

# WHO Reference Group on Global Health Statistics

## Report of the 1<sup>st</sup> meeting

*WHO, Geneva,  
9-10 December 2013*

### Contents

Executive Summary

Report of the meeting

Annexes

- A. Terms of reference
- B. Agenda
- C. List of participants

## *Executive summary*

The WHO Reference Group on Global Health Statistics (RGHS) provides advice on population-health related statistics of relevance to WHO, with particular focus on mortality and causes of death. The first RGHS meeting took place on 9-10 December 2013, following an initial Expert Consultation on Global Health Estimates in Geneva on 13-14 February 2013, and was attended by more than 30 experts and UN agencies.

### **Country use of estimates**

Currently, country use of global health estimates for resource allocation and policy making is limited in most countries. WHO has an important role to bridge between global and regional analytical work and countries to enhance evidence-based decision-making. Strengthening country capacity is critical and requires a long-term effort of multiple partners supported by good tools (e.g. HIV, child mortality).

WHO should invest more in promoting use of estimates in decision-making by:

- Strengthening country institutional capacity, through collaborations with development partners, academic institutions, research networks etc.
- Providing tools for use of estimates in key progress and performance reports
- Expanding the capacity building component of the WHO country consultation process for estimates.

### **Use of verbal autopsy**

Verbal Autopsy (VA) is an important strategy for addressing the gaps in population-level data on cause-specific mortality. Currently, two VA survey instruments are promoted in countries: the WHO 2012 and the shortened PHMRC questionnaires. There are multiple procedures for systematically coding VA data into cause of death outcomes. More countries are interested in applying VA on a large scale but are confused by the current situation and request WHO to clarify.

The RGHS recommended that WHO should focus on working with key VA researchers and countries to:

- Develop a single VA instrument for data collection which can be used in any analytical method to ascertain the probable cause of death
- Promote data sharing and joint work that leads to common standardized data sets for validation studies, supported by the development of standard VA data reporting items and reference definitions for causes of death of interest to ensure consistency with ICD classification rules.

A VA working group was established. Daniel Chandramohan accepted to chair the group. Membership will include Shams el Arifeen, Peter Byass, Sam Clark, Abie Flaxman, Bernardo Hernandez Prado, Robert Jakob, Henry Kalter, Erin Nichols, Arvind Pandey, Ian Riley, and Osman Sankoh.

### **All-cause mortality and life tables**

There is increasing demand for regular updating of global estimates of all-cause mortality, for monitoring of progress towards various targets, and as an important input to cause-specific analyses. For this purpose, WHO requires annual life table series, currently from year 1990 through to two years before publication year.

There are important differences between life tables produced by WHO, UN Population Division and IHME, including levels of mortality (predominantly arising from lower estimates of adult mortality for Africa from IHME), older child mortality levels (with WHO and the UN estimating almost twice as many deaths as IHME in the 5-14 year age group), the ways in which HIV mortality in high prevalence countries and mortality shocks are dealt with. Currently there is no clear way to resolve these technical issues.

It was agreed that a technical meeting to discuss a way forward should be held, which WHO should facilitate. This meeting should include Sam Clark (chair), Haidong Wang, Christopher Murray, Bruno Masquelier, Rob Dorrington, UN Population Division and WHO.

### **Cause of death estimates**

WHO collaborates with networks of researchers to produce estimates of child causes of death and of many specific diseases (TB, malaria, cancer etc.). Building upon these estimates, WHO also produced comprehensive estimates of causes of death in 2013 (global and regional, followed by country estimates in 2014). Many results do not differ dramatically at global and regional levels, but some such as envelopes, malaria, HIV differ substantially. The RGHS discussed whether WHO should continue to make global/regional and national estimates for deaths or other summary health measures available for a comprehensive set of disease and injury causes.

WHO was advised to:

- Provide regular assessments of vital registration data quality and provide feedback to members, in collaboration with UN agencies and IHME which has recently developed a comprehensive method.
- Seek to avoid duplicating estimation work to the extent possible and to collaborate as broadly as possible with IHME on comprehensive assessments.

