

COORDINATING MEETING ON MORTALITY ESTIMATION

New York July 5-7, 2006

Wednesday, 5 July 2006: Review of current procedures for compiling data and arriving at point estimates of mortality

I. Welcome and overview

Tessa Wardlaw, UNICEF's Chief (OIC) of the Strategic Information Section, started the meeting with an opening statement that emphasize the importance of the work of this group in the context of the MDGs, the UN reform, and in regards to the mortality estimation and capacity building at the country level. Similarly, note was taken about the importance of having an owned data base that can be used by the agencies involved and scrutinized by wider audiences. The welcoming was followed by Edilberto Loaiza's overview of the history, activities, commitments, and future challenges for the group (attached PP presentation). Important progress has been achieved in establishing the mortality estimation data base and in the production of yearly estimates of mortality.

II. A Strategy of Mortality Estimation for National Populations

John Wilmoth, on behalf of the UN Population Division (UNPD) described a more refined and general approach to estimate levels and trends of mortality for national populations. By difference with the specific approach by the group in child mortality estimation, this is a broader approach that includes mortality estimation for all ages (see document attached).

III. Updates and current procedures for child mortality by participating agencies

UNPD emphasized the importance of better documentation for origin of estimates, the need for more transparent methods, and the need for more use of empirical data.

Ken Hill reported that the Mr. Ellison decided to withdraw the offer for the grant to create the Ellison Institute (EI). However, as part of Harvard University, Ken will continue participating and supporting the work of the inter-agency work, both for child and adult mortality.

Peter Johnston from the US Census Bureau indicated the interest in their participation in the IAMEG. As such, the USCB will bring to the attention of the group for future discussion, any identified difference between the current group estimates and their current estimates.

The World Bank (WB), Emi Suzuki, emphasize again the importance and benefits of discussing existing estimates among the group. As with the November 2005 meeting, the WB was interested in clarifying existing differences for the forthcoming 2007 estimates. The cases for a small number of countries were later on discussed on country by country bases.

Kenji Shibuya, on behalf of WHO, emphasize the importance of the collaborative work in setting a standard process of estimation and indicated that this activity should be sustained and expanded (attached PP presentation). WHO will continue to contribute to the production of the best available estimates with existing and new partners. Two outstanding issues were mentioned: CIS workshop and the need for unify procedures for estimating the total numbers of deaths before the 5th birthday.

Thursday, 6 July 2006: Country estimates of U5MR and IMR and mortality data base mechanisms

IV. Individual Country Assessment

Since last year's meeting, WHO, the WB, and the UNPD have raised questions on the mortality estimates for a small set of countries. The main concern has been with countries for which "good" vital registration data is available and with countries for which estimates based on all available data sources (vital statistics, population census and household surveys), and all available estimation methods showed substantial differences between agencies. The idea for this meeting was to replicate last year's exercise in which a country by country assessment was carried out (in terms of data availability and methods of estimation) until agreement was reached on the most appropriate estimate. Emi Suzuki, Gareth Jones, and Francois Pelletier identified a set of countries for which important differences exist between mortality estimates. These countries are:

Emi Suzuki: Tajikistan, Lesotho, Kazakhstan, South Africa, Timor Leste, and Guyana.

Gareth Jones: Chad, Colombia, Malawi, Armenia, Ethiopia, Moldova

Francois Pelletier: Bahrain, Oman, Qatar, Yemen, UAE, Turkey, Lesotho, Mozambique, Tanzania, Sudan, Timor Leste, Pacific Islands.

This activity was carried out during the afternoon of the first day and the morning portion of the second day. The following country by country summary includes the main discussed and agreed points. A summary of resulting commitments are included at the end of this summary.

EMI's countries

Tajikistan

The available data (from vital registration and household surveys), show a substantial spread of data points along time for U5MR but without indicating the most likely trend for the last 25 years. This was reflected in the two different regression lines produced (SOWC06 and WB). In the WB estimate for example a weight of zero was assigned to the VR, TLS03d and TLS03i. The following three actions were recommended:

- 1) to look at the indirect estimates obtained from MICS 2000, DS02i, and MICS 2005 according to the model used (North or East). An initial attempt using the MICS 2005 estimates show greater support for the WB regression line.
- 2) to look at the direct cohort estimates from DS02d,
- 3) to observe the changes in parity across cohorts, which are expected to reflect smooth changes, and
- 4) to look for possible explanations for oddities

The World Bank estimates incorporate a greater number of data sources (LSMS 1999 and 2003, and the 2002 Demographic Survey). Since the 2005 MICS was recently completed, it was recommended to develop a more in-depth analysis of the available data to produce future estimates.

