatment to stop smoking	Yes 1	H3d
		No 2	
	Advice to start or do more exercise	Yes 1	H3e
		No 2	
68	During the past 12 months have you seen a traditional healer for raised blood pressure or hypertension	Yes 1	H4
		No 2	
69	Are you currently taking any herbal or traditional remedy for your raised blood pressure?	Yes 1	H5
		No 2	

EXPANDED: History of Diabetes

Questions		Response	Code
70	Have you had your blood sugar measured in the last 12 months?	Yes 1	H6
		No 2	
71	During the past 12 months, have you ever been told by a doctor or other health worker that you have diabetes?	Yes 1	H7
		No 2	
72	Are you currently receiving any of the following treatments/advice for diabetes prescribed by a doctor or other health worker?		
	Insulin	Yes 1	H8a
		No 2	
	Oral drug (medication) that you have taken in the last 2 weeks	Yes 1	H8b
		No 2	
	Special prescribed diet	Yes 1	H8c
		No 2	
	Advice or treatment to lose weight	Yes 1	H8d
		No 2	
	Advice or treatment to stop smoking	Yes 1	H8e
		No 2	
	Advice to start or do more exercise	Yes 1	H8f
		No 2	
73	During the past 12 months have you seen a traditional healer for diabetes?	Yes 1	H9
		No 2	
74	Are you currently taking any herbal or traditional remedy for your diabetes?	Yes 1	H10
		No 2	

Step 2	Physical Measurements

For guidance on taking & completing physical measurements, see Part 3, Section 4, Page 3-4-1

	CORE: Height and Weight	**Response**	**Code**
75	Interviewer ID *Record interviewer ID(for height, weight and waist circumference)*	⎵⎵⎵⎵	M1
76	Device IDs for height and weight *Record device IDs*	Height ⎵⎵⎵	M2a
		Weight ⎵⎵⎵	M2b
77	Height *Record participant's height in centimetres*	in Centimetres (cm) ⎵⎵⎵⎵ . ⎵	M3
78	Weight *Record participant's weight in kg* If too large for scale, code 666.6	in Kilograms (kg) ⎵⎵⎵⎵ . ⎵	M4
79	*(For women)* Are you pregnant? *If yes, skip to M8*	Yes 1 If Yes, go to M 8 No 2	M5
	CORE: Waist		
80	Device ID for waist *Record device ID*	⎵⎵⎵	M6
81	Waist circumference *Record participant's waist circumference in centimetres*	in Centimetres (cm) ⎵⎵⎵⎵ . ⎵	M7
	CORE: Blood Pressure		
82	Interviewer ID *Record interviewer's ID (in most cases technician would be the same as for height, weight & waist circumference)*	⎵⎵⎵⎵	M8
83	Device ID for blood pressure *Record device ID*	⎵⎵⎵	M9
84	Cuff size used *Circle size used*	Small 1 Medium 2 Large 3	M10
85	Reading 1 *Record first measurement after the participant has rested for 15 minutes. Wait 3 minutes before taking second measurement.*	Systolic (mmHg) ⎵⎵⎵	M11a
		Diastolic (mmHg) ⎵⎵⎵	M11b
86	Reading 2 *Record second measurement. Ask the participant to rest for another 3 minutes before taking the third measurement*	Systolic (mmHg) ⎵⎵⎵	M12a
		Diastolic (mmHg) ⎵⎵⎵	M12b
87	Reading 3 *Record third measurement*	Systolic (mmHg) ⎵⎵⎵	M13a
		Diastolic (mmHg) ⎵⎵⎵	M13b
88	During the past two weeks, have you been treated for raised blood pressure with drugs (medication) prescribed by a doctor or other health worker? *Circle appropriate response*	Yes 1 No 2	M14
	EXPANDED: Hip Circumference and Heart Rate		
89	Hip circumference *Record participant's hip circumference in cm*	in Centimetres (cm) ⎵⎵⎵⎵ . ⎵	M15
90	Heart Rate (Record if automatic blood pressure device is used)		
	Reading 1 *Record first measurement*	Beats per minute ⎵⎵⎵	M16a
	Reading 2 *Record second measurement*	Beats per minute ⎵⎵⎵	M16b
	Reading 3 *Record third measurement*	Beats per minute ⎵⎵⎵	M16c

Step 3   Biochemical Measurements

For guidance on taking & completing biochemical measurements, see Part 3, Section 5, Page 3-5-1,

CORE: Blood Glucose		Response	Code
91	During the last 12 hours have you had anything to eat or drink, other than water? *It is essential that the participant has fasted*	Yes 1 No 2	B1
92	Technician ID	|__|__|__|__|	B2
93	Device ID	|__|__|__|	B3
94	Time of day blood specimen taken (24 hour clock)	Hours : minutes |__|__| : |__|__| hrs mins	B4
95	Fasting blood glucose	mmol/l |__|__|__| . |__|__|	B5

CORE: Blood Lipids			Code
96	Device ID	|__|__|__|	B6
97	Total cholesterol	mmol/l |__|__|__| . |__|__|__|	B7

EXPANDED: Triglycerides and HDL Cholesterol			Code
98	Triglycerides	mmol/l |__|__|__| . |__|__|__|	B8
99	HDL Cholesterol	mmol/l |__|__| . |__|__|__|	B9

World Health Organization

Section 3: Show Cards

Overview

Introduction   Show cards are to be used during the interviews to show or explain the meanings of some of the items asked.

Show cards   The section contains the following show cards:

Show Card	See Page
List of Work Status	5-3-2
List of Tobacco Products	5-3-3
Alcohol Consumption	5-3-4
Diet (Typical Fruit and Vegetables and Serving Sizes)	5-3-5
Typical Physical Activities	5-3-6

List of Work Status

For use with   This show card relates to:

Step	Section	Items
Step 1, core demographic information	C	C7

Work Status	Description
Government employee	An individual who is hired by a government office or agency and paid a salary. This includes employees of: • Federal • State, or • Municipal governments and their agencies. • Parastatal enterprises, and • Semi-autonomous institutions (such as social security institutions) that are owned by the government. • Institutions like religious schools (if paid by the government).
Non-government employee	An individual who is hired to work and is paid a salary or wages. This includes any employees not working for the government.
Self-employed	An individual who produces goods for sale or earns an income through provision of services to different people or firms. The individual works alone or with intermittent assistance from others, but does not employ anyone for a paid wage or salary on a regular basis.
Non-paid - subsistence farming etc	An individual who spends significant amount of time working for a volunteer organisation, family business, family farm or other similar activity without pay.
Student	An individual whose primary activity is engaging in studies at elementary, secondary, university or technical schools.
Homemaker (household chores)	An individual whose primary activity is in carrying out household tasks without being paid.
Retired	An individual who has earned income during some period in the workforce or as an employer and who is no longer working due to age.
Unemployed - able to work	An individual who could work but does not currently have a job or business (excluding homemaker).
Unemployed - unable to work	An individual who cannot work because of his/her health status.

List of Tobacco Products

For use with   This show card relates to:

Step	Section	Items
Step 1, core tobacco use	T	T1 to T8

- **Cigarettes**

- **Cigarillos**

- **Cigars**

- **Cheroots**

- **Chuttas**

- **Bidis**

- **Goza / Hookah**

- **Local tobacco products** (each country to add to the list)

- **Local tobacco products** (each country to add to the list)

- **Local tobacco products** (each country to add to the list)

Alcohol Consumption

For use with   This show card relates to:

Step	Section	Items
Step 1, core alcohol consumption	A	A1 to A5

1 standard bottle
of **regular beer**
(285ml)

1 single measure
of **spirits** (30ml)

1 medium size
glass of wine
(120ml)

1 measure of
aperitif (60ml)

Note: net alcohol content of a **standard drink is generally 10g.** of ethanol depending on the country. Countries will adapt this measure according to their own standards and will report this measure if different from the standard mentioned above

Diet (Typical Fruit and Vegetables and Serving Sizes)

For use with   This show card relates to:

Step	Section	Items
Step 1, core diet	D	D1 to D4

VEGETABLES are considered to be:	1 Serving =	Examples
Raw green leafy vegetables	1 cup	Spinach, salad, etc.
Other vegetables, cooked or chopped raw	½ cup	Tomatoes, carrots, pumpkin, corn, Chinese cabbage, fresh beans, onion, etc.
Vegetable juice	½ cup	

FRUIT Is considered to be:	1 Serving =	Examples
Apple, banana, orange	1 medium size piece	
Chopped, cooked, canned fruit	½ cup	
Fruit juice	½ cup	Juice from fruit, not artificially flavoured

Serving size   One standard serving = 80 grams (translated into different units of cups depending on type of vegetable and standard cup measures available in the country).

WHO Recommendation   The World Health Organization recommends at least:

- 400 grams of vegetables and fruits per day, or
- Five servings of 80 grams each.

Note: Tubers such as potatoes and cassava, however, are not included in this recommendation

Typical Physical Activities

For use with	This show card relates to:	Step	Section	Items
		Step 1, core physical activity	P	P to P15

WORK RELATED PHYSICAL ACTIVITY		LEISURE/ SPARE TIME RELATED PHYSICAL ACTIVITY	
MODERATE Intensity Activities Makes you breathe somewhat harder than normal	**VIGOROUS Intensity Activities** Makes you breathe much harder than normal	**MODERATE Intensity Activities** Makes you breathe somewhat harder than normal	**VIGOROUS Intensity Activities** Makes you breathe much harder than normal
Examples: - Cleaning (vacuuming, mopping, polishing, scrubbing, sweeping, ironing) - Washing (beating and brushing carpets, wringing clothes (by hand) - Gardening - Milking cows (by hand) - Planting and harvesting crops - Digging dry soil (with spade) - Weaving - Woodwork (chiselling, sawing softwood) - Mixing cement (with shovel) - Labouring (pushing loaded wheelbarrow, operating jackhammer) - Walking with load on head - Drawing water - Tending animals	**Examples:** - Forestry (cutting, chopping, carrying wood) - Sawing hardwood - Ploughing - Cutting crops (sugar cane) - Gardening (digging) - Grinding (with pestle) - Labouring (shovelling sand) - Loading furniture (stoves, fridge) - Instructing spinning (fitness) - Instructing sports aerobics - Sorting postal parcels (fast pace) - Cycle rickshaw driving	**Examples:** - Cycling - Jogging - Dancing - Horse-riding - Tai chi - Yoga - Pilates - Low-impact aerobics - Cricket	**Examples** - Soccer - Rugby - Tennis - High-impact aerobics - Aqua aerobics - Ballet dancing - Fast swimming

Instrument at a Glance

STEPS Risk Factors

	Core Items	Expanded Items	Optional Modules
Step 1 **Behavioural**	Age, sex and years at school	Ethnicity, employment status, household income	Mental health, intentional and unintentional injury and violence and oral health.
	Tobacco use	Smokeless tobacco, ex-smokers	
	Alcohol consumption	Binge drinking	
	Fruit and vegetable consumption	Oil and fat consumption	
	Physical activity		Objective measure of physical activity behaviour
		History of blood pressure, treatment for raised blood pressure	
		History of diabetes, treatment for diabetes	
Step 2 **Physical** **measurements**	Weight and height Waist circumference Blood pressure	Hip circumference, Heart rate	Skin fold thickness, assessment of physical fitness
Step 3 **Biochemical** **measurements**	Fasting blood sugar Total cholesterol	Fasting HDL-cholesterol and triglycerides	Oral glucose tolerance test, urine examination, salivary cotinine

Core Indicators

	Key Risk Factor	Data Variable	Indicator
Step 1 **Behavioural**	Tobacco use	Current daily smoker	• Percentage of adults currently smoking daily
	Alcohol consumption	Current drinker	• Percentage of adults who drank in the past 30 days
	Physical inactivity	Duration of total activity	• Percentage of adults with low levels of activity • Median level of physical activity
	Low fruit and vegetable consumption	Number of servings of fruit and vegetable	• Percentage of adults eating less than 5 servings a day
Step 2 **Physical** **measurements**	Overweight	Height, weight, waist circumference	• Mean Body Mass Index, average waist circumference • Percentage of overweight and obese adults
	Raised blood pressure	Systolic and diastolic blood pressure	• Mean systolic blood pressure • Percentage of adults with raised blood pressure
Step 3 **Biochemical** **measurements**	Raised blood glucose	Fasting blood glucose	• Mean fasting blood glucose • Percentage of adults with raised blood glucose
	Raised total cholesterol	Cholesterol	• Mean total cholesterol • Percentage of adults with raised cholesterol

Part 6: Templates and Forms

Overview

In this Part   This Part covers the following topics

Part 6: Templates and Forms

Section 1: Planning and Set Up Templates

Overview

Introduction   This section includes some document templates that can be used during the stage that involves planning and preparing a STEPS survey.

Intended audience   This section is primarily designed to be used by those fulfilling the following roles:

- STEPS site coordinator
- Coordinating committee

In this section   This section contains the following topics.

Topic	See Page
STEPS Implementation Plan	6-1-2
Ethical Approval Form	6-1-6

STEPS Implementation Plan

Executive Summary

Introduction

**Current
situation**

Goals

Scope

Resources

Budget

Current Situation

Introduction

**Previous risk
factor surveys**   Specify if a risk factor survey has already been conducted in this setting.

**Data
availability**   Specify risk factor data availability in this setting.

**Infrastructure
and capacity**   Specify if there already an infrastructure (human capacity, equipment, other)
on which STEPS could be built.

Rationale   Specify the rationale for conducting chronic disease risk factor surveillance.
(See Part 1, Section 1, Rationale for Surveillance).

Goals and Objectives

Introduction

Goals Identify the planned goals or use for the information gathered. For example, as a contribution to ongoing data collection to:

- Describe the current levels of risk factors for chronic diseases in this population
- Track the direction and magnitude of trends in risk factors
- Plan or evaluate a health promotion or preventive campaign
- Collect data from which to predict likely future demands for health services

Objectives Specify objectives that support gathering 'essential' information only.

Scope

Introduction

Overview of scope Specify the scope of surveillance to be conducted over time, ie Step 1, Step 2 or Step 3, plus coverage of core, expanded and optional items.

