

# **Inter-Agency Group for Mortality Estimation Technical Advisory Group**

December 16, 2008  
5<sup>th</sup> Floor Conference Room  
UNICEF House  
New York City

## **Draft Minutes**

Members present: Kenneth Hill (Harvard University, Chair); Simon Cousens (London School of Hygiene and Tropical Medicine); Michel Guillot (University of Wisconsin, Madison); Jon Pedersen (FAFO); Neff Walker (Johns Hopkins University); John Wilmoth (University of California, Berkeley)

Member absent: Trevor Croft (Consultant)

Agency Representatives: Edilberto Loaiza (UNICEF); François Pelletier (UNPD); Mie Inoue (WHO – by telephone); Danzhen You (UNICEF).

Ken Hill opened the meeting by welcoming participants. The meeting agenda is in Appendix 1.

### **TAG Work Program and Funding**

The first item on the agenda was a discussion of the draft (10/08) work plan and possible approaches to funding the work program. The 10/08 draft workplan identified five areas for priority attention of the TAG:

1. The improvement of methods for deriving best estimates of trends in under-5 mortality (specifically the probability of dying by age 5, U5MR) and plausible uncertainty bounds around such trends from diverse and periodic data sources.
2. The development of standard methods for obtaining estimates of child mortality by sex, of neonatal and infant mortality from estimates of U5MR, and for subnational geographic units.
3. Recommendations to agencies about data collection procedures.
4. Estimation of child mortality in countries severely affected by HIV/AIDS.
5. Recent peculiarities in child mortality trends from DHS surveys.

The TAG reaffirmed these priorities, and then discussed whether or not the TAG should consider other mortality issues than the estimation of child mortality. There is considerable pressure on the agencies to update estimates of maternal mortality by 2010, and the TAG agreed that it would be willing to provide technical input to the re-estimation process if asked to do so. This would require adding additional expertise to

the group, either as full members or as a sub-TAG, and would also require the inclusion of representatives of other international agencies (UNFPA) or programs (Reproductive Health in WHO and Unicef). The group agreed in principle that other aspects of mortality should be included in the broad agenda of the TAG, but that no specific plans were required at this point.

Discussion then turned to possible funding mechanisms for the TAG. It was agreed that the TAG should attempt to raise sufficient funding to provide research support for members or other experts to carry out needed research as well as to cover the costs of regular meetings. A ballpark figure of \$1 million over 3 years was agreed as a sensible target, and it was also agreed that if possible an umbrella group with very low indirect costs, such as the US Committee for Unicef, should be used as the conduit for research funds. Neff Walker agreed to contact USCU to explore the possibility of such an arrangement. To assist with fund raising, a general proposal, specifying objectives, specific research activities, and importance to improving human welfare, should be developed with a general budget. This prototype proposal could then be fine-tuned for submission to specific funding agencies such as Norad, DfID, BMGF and Google.org. One possible hook would be to include in the work program a series of training programs in regions of the developing world along the lines of the recent Bangkok workshop.

### **Imputing Birth Histories**

The issue of data collection procedures for child mortality estimation hinges on the relative information gains of using a full or truncated birth history over the use of a summary (Children ever born/children dead) birth history. KH presented preliminary results of an experiment (conducted with Livia Montana) to impute a full birth history for a country using only a summary birth history and an existing full birth history for the same or a neighboring country. A woman with a given number of children ever born and children dead and given five-year time since first birth is matched randomly to a woman with the same characteristics in an existing birth history, and that birth history is then adopted as the woman's own. The resulting imputed birth history could be analyzed in exactly the same way as a newly-collected birth history, permitting calculation of neonatal, infant etc. rates, and would control for broad fertility trends (since women are being matched on children ever born and time since first birth) and child mortality trends (since women are being matched on children dead). KH presented four applications to DHS data, where birth histories from an earlier survey were matched onto the summary characteristics from a later survey, and two applications where histories from neighboring countries were linked. Estimates of child mortality indicators from the imputed birth history were then compared to results from the real birth history at the second survey. Results are summarized in the powerpoint presentation. The bottom line was that the techniques gave good estimates of U5MR, but less good estimates of the component parts such as neonatal mortality rates, for within-country applications, but gave poor results in the across country applications, particularly for Zimbabwe using a birth history from Zambia.