Leshoto

The results from the 2004 DHS confirmed a recent increase on the levels of mortality. Two alternatives were presented to model the pace of this increase in mortality, first to maintain an increase in U5MR since 1995 until 2005 and then to smooth it out (until new empirical evidence is available). Second, use UNAIDS information about the pace of the epidemic to infer the year at which the increase in mortality due to AIDS will plateau.

Kazakhstan

The preliminary results from the 2005 MICS3 shows support for the trend depicted by EHPHIN, TMD and the 1995 DHS and very different from the ones observed in the 1999 DHS and 1996 LSMS. These two last surveys show erratic values. It was recommended to include the 2005 MICS3 results to determine the new estimates. In the absence of these values, we will stay with the current regression line.

South Africa

The inclusion of recent estimates from the 1993 LSMS show values that are considerably different from the ones obtained from the 1998 DHS. Before changing the existing estimates, it was recommended a have a more detailed examination of the 1993 LSMS in terms of questionnaire used, data quality and results.

Timor Leste

The inclusion of the 2004 census showed a possible smoother trend in U5MR. It was recommended to run regression line including data from the 2004 population census. Also not included here are the available estimates from the 1996 DHS for Timor Leste as a province of Indonesia.

Guyana

The inclusion of the results from the 1993 LSMS shows variations in the trend of U5MR as initially obtained with data from the 2000 MICS. It was recommended to include in the estimation the results from the 2006 MICS3 and to further assess the 1993 LSMS (questionnaire, data quality and analysis of results).

GARETH's COUNTRIES

Chad

When including data from the 2004 DHS, the resulting spectrum of data for the regression estimate present a good example about the definition of weights to be used. Gareth's question here was about the flexibility of the general rules/guidelines when to produce a regression line and estimates. That is, how much can we change the general agreed weights for any data source, method, or reference period? I do believe we agreed that what is important about these deviations from the general/agreed rule is the proper documentation of the decided changes ad adaptations.

Colombia

The data for Colombia was presented as an example of a country with plenty and consistent data.

Malawi

It was recommended to look at the evolution of data (direct and indirect estimates) to look at consistency and to help in the understanding and analysis of the most recent direct estimates for the 0-4 year before the survey. Analysis should pay importance attention to the possible omission of births and/or shifting of births from the 0-4 to 5-9 years before the survey.

Peru

I am not sure about the issue with Peru but I think Gareth emphasized the importance of having data consistency between surveys producing estimates for similar periods (e.g. the 5-9 years before the survey estimate of a recent survey should be similar to the 0-4 years estimate from a survey conducted 5 years before the most recent survey). **Please clarify if this was not the issue.** For DHS also to include in the MDB, both the direct and indirect estimates.

Armenia

Recommendation to include data from the 2005 DHS and if available the 2005 MICS3

Ethiopia

Compare data across surveys to clarify inconsistency since observed differences between DHSs appear to be too extreme. Shall we proceed with the idea of giving a zero value (weight) to the 1994 Census when producing the regression line?

Moldova

Include all available direct and indirect estimates from household surveys. Include the estimates from the 2000 MICS (check availability). If different weights are used to produce the regression line, the changes should be properly documented in the mortality data base. Also in the discussion were questions about the presented changes observed in child mortality from vital registration data during the 90s and the use of adjusting factors for countries with doubtful VR values.

Other points of discussion

- During this discussion a question was put regarding the weights to be used when only one indirect value is available. **I AM NOT SURE ABOUT THE ANSWER?? Anyone?**
- In dealing with data quality issues and in the case of VR data, we could use the ratio of neonatal to infant mortality (NN/IMR) as an indicator, which is expected to be 0.6 or greater. Ken suggested looking at the available historical record from European countries as a guide, using the loglog (???) **Ken could you please clarify this!**

FRANCOIS countries

Bahrain

The numbers obtained at the UNPD need confirmation that they are obtained from information provided for “all women” and not just “ever married women”. In addition, the possible influence of the migration factor needs to be checked to separate the influence of immigrant characteristics.