Sample size Identify the sample size and sample frame that will be used

Geographical coverage Identify geographical coverage

Timeframe Describe the broad timeframes

Sustainability and future surveys Specify if STEPS sustainability can be assured and plans for future surveys.

Resources

Introduction

Personnel required   Specify required resources in terms of all personnel required for the surveillance.

Equipment   Specify required resources in terms of all equipment required for the surveillance.

Facilities   Specify required resources in terms of all facilities required for the surveillance.

Resources already committed   Describe resources that have already been committed or which are expected, including support from WHO

Resources required from other organisations   Specify resources required from other organisations involved

Action Plan

Introduction

Plan   Provide a chart of the main tasks with estimated start dates and timeframes for completion of each phase.

Communication Strategy and Publicity

Introduction

Publicity plan   Specify methods for informing and involving community leaders and community groups in the STEPS surveillance project.

Reporting and Disseminating Results

Introduction

Reporting   Describe to whom and how the results will be reported and disseminated.

Budget

Introduction

Budget   Provide a detailed budget that includes:

- total funds required for each year planned to implement all STEPS activities as identified in the scope,
- source of funds, and
- funding gap.

Item	USD

Part 2: Scientific Assessment

Introduction

Scientific basis

Summary of report

Part 3: Survey Scope

Introduction

Goals Identify the planned goals or use for the information gathered. For example, as a contribution to ongoing data collection to:

- Describe the current levels of risk factors for chronic diseases in this population
- Track the direction and magnitude of trends in risk factors
- Plan or evaluate a health promotion or preventive campaign
- Collect data from which to predict likely future demands for health services

Objectives Specify objectives that support gathering 'essential' information only.

Overview of scope Specify the scope of surveillance to be conducted over time, ie Step 1, Step 2 or Step 3, plus coverage of core, expanded and optional items.

Sample size Identify the sample size and sample frame that will be used.

Geographical coverage Identify geographical coverage of the survey.

Resources Describe resources that:

- are required,
- have already been committed, and
- are expected, including support from WHO.

Cultural/ethical issues Describe any aspects of the survey that might raise specific cultural or ethical issues.

Reporting and use of results Describe:

- To whom and how the results will be reported and disseminated
- Any restrictions on results
- Confidentiality of personal identification information
- Use of results once the survey is complete
- Methods for informing and involving community leaders and community groups in the STEPS surveillance project

Ethical Approval Form

Part 1: General Information

Introduction

Survey tile   The title of the proposed survey is:

STEPS Chronic Disease Risk Factor Surveillance.

Key personnel   A STEPS coordinating committee has been set up to oversee and manage the planning, preparation and implantation of the proposed survey and includes the following people.

Name	Organisation and qualifications

Dates   The proposed survey dates are:

Phase	Dates
Start Date	
Completion Date	
Survey duration	6 - 7 months

Part 3: Survey Scope, Continued

Budget

Provide a detailed budget that includes:

- total funds required for each year planned to implement all STEPS activities as identified in the Scope,
- source of funds, and
- funding gap.

Item	USD

Part 3: Survey Scope, Continued

Part 4: Declarations

Introduction

Declaration by principal investigator

The information supplied in this application is, to the best of my knowledge and belief, accurate. I have considered the ethical issues involved in this research and believe that I have adequately addressed them in this application. I understand that if the protocol for this research changes in any way I must inform the Research Ethics Review Committee.

Name:	
Signature:	
Date:	

Declaration by head of department

I have read the application and believe it to be scientifically and ethically sound. I approve the research design. I give my consent for the application to be forwarded to the Ethics Committee.

Name:	
Signature:	
Date:	

Note: Where the head of department is also one of the investigators, the head of department declaration must be signed by the appropriate Dean, or relevant senior officer.

Section 2: Interview, Blood Collection and Data Entry Forms

Overview

Introduction   This section includes some document templates that can be used during the interview, measurement and data entry stages.

In this section   This section contains the following forms for use during the survey.

Topic	See Page
Notification of WHO STEPS Surveillance Visit	6-2-2
Participant Information Form (Step 1, 2 & 3)	6-2-3
Consent Form 1 (Step 1 & 2)	6-2-6
Consent Form 2 (Step 3)	6-2-7
Kish Household Coversheet	6-2-8
Kish Household List	6-2-9
Kish Summary of Eight Tables	6-2-10
Interview Tracking Form	6-2-11
Clinic Appointment Card (Step 3)	6-2-12
Fasting Instructions (Step 3)	6-2-13
Clinic Registration Form (Step 3)	6-2-14
Blood Collection Form (Step 3)	6-2-15
Biochemical Measurement Form (Step 3)	6-2-16
Data Entry Tracking Form	6-2-17
Data Entry Folder Coversheet	6-2-18

Notification of WHO STEPS Surveillance Visit

World Health Organization

Notification of WHO STEPS Surveillance Visit		
Today Ministry of Health employees visited your household to conduct a survey of people between the ages of 25 to 64 on health issues. We will try and return on the date indicated below. If this is not convenient, please contact us to make a suitable time for the survey.		
Date of Visit		
Household Number		
Next Visit	Day/Date:	Time:
Contact		
<site> Ministry of Health, <address>		

World Health Organization

Notification of WHO STEPS Surveillance Visit		
Today Ministry of Health employees visited your household to conduct a survey of people between the ages of 25 to 64 on health issues. We will try and return on the date indicated below. If this is not convenient, please contact us to make a suitable time for the survey.		
Date of Visit		
Household Number		
Next Visit	Day/Date:	Time:
Contact		
<site> Ministry of Health, <address>		

Participant Information Form (Step 1, 2 & 3)

Introduction   This form describes what participation in the WHO STEPS survey means.

Title of survey   The title of this survey is the STEPS Surveillance of Risk Factors for Chronic Non-Communicable Diseases (NCDs)

Aim of the survey   This survey will determine the extent in [name of the site] of several of the major risk factors for major chronic non-communicable diseases (e.g diseases not caused by infections). These diseases and their risk factors include:

- Tobacco use
- Alcohol consumption
- Low intake of fruit and vegetable
- Physical inactivity
- Raised blood pressure
- Raised fasting blood glucose
- Obesity
- High levels of fat in the blood

Data collection methods   We will collect information from [insert sample size] participants throughout the area in which the survey is being conducted.

Information will be gathered through (X number of) steps of data collection:

- Step 1 - Interview questions
- Step 2 - Measurements of height, weight, waist & blood pressure
- Step 3 - Blood tests for sugar and fats

What's involved   The table below shows each of the steps involved. You will be given time to consider your participation.

Step	Action
1	We will describe the STEPS surveillance to you.
2	You may ask any questions you may have.
3	We will ask you to sign a consent form.

Continued on next page

Participant Information Form (Step 1, 2 & 3), Continued

What's involved (continued)

Step	Action
4	You will be asked to participate in Step 1. This will involve a Ministry of Health employee asking you some questions about your: • Age • Education • Employment and income • Tobacco and alcohol use • Fruit and vegetable intake • Physical activity • History of diabetes and or raised blood pressure
5	You will then be asked to participate in Step 2. This will involve a Ministry of Health employee taking some simple measurements of your: • Height • Weight • Waist circumference • Blood pressure
6	You may also be asked to participate in Step 3. This will involve taking a small amount of blood from a vein in your arm to test for sugar and fat levels in your blood. This may cause some mild pain.

Timeframe   It is estimated that Step 1 and 2 of the survey will take approximately 1 hour.

Community benefits   The results of this study will be used to assist the Ministry of Health in developing public health programmes that target efforts to lower the risk factors that lead to chronic non-communicable diseases.

Your rights   It is your right to:

• decline to take part in the study,
• withdraw your consent at any time, and
• decline to answer any questions in the interview that you do not wish to answer.

Participant Information Form (Step 1, 2 & 3), Continued

Confidentiality   You will provide your name and contact information so that you can be contacted if there is any need to follow up with you after the survey is conducted.

Your participation and data provided will be completely confidential.

Your name will not be used in any report of the study.

Results   The results of this survey will be used to help plan strategies in reducing the risk factors that contribute to chronic non-communicable diseases in your community.

The results will be published in research publications, media briefings, fact sheets, and reports and can be made available to you through the local researchers.

Ethical approval   This study has received ethical approval from the Research Ethics Review Committee of [insert name of institution and of location].

Consent Form 1 (Step 1 & 2)

Dear Participant,

Random selection   You have been randomly selected to be part of this survey and this is why we would like to interview you. This survey is conducted by the World Health Organization in collaboration with the Ministry of Health and the WHO Regional Office and will be carried out by professional interviewers from (name of institution). This survey is currently taking place in several countries around the world.

Confidentiality   The information you provide is totally <u>confidential</u> and will not be disclosed to anyone. It will only be used for research purposes. Your name, address, and other personal information will be removed from the instrument, and only a code will be used to connect your name and your answers without identifying you. You may be contacted by the survey team again only if it is necessary to complete the information on the survey.

Voluntary participation   Your participation is <u>voluntary</u> and you can withdraw from the survey after having agreed to participate. You are free to refuse to answer any question that is asked in the questionnaire. If you have any questions about this survey you may ask me or contact (name of institution and contact details) or (Principal Investigator at site).

Consent to participate   Signing this consent indicates that you understand what will be expected of you and are willing to participate in this survey.

Read by Participant		Interviewer	
Agreed		Refused	

Signatures   I hereby provide INFORMED CONSENT to take part in Steps 1 and 2 of the Risk Factors Study. For participants under 21 years old, a parent or guardian must also sign this form.

Name: _____   Sign: _____

Parent/Guardian: _____   Sign: _____

Witness: _____   Sign: _____

Consent Form 2 (Step 3)

Dear Participant

Random selection   You have been randomly selected to be part of this survey and this is why we would like to interview you. This survey is conducted by the World Health Organization in collaboration with the Ministry of Health and the WHO Regional Office and will be carried out by professional interviewers from (name of institution). This survey is currently taking place in several countries around the world.

Confidentiality   The information you provide is totally <u>confidential</u> and will not be disclosed to anyone. It will only be used for research purposes. Your name, address, and other personal information will be removed from the instrument, and only a code will be used to connect your name and your answers without identifying you. You may be contacted by the Survey Team again only if it is necessary to complete the information on the survey.

Voluntary participation   Your participation is <u>voluntary</u> and you can withdraw from the survey after having agreed to participate. You are free to refuse to answer any question that is asked in the questionnaire. If you have any questions about this survey you may ask me or contact (name of institution and contact details) or (Principal Investigator at site).

What's involved   You will have a small amount of blood taken from a vein in your arm to be tested for sugar and fat. This may cause some mild pain. You will be informed about the kind of tests which will be done on your blood sample.

Consent to participate   Signing this consent indicates that you understand what will be expected of you and are willing to participate in this survey.

Read by Participant		Interviewer	
Agreed		Refused	

Signatures   I hereby provide INFORMED CONSENT to take part in Step 3 of the Chronic Disease Risk Factor Study.

Name: _____   Sign: _____

Witness: _____   Sign: _____

Kish Household Coversheet

Directions to fill out Adult N°

Order the adults 1-6 by:
- males in order of decreasing age (oldest to youngest)
- females in order of decreasing age (oldest to youngest)

Example:

Sex	Age		Adult n°
M	45		1
F	**47**		**3**
M	23		2

List all persons age 25-64 in household

Sex	Age		Adult n°	Selected Respondent

Household Number _____

Cluster Number_____

Participant ID _____

Selection Table A			Selection Table B1			Selection Table B2			Selection Table C	
If n° of adults is:	Select adult n°		If n° of adults is:	Select adult n°		If n° of adults is:	Select adult n°		If n° of adults is:	Select adult n°
1	1		1	1		1	1		1	1
2	1		2	1		2	1		2	1
3	1		3	1		3	1		3	2
4	1		4	1		4	2		4	2
5	1		5	2		5	2		5	3
6 or more	1		6 or more	2		6 or more	2		6 or more	3

Selection Table D			Selection Table E1			Selection Table E2			Selection Table F	
If n° of adults is:	Select adult n°		If n° of adults is:	Select adult n°		If n° of adults is:	Select adult n°		If n° of adults is:	Select adult n°
1	1		1	1		1	1		1	1
2	2		2	2		2	2		2	2
3	2		3	3		3	3		3	3
4	3		4	3		4	4		4	4
5	4		5	3		5	5		5	5
6 or more	4		6 or more	5		6 or more	5		6 or more	6

Kish Household List

Directions   Match the household number assigned to the household with the Kish table below and identify which table from the Kish Summary of Eight Tables should be used.

Household	Kish Table	Household	Kish Table
1	A	26	A
2	A	27	B1
3	B1	28	B2
4	B2	29	C
5	C	30	C
6	C	31	D
7	D	32	D
8	D	33	E1
9	E1	34	E2
10	E2	35	F
11	F	36	F
12	F	37	A
13	A	38	A
14	A	39	B1
15	B1	40	B2
16	B2	41	C
17	C	42	C
18	C	43	D
19	D	44	D
20	D	45	E1
21	E1	46	E2
22	E2	47	F
23	F	48	F
24	F	49	A
25	A	etc.	etc.

Kish Summary of Eight Tables

Directions   Identify which table to use for each household with the Kish household list.
Fill out the Kish coversheet and, using the number of eligible respondents in
the household and the Table number already identified, select the participant.

Example:
- If the Table number was C and there were 4 adults in the household, the
  adult numbered 2 should be interviewed.
- If the Table number was E1 and there were 5 adults in the household, the
  adult numbered 3 should be interviewed.

Table Number	If the number of adults in household is:					
	1	2	3	4	5	6 or more
	Select adult numbered:					
A	1	1	1	1	1	1
B1	1	1	1	1	2	2
B2	1	1	1	2	2	2
C	1	1	2	2	3	3
D	1	2	2	3	4	4
E1	1	2	3	3	3	5
E2	1	2	3	4	5	5
F	1	2	3	4	5	6

Note: This table is embedded in the Kish coversheet and does not need to be
carried around by the interviewer.