### **Producing and reporting global health estimates**

The RGHS endorsed WHO's statistical clearance procedures and gave recommendations for improvement, including calculation of uncertainty intervals for all health statistics.

The RGHS agreed that a standard reporting checklist is needed for reporting population health estimates. More methodological work was needed to clearly describe types of data, sources of uncertainty and methods of model validation.

A working group to develop general reporting guidelines was proposed. Members should include Christopher Murray, Joy Lawn, Majid Ezzati, Igor Rudan, Leontine Alkema, Neff Walker, Rory Collins (proposed chair), Adrian Raftery, and Gary King.

### **Comparative risk factors assessment (CRA)**

It was agreed that given the current needs for basic research to improve CRA, and resource limitations at WHO, WHO should not attempt to carry out CRA of attributable health outcomes across a comprehensive set of risk factors, but should continue to work with relevant academic partners and expert advisory groups to carry out assessments and updates for specific risk factors identified as priorities for WHO.

Avoidable deaths was suggested as a simple summary metric that WHO could use to assess potential for prevention and treatment scale-up and progress towards universal health coverage, allowing for the inclusion of risk factors and health interventions within one framework. WHO will interact with experts who have used or plan to use avoidable deaths for subnational health systems performance assessment in Mexico (Rafael Lozano) and South Africa (Debbie Bradshaw).

## *MEETING REPORT*

### *Background*

Monitoring the global health situation, health trends and their determinants is one of the six core functions of WHO. This work often involves estimation based on statistical modeling to allow the production of comparable global, regional and country statistics, as there are major gaps in the availability and quality of data from countries. WHO has established a Reference Group on Global Health Statistics (RGHS) which will provide advice on the broad range of population-health related statistics of relevance to WHO, with particular focus on mortality and causes of death. This Reference Group follows an initial Expert Consultation on Global Health Estimates held in Geneva on 13-14 February 2013.

More than 30 experts and UN agency staff attended the first meeting of the RGHS reference group, which took place on 9-10 December 2013. The group advised WHO on the following topics:

- WHO's criteria for its official statistics and good practices in global health estimates;
- WHO's life tables, including how to synchronize with other UN agencies, including UNAIDS and UN Population Division;
- WHO's cause of death estimates, including uptake of new analyses and results, and coherence of statistical estimates within WHO and across collaborating international agencies;
- Ways to enhance cause of death data collection in countries and reporting to WHO, with a focus on verbal autopsy;
- Summary statistics for measuring universal health coverage and health system performance; and
- National use of global health estimates for policy making.

The terms of reference for the RGHS are attached as Annex A, the meeting agenda is attached as Annex B and the list of participants as Annex C. A summary of the group's recommendations is given below.

### *Overview of WHO and other work in global health statistics*

WHO regularly updates global, regional and country mortality statistics, including causes of death. Some statistics such as child mortality are updated annually, others such as maternal mortality bi-annually. Mortality estimation work is done in close collaboration with other UN agencies, and is guided by expert groups. These currently include:

- Child mortality: IGME (UNICEF, WHO, UN Population Division, World Bank), supported by a TAG: annual updates (September);
- Adult mortality: collaboration between WHO and UN Population Division, ad hoc expert meetings organized by UN Population Division;
- Causes of death in children: CHERG (secretariat at Johns Hopkins University, WHO, UNICEF): annual updates (December); also links with disease specific estimation processes expert groups such as QUIVER for vaccine preventable diseases and UN reference groups for malaria and AIDS;
- Causes of death in adults: WHO has published various point estimates for years 2000 through 2008, and more recently has released regional-level estimates for years 2000 and 2011, to be updated to 2012 at country level in 2014. These estimates draw and UN/WHO all-cause mortality estimates, WHO and other disease specific estimation processes and estimates published by academic researcher groups;

- Maternal mortality: MMEIG (WHO, UNICEF, UN Population Division, World Bank, UNFPA): bi-annual updates (September);
- Cancer incidence and mortality: IARC, supported by an editorial advisory group, biennial update; and
- HIV, malaria, TB, selected vaccine-preventable diseases, road injury and other specific causes and risks: WHO programs and collaborating agencies and expert groups, various revision cycles.