Oman

Questions on the data presented for Oman were related to the origin of the MOH data. It was recommended to identify the data produced by Alan Hill using the last birth method.

Qatar

The main question here was about the increases in UNICEF estimates from 2004 to 2006. The indirect estimates obtained from then 1987 data source can be a problem.

Yemen

Here again, the UNICEF estimates are different from the data produced by the by the 2003 PAPFAM survey and the Yemeni Statistical Office for the year 2002.

United Arab Emirates

Do we need to adjust the exiting UNICEF estimates? Gareth to review.

Turkey

OK

Lesotho

OK

Mozambique

Still a concern with the direct estimates obtained for the 0-4 years before the 2003 DHS.

Tanzania

The suggestion is to include data collected in the 2002 Census. UNICEF will follow up with the country office to obtain needed data for indirect estimation.

Sudan

Check the direct U5MR estimate of 104 and the indirect one of 130 (WHICH DATA SOURCE????? There are some problems with the province estimates in which 3 of them present lower values than Kartoon. Also check the mortality data base for these inconsistencies. To look actively for the inclusion of the 2006 MICS3

Pacific Islands

In the case of the Solomon Islands there seems to be an inconsistency between the numbers reported by the country (U5MR=90) and what UNICEF is using (25, CHECK)

Similarly, for Micronesia we have two different values for U5MR, 50 from the UNPD and 25 from UNICEF. This will be clarified for the next round of U5MR estimates.

Follow up with Gareth

Mexico

Ken briefed the group on the work he has been involved for Mexico and indicated that we need to be careful when using data from population census (children ever born CEB, children surviving CSV and children dead CD) when the reporting is for only two of these pieces. The 3 pieces of data are not necessarily consistent because women did not provide answer to the three questions. In other words, this is an issue on how to deal with cases with missing data.

In the case of Mexico, this problem translates into having estimates of mortality for 2000 and 2005 that are greater than the ones for 1991. Ken's proposal is to use the data after exclusion of the cases with missing data. His analysis of these to be excluded is women belonging to both ends of the education distribution. Finally, the MOH in Mexico is very much interested in the production of these estimates. Follow up with Ken for further action

IMMEDIATE ACTIONS

A. In Gareth's presentation, two main issues received wide discussion, first the standard use and application of the regression model fitting available data and the projection of mortality, and second, the production of IMR estimates from indirect estimation and from data affected by reporting errors.

After some discussion the following agreements and commitment were reached:

- 1) Gareth will provide a first draft for the procedures to decide on weights assignment and mortality projection
- 2) Trevor will factor in the issue of omission among those countries greatly affected (e.g. Mozambique)

For the estimation to be produced for the year 2005, we agreed on 1) to use the minimalist solution (the one used for last year's estimation) to obtain the IMR values from the known ratio ($1q_0/4q_1$ or $1q_0/5q_0$) from a previous estimates. For DHS we agree to the idea of smoothing out the distribution of deaths ($\log \log (\text{deaths})/\text{age}^{??}$). For non DHS countries where the ratios are unknown or not reliable, we could use information from a neighbour country with similar characteristics. Overall we need to undertake a program of analysis to look at the issue in more detail and to identify country specific characteristics and possible adjustments.

B. Regarding the country specific the following actions need follow up by the person's name in parenthesis:

- 1) Tajikistan, Timor Leste, Guyana, Ethiopia, Moldova, UAE, Sudan (north) and Pacific Islands, Armenia, will have clarifications with the 2005 estimates (Gareth Jones)
- 2) For Lesotho to identify the onset of AIDS and the probable year of change (Neff walker)
- 3) South Africa, in-depth analysis of the 1993 LSMS (Emi Suzuki)
- 4) Chad, to document the changes in the general rule for estimation (Gareth Jones)
- 5) Malawi and Mozambique to look at data quality issues (Trevor Croft)
- 6) Peru, to clarify the points raised (Gareth Jones)
- 7) Mexico, to follow on estimation (Ken Hill). Ken will also provide analytical work on the use of data from neonatal mortality.
- 8) Oman, Bahrain, clarification on type of data used, that is EMW or all women (Francois Pelletier)
- 9) Tanzania, obtain data for the 2002 Census and re-estimate (Edilberto Loaiza)