Interview Tracking Form

Household Number	No. Eligible in Household	Participant ID	At Home		Male				Female				Step 1			Step 2			Step 3			Appointment Time	Individual Comment
			Visit 1	Visit 2	25-34	35-44	45-54	55-64	25-34	35-44	45-54	55-64	Eligible	Yes	Decline	Eligible	Yes	Decline	Eligible	Yes	Decline		

Notes:
- Individuals who are not "usual residents" are not eligible. Please see definition in the Glossary (Part 7)
- Step 1 "Yes" / Step 2 "Decline" should only occur for people who are absolutely unable to attend Step 2 – explain in "Comment" for each such person.
- Fill in form by using "y/n" for At home (corresponds with yes/no) and using an "x" for the correct responses in Male, Female, Step 1, Step 2, Step 3"

Clinic Appointment Card (Step 3)

<div style="border:1px solid">

APPOINTMENT TIME

Thank you for agreeing to participate in the STEPS Surveillance.

CLINIC APPOINTMENT

Centre: _____

Date: _____

Time: _____

**PLEASE BRING THIS FORM WITH YOU
WHEN YOU COME FOR AN APPOINTMENT**

</div>

Fasting Instructions (Step 3)

Introduction   To get accurate results from the blood test it is very important that you have fasted.

Fasting instructions   Please ensure that you DO NOT have anything to eat or drink including chewing gum (except plain water) after 10:00 PM on the night BEFORE the clinic appointment or on the morning of the clinic appointment.

Note for diabetics   If you have diabetes controlled with tablets and/or insulin, please AVOID taking these on the morning of your appointment, but bring them with you to take after testing is completed. Please take any other morning medications as usual.

Clinic Registration Form (Step 3)

Centre (Village/Cluster) Number_____
Technician ID_____

Participant ID	Name	Consent form (place a √)	Fasting status	Arrival time

Blood Collection Form (Step 3)

Centre (Village/Cluster) Number_____
Technician ID_____

Date	Participant ID	Time of last meal/drink	Time of collection	Fasting blood sugar	If did not fast properly, appointment of next visit

Biochemical Measurement Form (Step 3)

<div style="text-align: right;">
Centre (Village/Cluster) Number_____
Technician ID_____
</div>

Date Analyzed	Partici-pant ID	Fasting Blood Sugar		Hgb	Total Chol.	HDL	LDL	TRIG
		Strip	**Lab**					

Data Entry Tracking Form

Participant ID	1st Key		2nd Key		Error on Instrument	Supervisor's decision	Individual Comment	Checked out by supervisor	
	Date received	Date finished	Date received	Date finished				Date checked out	Date checked in

Note: This form is available electronically in excel and can be downloaded with the data entry templates, available from www.who.int/chp/steps

STEPS Data Entry

Folder Coversheet

Topic	Tracking Information
Computer (Write the label)	
Phase of data entry: First key, second key entry or complete. *(Circle one)*	1st Key Entry 2nd Key Entry Complete
Instrument section entered and template being used. *(Circle only one)*	Location Tracking Survey Consent Biochemical
Data entry staff name or ID number	
Start Date	
End Date	

Section 3: Reporting Templates (Fact Sheet and Data Book) Overview

Introduction   This section includes two templates that can be used to report both the comprehensive and summary results of the STEPS survey.

In this section   This section contains the following Report Templates:

Topic	See Page
Fact Sheet Analysis Guide	6-3B-1
Fact Sheet Template	6-3C-1
Data Book Template	6-3D-1

Country (Site) STEPS Survey <year>

Fact Sheet Analysis Guide

PLEASE use this as a guide when you are altering your instrument as it will provide you with a guideline for which questions are needed in order to calculate these basic indicators.

To calculate the basic indicators that are presented on the fact sheet refer to the Data Analysis section of the user manual (Part 4 Section 3)

The biochemical measurements have two different programmes for each indicator, select the program that corresponds with the measurement used in your survey (mmol/L or mg/dl). Always report the values for both mmol/L and mg/dl.

Results for adults aged 25-64 years (incl. 95% CI) (adjust if necessary)	Questions required to calculate result (based on coding column)	Epi Info Programme Name
Step 1 Tobacco Use		
Percentage who currently smoke tobacco daily	T2	TsmokestatusWT
For those who smoke tobacco daily		
Average age started smoking (years)	T2, T3	TsmokeagetimeWT
Average years of smoking	T2, T4a-c	TsmokeagetimeWT
Percentage smoking manufactured cigarettes	T2, T5a	TsmokemanWT
Mean number of manufactured cigarettes smoked per day (by smokers of manufactured cigarettes)	T5a	TsmoketypeWT
Step 1 Alcohol Consumption		
Percentage of abstainers (who did not drink alcohol in the last year)	A1	AconsumptionWT
Percentage of current drinkers (who drank alcohol in the past 30 days)	A4	AcurrentWT
For those who drank alcohol in the last 30 days		
Percentage who drank alcohol on 4 or more days in the last week	A4, A5a-g	AheavydrinkingWT
Percentage of women who had 4 or more drinks on any day in the last week	A4, A5a-g	AheavydrinkingWT
Percentage of men who had 5 or more drinks on any day in the last week	A4, A5a-g	AheavydrinkingWT
Step 1 Fruit and Vegetable Consumption (in a typical week)		
Mean number of days fruit consumed	D1, D3	DdaysWT
Mean number of servings of fruit consumed per day	D1, D2, D3, D4	DservingsWT
Mean number of days vegetables consumed	D1, D3	DdaysWT
Mean number of servings of vegetables consumed per day	D1, D2, D3, D4	DservingsWT
Percentage who ate less than 5 of combined servings of fruit & vegetables per day	D1, D2, D3, D4	DfiveormoreWT
Step 1 Physical Activity		
Percentage with low levels of activity (defined as <600 MET-minutes)	P1-P16	PtotallevelsWT
Percentage with high levels of activity (defined as ≥ 3000 MET-minutes/week)	P1-P16	PtotallevelsWT
Median time spent in physical activity per day (minutes)	P1-P16	PtotalmedianWT
Mean time spent in physical activity per day (minutes)	P1-P16	PtotalWT

Results for adults aged 25-64 years (incl. 95% CI) *(adjust if necessary)*	Questions required to calculate result (based on coding column)	Epi Info Programme Name
Step 2 Physical Measurements		
Mean body mass index - BMI (kg/m^2)	M3, M4, M5	MbmiWT
Percentage who are overweight or obese (BMI ≥ 25 kg/m^2)	M3, M4, M5	MbmiclassWT
Percentage who are obese (BMI ≥ 30 kg/m^2)	M3, M4, M5	MbmiclassWT
Average waist circumference (cm)	M7, M5	MwaistWT
Mean systolic blood pressure - SBP (mmHg) , excluding those currently on medication for raised BP	H3a, M11a, M12a, M13a	MbloodpressureWT
Mean diastolic blood pressure - DBP (mmHg) , excluding those currently on medication for raised BP	H3a, M11b, M12b, M13b	MbloodpressureWT
Percentage with raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP)	H3a, M11a-b, M12a-b, M13a-b	MraisedbpWT
Percentage with raised BP (SBP ≥ 160 and/or DBP ≥ 100 mmHg or currently on medication for raised BP)	H3a,M11a-b, M12a-b,M13a-b	MraisedbpWT
Step 3 Biochemical Measurements		
Mean fasting blood glucose (mmol/L) , excluding those currently on medication for raised blood glucose	H8a, H8b, B1, B5	BglucoseWT (mmol/L) BglucoseMgWT (mg/dl)
Mean fasting blood glucose (mg/dl) , excluding those currently on medication for raised blood glucose	H8a, H8b, B1, B5	BglucoseWT (mmol/L) BglucoseMgWT (mg/dl)
Percentage with raised fasting blood glucose as defined below or currently on medication for raised blood glucose • plasma venous value ≥ 7.0 mmol/L or ≥ 126 mg/dl • capillary whole blood value ≥ 6.1 mmol/L or ≥ 110 mg/dl	H8a, H8b, B1, B5	BglucoseWT (mmol/L) BglucoseMgWT (mg/dl)
Mean total blood cholesterol (mmol/L)	B7	BtotallipidsWT (mmol/L) BtotallipidsMgWT (mg/dl)
Mean total blood cholesterol (mg/dl)	B7	BtotallipidsWT (mmol/L) BtotallipidsMgWT (mg/dl)
Percentage with raised total cholesterol (≥ 5.2 mmol/L or ≥ 200 mg/dl)	B7	BtotallipidsWT (mmol/L) BtotallipidsMgWT (mg/dl)
Percentage with raised total cholesterol (≥ 6.5 mmol/L or ≥ 250 mg/dl)	B7	BtotallipidsWT (mmol/L) BtotallipidsMgWT (mg/dl)
Summary of combined risk factors • current daily smokers • less than 5 servings of fruits & vegetables per day • low level of activity (<600 MET -minutes) • overweight or obese (BMI ≥ 25 kg/m^2) • raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP)	**Codes used for summary of combined risk factors:** T2, D2, D4, M3, M4, M5, H3a, M11a-b, M12a-b, M13a-b, P1-P16	
Percentage with low risk (i.e. none of the risk factors included above)	See above	raisedriskWT
Percentage with raised risk (at least three of the risk factors included above), aged 25 to 44 years old	See above	raisedriskWT
Percentage with raised risk (at least three of the risk factors included above), aged 45 to 64 years old	See above	raisedriskWT

For additional information, please contact:
STEPS country focal point [name, email addresses]

\<Country\> (Site) STEPS Survey \<year\>
Fact Sheet

The STEPS survey of chronic disease risk factors in [country/site name] was carried out from [insert month and year] to [insert month and year]. [country/site name] carried out Step 1, Step 2 [and Step 3 if applicable]. Socio demographic and behavioural information was collected in Step 1. Physical measurements such as height, weight and blood pressure were collected in Step 2. [If applicable, biochemical measurements were collected to assess blood glucose and cholesterol levels in Step 3.] The STEPS survey in [insert site, country] was a population-based survey of adults aged 25-64 [adjust as necessary]. A [insert type of sampling design] sample design was used to produce representative data for that age range in [insert country/site name]. A total of 2,000 [adjust as necessary] adults participated in the [country/site name] STEPS survey. The overall response rate was [x%]. A repeat survey is planned for [insert year] if funds permit.

Results for adults aged 25-64 years (incl. 95% CI) *(adjust if necessary)*	Both Sexes	Males	Females
Step 1 Tobacco Use			
Percentage who currently smoke tobacco daily	**77.1%** (66.2 – 88.1)	**77.2%** (66.2 – 88.1)	**77.4%** (66.2 – 88.1)
For those who smoke tobacco daily			
Average age started smoking (years)			
Average years of smoking			
Percentage smoking manufactured cigarettes			
Mean number of manufactured cigarettes smoked per day (by smokers of manufactured cigarettes)			
Step 1 Alcohol Consumption			
Percentage of abstainers (who did not drink alcohol in the last year)			
Percentage of current drinkers (who drank alcohol in the past 30 days)			
For those who drank alcohol in the last 30 days			
Percentage who drank alcohol on 4 or more days in the last week			
Percentage of women who had 4 or more drinks on any day in the last week			
Percentage of men who had 5 or more drinks on any day in the last week			
Step 1 Fruit and Vegetable Consumption (in a typical week)			
Mean number of days fruit consumed			
Mean number of servings of fruit consumed per day			
Mean number of days vegetables consumed			
Mean number of servings of vegetables consumed per day			
Percentage who ate less than 5 of combined servings of fruit & vegetables per day			
Step 1 Physical Activity			
Percentage with low levels of activity (defined as <600 MET-minutes/week)			
Percentage with high levels of activity (defined as ≥3000 MET-minutes/week)			
Median time spent in physical activity per day (minutes) (presented with Inter-quartile range)			
Mean time spent in physical activity per day (minutes)			

Results for adults aged 25-64 years (incl. 95% CI) *(adjust if necessary)*	Both Sexes	Males	Females
Step 2 Physical Measurements			
Mean body mass index - BMI (kg/m^2)			
Percentage who are overweight or obese (BMI ≥ 25 kg/m^2)			
Percentage who are obese (BMI ≥ 30 kg/m^2)			
Average waist circumference (cm)			
Mean systolic blood pressure - SBP (mmHg), excluding those currently on medication for raised BP			
Mean diastolic blood pressure - DBP (mmHg) , excluding those currently on medication for raised BP			
Percentage with raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP)			
Percentage with raised BP (SBP ≥ 160 and/or DBP ≥ 100 mmHg or currently on medication for raised BP)			
Step 3 Biochemical Measurement			
Mean fasting blood glucose (mmol/L) , excluding those currently on medication for raised blood glucose			
Mean fasting blood glucose (mg/dl) , excluding those currently on medication for raised blood glucose			
Percentage with raised fasting blood glucose as defined below or currently on medication for raised blood glucose • plasma venous value ≥ 7.0 mmol/L or ≥ 126 mg/dl • capillary whole blood value ≥ 6.1 mmol/L or ≥ 110 mg/dl			
Mean total blood cholesterol (mmol/L)			
Mean total blood cholesterol (mg/dl)			
Percentage with raised total cholesterol (≥ 5.2 mmol/L or ≥ 200 mg/dl)			
Percentage with raised total cholesterol (≥ 6.5 mmol/L or ≥ 250 mg/dl)			
Summary of combined risk factors • current daily smokers • less than 5 servings of fruits & vegetables per day • low level of activity (<600 MET -minutes) • overweight or obese (BMI ≥ 25 kg/m^2) • raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised BP)			
Percentage with low risk (i.e. none of the risk factors included above)			
Percentage with raised risk (at least three of the risk factors included above), aged 25 to 44 years old			
Percentage with raised risk (at least three of the risk factors included above), aged 45 to 64 years old			

For additional information, please contact:
STEPS country focal point [name, email addresses]

WHO STEPS chronic disease risk factor surveillance
www.who.int/chp/steps
fact sheet

WHO STEPS

Chronic Disease
Risk Factor Surveillance

DATA BOOK FOR
<INSERT COUNTRY/SITE NAME>

Table of Contents

Note:

- All the questions include C1; C2 or C3 in the "Questions used (uses coding column as identifier)" section of the analysis block.
- Unweighted tables will not have confidence intervals associated with them.
- You need to run the Epi Info programmes MissingAgeSexConsent and AgeSex10 prior to running any of the programmes in the data book. You only need to run these programmes one time.