In recent years, the Institute for Health Metrics and Evaluation (IHME, University of Washington) has also produced maternal and child mortality estimates with a fairly similar updating cycle as the UN, and in December 2012 it released the Global Burden of Disease 2010. The IHME-GBD includes adult mortality estimates as well as cause of death estimates by age and sex at country level, and the plans are to regularly update these estimates, with 2013 estimates to be released in 2014. Increasing information on data sources, data adjustments and estimates is being made available on the IHME website, mainly through data visualizations.

Multiple sets of estimates for child mortality rates and priority causes of death, including HIV, TB, malaria, maternal mortality and major causes of child deaths have been published by UN agencies and by academic groups. Availability of multiple sets of estimates has stimulated closer attention to data and modelling issues and has resulted in improvements in the quality of some health estimates. However, uptake by countries remains limited. WHO will continue to produce estimates for priority causes both in-house and in collaboration with academics. The Institute for Health Metrics and Evaluation (IHME) will update the GBD 2010 for 2013 in the coming year.

### *Country use of global health estimates*

The Reference Group addressed three questions on global estimates:

- What is the role of estimates in country decision-making processes in health?
- What can be done to make estimation processes more useful to and more used in countries?
- What should be the WHO strategy to enhance country analytical capacity and use of estimates?

The group agreed that more can be done to bridge between global and regional analytical work and countries to enhance evidence-based decision-making and that this is a two-way process. WHO and other international agencies have an important role to play in technical advice, tools provision and capacity building in countries. Improved consultation and collaboration with countries will also ensure that best use is made of country knowledge and data to strengthen and improve global health estimates.

Multi-agency collaborations provide one important pathway, as evidenced by the capacity-building and analytic multicountry workshops that WHO and other partners have been conducting as part of the follow-up to the Commission on Information and Accountability recommendations process and in connection with renewed effort to improve vital statistics and cause of death systems and national use of health system information in strategic planning. At present there is no systematic approach among global players, and it would be desirable to develop a consortium of institutions for capacity building in global health statistics and analysis.

It was recommended that WHO's country consultation process should be used more systematically as an entry point for capacity building.

WHO can also promote accountability within countries by publishing accurate and comparable estimates of levels and trends in health indicators. By publishing comparable estimates, WHO provides

tools for in-country stakeholders to hold their governments accountable. Data visualizations increase the accessibility of health estimates, and their uptake by various stakeholders within countries.

The discussions concluded that WHO should invest more in promoting use of estimates in decision-making by:

- Strengthening country institutional capacity, through collaborations with development partners, academic institutions, research networks etc.
- Providing tools for use of estimates in key progress and performance reports
- Expanding the capacity building component of the WHO country consultation process for estimates.

### *Use of verbal autopsy in global health estimates*

Verbal Autopsy (VA) is recognised as an important strategy for addressing the gaps in population-level data on cause-specific mortality. There has been considerable progress in the development of automated procedures for systematically coding VA data into cause of death outcomes, which are seen as a necessary strategy to underpin widespread, rapid and cost-effective approaches to registering cause of death.

The Reference Group agreed that the current use of two different short instruments, 2012 WHO and shortened PHMRC, is far from ideal. Researchers and countries are looking for guidance on a single short instrument, which would also greatly facilitate the development, comparison and validation of analysis procedures. An initial comparison of the two instruments showed that over 75% of the items in the questionnaires were similar, many differences were easily solvable, and a smaller fraction of items needed extensive discussion. It was agreed that an ongoing process to reconcile the two short instruments is urgent and should be pursued.