V. Mortality Data Base (MDB)

Although the MDB has been well received and considered an important step forward towards the production of coordinated mortality estimates, a series of additional recommendations were presented:

- 1) For mortality estimation based on vital registration, the recommendation is to include un-adjusted data. Specifically, we need to add information on time interval (year), age interval (months if available) and year (< 5 years of age), deaths count, exposure counts, and birth counts.
- 2) The current design needs improvements. John Wilmoth insisted in a series of elements that were further explored but that confronted greater technical difficulties. John is to provide a set of specific recommendations to improve the existing framework of the MDB. Trevor Croft indicated that to start with, it is possible to produce standard data files with the input data needed and used on each estimation method: indirect (number of women, death and surviving, CEB, CSV, PD, ratios and weighed population) and direct (number of deaths, exposure, probabilities and rates by 5-years groups before the survey time). John Wilmoth asked to also produce, for the direct estimation, numbers by single year before the survey (instead just 5 years' periods) and single ages (instead of just 1-4 years of age) for deaths, exposure, probabilities and rates.
- 3) For any indirect estimate included, we should also include the corresponding tabulations/absolute numbers for CEB and CSV. This recommendation is very similar to the one presented in the November 2005 meeting in which it was emphasized the need to include the mortality schedule (family) and method used.
- 4) Similarly, it was recommended that when using data from household surveys (DHS in particular) that the dates of interview be included.
- 5) As in the November 2005 meeting this time we revisited the issue of transparency in the estimates and to get countries involved in its administration and use. One of the important activities identified is the implementation of regional workshop, starting with one in the CEE/CIS region. UNICEF (Edilberto Loaiza) is following up on this with the regional office in Geneva. Upon some clarification on this, Neff Walker and Ken Hill will proceed to develop a proposal to the Gates Foundation to obtain the needed funds.
- 6) We revisited the idea of producing a yearly-joint publication with the mortality estimates. UNICEF (Edilberto Loaiza) will circulate a description of the main points to be included.

- 7) In terms of the use that agencies had made of the data base, note was taken of the fact that this has not happened and that each agency is preparing and producing their own estimates outside the utility provided for this purpose in the data base. In order to agreed on common estimates we need to make sure that we all are using the same methodology and approach. As agreed in November 2005, data entry into the MDB will be done by UNICEF (household surveys, MICS, DHS, RHS, etc.), UNPD (population census), and WHO (vital registration). Estimates (using the regression approach under different assumptions) that could be included as permanent ones should be proposed for assessment and discussion to the other agencies.
- 8) One other issued raised during the discussion was the timing to provide public access to the data base. No specific time table was agreed on this issue.
- 9) The WHO participants raise the use of portability of the MDB. UNICEF will work towards the idea of providing each agency with a copy of the MDB.
- 10) In terms of output from the MDB it was suggested the production of an Excel spreadsheet with all the sources and values (similar to the ones produced by Gareth). UNICEF will follow up on this.
- 11) In November 2005 we all agreed that the production of sampling errors was a priority for the MDB and to have them included in the MDB by early 2006 (standard errors for direct and indirect estimates and for as many countries as possible). Ken suggested that the conceptualization around the uncertainty around the current estimates was something that could be worked with a “postdoctoral” (Simon) within the context of the malaria project. The idea in part is to be able to produce a “95% like bound” for those cases of unknown real distributions that is a range of uncertainty. One person from the group will work with Simon on this (I guess this is something for Neff).
- 12) As in the November 2005 meeting, the production of sampling errors was seen as an important priority for the MDB. This will be worked with Trevor Croft and the MDB administrator.
- 13) In the mortality estimation using time since first birth (TSFB), Ken Hill indicated that the work conducted with Trevor Croft, using MICS and DHS data, shows not only reasonable results, but also results that are better than the ones obtained using duration of marriage. However when looking at the sampling errors around the TSFB estimates, they tend to be higher than the ones based on “age of the mother” data. From the November 2005 meeting the following three points were mentioned as needed for follow up and are still relevant:
 - a. Initiate data quality assessment of data collected,
 - b. Produce estimates and include them in the MDB,
 - c. Produce an easy to use (at the country level) routine for estimation (SPSS)

Currently, Ken Hill and Trevor Croft are working in the completion of a paper that will address the before mentioned issues.