Sampling and Response Proportions

Step 1 response proportions

Description: summary results for the response proportions for step 1.

Age Group	Men				Women				Both Sexes		
	Eligible	Participated			Eligible	Participated			Eligible	Participated	
	N	n	%		N	n	%		N	n	%
25-34 years											
35-44 years											
45-54 years											
55-64 years											
25-64 years											

Analysis Information:
- Questions used (uses coding column as identifier): interview tracking form
- Epi Info programme name: Responsestep1 (unweighted)

Step 2 response proportions

Description: summary results for the response proportions for step 2.

Age Group	Men				Women				Both Sexes		
	Eligible	Participated			Eligible	Participated			Eligible	Participated	
	N	n	%		N	n	%		N	n	%
25-34 years											
35-44 years											
45-54 years											
55-64 years											
25-64 years											

Analysis Information:
- Questions used (uses coding column as identifier): interview tracking form
- Epi Info programme name: Responsestep2 (unweighted)

Step 3 response proportions

Description: summary results for the response proportions for step 3.

Age Group	Men				Women				Both Sexes		
	Eligible	Participated			Eligible	Participated			Eligible	Participated	
	N	n	%		N	n	%		N	n	%
25-34 years											
35-44 years											
45-54 years											
55-64 years											
25-64 years											

Analysis Information:

- Questions used (uses coding column as identifier): interview tracking form (if applicable)
- Epi Info programme name: Responsestep3 (unweighted)

District response proportions

Description: summary results for the response proportions by district.

Age Group	Men (N=)						Women (N=)				
	District 1	District 2	District 3	District 4	District 5		District 1	District 2	District 3	District 4	District 5
	n %	n %	n %	n %	n %		n %	n %	n %	n %	n %
25-34 years											
35-44 years											
45-54 years											
55-64 years											
25-64 years											

Analysis Information:

- Questions used (uses coding column as identifier): I1
- Epi Info programme name: District (unweighted)

District response proportions continued

Description: summary results for the response proportions by district

Age Group	Both Sexes (N=)				
	District 1	District 2	District 3	District 4	District 5
	n %	n %	n %	n %	n %
25-34 years					
35-44 years					
45-54 years					
55-64 years					
25-64 years					

Analysis Information:

- Questions used (uses coding column as identifier): I1
- Epi Info programme name: District (unweighted)

Demographic Information Results

Age group by gender

Description: summary information by age group and gender of the participants sample.

Instrument question:
- Sex
- What is your date of birth?

Age Group	Men N= n %	Women N= n %	Both Sexes N= n %
25-34 years			
35-44 years			
45-54 years			
55-64 years			
25-64 years			

Analysis Information:
- Questions used (uses coding column as identifier): C1; C2 or C3
- Epi Info programme name: Cagesex (unweighted)

Ethnicity   Description: summary results for the ethnicity of the participants.

Instrument Question:
- What is your [insert relevant ethnic group/racial group/cultural subgroup/others] background?

Age Group	Men (N=)					Women (N=)					Both Sexes (N=)			
	Ethnic group ……	Ethnic group ……	Ethnic group ……	Other ethnic group		Ethnic group ……	Ethnic group ……	Ethnic group ……	Other ethnic group		Ethnic group ……	Ethnic group ……	Ethnic group ……	Other ethnic group
	n %	n %	n %	n %		n %	n %	n %	n %		n %	n %	n %	n %
25-34 years														
35-44 years														
45-54 years														
55-64 years														
25-64 years														

Analysis Information:
- Questions used (uses coding column as identifier): C5
- Epi Info programme name: Cethnic (unweighted)

Household composition

Description: mean number of adults over 18 years old in each household (presented only for both sexes because results are for the household not individuals).

Instrument question:
- How many people older than 18 years, including yourself, live in your household?

Age Group	Both Sexes N=
	n %
25-34 years	
35-44 years	
45-54 years	
55-64 years	
25-64 years	

Analysis Information:
- Questions used (uses coding column as identifier): C8
- Epi Info programme name: Chousehold18 (unweighted)

Education   Description: mean number of years of education in population of the participants.

Instrument question:
- In total, how many years have you spent at school or in full-time study (excluding pre-school)?

Age Group	Men N= n Mean	Women N= n Mean	Both Sexes N= n Mean
25-34 years			
35-44 years			
45-54 years			
55-64 years			
25-64 years			

Analysis Information:
- Questions used (uses coding column as identifier): C4
- Epi Info programme name: Ceduyears (unweighted)

Highest level of education

Description: highest level of education achieved by the survey participants.

Instrument question:
• What is the highest level of education you have completed?

	Age Group	No formal schooling	Some primary schooling	Completed primary	Completed secondary school	Completed high school	College /university completed	Post-graduate degree
		n %	n %	n %	n %	n %	n %	n %
Men (N=)	25-34 years							
	35-44 years							
	45-54 years							
	55-64 years							
	25-64 years							
Women (N=)	25-34 years							
	35-44 years							
	45-54 years							
	55-64 years							
	25-64 years							

Analysis Information:
• Questions used (uses coding column as identifier): C6
• Epi Info programme name: Ceduhigh (unweighted)

Highest level of education cont.

Description: highest level of education achieved by the survey participants.

Instrument question:
- What is the highest level of education you have completed?

	Age Group	No formal schooling	Some primary schooling	Completed primary	Completed secondary school	Completed high school	College /university completed	Post-graduate degree
		n %	n %	n %	n %	n %	n %	n %
Both Sexes (N=)	25-34 years							
	35-44 years							
	45-54 years							
	55-64 years							
	25-64 years							

Analysis Information:
- Questions used (uses coding column as identifier): C6
- Epi Info programme name: Ceduhigh (unweighted)

Employment status

Description: proportion of participants in paid employment and those who are unpaid. Unpaid includes persons who are non-paid, students, homemakers, retired, and unemployed.

Instrument question:
- Which of the following best describes your main work status over the last 12 months?

Age Group	Men (N=)					Women (N=)					Both Sexes (N=)			
	Gov't employee	Non-gov't employee	Self-employed	Unpaid		Gov't employee	Non-gov't employee	Self-employed	Unpaid		Gov't employee	Non-gov't employee	Self-employed	Unpaid
	n %	n %	n %	n %		n %	n %	n %	n %		n %	n %	n %	n %
25-34 years														
35-44 years														
45-54 years														
55-64 years														
25-64 years														

Analysis Information:
- Questions used (uses coding column as identifier): C7
- Epi Info programme name: Cworkpaid (unweighted)

Unpaid work and unemployed

Description: proportion of participants in unpaid work.

Instrument question:
- Which of the following best describes your main work status over the last 12 months?

Age Group	Men (N=)							Women (N=)					
	Non-paid	Student	Home-maker	Retired	Unemployed			Non-paid	Student	Home-maker	Retired	Unemployed	
					Able to work	Not able to work						Able to work	Not able to work
	n %	n %	n %	n %	n %	n %		n %	n %	n %	n %	n %	n %
25-34 years													
35-44 years													
45-54 years													
55-64 years													
25-64 years													

Analysis Information:
- Questions used (uses coding column as identifier): C7
- Epi Info programme name: Cworknotpaid (unweighted)

Unpaid work and unemployed continued

Description: proportion of participants in unpaid work.

Instrument question:
- Which of the following best describes your main work status over the last 12 months?

Age Group	Both Sexes (N=)					
	Non-paid	Student	Home-maker	Retired	Unemployed	
					Able to work	Not able to work
	n %	n %	n %	n %	n %	n %
25-34 years						
35-44 years						
45-54 years						
55-64 years						
25-64 years						

Analysis Information:
- Questions used (uses coding column as identifier): C7
- Epi Info programme name: Cworknotpaid (unweighted)

Income   Description: mean reported household earnings per year of participants in local currency (presented only for both sexes because results are for the household not individuals).

Instrument question:
- Taking the past year, can you tell me what the average earning of the household have been?

Age Group	Both Sexes N=
	Mean
25-34 years	
35-44 years	
45-54 years	
55-64 years	
25-64 years	

Analysis Information:
- Questions used (uses coding column as identifier): C9a or C9b or C9c
- Epi Info programme name: Cmeanincome (unweighted)

Estimated household earnings

Description: summary of participant household earnings by quintile (presented only for both sexes because results are for the household not individuals)

Instrument question:
- If you don't know the amount, can you give an estimate of the annual household income if I read some options to you?

Age Group	Quintile 1: Under $........		Quintile 2: $........- $........		Quintile 3: $........- $........		Quintile 4: $........- $........		Quintile 5: Over $........	
	n	%	n	%	n	%	n	%	n	%
25-34 years										
35-44 years										
45-54 years										
55-64 years										
25-64 years										

Analysis Information:
- Questions used (uses coding column as identifier): C10
- Epi Info programme name: Cquintile (unweighted)

Tobacco Use

Smoking Status   Description: smoking status among total population.

Instrument questions:
- Do you currently smoke any tobacco products, such as cigarettes, cigars, or pipes?
- Do you currently smoke tobacco products daily?

Age Group	Men (N=)					Women (N=)					Both Sexes (N=)			
	Current smoker			Does not smoke		Current smoker			Does not smoke		Current smoker			Does not smoke
	Daily	Non-daily	Daily and non-daily			Daily	Non-daily	Daily and non-daily			Daily	Non-daily	Daily and non-daily	
	% 95% CI	% 95% CI	% 95% CI	% 95% CI		% 95% CI	% 95% CI	% 95% CI	% 95% CI		% 95% CI	% 95% CI	% 95% CI	% 95% CI
25-34 years														
35-44 years														
45-54 years														
55-64 years														
25-64 years														

Analysis Information:
- Questions used (uses coding column as identifier): T1; T2
- Epi Info programme name: Tsmokestatus (unweighted); TsmokestatusWT (weighted)

Manufactured cigarette smokers

Description: percentage of smokers who use manufactured cigarettes.

Instrument question:
- On average, how many of the following do you smoke each day?

Age Group	Manufactured cigarette users		
	Men N=	**Women** N=	**Both Sexes** N=
	% (95% CI)	% (95% CI)	% (95% CI)
25-34 years			
35-44 years			
45-54 years			
55-64 years			
25-64 years			

Analysis Information:
- Questions used (uses coding column as identifier): T1; T2; T5a
- Epi Info programme name: Tsmokeman (unweighted); TsmokemanWT (weighted)

Frequency of smoking

Description: percentage of current daily smokers among smokers.

Instrument question:
• Do you currently smoke any tobacco products, such as cigarettes, cigars, or pipes?
• Do you currently smoke tobacco products daily?

Age Group	Men (N=)		Women (N=)		Both Sexes (N=)	
	Current daily smokers	Non-daily smokers	Current daily smokers	Non-daily smokers	Current daily smokers	Non-daily smokers
	% 95% CI	% 95% CI	% 95% CI	% 95% CI	% 95% CI	% 95% CI
25-34 years						
35-44 years						
45-54 years						
55-64 years						
25-64 years						

Analysis Information:
• Questions used (uses coding column as identifier): T1; T2
• Epi Info programme name: Tsmokefreq (unweighted); TsmokefreqWT (weighted)

Amount of tobacco used among smokers by type

Description: mean amount of tobacco used by daily smokers by type.

Instrument question:
- On average, how many of the following do you smoke each day?

Age Group	Men (N=)					Women (N=)					Both Sexes (N=)			
	Manu-factured cigarettes	Hand-rolled cigarettes	Pipes of tobacco	Other		Manu-factured cigarettes	Hand-rolled cigarettes	Pipes of tobacco	Other		Manu-factured cigarettes	Hand-rolled cigarettes	Pipes of tobacco	Other
	mean (95% CI)	mean (95% CI)	mean (95% CI)	mean (95% CI)		mean (95% CI)	mean (95% CI)	mean (95% CI)	mean (95% CI)		mean (95% CI)	mean (95% CI)	mean (95% CI)	mean (95% CI)
25-34 years														
35-44 years														
45-54 years														
55-64 years														
25-64 years														

Analysis Information:
- Questions used (uses coding column as identifier): T1; T2; T5(a-other)
- Epi Info programme name: Tsmoketype (unweighted); TsmoketypeWT (weighted)

Initiation and duration of smoking

Description: average age of initiation and duration, in years, of smoking among current daily smokers.

Instrument question:
- How old were you when you first started smoking daily?

Age Group	Age started smoking (mean age)				Years of smoking (mean duration)		
	Men N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=
	mean (95% CI)	mean (95% CI)	mean (95% CI)		mean (95% CI)	mean (95% CI)	mean (95% CI)
25-34 years							
35-44 years							
45-54 years							
55-64 years							
25-64 years							

Analysis Information:
- Questions used (uses coding column as identifier): T1; T2; T3 ;T4
- Epi Info programme name: Tsmokeagetime (unweighted); TsmokeagetimeWT (weighted)

Percentage of ex daily smokers in the population

Description: percentage of ex daily smokers and the mean duration, in years, since they quit smoking daily.

Instrument question:
- In the past did you ever smoke daily?
- How old were you when you stopped smoking daily?

Age Group	Ex daily smokers				Time since cessation (mean duration in years)		
	Men N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=
	% (95% CI)	% (95% CI)	% (95% CI)		mean (95% CI)	mean (95% CI)	mean (95% CI)
25-34 years							
35-44 years							
45-54 years							
55-64 years							
25-64 years							

Analysis Information:
- Questions used (uses coding column as identifier): T6; T7; T8
- Epi Info programme name: Tsmokeexdaily (unweighted); TsmokeaexdailyWT (weighted)

Current Users of smokeless tobacco

Description: percentage of current users of smokeless tobacco and the proportion of them using it daily.

Instrument question:
- Do you currently use any smokeless tobacco such as [snuff, chewing tobacco, betel]?
- Do you currently use smokeless tobacco products daily?