The group discussed the need for common validation datasets, processing procedures, and data reporting. Although there is not likely to be another validation dataset like the Gold Standard Verbal Autopsy dataset from the Population Health Metrics Research Consortium (PHMRC), improved datasharing and standardized reference datasets would be useful. The group identified a need for standard verbal autopsy data reporting items including meta-data and a data reporting structure that would allow verbal autopsy data to be collected in the WHO mortality database. Progress in VA research will be facilitated by more transparency, with datasets, raw code and compiled code being made publicly available. There is also a need to further develop reference definitions for causes of death of interest and ensure consistency with ICD classification rules.

This will facilitate further evaluation and comparison of multiple analytic methods, including physician coding. While the group noted the advantages of automated statistical coding procedures, it also noted that physician coding of VA data provides a potential pathway to medically certified cause of death on death certificates.

It was agreed that a working group on verbal autopsy should be convened, to be chaired by Daniel Chandramohan. Membership will include Shams el Arifeen, Peter Byass, Sam Clark, Abie Flaxman, Bernardo Hernandez Prado, Robert Jakob, Henry Kalter, Erin Nichols, Arvind Pandey, Ian Riley Osman Sankoh.

### *All-cause mortality and life tables*

WHO has been preparing annual revisions of life tables for Member States since the early to mid-2000s using consistent data and methods – predominantly drawing on death registration data and the use of available information on levels of child and adult mortality from surveys and censuses, together with the WHO-developed modified logit life table system. At the same time, the UN Population Division produces time series of country life tables for 5-year periods from 1950-55 through to 2095-2100, on a two-year revision cycle (the World Population Prospects). More recently, IHME has published time series of life tables for countries over the period 1970-2010 and plans annual updates of these.

In the last three years, WHO has moved to synchronise more closely with the biennial revisions of UN life tables for countries without useable death registration data, as the UN analysis process aims to develop fully consistent demographic estimates for population, fertility, migration and mortality using a cohort-components projection model to cross-validate estimates and ensure full internal consistency. Complete and incomplete vital registration data provide the main inputs for life tables for 131 countries. For another 39 countries, data on levels of adult and child mortality are used together with model life tables or relational models, and for 39 countries there is heavy reliance on model life tables as only information on child mortality is available. For 22 countries with high levels of HIV infection, the mortality impact of the HIV epidemic is explicitly modeled using multistate epidemiological modelling. For the 2012 revision of World Population Prospects (released in June 2013), the UN Population Division used the Spectrum modelling software also used by UNAIDS for modelling HIV mortality, together with the input HIV data and estimates used by UNAIDS as at mid to late 2012.

UNAIDS subsequently released its 2013 estimates for HIV mortality using the same modelling approach but with data and inputs for HIV updated around mid-2013, and with other demographic inputs for many countries from the previous 2010 revision of World Population Prospects. Because of these differences, the 2013 HIV mortality estimates from UNAIDS and the all-cause mortality estimates from World Population Prospects (2012 revision) are not entirely consistent for a number of the high HIV countries, leading to implied envelopes for non-HIV deaths (noncommunicable diseases, maternal deaths, injuries etc) that are implausible either in age patterns or trends or both. As a result, WHO has used the results of a separate Spectrum modelling exercise for high HIV countries which provide estimates of HIV and all-cause mortality that are consistent with UNAIDS data and assumptions, and to the extent possible, with UN Population Division estimates of all-cause adult mortality levels. UNAIDS intends to continue this approach for future modelling of HIV mortality and to move to an annual revision cycle for country-level estimates.

There are other important differences between life tables produced by WHO and the UN Population Division and the Institute for Health Metrics and Evaluation, including substantial differences in levels of mortality at ages (predominantly arising from lower estimates of adult mortality for Africa from IHME) and a substantial difference in older child mortality levels (with WHO and the UN estimating almost twice as many deaths as IHME in the 5-14 year age group). Currently there is not a clear way to resolve these technical issues.