In the discussion that followed, it was suggested that multiple rather than single imputation should be used, since this would give measures of uncertainty; that for cross-country applications the countries should be matched as far as possible by fertility and mortality level; that the results should be compared to the indirect estimates of U5MR obtained by applying Manual X (and the new IHME) methods; and that estimates should be made by matching on additional characteristics of mother such as urban/rural residence, education. Other tests should include longer time lapses between surveys etc.

### **Establishing Objective Criteria for Inclusion/Exclusion of Data Sets**

Fitting trends to U5MR estimates often requires judgments about the quality or lack thereof of particular data sets. Such judgments have to date been largely subjective or based upon anecdotes about survey quality. It is desirable to develop objective, describable criteria for such judgments. JRW noted that the Human Mortality Database classifies assessments in terms of internal consistency and plausibility, and external consistency and plausibility. A series of data tests, mostly of internal data quality or plausibility (extent of heaping of child deaths on 12 months or 7 days in a birth history; missing data on dates of birth of children or ages at death; age heaping of women; ratios of neonatal to infant or under-5 mortality) were proposed. A complete list of those discussed is presented in Appendix 2. The TAG work program will need to lengthen the list and explore possible cut-off points, beyond which a survey's results should be excluded from analysis. A systematic assessment of all DHS and WFS surveys, using the criteria, should also be carried out. There was also some discussion as to what should be considered a "data point" for trend fitting. It was recommended that estimates of child mortality from, for example, a nationally-developed life table, should not be included unless there was clear use of additional information in its creation.

### **Truncated Birth Histories**

One area where the TAG had been asked to provide recommendations to the agencies quickly was the format to be used for collecting child mortality data in Unicef's MICS surveys. The options considered were (a) full birth history (used in a few MICS-3); (b) truncated birth history, asking each woman about the date of birth and age at death of births in a defined recent period (eg 5 years) or the last 3 births; and (c) the summary birth history. Hill presented a short assessment of the pros and cons of each approach (see powerpoint) together with data from two surveys that used truncated histories. Although in these two cases the truncated histories gave estimates that were not wildly different from current trend estimates of U5MR produced by IGME for the corresponding time period, the TAG strongly recommended to Unicef that it should continue with the current procedure of using summary birth histories in the MICS except in countries with very well-developed survey capabilities. Unicef lacks the ability to provide the intense technical assistance still required with instrument development, training, supervision and data cleaning and processing to collect full birth histories in most developing countries, and the truncated history saves little time in the field but requires similar technical input.

### **Adjusting Child Mortality Estimates for HIV**

EL and NW described the process whereby IGME arrived at estimates of child mortality in countries severely affected by HIV. Essentially the process (for approximately 12 high AIDS impact countries) is to establish a “no-AIDS” trend in U5MR for the period before the epidemic, and then add on year by year to that trend the number of deaths of children under 5 due to AIDS, the latter series of numbers being provided by UNAIDS. There are of course problems with this procedure – for example, what to do in the case of Zimbabwe where the extrapolated “no AIDS” series is unlikely to be correctly reflecting recent adverse changes in that country. However, the TAG, while not endorsing any series of country estimates, strongly endorsed the general principle of using well-founded external information relevant to child mortality (such as the time pattern of HIV deaths in the recent past) to inform the projection of estimates beyond the last empirically-observed points. The TAG recommended using empirically observed values (with trends fitted by spline, Loess, or whatever) as far as they are available, and then extending the series using for example subsequent changes in numbers of AIDS deaths as predicted by UNAIDS.