Age Group	Current Smokeless tobacco use				Proportion of users currently using smokeless tobacco daily				Ex-daily smokeless tobacco users		
	Men N= % (95%CI)	**Women** N= % (95%CI)	**Both Sexes** N= % (95%CI)		**Men** N= % (95%CI)	**Women** N= % (95%CI)	**Both Sexes** N= % (95%CI)		**Men** N= % (95%CI)	**Women** N= % (95%CI)	**Both Sexes** N= % (95%CI)
25-34 years											
35-44 years											
45-54 years											
55-64 years											
25-64 years											

Analysis Information:
- Questions used (uses coding column as identifier): T9; T10 ; T12
- Epi Info programme name: Tsmokelessexdaily (unweighted); TsmokelessexdailyWT (weighted)

Frequency of smokeless tobacco use among users by type

Description: mean frequency of smokeless tobacco use, by smokeless tobacco users by type.

Instrument question:
- On average, how many times a day do you use…?

Age Group	Men (N=)					Women (N=)					Both Sexes (N=)				
	Snuff by mouth	Snuff by nose	Chewing tobacco	Betel; quid	Other	Snuff by mouth	Snuff by nose	Chewing tobacco	Betel; quid	Other	Snuff by mouth	Snuff by nose	Chewing tobacco	Betel; quid	Other
	mean (95% CI)	mean (95% CI)	mean (95% CI)	mean (95% CI)	mean (95% CI)	mean (95% CI)	mean (95% CI)	mean (95% CI)	mean (95% CI)	mean (95% CI)	mean (95% CI)	mean (95% CI)	mean (95% CI)	mean (95% CI)	mean (95% CI)
25-34 years															
35-44 years															
45-54 years															
55-64 years															
25-64 years															

Analysis Information:
- Questions used (uses coding column as identifier): T11(a-other)
- Epi Info programme name: Tsmokelesstype (unweighted); TsmokelesstypeWT (weighted)

Current tobacco users

Description: percentage of tobacco users (daily and non-daily), includes smoking and smokeless, among the total population.

Instrument questions:
- Do you currently smoke tobacco products daily?
- Do you currently use smokeless tobacco products daily?

Age Group	Current daily tobacco user				Current tobacco user		
	Men N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=
	% (95% CI)	% (95% CI)	% (95% CI)		mean (95% CI)	mean (95% CI)	mean (95% CI)
25-34 years							
35-44 years							
45-54 years							
55-64 years							
25-64 years							

Analysis Information:
- Questions used (uses coding column as identifier): T1; T2; T9; T10
- Epi Info programme name: Tdailyuser (unweighted); TdailyuserWT (weighted)

Alcohol Consumption

Alcohol consumption status

Description: alcohol consumption status of the population. Abstainers have not consumed alcohol in the last 12 months.

Instrument questions:
- Have you consumed alcohol (such as beer, wine, spirits, fermented cider, or (add other local examples) within the past 12 months?
- Have you consumed alcohol (such as beer, wine, spirits, fermented cider, or (add other local examples) within the past 30 days?

Age Group	Men (N=)			Women (N=)			Both Sexes (N=)		
	Current drinker (last 30 days)	Drank alcohol in last 12 months, not current	Abstainer	Current drinker (last 30 days)	Drank alcohol in last 12 months, not current	Abstainer	Current drinker (last 30 days)	Drank alcohol in last 12 months, not current	Abstainer
	% 95% CI	% 95% CI	% 95% CI	% 95% CI	% 95% CI	% 95% CI	% 95% CI	% 95% CI	% 95% CI
25-34 years									
35-44 years									
45-54 years									
55-64 years									
25-64 years									

Analysis Information:
- Questions used (uses coding column as identifier): A1; A4
- Epi Info programme name: Aconsumption (unweighted); AconsumptionWT (weighted)

Number of drinks during last seven days

Description: mean number of standard drinks consumed by current drinkers during the last 7 days.

Instrument question:
- During each of the past 7 days, how many standard drinks of any alcoholic drink did you have each day?

Age Group	Drinks during last 7 days		
	Men N=	**Women** N=	**Both Sexes** N=
	mean 95% CI	mean 95% CI	mean 95% CI
25-34 years			
35-44 years			
45-54 years			
55-64 years			
25-64 years			

Analysis Information:
- Questions used (uses coding column as identifier): A1; A4; A5
- Epi Info programme name: Anumdrinklastwk (unweighted); AnumdrinklastwkWT (weighted)

Standard drinks per day

Description: number of standard drinks consumed per day.

Instrument question:
- When you drink alcohol, on average, how many drinks do you have during one day.

Age Group	Men (N=)						Women (N=)				
	Drinks per day						Drinks per day				
	1	2-3	4-5	6+	mean		1	2-3	4-5	6+	mean
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	mean (95% CI)		% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	mean (95% CI)
25-34 years											
35-44 years											
45-54 years											
55-64 years											
25-64 years											

Analysis Information:
- Questions used (uses coding column as identifier): A1; A3
- Epi Info programme name: Anumdrinkperday (unweighted); AnumdrinkperdayWT (weighted)

Frequency of alcohol consumption

Description: frequency of alcohol consumption in the last year.

Instrument question:
- In the past 12 months, how frequently have you had at least one drink?

Age Group	Men (N=)						Women (N=)				
	Daily	5-6 days per/wk	1-4 days per/wk	1-3days per/month	< once a month		Daily	5-6 days per/wk	1-4 days per/wk	1-3days per/month	< once a month
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)		% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
25-34 years											
35-44 years											
45-54 years											
55-64 years											
25-64 years											

Analysis Information:
- Questions used (uses coding column as identifier): A1; A2
- Epi Info programme name: Afrequency (unweighted); AfrequencyWT (weighted)

Largest number of drinks in last 12 months

Description: largest number of drinks consumed during a single occasion in the last 12 months.

Instrument question:
• In the past 12 months what was the largest number of drinks you has on a single occasion, counting all types of standard drinks together?

Age Group	Maximum number of drinks during a single day in last 12 months		
	Men N=	**Women** N=	**Both Sexes** N=
	mean 95% CI	mean 95% CI	mean 95% CI
25-34 years			
35-44 years			
45-54 years			
55-64 years			
25-64 years			

Analysis Information:
• Questions used (uses coding column as identifier): A1; A6
• Epi Info programme name: Alargestnum (unweighted); AlargestnumWT (weighted)

Heavy drinking Description: frequency and quantity of drinks consumed in the last 7 days grouped into three categories.

Instrument question:
- During each of the past 7 days, how many standard drinks of any alcoholic drink did you have each day?

Age Group	Men (N=)				Women (N=)			Both Sexes (N=)
	Drank on 4+ days	5+ drinks on any day	20+ drinks in 7 days		Drank on 4+ days	4+ drinks on any day	15+ drinks in 7 days	Drank on 4+ days
	% 95% CI	% 95% CI	% 95% CI		% 95% CI	% 95% CI	% 95% CI	% 95% CI
25-34 years								
35-44 years								
45-54 years								
55-64 years								
25-64 years								

Analysis Information:
- Questions used (uses coding column as identifier): A1; A4; A5
- Epi Info programme name: Aheavydrinking (unweighted); AheavydrinkingWT (weighted)

Five or more drinks on a single occasion

Description: mean number of occasions where consumer drank five or more drinks during a single occasion.

Instrument question:
• In the past 12 months, on how many days did you have five or more standard drinks in a single day?

Age Group	Men N= mean 95% CI
25-34 years	
35-44 years	
45-54 years	
55-64 years	
25-64 years	

Analysis Information:
• Questions used (uses coding column as identifier): A1; A7
• Epi Info programme name: Abingemen (unweighted); AbingemenWT (weighted)

Four or more drinks on a single occasion

Description: mean number of occasions where consumer drank four or more drinks during a single occasion.

Instrument question:
- In the past 12 months, on how many days did you have four or more standard drinks in a single day?

Age Group	Women N= mean 95% CI
25-34 years	
35-44 years	
45-54 years	
55-64 years	
25-64 years	

Analysis Information:
- Questions used (uses coding column as identifier): A1; A8
- Epi Info programme name: Abingewomen (unweighted); AbingewomenWT (weighted)

Fruit and Vegetable Consumption

Fruit and vegetable consumption

Description: mean number of days fruit, vegetable, and combined fruit and vegetable consumed.

Instrument questions:
- In a typical week, on how many days do your eat fruit?
- How many servings of fruit do you eat each on one of those days?
- In a typical week, on how many days do your eat vegetables?
- How many servings of vegetables do you eat each on one of those days?

Age Group	Number of days fruit consumed				Number of days vegetables consumed				Number of days fruit and/or vegetables consumed		
	Men N= mean 95% CI	**Women** N= mean 95% CI	**Both Sexes** N= mean 95% CI		**Men** N= mean 95% CI	**Women** N= mean 95% CI	**Both Sexes** N= mean 95% CI		**Men** N= mean 95% CI	**Women** N= mean 95% CI	**Both Sexes** N= mean 95% CI
25-34 years											
35-44 years											
45-54 years											
55-64 years											
25-64 years											

Analysis Information:
- Questions used (uses coding column as identifier): D1; D3
- Epi Info programme name: Ddays (unweighted); DdaysWT (weighted)

Fruit and vegetable consumption

Description: mean number of fruit, vegetable, and combined fruit and vegetable servings per day on days consumed.

Instrument questions:
- In a typical week, on how many days do your eat fruit?
- How many servings of fruit do you eat each on one of those days?
- In a typical week, on how many days do your eat vegetables?
- How many servings of vegetables do you eat each on one of those days?

Age Group	Number of servings of fruit			Number of servings of vegetables			Number of servings of fruit and/or vegetables		
	Men N=	**Women** N=	**Both Sexes** N=	**Men** N=	**Women** N=	**Both Sexes** N=	**Men** N=	**Women** N=	**Both Sexes** N=
	mean 95% CI	mean 95% CI	mean 95% CI	mean 95% CI	mean 95% CI	mean 95% CI	mean 95% CI	mean 95% CI	mean 95% CI
25-34 years									
35-44 years									
45-54 years									
55-64 years									
25-64 years									

Analysis Information:
- Questions used (uses coding column as identifier): D1; D2 ; D3 ; D4
- Epi Info programme name: Dservings (unweighted); DservingsWT (weighted)

Five or more combined fruit and vegetables per day

Description: percentage consuming five or more fruit and/or vegetables per day on days consumed.

Instrument questions:
- In a typical week, on how many days do your eat fruit?
- How many servings of fruit do you eat each on one of those days?
- In a typical week, on how many days do your eat vegetables?
- How many servings of vegetables do you eat each on one of those days?

Age Group	No consumption of fruit or vegetable				Less than five servings of fruit and/or vegetable per day				Five or more fruit and/or vegetables per day		
	Men N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=
	mean 95% CI	mean 95% CI	mean 95% CI		mean 95% CI	mean 95% CI	mean 95% CI		mean 95% CI	mean 95% CI	mean 95% CI
25-34 years											
35-44 years											
45-54 years											
55-64 years											
25-64 years											

Analysis Information:
- Questions used (uses coding column as identifier): D1; D2 ; D3 ; D4
- Epi Info programme name: Dfiveormore (unweighted); DfiveormoreWT (weighted)

Fruit and vegetable consumption: Risky eating

Description: percentage of population classified as "risky" based on categories provided in the table

Instrument questions:
- In a typical week, on how many days do your eat fruit?
- How many servings of fruit do you eat each on one of those days?
- In a typical week, on how many days do your eat vegetables?
- How many servings of vegetables do you eat each on one of those days?

Age Group	Fruit or vegetables eaten on fewer than 4 days /week			Under 2 servings of fruit or vegetables /day when eaten			Under 14 servings of fruit or vegetables /week		
	Men N=	**Women** N=	**Both Sexes** N=	**Men** N=	**Women** N=	**Both Sexes** N=	**Men** N=	**Women** N=	**Both Sexes** N=
	% 95% CI	% 95% CI	% 95% CI	% 95% CI	% 95% CI	% 95% CI	% 95% CI	% 95% CI	% 95% CI
25-34 years									
35-44 years									
45-54 years									
55-64 years									
25-64 years									

Analysis Information:
- Questions used (uses coding column as identifier): D1; D2 ; D3 ; D4
- Epi Info programme name: Driskyeating (unweighted); DriskyeatingWT (weighted)

Type of oils used most frequently

Description: type of oil or fat most often used for meal preparation in households (presented only for both sexes because results are for the household not individuals).

Instrument question:
• What type of oil or fat is most often used for meal preparation in your household?

Age Group (N=)	Vegetable oil % 95% CI	Lard % 95% CI	Butter % 95% CI	Margarine % 95% CI	None used % 95% CI	other % 95% CI
25-34 years						
35-44 years						
45-54 years						
55-64 years						
25-64 years						

Analysis Information:
• Questions used (uses coding column as identifier): D5
• Epi Info programme name: Doil (unweighted); DoilWT (weighted)

Physical Activity

Introduction   Analysis physical activity data can be very complicated and the result confusing. The following guidelines will help clarify the results of the physical activity and will also provide valuable information on the classifications. Make sure you use some of these guidelines when you report physical activity data.

- MET values are applied to vigorous and moderate intensity variables in the work and recreation settings. These have been calculated using an average of the typical types of activity undertaken. Different types of activities have been grouped together and given an MET value based on the intensity of the activity. Applying MET values to activity levels allows us to calculate total physical activity. For more information regarding MET values go the STEPS website at www.who.int/chp/steps .

- The calculations below use multiple questions in the physical activity section. To simplify this a bit the questions have been clustered into four groups (as they appear in the Instrument). In the Instrument questions section of the table, only the group label appears. The specific questions for each groups is presented below.

  - Activity at work:
    - Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like [examples] for at least 10 minutes continuously?
    - In a typical week, on how many days do you do vigorous-intensity activities as part of your work?
    - How much time do you spend doing vigorous-intensity activities at work on a typical day?
    - Does your work involve moderate-intensity activity, that causes small increases in breathing or heart rate such as brisk walking for at least 10 minutes continuously?
    - In a typical week, on how many days do you do moderate-intensity activities as part of your work?
    - How much time do you spend doing moderate-intensity activities at work on a typical day?