There is increasing demand for regular updating of global estimates of all-cause mortality, for monitoring of progress towards various targets, and as an important input to cause-specific analyses for monitoring and evaluation of needs and impact. For this purpose, WHO requires annual life table series, currently from year 1990 through to 2 years before publication year. The World Population Prospects produces life tables and all-cause mortality estimates for 5-year calendar periods, some of which include estimated deaths from mortality shocks such as major conflicts and natural disasters. Currently, neither UN Population Division or UNAIDS exclude such mortality shocks before imputing annual total or non-HIV deaths. WHO has been attempting to address this, by excluding estimated mortality shocks before

imputation and then adding back annual estimates. Further efforts are needed to better address this and ensure consistency across agencies.

IHME is also revising its methods to address the high HIV mortality estimation issues, working more closely with UNAIDS and the Spectrum modelling of high HIV epidemics. IHME's first step involves regression modelling of data for child and adult mortality levels, including HIV death rates as covariates. These models are used to estimate HIV-free time trends, and life tables. The excess child and adult mortality due to HIV is then translated to age-sex specific death rates using the Spectrum modelling of HIV age-sex mortality patterns. This provides a promising direction for improving the consistency and empirical underpinning of life tables for high HIV countries.

A technical meeting in 2014 to discuss a way forward was proposed, including Sam Clark (chair), Haidong Wang, Christopher Murray, Bruno Masquelier, Rob Dorrington, UN Population Division and WHO.

### *Cause of death estimates*

Strengthening cause of death data sources should remain a priority for WHO, with particular emphasis to address the large data gaps for Africa and Asia through efforts to improve or introduce vital registration as well as to make more use of verbal autopsy methods. Apart from the work to further develop VA instruments and methods, WHO should also take a lead in auditing death registration data quality and providing feedback to Member States. Specifically, WHO should regularly assess vital registration quality and inform data collectors of their findings. In doing this, WHO should collaborate with other relevant UN agencies and with IHME, which has recently carried out an assessment of national death registration data quality addressing six key factors: completeness (per cent of deaths recorded), cause of death (per cent garbage codes), age and sex (per cent unspecified), internal consistency (per cent of causes that are impossible for the age-sex group), availability of underlying cause of death (per cent of registered deaths), availability (per cent of years available).

WHO currently collaborates with a network of researchers (formerly members of the WHO and UNICEF Child Health Epidemiology Reference Group) to prepare regular updates of trends for major child causes of death at country, regional and global level. This process involves multicause models for neonatal and 1-59 month deaths, including low mortality models based on death registration data and high mortality models based on verbal autopsy study data. Additionally, use is also made of single-cause estimates for measles, pertussis, HIV and malaria (in low endemicity countries) prepared by WHO programs and UNAIDS.

WHO has also prepared country, regional and global estimates for all age groups for a comprehensive set of disease and injury causes. These have gone through a number of revisions over the last 15 years, most recently with the release of regional and global estimates for deaths by detailed causes for years 2000 and 2011 – released in mid-2013. These will be followed in early 2014 by country-level estimates for causes of death for 2012.

This estimation process draws together global health estimates from UN Population Division, UN Interagency Groups (UN-IGME and MMEIG), UNAIDS, as well as estimates for specific cause groups from IARC and various WHO programs and collaborating academic groups (major child causes, HIV, TB, malaria, maternal, cancers, road injury, homicide, conflict etc) . Additionally, WHO draws on its own analyses of death registration data submitted by Member States and sample information systems for India and China, as well as IHME analyses for fractional distributions of other causes for non-VR countries. These are documented in more detail in a Technical paper at [www.who.int/evidence/bod](http://www.who.int/evidence/bod)

The group discussed whether WHO should continue to make global/regional and national estimates for deaths or other summary health measures available for a comprehensive set of disease and injury causes. WHO could aim to produce such estimates itself (with other institutional and academic collaborators), to collate estimates from a range of sources, or to report estimates prepared by others.

