



# ANACONDA

## Analysis of Causes of (National) Death for Action

ANACONDA is an electronic tool that assesses the accuracy and completeness of mortality and cause of death data by checking for potential errors and inconsistencies. The training courses on ANACONDA build capacity and confidence in participants to assess data quality using basic epidemiological and demographic concepts, and how to interpret and apply the results.

### The challenge

All countries need accurate and up-to-date mortality data for a variety of purposes including:

- Guiding policy debates about priority actions for improving population health
- Monitoring progress towards national and global development goals
- Monitoring trends in diseases and injuries
- Evaluation of policies designed to improve health outcomes, and
- Informing health research priorities.

However, the systems that produce mortality and cause of death data in many countries are often poorly developed and fragmented, resulting in **poor quality data** that are generally not fit-for-purpose, and as a result are grossly under-used or **not used at all**.

A common concern with any mortality dataset, including data produced from civil registration systems, is their reliability in describing actual mortality patterns in the population to which they refer.

As a first step to improving the policy utility of health information systems in countries, it is very **important to have a detailed understanding of problems in the data**, particularly with regard to **completeness and accuracy**. Higher quality data reduces uncertainty about the leading causes of death in a population and how they are changing, thus better meeting policy needs.

### Our approach

Training in ANACONDA **builds capacity among individuals and institutions to comprehensively and systematically assess the quality of mortality and cause of death data**. Through extended modules, it also teaches how to apply this knowledge to enhance the policy value of mortality data. This is done through building analytic capacity in the core **epidemiological and demographic concepts** that underlie ANACONDA, based on decades of recorded observations in a wide range of countries.

ANACONDA is an easy-to-use electronic tool that does not require more than basic computer skills and familiarity with Microsoft Excel. It performs the calculations needed for a **comprehensive data quality review** and automatically generates the associated figures and tables from which a report can be written.

The structure of the tool is logical and all the computational steps are automated. ANACONDA starts with a broad overview of the input data, applies systematic consistency checks to total (all-cause) mortality data, followed by a detailed assessment of the quality of cause of death data, and finally computes an overall index of mortality data quality, based entirely on the input data.

The tool is particularly useful for those who are responsible for the production of **routine mortality data**, as it allows them to annually monitor the quality of their datasets.

**The technical basis of ANACONDA was developed by the Melbourne School of Population and Global Health at the University of Melbourne. The software was built by the Swiss Tropical and Public Health Institute (Swiss TPH) at the University of Basel.**

## Course structure

The ANACONDA training course has been developed in a modular approach, so that countries can select from both core and optional modules to compose a course that best meets their training needs. For the first national or regional training it is recommended that countries include core modules 1 and 2. These modules provide participants with an overview of the epidemiological and demographic concepts, classifications and standards used in ANACONDA. Building capacity in these core skills allows participants to critically assess the quality of their data and identify areas for improvement, using locally-supplied datasets.

Optional modules 1 and 2 are recommended for countries with previous experience in ANACONDA, who wish to further expand their knowledge on the epidemiological and demographic concepts underlying ANACONDA, including how to adjust and analyse data to improve their value for policy. These two modules provide detailed information on the theory and conceptual thinking behind each of the main steps in ANACONDA, allowing participants to explore fundamental data quality issues, learn about advanced epidemiological and demographic techniques that will strengthen the evidence base for policy, and be introduced to the range of cost-effective strategies available to improve routine mortality data systems.

Finally, the refresher module reinforces earlier learnings, introduces participants to new concepts and methods that have been introduced into ANACONDA, and emphasises the key and continuous role of critical appraisal of data quality in strengthening country vital registration systems.

Course pre-requisites are minimal; however it is critical that all participants have access to laptops or desktop computers and that their mortality dataset is disaggregated by age and sex and compiled into three- or four-digit codes based on the International Classification of Diseases (ICD). Participants should have basic computer skills, preferably including Excel, if optional modules 1 and 2 are undertaken. Some knowledge of the ICD is helpful in order to understand the concepts and rationale of approaches and classifications used to analyse the data.



Countries that become part of the ANACONDA community are asked to nominate a Focal Point for ANACONDA who will receive updates about new versions of the software and all communications regarding ANACONDA from the developers. Requests for translations of ANACONDA into other languages should be addressed to the developers at the University of Melbourne

For more information about ANACONDA, contact Dr Lene Mikkelsen, University of Melbourne Technical Lead and ANACONDA Course Co-ordinator ([l.mikkelsen@unimelb.edu.au](mailto:l.mikkelsen@unimelb.edu.au)).