  - Travel to and from places:
    - Do you walk or use a bicycle for at least 10 minutes continuously to get to and from places?
    - In a typical week, on how many days do you walk or bicycle for at least 20 minutes continuously to get to and from places?

Physical Activity, Continued

Introduction
(continued)

- How much time do you spend walking or bicycling for travel on a typical day?

  – Recreational activities:
  - Do you do any involve vigorous-intensity sports, fitness or recreational activities that cause large increases in breathing or heart rate like [examples] for at least 10 minutes continuously?
  - In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational activities?
  - How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?
  - Do you do any involve moderate-intensity sports, fitness or recreational activities that cause large increases in breathing or heart rate like [examples] for at least 10 minutes continuously?
  - In a typical week, on how many days do you do moderate--intensity sports, fitness or recreational activities?
  - How much time do you spend doing moderate--intensity sports, fitness or recreational activities on a typical day?

  – Sedentary behaviour :
  - How much time do you usually spend sitting or reclining on a typical day?

Levels of total physical activity

Description: percentage of participants classified into three categories of total physical activity

Instrument questions:
- activity at work
- travel to and from places
- recreational activities

Age Group	Men (N=)			Women (N=)			Both Sexes (N=)		
	Low level of activity	Moderate level of activity	High level of activity	Low level of activity	Moderate level of activity	High level of activity	Low level of activity	Moderate level of activity	High level of activity
	% 95% CI	% 95% CI	% 95% CI	% 95% CI	% 95% CI	% 95% CI	% 95% CI	% 95% CI	% 95% CI
25-34 years									
35-44 years									
45-54 years									
55-64 years									
25-64 years									

Analysis Information:
- Questions used (uses coding column as identifier): P1-P16
- Epi Info programme name: Ptotallevels (unweighted); PtotallevelsWT (weighted)

Total physical activity- mean

Description: mean time of total physical activity per day.

Instrument questions
- activity at work
- travel to and from places
- recreational activities

Age Group	Men	Women	Both
	N=	N=	N=
	Mean 95% CI	Mean 95% CI	Mean 95% CI
25-34 years			
35-44 years			
45-54 years			
55-64 years			
25-64 years			

Analysis Information:
- Questions used (uses coding column as identifier): P1-P16
- Epi Info programme name: Ptotal (unweighted); PtotalWT (weighted)

Total physical activity-median

Description: median time of total physical activity per day.

Instrument questions
- activity at work
- travel to and from places
- recreational activities

Age Group	Men	Women	Both
	N=	N=	N=
	Median (inter-quartile range) 95% CI	Median (inter-quartile range) 95% CI	Median (inter-quartile range) 95% CI
25-34 years			
35-44 years			
45-54 years			
55-64 years			
25-64 years			

Analysis Information:
- Questions used (uses coding column as identifier): P1-P16
- Epi Info programme name: Ptotal (unweighted); PtotalmedianWT (weighted)

Setting-specific physical activity- mean

Description: mean time spent per day in minutes, in work-, transport- and recreation-related physical activity

Instrument questions:
- activity at work
- travel to and from places
- recreational activities

Age Group	Men (N=)			Women (N=)			Both Sexes (N=)		
	Work	Transport	Recreation	Work	Transport	Recreation	Work	Transport	Recreation
	Mean 95% CI	Mean 95% CI	Mean 95% CI	Mean 95% CI	Mean 95% CI	Mean 95% CI	Mean 95% CI	Mean 95% CI	Mean 95% CI
25-34 years									
35-44 years									
45-54 years									
55-64 years									
25-64 years									

Analysis Information:
- Questions used (uses coding column as identifier): P1-P16
- Epi Info programme name: Psetspecific (unweighted); PsetspecificWT (weighted)

Setting-specific physical activity - median

Description: median time spent per day in minutes, in work-, transport- and recreation-related physical activity

Instrument questions:
- activity at work
- travel to and from places
- recreational activities

Age Group	Men (N=)				Women (N=)				Both Sexes (N=)		
	Work	Transport	Recreation		Work	Transport	Recreation		Work	Transport	Recreation
	Median (inter-quartile range) 95% CI	Median (inter-quartile range) 95% CI	Median (inter-quartile range) 95% CI		Median (inter-quartile range) 95% CI	Median (inter-quartile range) 95% CI	Median (inter-quartile range) 95% CI		Median (inter-quartile range) 95% CI	Median (inter-quartile range) 95% CI	Median (inter-quartile range) 95% CI
25-34 years											
35-44 years											
45-54 years											
55-64 years											
25-64 years											

Analysis Information:
- Questions used (uses coding column as identifier): P1-P16
- Epi Info programme name: Psetspecific (unweighted); PsetspecificmedianWT (weighted)

No physical activity by setting

Description: percentage of participants classified as doing no work-transport- or recreational-related physical activity.

Instrument questions:
- activity at work
- travel to and from places
- recreational activities

Age Group	Men (N=)				Women (N=)				Both Sexes (N=)		
	Work	Transport	Recreation		Work	Transport	Recreation		Work	Transport	Recreation
	N=	N=	N=		N=	N=	N=		N=	N=	N=
	% 95% CI	% 95% CI	% 95% CI		% 95% CI	% 95% CI	% 95% CI		% 95% CI	% 95% CI	% 95% CI
25-34 years											
35-44 years											
45-54 years											
55-64 years											
25-64 years											

Analysis Information:
- Questions used (uses coding column as identifier): P1-P16
- Epi Info programme name: Pnoactivitybyset (unweighted); PnoactivitybysetWT (weighted)

Sedentary   Description: total time spent in sedentary activities per day.

Instrument question:
• sedentary behaviour

Age Group	Men (N=)		Women (N=)		Both (N=)	
	mean	median	mean	median	mean	median
	mean	median (inter-quartile range)	mean	median (inter-quartile range)	mean	median (inter-quartile range)
	95% CI	95% CI	95% CI	95% CI	95% CI	95% CI
25-34 years						
35-44 years						
45-54 years						
55-64 years						
25-64 years						

Analysis Information:
• Questions used (uses coding column as identifier): P1-P16
• Epi Info programme name: Psedentary (unweighted);
    • PsedentaryWT (weighted)
    • PsedentarymedianWT (weighted)

Work related physical activity - mean

Description: mean time of work-related moderate- and vigorous-intensity physical activity per day.

Instrument questions:
- activity at work

Age Group	Men (N=)			Women (N=)			Both (N=)	
	Moderate	Vigorous		Moderate	Vigorous		Moderate	Vigorous
	Mean 95% CI	Mean 95% CI		Mean 95% CI	Mean 95% CI		Mean 95% CI	Mean 95% CI
25-34 years								
35-44 years								
45-54 years								
55-64 years								
25-64 years								

Analysis Information:
- Questions used (uses coding column as identifier): P1-P16
- Epi Info programme name: Pwork (unweighted); PworkWT (weighted)

Work related physical activity - median

Description: median time of work-related moderate- and vigorous-intensity physical activity per day.

Instrument questions:
- activity at work

Age Group	Men (N=)		Women (N=)		Both (N=)	
	Moderate	Vigorous	Moderate	Vigorous	Moderate	Vigorous
	median (inter-quartile range) 95% CI	median (inter-quartile range) 95% CI	median (inter-quartile range) 95% CI	median (inter-quartile range) 95% CI	median (inter-quartile range) 95% CI	median (inter-quartile range) 95% CI
25-34 years						
35-44 years						
45-54 years						
55-64 years						
25-64 years						

Analysis Information:
- Questions used (uses coding column as identifier): P1-P16
- Epi Info programme name: Pwork (unweighted); PworkmedianWT (weighted)

Recreational physical activity - mean

Description: mean time of recreational moderate- and vigorous-intensity physical activity per day.

Instrument question:
- recreational activities

Age Group	Men (N=)			Women (N=)			Both (N=)	
	Moderate	Vigorous		Moderate	Vigorous		Moderate	Vigorous
	Mean 95% CI	Mean 95% CI		Mean 95% CI	Mean 95% CI		Mean 95% CI	Mean 95% CI
25-34 years								
35-44 years								
45-54 years								
55-64 years								
25-64 years								

Analysis Information:
- Questions used (uses coding column as identifier): P1-P16
- Epi Info programme name: Precreation (unweighted); PrecreationWT (weighted)

Recreational physical activity - median

Description: median time of recreational moderate- and vigorous-intensity physical activity per day.

Instrument question:
• recreational activities

Age Group	Men (N=)		Women (N=)		Both (N=)	
	Moderate	Vigorous	Moderate	Vigorous	Moderate	Vigorous
	median (inter-quartile range) 95% CI	median (inter-quartile range) 95% CI	median (inter-quartile range) 95% CI	median (inter-quartile range) 95% CI	median (inter-quartile range) 95% CI	median (inter-quartile range) 95% CI
25-34 years						
35-44 years						
45-54 years						
55-64 years						
25-64 years						

Analysis Information:
• Questions used (uses coding column as identifier): P1-P16
• Epi Info programme name: Precreation (unweighted); PrecreationmedianWT (weighted)

Blood Pressure and Diabetes History

Blood pressure diagnosis and treatment

Description: raised blood pressure diagnosis and treatment results.

Instrument questions:
- During the past 12 months have you been told by a doctor or other health worker that you have elevated blood pressure or hypertension?
- Are you currently receiving any of the following treatments/advice for high blood pressure prescribed by a doctor or other health worker?
  - Drugs (medication) that you have taken in the last 2 weeks?

Age Group	Raised blood pressure diagnosed by doctor or health worker in last 12 months				Currently taking blood pressure drugs prescribed by doctor or health worker		
	Men N= % 95% CI	**Women** N= % 95% CI	**Both Sexes** N= % 95% CI		**Men** N= % 95% CI	**Women** N= % 95% CI	**Both Sexes** N= % 95% CI
25-34 years							
35-44 years							
45-54 years							
55-64 years							
25-64 years							

Analysis Information:
- Questions used (uses coding column as identifier): H1; H2; H3a
- Epi Info programme name: Hraisedbpadvice (unweighted); HraisedbpadviceWT (weighted)

Blood pressure lifestyle advice

Description: percentage of population with raised blood pressure who received lifestyle advice.

Instrument question:
- Are you currently receiving any of the following treatments/advice for high blood pressure prescribed by a doctor or other health worker?

Age Group	Advised or treated by doctor or health worker to lose weight				Advised or treated by doctor or health worker to stop smoking				Advised or treated by doctor or health worker to start or do more exercise		
	Men N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=
	% 95% CI	% 95% CI	% 95% CI		% 95% CI	% 95% CI	% 95% CI		% 95% CI	% 95% CI	% 95% CI
25-34 years											
35-44 years											
45-54 years											
55-64 years											
25-64 years											

Analysis Information:
- Questions used (uses coding column as identifier): H3(c-e)
- Epi Info programme name: Hraisedbplifestyle (unweighted); HraisedbplifestyleWT (weighted)

Blood pressure advice by a traditional healer

Description: percentage of population with raised blood pressure, who are seeking advice with traditional healers.

Instrument questions:
- During the past 12 months have you seen a traditional healer for raised blood pressure?
- Are you currently taking any herbal or traditional remedy for your high blood pressure?

Age Group		Seen a traditional healer in the last 12 months				Currently taking herbal or traditional remedy for high blood pressure		
		Men N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=
		% 95% CI	% 95% CI	% 95% CI		% 95% CI	% 95% CI	% 95% CI
25-34 years								
35-44 years								
45-54 years								
55-64 years								
25-64 years								

Analysis Information:
- Questions used (uses coding column as identifier): H4; H5
- Epi Info programme name: Hraisedbptrad (unweighted); HraisedbptradWT (weighted)

Diabetes diagnosis and treatment

Description: history of diabetes diagnosis and treatment results.

Instrument questions:
- During the past 12 months, have you ever been told by a doctor or other health worker that you have diabetes?
- Are you currently taking any of the following treatments/advice for diabetes prescribed by a doctor or other health worker?

Age Group	Diabetes diagnosed by doctor or health worker in last 12 months				Currently taking insulin prescribed for diabetes by doctor or health worker				Currently taking oral drugs prescribed for diabetes by doctor or health worker		
	Men N= % 95% CI	**Women** N= % 95% CI	**Both Sexes** N= % 95% CI		**Men** N= % 95% CI	**Women** N= % 95% CI	**Both Sexes** N= % 95% CI		**Men** N= % 95% CI	**Women** N= % 95% CI	**Both Sexes** N= % 95% CI
25-34 years											
35-44 years											
45-54 years											
55-64 years											
25-64 years											

Analysis Information:
- Questions used (uses coding column as identifier): H7; H8a; H8b
- Epi Info programme name: Hdiabetes (unweighted); HdiabetesWT (weighted)

Diabetes lifestyle advice

Description: history of diabetes lifestyle advice.

Instrument question:
- Are you currently taking any of the following treatments/advice for diabetes prescribed by a doctor or other health worker?

Age Group	Advised or treated by doctor or health worker to lose weight				Advised or treated by doctor or health worker to stop smoking				Advised or treated by doctor or health worker to start or do more exercise		
	Men N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=
	% 95% CI	% 95% CI	% 95% CI		% 95% CI	% 95% CI	% 95% CI		% 95% CI	% 95% CI	% 95% CI
25-34 years											
35-44 years											
45-54 years											
55-64 years											
25-64 years											

Analysis Information:
- Questions used (uses coding column as identifier): H8d; H8e; H8f
- Epi Info programme name: Hdiabeteslifestyle (unweighted); HdiabeteslifestyleWT (weighted)

Diabetes advice by traditional healer

Description: percentage of population with diabetes, who are seeking advice with traditional healers and receiving traditional treatment.

Instrument questions:
- During the past 12 months have you seen a traditional healer for diabetes?
- Are you currently taking any herbal or traditional remedy for your diabetes?

Age Group	Counselling by Traditional Healer for Diabetes during last 12 months				Current Herbal or traditional treatment for Diabetes		
	Men N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=
	% 95% CI	% 95% CI	% 95% CI		% 95% CI	% 95% CI	% 95% CI
25-34 years							
35-44 years							
45-54 years							
55-64 years							
25-64 years							

Analysis Information:
- Questions used (uses coding column as identifier): H9 ; H10
- Epi Info programme name: Hdiabetestrad (unweighted); HdiabetestradWT (weighted)

Physical Measurements

Height, weight and BMI

Description: mean results for height, weight and body mass index (excluding pregnant women).