Unlike research consortia which can centrally analyse all data and causes in a common framework, WHO must work in an environment where priority causes are addressed by a large number of different departments and agencies, and there are considerable variations in time frames and methods which leads to issues in ensuring internal consistency of estimates as well as synchronization of component inputs and results. The lack of a specific WHO expert advisory process for adult causes of mortality was noted. WHO should seek to avoid duplicating estimation work to the extent possible and to collaborate as broadly as possible with IHME.

The group noted the importance of transparency and documentation of methods, as well as the desirability of working towards the preparation of information on uncertainty. There is also a need to develop a more standardized approach to the synthesis of estimates from different groups, with varying approaches and comprehensiveness for uncertainty estimation.

The heterogeneity of modelling approaches, and timing differences in publication of updates, makes it difficult to apply a consistent process across all causes for adjusting cause-specific estimates to envelopes. It may be worth considering developing a hierarchy of estimates, with higher quality estimates excluded from the envelope adjustment process.

This approach would allow WHO to continue to work with academic and institutional collaborators to fill gaps in estimation, and to take on estimation for new priorities as required. In doing this, more attention needs to be paid to model performance metrics and reporting of these.

### *Recommendations for producing and reporting global health estimates*

The group endorsed WHO's statistical clearance procedures and gave recommendations for improvement. Several group members suggested that WHO should produce quantitative uncertainty intervals for all health statistics. It was also suggested that health estimates should include documentation of the specific disease list considered, and it was noted that the clearance process should not stifle innovation. The group noted that the unit which carries out statistical clearance is underresourced to engage in statistical clearance at an optimal level. Specifically, the value of country consultation in improving estimates and building country capacity was noted; however, these benefits are mitigated if the country consultation is rushed. The group also noted that WHO's statistics would benefit from a coordinated cycle rather than the current uncoordinated production cycles, and that instituting such a cycle would require leadership at the highest level of WHO.

A background paper on good practices for reporting of global health estimates was circulated prior to the meeting for inputs. The group agreed that a standard reporting checklist is needed for reporting population health estimates. They noted that the checklist could be applicable for both global and regional/country health estimates. They suggested that a more methodological work was needed to clearly describe types of data, sources of uncertainty and methods of model validation.

A working group to develop general reporting guidelines was proposed. Members should include Christopher Murray, Joy Lawn, Majid Ezzati, Igor Rudan, Leontine Alkema, Neff Walker, Rory Collins (proposed chair), Adrian Raftery, and Gary King.

### *Avoidable burden, risk factor assessment*

The methodological challenges and limitations of the comparative risk assessment (CRA) framework were presented. It was agreed that given the current needs for basic research to improve CRA, and the limited resources for health statistics at WHO, WHO should not attempt to carry out CRA of attributable health outcomes across a comprehensive set of risk factors, but should continue to work with relevant academic partners and expert advisory groups to carry out assessments and updates for specific risk factors identified as priorities for WHO.

Avoidable deaths, using a frontier (benchmarking) or list-based approach, was suggested as a simple summary metric that WHO could use to assess potential for prevention and treatment scale-up and progress towards universal health coverage. Such an approach may allow for the inclusion of risk factors and health interventions within one framework, and possibly for quantification of averted burden as well as avoidable burden. WHO will interact with experts who have used or plan to use avoidable deaths for subnational health systems performance assessment in Mexico (Rafael Lozano) and South Africa (Debbie Bradshaw).

### *Way forward*

It was agreed that the Reference Group should continue and that WHO should aim to host further meetings of the Reference Group on Health Statistics in the 2014/2015 biennium to assess progress on the agendas noted above. Depending on availability of resources, working groups on specific topics noted below may meet more often, either through conferencing facilities or face-to-face. In 2014, these working groups include:

- WHO working group on verbal autopsy instruments and methods
- Working group on WHO estimates for all-cause mortality and life tables
- Drafting group for a paper on global estimate reporting guidelines