MODULE	DURATION	CONTENT	ADDITIONAL INFORMATION
<b>Core module 1: Introduction to ANACONDA</b>	1 day	<ul style="list-style-type: none"> <li>■ Concepts, classifications and standards used in ANACONDA</li> <li>■ What is ANACONDA? Steps 1-5</li> <li>■ What is ANACONDA? Steps 6-10</li> <li>■ Technical guidance and virtual tour of ANACONDA</li> <li>■ Basic exercises with local data</li> </ul>	<p>This basic introductory module is required for any country that has not had previous training in ANACONDA.</p> <p>It is a pre-requisite for all other modules.</p> <p>Participants become part of the ANACONDA community of users.</p>
<b>Core module 2: Practical exercises</b>	1 to 1.5 days	<ul style="list-style-type: none"> <li>■ Practical exercises with local datasets (national and/or sub-national)</li> <li>■ Basic report writing skills, using the in-built report generation function in ANACONDA</li> <li>■ Practice with reporting back results</li> </ul>	<p>It is recommended that countries include this module to ensure participants gain practical experience in applying their new skills to local datasets.</p>
<b>Optional module 1: Improving understanding and analytical skills for all-cause mortality</b>  <b>Optional module 2: Improving understanding and analytical skills for cause-specific mortality</b>	1 to 2 days	<ul style="list-style-type: none"> <li>■ Review of ANACONDA results for all-cause and cause-specific mortality data from routine mortality surveillance systems</li> <li>■ Explaining patterns in all-cause and cause-specific mortality data using the epidemiological and demographic concepts underlying ANACONDA</li> <li>■ Understanding routine mortality data sources</li> <li>■ Identifying fundamental causes of data quality issues</li> <li>■ Adjusting poor-quality data to better support policy needs</li> <li>■ Strategies to improve completeness and age reporting of mortality data in civil registration and vital statistics systems</li> <li>■ Strategies for improving quality of cause of death data</li> <li>■ Beyond ANACONDA: advanced analysis for countries with well-developed systems</li> </ul>	<p>These optional modules provide participants with a more detailed explanation of the epidemiological and demographic concepts used in ANACONDA.</p> <p>They provide participants with the skills required to identify and analyse issues of policy relevance in their data using ANACONDA, critically assess the issues, apply data adjustment techniques, and propose solutions for system improvements.</p> <p>Optional module 1 is a logical sequence to the two previous modules and focuses on analytical concepts underlying the assessment of data on the <i>fact</i> of death.</p> <p>Optional module 2 provides participants with more advanced skills required to critically appraise the diagnostic accuracy of cause of death datasets, how to conduct advanced analyses, and how to apply data adjustment techniques.</p>
<b>Refresher</b>	1 day	<ul style="list-style-type: none"> <li>■ Relevance of high quality mortality and cause of death data, including the extent of errors in local datasets and implications for policy</li> <li>■ Concepts, classifications and standards used in ANACONDA</li> <li>■ Technical guidance and virtual tour of ANACONDA</li> <li>■ Basic exercises</li> <li>■ Overview of optional modules 1 and 2</li> <li>■ Innovations and new developments in ANACONDA</li> </ul>	<p>A condensed version of core modules 1 and 2, with an overview of content from the two optional modules.</p> <p>Countries that have already had training in ANACONDA, or who wish to implement it at the sub-national level, are recommended to undertake this module.</p> <p>It provides opportunities to discuss lessons learnt from the community of practice of ANACONDA users, and feedback on policy implications.</p>

**Bloomberg  
Philanthropies**

 **DATA FOR  
HEALTH INITIATIVE**



**Australian Government**  
**Department of Foreign Affairs and Trade**

The program partners on this initiative include: The University of Melbourne, Australia; CDC Foundation, USA; Vital Strategies, USA; Johns Hopkins Bloomberg School of Public Health, USA; World Health Organization, Switzerland.

Civil Registration and Vital Statistics partners:



**For more information, contact:**

**E: [CRVS-info@unimelb.edu.au](mailto:CRVS-info@unimelb.edu.au)**

**W: [mspgh.unimelb.edu.au/dataforhealth](http://mspgh.unimelb.edu.au/dataforhealth)**

CRICOS Provider Code: 00116K

Version: 0217-01

**Copyright**

© Copyright University of Melbourne October 2016.

The University of Melbourne owns the copyright in this publication, and no part of it may be reproduced without their permission.

**Disclaimer**

The University of Melbourne has used its best endeavours to ensure that the material contained in this publication was correct at the time of printing. The University gives no warranty and accepts no responsibility for the accuracy or completeness of information and the University reserves the right to make changes without notice at any time in its absolute discretion.

**Intellectual property**

For further information refer to: [www.unimelb.edu.au/Statutes](http://www.unimelb.edu.au/Statutes)