Instrument questions:
- Height
- Weight

Age Group	Height (cm) Men N= mean 95% CI	Height (cm) Women N= mean 95% CI	Height (cm) Both Sexes N= mean 95% CI		Weight (kg) Men N= mean 95% CI	Weight (kg) Women N= mean 95% CI	Weight (kg) Both Sexes N= mean 95% CI		BMI (kg/m^2) Men N= mean 95% CI	BMI (kg/m^2) Women N= mean 95% CI	BMI (kg/m^2) Both Sexes N= mean 95% CI
25-34 years											
35-44 years											
45-54 years											
55-64 years											
25-64 years											

Analysis Information:
- Questions used (uses coding column as identifier): M3 ; M4 ; M5
- Epi Info programme name: Mbmi (unweighted); MbmiWT (weighted)

BMI categories   Description: BMI classifications (excluding pregnant women).

Instrument questions:
- Height
- Weight

Age Group	Men					Women			
	Under-weight <18.5	Normal weight 18.5-24.9	Over-weight 25.0-29.9	Obese 30.0+		Under-weight <18.5	Normal weight 18.5-24.9	Over-weight 25.0-29.9	Obese 30.0+
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)		% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
25-34 years									
35-44 years									
45-54 years									
55-64 years									
25-64 years									

Analysis Information:
- Questions used (uses coding column as identifier): M3 ; M4 ; M5
- Epi Info programme name: Mbmiclass (unweighted); MbmiclassWT (weighted)

Waist circumference

Description: mean waist circumference results (excluding pregnant women).

Instrument question:
• Waist circumference measurement

Age Group	Waist circumference	
	Men (N=)	Women (N=)
	mean (95% CI)	mean (95% CI)
25-34 years		
35-44 years		
45-54 years		
55-64 years		
25-64 years		

Analysis Information:
• Questions used (uses coding column as identifier): M7 ; M5
• Epi Info programme name: Mwaist (unweighted); MwaistWT (weighted)

Hip circumference

Description: mean hip circumference results (excluding pregnant women).

Instrument question:
• Hip circumference measurement

Age Group	Hip circumference	
	Men (N=)	Women (N=)
	mean (95% CI)	mean (95% CI)
25-34 years		
35-44 years		
45-54 years		
55-64 years		
25-64 years		

Analysis Information:
• Questions used (uses coding column as identifier): M15 ; M5
• Epi Info programme name: Mhip (unweighted); MhipWT (weighted)

Blood pressure   Description: mean blood pressure results excluding those currently on medication for raised blood pressure (average of second and third readings).

Instrument question:
- Are you currently receiving any of the following treatments for raised blood pressure prescribed by a doctor or other health worker? Drugs (medication) that you have taken in the last 2 weeks?
- Reading 1-3 systolic and diastolic blood pressure

Age Group	Systolic (mmHg)				Diastolic (mmHg)		
	Men N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=
	mean 95% CI	mean 95% CI	mean 95% CI		mean 95% CI	mean 95% CI	mean 95% CI
25-34 years							
35-44 years							
45-54 years							
55-64 years							
25-64 years							

Analysis Information:
- Questions used (uses coding column as identifier): H3a, M11a; M11b, M12a; M12b; M13a; M13b
- Epi Info programme name: Mbloodpressure (unweighted); MbloodpressureWT (weighted)

Raised blood pressure

Description: raised blood pressure

Instrument question:
- Are you currently receiving any of the following treatments for raised blood pressure prescribed by a doctor or other health worker? Drugs (medication) that you have taken in the last 2 weeks?
- Reading 1-3 systolic and diastolic blood pressure

Age Group	SBP ≥ 140 and/or DBP ≥ 90 mmHg				SBP ≥ 140 and/or DBP ≥ 90 mmHg or currently on medication for raised blood pressure				Currently on medication for raised blood pressure		
	Men N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=
	% 95% CI	% 95% CI	% 95% CI		% 95% CI	% 95% CI	% 95% CI		% 95% CI	% 95% CI	% 95% CI
25-34 years											
35-44 years											
45-54 years											
55-64 years											
25-64 years											

Analysis Information:
- Questions used (uses coding column as identifier): H3a, M11a; M11b, M12a; M12b; M13a; M13b
- Epi Info programme name: Mraisedbp (unweighted); MraisedbpWT (weighted)

Raised blood pressure

Description: raised blood pressure

Instrument question:
- Are you currently receiving any of the following treatments for raised blood pressure prescribed by a doctor or other health worker? Drugs (medication) that you have taken in the last 2 weeks?
- Reading 1-3 systolic and diastolic blood pressure

Age Group	SBP ≥ 160 and/or DBP ≥ 100 mmHg				SBP ≥ 160 and/or DBP ≥ 100 mmHg or currently on medication for raised blood pressure				Currently on medication for raised blood pressure		
	Men N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=
	% 95% CI	% 95% CI	% 95% CI		% 95% CI	% 95% CI	% 95% CI		% 95% CI	% 95% CI	% 95% CI
25-34 years											
35-44 years											
45-54 years											
55-64 years											
25-64 years											

Analysis Information:
- Questions used (uses coding column as identifier):H3a, M11a; M11b, M12a; M12b; M13a; M13b
- Epi Info programme name: Mraisedbp (unweighted); MraisedbpWT (weighted)

Treatment for raised blood pressure

Description: percentage of participant treated with drugs for raised blood pressure during the last 2 weeks.

Instrument question:
- During the past two weeks, have you been treated for high blood pressure with drugs (medication) prescribed by a doctor or other health worker?

Age Group	Treatment with drugs for raised blood pressure during the last 2 weeks		
	Men N=	**Women** N=	**Both Sexes** N=
	% 95% CI	% 95% CI	% 95% CI
25-34 years			
35-44 years			
45-54 years			
55-64 years			
25-64 years			

Analysis Information:
- Questions used (uses coding column as identifier): M14
- Epi Info programme name: Mbptreatment (unweighted); MbptreatmentWT (weighted)

Heart rates   Description: mean heart rate result and percentage with increased heart rates.

Instrument question:
• Heart Rate measurement

Age Group	Beats per minute				Beats per minute over 100		
	Men N=	Women N=	Both Sexes N=		Men N=	Women N=	Both Sexes N=
	mean 95% CI	mean 95% CI	mean 95% CI		% 95% CI	% 95% CI	% 95% CI
25-34 years							
35-44 years							
45-54 years							
55-64 years							
25-64 years							

Analysis Information:
• Questions used (uses coding column as identifier): M16a ; M16b ; M16c
• Epi Info programme name: Mheartrate (unweighted); MheartrateWT (weighted)

Biochemical Measurements

Mean fasting blood glucose

Description: mean fasting blood glucose results excluding those currently on medication for diabetes (Non-fasting recipients excluded).

Instrument questions:

- Are you currently receiving any of the following treatments for diabetes prescribed by a doctor or other health worker?
  - Insulin?
  - Oral drugs (medication) that you have taken in the last 2 weeks?
- During the last 12 hours have you had anything to eat or drink, other than water?
- Blood glucose measurement

Age Group	Fasting blood glucose (mmol/L)				Fasting blood glucose (mg/dl)		
	Men N=	Women N=	Both Sexes N=		Men N=	Women N=	Both Sexes N=
	mean 95% CI	mean 95% CI	mean 95% CI		% 95% CI	% 95% CI	% 95% CI
25-34 years							
35-44 years							
45-54 years							
55-64 years							
25-64 years							

Analysis Information:

- Questions used (uses coding column as identifier): H8a, H8b, B1, B5
- Epi Info programme name:
  - measurement in mmol/L: Bglucose (unweighted); BglucoseWT (weighted)
  - measurement in mg/dl: BglucoseMg (unweighted); BglucoseMgWT (weighted)

Raised blood glucose

Description: Participants with raised fasting blood glucose, or currently on medication for raised blood glucose (Non-fasting recipients excluded).

Instrument questions:
- Are you currently receiving any of the following treatments for diabetes prescribed by a doctor or other health worker?
  - Insulin?
  - Oral drugs (medication) that you have taken in the last 2 weeks?
- During the last 12 hours have you had anything to eat or drink, other than water?
- Blood glucose measurement

Age Group	Raised blood glucose *				Raised blood glucose* or currently on medication for diabetes				Currently on medication for diabetes		
	Men N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=
	% 95% CI	% 95% CI	% 95% CI		% 95% CI	% 95% CI	% 95% CI		% 95% CI	% 95% CI	% 95% CI
25-34 years											
35-44 years											
45-54 years											
55-64 years											
25-64 years											

* Raised blood glucose is defined as either
- plasma venous value ≥ 7.0 mmol/L or ≥ 126 mg/dl
- capillary whole blood value ≥ 6.1 mmol/L or ≥ 110 mg/dl

Analysis Information:
- Questions used (uses coding column as identifier): H8a, H8b, B1, B5
- Epi Info programme name:
  - measurement in mmol/L: Bglucose (unweighted); BglucoseWT (weighted)
  - measurement in mg/dl: BglucoseMg (unweighted); BglucoseMgWT (weighted)

Total cholesterol

Description: mean total cholesterol results.

Instrument question:
• Total cholesterol measurement

Age Group	Total cholesterol (mmol/L)				Total cholesterol (mg/dl)		
	Men N= mean 95% CI	**Women** N= mean 95% CI	**Both Sexes** N= mean 95% CI		**Men** N= mean 95% CI	**Women** N= mean 95% CI	**Both Sexes** N= mean 95% CI
25-34 years							
35-44 years							
45-54 years							
55-64 years							
25-64 years							

Analysis Information:

• Questions used (uses coding column as identifier): B7
• Epi Info programme name:
    • measurement in mmol/L: Btotallipids (unweighted); BtotallipidsWT (weighted)
    • measurement in mg/dl: BtotallipidsMg (unweighted); BtotallipidsMgWT (weighted)

Raised total cholesterol

Description: participants with raised cholesterol

Instrument question:
- Total cholesterol measurement

Age Group	Total cholesterol ≥ 5.2 mmol/L or ≥ 200 mg/dl				Total cholesterol ≥ 6.5 mmol/L or ≥ 250 mg/dl		
	Men N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=
	% 95% CI	% 95% CI	% 95% CI		% 95% CI	% 95% CI	% 95% CI
25-34 years							
35-44 years							
45-54 years							
55-64 years							
25-64 years							

Analysis Information:
- Questions used (uses coding column as identifier): B7
- Epi Info programme name:
  - measurement in mmol/L: Btotallipids (unweighted); BtotallipidsWT (weighted)
  - measurement in mg/dl: BtotallipidsMg (unweighted); BtotallipidsMgWT (weighted)

High density lipoprotein (HDL)

Description: mean HDL results.

Instrument question:
- HDL cholesterol measurement

Age Group	HDL (mmol/L)				HDL (mg/dl)				HDL < 0.9 mmol/L or <35 mg/dl		
	Men N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=
	mean 95% CI	mean 95% CI	mean 95% CI		mean 95% CI	mean 95% CI	mean 95% CI		% 95% CI	% 95% CI	% 95% CI
25-34 years											
35-44 years											
45-54 years											
55-64 years											
25-64 years											

Analysis Information:
- Questions used (uses coding column as identifier): B9
- Epi Info programme name:
  - measurement in mmol/L: Bhdllipids (unweighted); BhdllipidsWT (weighted)
  - measurement in mg/dl: BhdllipidsMg (unweighted); BhdllipidsMgWT (weighted)

Triglycerides   Description: mean triglyceride results.

Instrument question:
• Triglyceride measurement

Age Group	Triglycerides (mmol/L)				Triglycerides (mg/dl)				Triglycerides > 2.26 mmol/L or > 200mg/dl		
	Men N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=		**Men** N=	**Women** N=	**Both Sexes** N=
	mean 95% CI	mean 95% CI	mean 95% CI		mean 95% CI	mean 95% CI	mean 95% CI		% 95% CI	% 95% CI	% 95% CI
25-34 years											
35-44 years											
45-54 years											
55-64 years											
25-64 years											

Analysis Information:
• Questions used (uses coding column as identifier): B8
• Epi Info programme name:
  • measurement in Btriglyceride (unweighted); BtriglycerideWT (weighted)
  • measurement in mg/dl: BtriglycerideMg (unweighted); BtriglycerideMgWT (weighted)

Raised Risk

Description: summary of combined risk factors
- current daily smokers
- less than 5 servings of fruits & vegetables per day
- low level of activity (<600 MET -minutes)
- overweight or obese (BMI $\geq$ 25 kg/m^2)
- raised BP (SBP $\geq$ 140 and/or DBP $\geq$ 90 mmHg or currently on medication for raised BP).

Instrument question: combined from Step 1

Analysis Information:
- Questions used (uses coding column as identifier): T2; D1; D2; D3; D4; M3; M4; M5; H3a; M11a-b; M12a-b; M13a-b; P1-P16
- Epi Info programme name: raisedrisk (unweighted); raisedriskWT (weighted)

Age Group	Low risk (none of the risk factors)				Raised risk (at least 3 of the risk factors)		
	Men N=	Women N=	Both Sexes N=		Men N=	Women N=	Both Sexes N=
	% 95% CI	% 95% CI	% 95% CI		% 95% CI	% 95% CI	% 95% CI
25-34 years							
35-44 years							
45-54 years							
55-64 years							
25-44 years							
45-64 years							
25-64 years							

Section 4: Archiving

Archiving your STEPS Materials

Introduction   Once the survey is completed and before the team is disbanded, all records need to be properly stored in order to prevent loss.

Policies and systems   Most governments and large organisations will have their own established archival systems, in which case their facilities are likely to be your best long-term storage option. Investigate storing your data at:

- Ministry of Health
- WHO country office
- WHO regional office

Archival period   Decide on the archival period.   The duration may have been specified by your ethics authority. If not, consider twelve years.

This is long enough for data to be available for further STEPS surveys, and long enough to investigate query from the results.