## Annex A. WHO Reference Group on Global Health Statistics (RGHS)

### Terms of Reference

#### Background

WHO regularly updates global, regional and country mortality statistics, including causes of death. Some statistics such as child mortality are updated annually, others such as maternal mortality bi-annually. Mortality estimation work is done in close collaboration with other UN agencies, and are guided by expert groups. These currently include:

- Child mortality: IGME (UNICEF, WHO, UN Population Division, World Bank), supported by a TAG: annual updates (September);
- Maternal mortality: MMEIG (WHO, UNICEF, UN Population Division, World Bank, UNFPA): bi-annual updates (September);
- Causes of death in children: CHERG (secretariat at Johns Hopkins University, WHO, UNICEF): annual updates (December); also links with disease specific estimation processes expert groups such as QUIVER for vaccine preventable diseases and UN reference groups for malaria and AIDS;
- Adult mortality: collaboration between WHO and UN Population Division, ad hoc expert meetings organized by UN Population Division.

In recent years, the IHME has also produced maternal and child mortality estimates with a fairly similar updating cycle as the UN, and in December 2012 it released the Global Burden of Disease 2010. The IHME-GBD includes adult mortality estimates as well as cause of death estimates by age, and the plans are to regularly update these estimates. WHO organized a meeting on global health estimates in February 2013 which brought together academic experts, UN agencies, scientific journal editors, development partners and others. The meeting proposed “the establishment of an overall platform, with global representation, that focuses on overall mortality rates, causes of death, risk factors and burden, and facilitates interaction between multilateral development institutions, IHME and other independent academic groups, and WHO expert groups in specific subject areas.”.

WHO is establishing a reference group on global health statistics which will provide advice on the broad range of population-health related statistics of relevance to WHO, including summary measures, with particular focus on mortality and causes of death. This will cover adult mortality and life tables, as well as all causes of death. It will not replace existing mechanism but work closely with disease-specific groups, which often use natural history models, and GBD 2.0. It will also work closely with the child and maternal mortality estimation groups. This reference group will provide oversight to the collaboration between WHO and academic collaborating groups formerly provided by the CHERG.

#### Objectives

The goals of the reference group are:

- To provide an overall platform for discussion on methodological and data issues related to the measurement of mortality and causes of death patterns;
- To facilitate links between disease-specific expert groups and overall work on mortality and causes of death;

- To actively engage in global health estimates related work such as improving the methods for cause of death, collaborating on producing those estimates etc.;
- To advise WHO on its use of summary measures of population health such as DALYs and HALE;
- To provide advice on WHO standards for official statistics and for use or endorsement of external analyses and estimates;
- To give advice to WHO and other UN agencies on updating of key mortality and population health statistics at the global, regional and country levels;
- To function as a general global platform to support the strengthening of country health information systems, including data generation, analyses and use of estimates.

### **Modus operandi**

The reference group will use a flexible working model in which smaller submeetings with limited numbers of experts are organized to focus on specific topics. Invitations to members will be sent based on meeting objectives and expertise. Examples of topics for such meetings and subgroups include a verbal autopsy working group, adult mortality estimation, cause of death in childhood etc. The first meeting will discuss and propose the priority topics for 2014-15.

## Annex B. Agenda

9-10 December 2013

Chateau de Penthes, Geneva

### Monday, 9 December

Time	Title	Presenters /Discussants
8:30	Welcome coffee	
9:00	Introductions, background and objectives	Ties Boerma, WHO
	<b><i>Overview of WHO and other work in global health statistics</i></b>	
<i>Session objectives</i>	<i>Provide an overview of current and planned WHO activities and partner activities; Identify key issues for WHO statistics</i>	
9:15	Current and planned WHO global health activities	Colin Mathers, WHO
9:30	Current status of GBD 2013	Chris Murray, IHME
9:45	Introduction to the Centre for Population Health Sciences	Igor Rudan, University of Edinburgh
10:00	Introduction to new CHERG work	Li Liu, Johns Hopkins University
10:15	Discussion	
10:30	<i>Coffee break</i>	
	<b><i>Issues around national use of global health estimates for policy making</i></b>	
<i>Session objectives</i>	<i>Identify ways to enhance use of estimates in country progress and performance reviews and subsequent decision-making</i>	
11:00	The (missing) link between estimates and national decision-making processes	Ties Boerma
11:15	Panel commentaries (5 minutes each)	Shams el Arifeen, ICDDR,B Daniel Low-Beer, GF Rafael Lozano, INSP Girmay Medhin, Aklilu Lemma Institute of Pathobiology Arvind Pandey, Indian Council of Medical Research Peter Hansen, GAVI Alliance
11:45	Discussion	All
12:15	<i>Lunch</i>	