### **Birth Transference in DHS Surveys**

NW made a brief presentation of an extensive report prepared by a graduate student, Fengmin Zhao. The report examined a number of data quality indicators in DHS surveys, such as ratios of numbers of births in the first year of the period within which extra questions about children are required to the average number of births in adjacent years (birth ratios) and ratios of estimates of U5MR for a range of numbers of years generated by sequential DHS surveys (mortality ratios). A total of 99 surveys were included in the analysis. The bottom line was that (a) there was clear evidence of birth transference in some surveys; (b) in a subset of such surveys the birth transference also affected estimates of U5MR; (c) that the most consistent recent time period for estimating U5MR was 1 to 5 years before the survey, with 0 to 5 also performing quite well; (d) that in several cases there were differences between estimates from different surveys that could not be explained by birth or death transference (e.g. Nigeria 1999 and 2003); and (e) that the factors tending to predict problems with birth transference were size of survey (the larger the worse) and having the data collection straddle January 1. The TAG recommended to the agencies that the birth history estimates of child mortality used should be for the periods 1 to 5, 6 to 11, etc. years before the survey. In terms of the presentation of the analysis, it was agreed to adopt SC’s suggestion that the standard errors be computed correctly to take into account the sample designs of the DHS surveys. NW undertook to prepare a first draft of a journal article describing the results.

### **Neonatal Mortality**

It was agreed that one concrete piece of work to carry out before the next TAG meeting would be the exploration of “model life tables” for neonatal mortality. The study would compile historical European data on age patterns of infant death across years and mortality levels, and combine these patterns with those observed in WFS, DHS and other birth history surveys plus DSS data where available and where data collection procedures

are frequent enough to plausibly capture a very high proportion of early neonatal deaths (roughly speaking, every four months or less with questions on pregnancy status each round). KH undertook to lead this analysis, but encouraged all participants to provide data where available.

### **Next Meeting**

It was agreed to hold the TAG's next meeting on June 15/16 2009, location to be determined by funding and convenience. It was requested that at the next meeting WHO should make a presentation of how estimates of completeness of death registration (for children and adults) are made.

The meeting adjourned about 4:45 pm.

Appendix 1

**Inter-Agency Group for Mortality Estimation  
Technical Advisory Group**

December 15, 2008  
UNICEF House  
New York City

**Agenda**

- 9:30 am **Welcome and Introductions**
- 9:45 am **Discussion of draft (10/08) initial work plan and funding**
- 10:15 am **Imputation of full birth histories from summary birth histories**  
Preliminary results from DHS data sets (Hill)  
Next steps (Group discussion)
- 11:00 am **Coffee Break**
- 11:20 am **Establishing objective criteria for including or excluding data sets from child mortality trend analyses**  
Discussion
- 12:00 pm **Compiling Data Sets with Truncated Birth Histories**  
Discussion
- 12:30 pm **Lunch**
- 2:00 pm **Birth transference in DHS surveys**  
Child mortality estimates for single years from DHS surveys:  
Implications for recent estimates (Walker)  
Discussion of next steps
- 3:00 pm **Discussion of recommendations for MICS data collection**  
Full, truncated or summary birth histories?
- 3:30 pm **Coffee Break**
- 3:50 pm **Plan for work on remaining issues**  
Discussion
- 4:30 pm **Scope of TAG work program: Discussion**  
Maternal mortality  
Adult mortality
- 5:00 pm **Dates for next meeting**
- 5:15 pm **Executive session (TAG members only)**
- 5:30 pm **Adjourn**

## Appendix 2

### **Objective Criteria for Inclusion/Exclusion of Data Sets**

1. Sex ratios and CEB/CD (full birth history) by birth order
2. Missing data, response rates (within country)
3. National representativeness
4. Age heaping (DHS: CEM by age digit)
5. Birth transference (birth ratios: alive vs. dead)
6. Proportion of neonatal/U5MR, early neonatal/neonatal and infant mortality/U5MR
7. Heaping of deaths on 12 months, 7 days
8. Country in conflict at time of survey
9. Urban vs. rural; wealth
10. Cohort evaluations of CEB and CD