Checklist   Use the checklist below to help ensure all necessary steps have been completed.

Step	Action	✔
1	Decide on the duration of storage.	
2	Box up all: • Questionnaires • Manuals • Interviewing materials • Printed versions of all file	
3	Label all the boxes clearly with: • Name and date of the project • Box contents • Names and contact details of site coordinator and one other member of the coordinating committee	
5	Determine who is entitled to have access to the archive.	
6	Place a copy of the form to apply for access in each box.	
7	Provide copies of electronic files (without personal identifiers) to WHO Geneva STEPS team.	
3	Inform all interested parties where the information is stored.	

Note: Make sure that participant identification information is never stored in the same location (electronically and in paper form) with the rest of the dataset.

Part 7: Glossary and References

Overview

In this Part   This Part covers the following topics

Section 1: Glossary of Terms Used in STEPS

Introduction   This section provides an alphabetical list of all the terms used in a STEPS surveillance with definitions that are appropriate for STEPS.

Term	Definition
Age-standardisation	A process of statistically adjusting rates from two or more populations with different age-sex structures, to a third hypothetical population with a fixed age-sex structure, in order to facilitate comparisons or understand differences between the populations.
Archive	A depository containing records or documents.
Average	See Mean
Bias	Distortion of a population estimate away from the true value. Bias can arise for many reasons such as measurement error or non-response.
Cluster	A (usually geographical defined) group of individuals.
Cluster sampling	A sampling method where the target population is divided into clusters/groups and a subset of each cluster is selected instead of the entire cluster. Cluster sampling often uses enumeration areas for the primary cluster
Confidence interval (CI)	A confidence interval is a measure of precision of the data of interest. All sample-based surveys lack some amount of precision due to non-sampling error and sampling error. To improve on point estimates, statisticians usually report an interval of values that they believe the parameter is highly likely to lie in. Usually the point estimate is the middle point of the interval and the endpoints of the interval communicate the size of the error associated with the estimate and how "confident" we are that the population parameter is in the interval. The intervals are called confidence intervals.
Cross-sectional design	A study design based on observations at a single point in time. STEPS surveys will be cross-sectional unless they are especially being extended to follow the sample over time. See also Longitudinal study.
Database	A large amount of information stored in a form that is easily searched by a computer. STEPS uses Microsoft Access.
Dataset	An electronic file with columns representing the variables being stored and rows that contain individual participant data.
Demographic characteristics	The characteristics of a human population for example age, sex, ethnicity and place of residence.
Distribution	The set of frequencies observed, or theoretical probabilities, in a set of events or values. Many estimates and tests used in statistics rely on assumptions about the data having a normal or other specific distribution.
Enumeration Area	A small to medium sized geographic area that has been defined in a census.

EpiData	Software package designed to facilitate data entry of survey data. Functions include immediate checking of ranges and legal values and ability to export data to a range of analysis packages. It is available for free.
Epi Info^{TM}	It is a statistical software package capable of complex analysis and available for free.
Estimate	A calculated guess of the true value of a population characteristic. If based on sample data, a confidence interval can be described which gives some indication of where the true value lies.
Estimation	Obtaining an approximation of a value for a population, based on sample data.
Exploratory data analysis (EDA)	The process of looking at raw data to find its important features. Various tools are used depending on the type of data. Simple frequency tables and histograms for categorical variables range, distributions, means etc and box plots for continuous variables are just some. This is a fundamental and essential aspect of data analysis.
Head of household	This can differ across countries. The definition used in most countries is the following: The person who has the decision making power and therefore it is not necessarily the person who earns the most.
Household composition	The age and sex of all the residents in the household who are within the age range of the survey.
Imputation	Methods for estimating values for questions where responses have been left out inadvertently, in order to provide a more complete dataset for analysis. Imputation is not done for STEPS.
Instrument	This refers to the STEPS Instrument which includes a questionnaire (Step 1), physical measurements (Step 2), and biochemical measurements (Step 3).
Inter-quartile range	The difference between the upper and lower quartiles in a set of values.
Interval	A pair of numbers describing the largest and the smallest in a set of values or estimates. The most commonly used interval in STEPS is the 95% confidence interval of the population estimates.
Kish method	The Kish method is a sampling method for selecting an individual randomly from a household. It uses a pre-determined table to select an individual based on the number of individuals living in the household.
Mean	The arithmetic mean is the average of a set of values, that is, the sum of all the values divided by number of values. Because of its simplicity and its statistical properties, it is used more than any of the other measures of central tendency (e.g. median).
Measurement device	A tool used for measurement purposes, for example a blood pressure monitor.
Median	The middle value in a distribution of values.

METs	A method for characterizing physical activities at different levels of effort based on the standard of a metabolic equivalent (MET). This unit is used to estimate the amount of oxygen used by the body during physical activity. For example, *1 MET* = the energy (oxygen) used by the body as you sit quietly, perhaps while talking on the phone or reading a book.
Moderate intensity physical activity	Refers to activities which take moderate physical effort and than make you breathe somewhat harder than normal. Examples include cleaning, vacuuming, polishing, gardening, cycling at a regular pace or horse-riding. Moderate intensity activities require an energy expenditure of 3-6 METs.
Multi-stage probability sampling	A study design with multiple stages of sampling and where each stage of sampling is based on probability. Multi-stage survey designs may save cost and avoid having to compile exhaustive lists of every person in the population.
Non-probability	Methods of sampling a population in which the probability of selection of each every individual is not known, and therefore from which reliable population estimates are not calculable. See Sample design.
Non-response	In a sample survey, the failure, for any reason, to obtain information from a designated participant.
Non-response bias	Also known as coverage bias, the error introduced by non-response.
Outlier	An observation so far removed from others in the set, that it may influence the results considerably and therefore should be examined carefully before being accepted.
Participant	An individual who responds to the STEPS Instrument. Participant is preferred to respondent.
Pilot survey	A small trial run or "dress rehearsal" of the entire survey process completed before the survey itself begins.
Population	The target population is the entire group of individuals of interest to the STEPS survey. The survey population is the group of individuals which have a chance to be selected for the survey, defined by upper and lower age limits, and perhaps also by residency or geographical location. The survey population should ideally be the same as the target population, but may not be exactly the same in practice, for example border-dwellers or social outcasts may be impossible to find and include in samples.
Post-stratification	A method of improving the accuracy of population estimates after a survey sample has been conducted. Where information obtained for the sample is already known for the whole population, then the sample individuals may be stratified according to data collected, and population estimates adjusted accordingly.
Precision	Refers to the likely spread of estimates made from a sample of data or from a statistical model. It is measured by the standard error of the estimator, and can be decreased (and therefore precision increased) by increasing the number of observations.
Prevalence	"The number of instances of a given disease or other condition in a given population at a designated time. When used without qualification the term usually refers to the situation at a specified point in time (point prevalence)" [Last 1988] Prevalence is similar to and often analysed as a probability, though multiplied by 100 and represented as a percentage.
Primary sampling unit (PSU)	The sampling units for the first stage of sampling.

Probability	A number between 0 and 1 which represents how likely some event is to occur. A probability of 0 means an event will never occur, while a probability of 1 means the event will always occur. In STEPS, prevalence data is often derived from estimates of probability.
Probability proportional to size (PPS)	A probability sample selection method where the sampling units are given a chance of selection according to their size. It is often used in multi-stage sampling where each primary sampling unit is selected with PPS.
Random sample	A sample of a population (or sub-population) that has the property that each individual has an equal or known chance of being selected, and in which the chance of one item being selected does not alter or affect the selection of any other individual. Examples of random sampling include simple random sample, cluster sampling and stratified sampling.
Random selection	Sampling in which every individual in a population has a known probability of selection.
Range	The difference between the largest and the smallest in a set of values, for example in a sample in which height was measured from 135 cms to 180 cms, the range would be 45 cms.
Rank	The position, when sorted into order, of a member within a set.
Rate	The occurrence of an event over a defined time amongst a defined sample or population. It may be expressed as number of events per person-years, for example 310 injury accidents per 10,000 person-years, which may be imagined as 310 of 1000 people over 10 years, or 310 of 2000 people over 5 years.
Representativeness	The extent to which a sample has the same distribution of the characteristics of interest as the target population from which it was selected.
Response proportion (rate)	The proportion or percentage of the eligible individuals sampled who did participate.
Risk Factor	Refers to any attribute, characteristic, or exposure of an individual, which increases the likelihood of developing a disease, or other unwanted condition/event.
Sample	The subset of the target population that is selected for inclusion in the survey.
Sample design	The methodology used to select the part of the population to be included in the survey. Methods include probabilistic, where each member of the population has a known non-zero chance of being selected, and non-probabilistic, where selection is based on convenience, networks or quotas. Non-probabilistic methods are unlikely to be representative of the population and are unlikely to be used in STEPS. Sampling design decisions are dependent in part upon the availability of up-to-date sampling fames.
Sample size	Sample size is the number of people selected in the sample. The sample size is determined by the amount of variation around the parameters that is acceptable, the likely size of differences that are anticipated to exist between sub-groups or two points in time, and the likely extent of non-response.

Sampling error	Sampling errors arise from estimating a population characteristic by looking at only one portion of the population rather than the entire population. It refers to the difference between the estimate derived from a sample survey and the 'true' value that would result if a census of the whole population were taken under the same conditions. There are no sampling errors in a census because the calculations are based on the entire population. A measure of sampling error is called standard error for a particular percentage or variable, precision is measured by standard error and illustrated with confidence intervals.
Sampling frame	A list of the units in the population, for example an electoral roll, a population register, or a telephone book. For the sample to be representative of the population, the sampling frame should include all people in the population (or sub-population) once and once only, will not include people who do not belong to that population, and will be up-to-date.
Sampling unit	The object of sampling, the parts of a population that is sampled. These units must cover the whole of the population and not overlap, i.e. every element in the population belongs to one, and one only, unit. In a simple random sample, the sampling units are the individuals themselves. In cluster sampling, it may be villages or other localities. In multi-stage sampling, the sampling units differ at each level of sampling.
Sampling weight	Sampling weights are weights that denote the inverse of the probability that the observation is included due to the sampling design.
Secondary sampling units (SSU)	The sampling units used for selection after the primary sampling units.
Serving (of fruit or vegetable)	For vegetables this refers to one cup of raw, leafy green vegetables, (spinach, salad etc…), one half cup of other vegetables, cooked or chopped raw (tomatoes, pumpkin, beans etc…), or a half cup of vegetable juice. For fruits, this refers to one medium sized piece of fruit (banana, apple, kiwi etc…) or a half cup of chopped, cooked or canned fruit or a half cup of juice from a fruit (not artificially flavoured).
Simple random sampling (SRS)	A probabilistic sampling method in which every member of the population has an equal chance of selection. Population estimates based on them are regarded as unbiased, but they require either that a single complete list of all members is available or can be assembled.
Skew	Of a distribution, having an imbalance of observations above and below the mean. Where the mean is located to the right of the median, the distribution is said to be right skewed, and vice-versa. Because many of the formulae for estimation are based on assumptions about normal distributions, skewness can seriously distort population estimates, and there must be a strategy for checking and coping with skewed data.
Standard deviation (SD)	One measure of the spread or dispersion of a characteristic. The standard deviation squared is known as the variance. Both are used in many formulae relating to survey estimates.

Standard drink	The net alcohol content of a standard drink is generally 10g. of ethanol depending on the country/site. This is the equivalent of 1 regular beer (285ml), a single measure of spirits (30 ml), a medium-sized glass of wine (120 ml), or a measure of aperitif (60 ml).
Standard error (SE or SEM)	The standard deviation of the means of many samples drawn from a population. The standard error indicates a reasonable distance that is expected between a sample mean and a population mean. It does not represent the amount of scatter of the values in the population, i.e. it is not similar to a standard deviation.
Strata	The plural form of stratum.
Stratified random sampling (STR)	A sampling method in which the population is partitioned into homogeneous sub-populations or "strata" in which sampling is conducted separately. In STEPS, many sites often choose to use strata defined by 10-year age group and sex.
Stratum	A partition of the population used in Stratified random sampling. A survey with 2 strata is in may ways equivalent to running two separate surveys, one for each stratum. Each stratum requires similar numbers of participants as a single survey: in STEPS that is about 2500 for each stratum.
Study population	The set of elements actually surveyed. If some elements are excluded from the survey (eg those living in remote areas), it is a matter of judgement whether the inferences drawn about the study population are valid for the reference population.
Systematic error	Lack of validity, as opposed to random error (lack of precision).
Systematic sampling	A probability sample selection method in which the sample is obtained by selecting every kth unit of the population, where k is an integer greater than 1. For example if k is 15 and the first unit is number 13, then subsequent units are 28, 43, 58 and so on. The first member of the sample must be selected randomly from within the first k units (a random start). If the target sample size is reached before all the kth members have been surveyed, recruitment must continue until all those selected have been surveyed.
Target population	The entire population that the results of the survey should be representing. The target population can be the entire country or a single province. The sample is then selected from the target population.
Variable	One item of information stored in a dataset, for example age or sex or weight (in kilograms). Variables may be categorical or continuous, but should be clearly defined and consistently recorded.
Variance	A measure of dispersion of a set of values, the square of the standard deviation. Variance and standard deviation are used extensively in statistics. Although not easy to give a conceptual meaning to variance, it is important because it occurs frequently in formula used to estimate variation in population characteristics.
Vigorous intensity activity	Refers to activities which take hard physical effort and which make you breathe much harder than normal. Examples include loading furniture, digging, playing football, tennis or fast swimming. Vigorous activities require an energy expenditure of greater than 6 METs.

Section 2: References

Introduction

This section provides a list of :

- References used in this publication (in alphabetical order)
- Resources available from the STEPS team

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**Resources from
the STEPS
team**

Additional resources available from the STEPS team include the following:

• Epi Info guide for STEPS
• EpiData guide for STEPS
• Summary: Surveillance of risk factors for noncommunicable disease:
The WHO STEPwise approach (2003), Rev.1
• STEPS statistical resources guide

Note: For a complete list of STEPS resources please visit our webpage:
www.who.int.chp/steps