	<b><i>Use of Verbal Autopsy in Global Health Estimates</i></b>	
<i>Session objective</i>	<i>Advise WHO on the best strategy for VA data collection</i>	
13:30	Update on IHME verbal autopsy tool and methods	Chris Murray
13:45	Update on VA work	Henry Kalter, Johns Hopkins
14:00	Comparison of VA instruments	Erin Nichols, NCHS
14:15	Update on VA work	Peter Byass, Umea University
14:30	Discussion on Verbal autopsy, covering: 1) reconciliation of VA instruments 2) criteria by which VA analysis algorithms should be judged 3) proposal for VA working group	Comment by Sam Clark, University of Washington  All
15:30	<i>Coffee Break</i>	
	<b><i>All-cause mortality and life tables</i></b>	
<i>Session objective</i>	<i>Advise WHO on future strategy for life table and all-cause mortality estimates Advise WHO on ways to assess completeness of CRVS</i>	
16:00	Issues around WHO use of life tables from UNPD and other sources	Colin Mathers
16:15	UNAIDS use of life tables in spectrum	Tim Hallett, Imperial College London
17:00	IHME methods and plans for life tables, including treatment of HIV and assessment of completeness	Chris Murray
17:15	Discussion on future WHO strategy for life tables, reconciliation of adult mortality and HIV estimates, and future WHO strategy for assessing completeness of CRVS	Comment by Bruno Masquelier, University of Louvain  All
18:00	End of day	

Tuesday, 10 December

Time	Title	Presenters /Discussants
8:30	Welcome coffee	
	<b><i>Cause of death estimates</i></b>	
<i>Session objectives</i>	<i>Advise WHO on cause-of-death estimation Identify gaps in WHO cause-of-death statistics</i>	
9:00	CRVS availability and quality	Rafael Lozano, INSP/IHME
9:15	WHO approach to child cause-of-death estimation	Li Liu
9:30	WHO approach to adult cause-of-death estimation	Colin Mathers
9:45	Discussion on WHO estimates of causes of death, covering: 1) harmonization of multi-cause and single-cause estimates based on cause-of-death data and natural history models 2) approach to gaps in WHO cause-of-death estimates	Comments by: Jacques Ferlay, IARC Chris Murray Igor Rudan Osman Sankoh, INDEPTH  All
10:30	<i>Coffee break</i>	
	<b><i>Recommendations for producing and reporting global health estimates</i></b>	
<i>Session objective</i>	<i>Advise on good practice for producing and reporting global health estimates</i>	
11:00	WHO standards for producing and reporting global health estimates	Gretchen Stevens, WHO
11:15	Discussion on good practices for producing and reporting global health estimates (background document)	All
12:30	<i>Lunch break</i>	
13:30	Wrap up and next steps	Gretchen Stevens
	<b><i>Avoidable burden, risk factor assessment</i></b>	
<i>Session objective</i>	<i>Brainstorm on strategies for assessing risk factors, interventions, and universal health coverage</i>	
14:00	General introduction	Ties Boerma
14:10	Discussion	All
15:45	Wrap up of the meeting	Ties Boerma
16:00	<b>Meeting end</b>	

## Annex C. List of Participants

<b>Leontien ALKEMA</b> (unavailable) University of Singapore	<a href="mailto:alkema@nus.edu.sg">alkema@nus.edu.sg</a>
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