INMEDIATE ACTIONS ON MDB: at the end of the second day of the meeting, the following actions were identified as the ones needing immediate action:

- 1) UNICEF to coordinate the production of a table by country with the most likely life table model. The following table was compiled by Gareth and needs further assessment and inclusion of remaining countries (attached).
- 2) Trevor Croft will work towards the design and production of standards tables with data and results at the country level.
- 3) Edilberto Loaiza will work to, first explore the work with CEE/CIS for regional training on mortality estimation, and second to produce a first draft of the structure for the joint publication on mortality estimates.
- 4) Ken Hill and Neff Walker will develop a proposal to the Gates Foundation to cover costs for the regional training workshops.
- 5) Edilberto Loaiza to coordinate the development of two utilities in the MDB, one to allow portability of the MDB and two to produce Excel files with all data point and estimates.
- 6) Ken Hill, Trevor Croft, and Neff Walker to coordinate the work around sampling errors and uncertainty levels around the numbers included in the MDB.

Friday, 7 July 2006: Adult Mortality

VI. Adult Mortality

- 1) Ken Hill presented an overview of the methods available for estimation of adult mortality.
 - a) *Evaluation and adjustment of the distribution of deaths by age from registration or a census.* It is not clear what level of completeness is sufficient to make the data worthy of adjustment. Also, it is not known whether registration data and household-deaths data from censuses behave similarly. The Adult Mortality in Developing Countries (AMDC) project studied methods for evaluating and adjusting data on deaths by age and developed a “Combined Method” based upon the General Growth Balance method and the Synthetic Extinct Generations method. These methods evaluate the relative completeness of census population and reported deaths.
 - b) *Intercensal survival.* This method is very sensitive to migration, changing census coverage, and age exaggeration.
 - c) *Survival of parents.* When questions on survival of parents are asked in multiple censuses, estimates based on these data seem to show trends in mortality. But the estimated levels seem low, and there are unexplained differences between estimates based on male versus female respondents. Also, the method does not produce age-specific estimates.
 - d) *Sibling survival* questions have been used extensively in DHS surveys. However, they are usually asked in the last module of a long survey. Time trends in the estimates generally show rising mortality. Comparisons with death distribution methods suggest that sibling survival method underestimates mortality. The confidence intervals around the estimates are large.

- 2) Mie Inoue presented WHO’s methods for estimating adult mortality.
 - a) Data from vital registration are evaluated using Growth Balance, Bennett-Horiuchi, and Preston-Coale methods. For 69 countries, vital registration data for adult mortality are considered good (and thus used without adjustment?). For a further 50 countries, registration data are used with adjustment. There are 13 countries where adult mortality data from sample registration, surveys or censuses are used. For remaining countries, the modified logit life table method is used with estimates of q_5 (and some average estimate of $45q_{15}$ and/or l_{60} ?).
 - b) Data from the World Health Survey are now becoming available. This survey collected sibling histories from all respondents aged 18 and over. The data are producing lower estimates than vital registration, so quality analysis and possibilities for adjustment require further study.
 - c) She presented WHO’s modified Brass logit equation and compared the results of this model to those of the new model proposed by UNPD. Based on this initial evaluation, the two models seem to produce very similar patterns.

- d) She believed that in relation to adult mortality the coordinating group should focus on data sharing and assessment of vital registration.
- 3) Kirill Andreev of UNPD presented comparisons of life expectancy and 45q15 from WHO and UNPD. It was agreed that differences in life expectancy greater than 2 years would be discussed between WHO and UNPD, with the hope of reducing or eliminating them within the next year.
- 4) Ken Hill and UNPD presented ongoing work to build upon the results of the AMDC project. UNPD is compiling the raw data used as input to the project. Danzhen You is preparing a methods protocol for preparation of input data, and Ken Hill will prepare one for the death distribution methods. UNPD is completing work on an analytical spreadsheet for the death distribution methods developed under AMDC. The methods will be further tested using additional registration and census data.
- 5) The first afternoon session was devoted to maternal mortality estimates.
 - a) Ken Hill reviewed the methods used by UNICEF/WHO/UNFPA to produce the estimates for 2000.
 - b) Ed Bos reviewed the World Bank program on maternal mortality, which has an emphasis on estimating trends. A grant has been received from BNPP (Netherlands) for further work.
 - c) Neff Walker discussed the timeline for production of the next round of estimates.
 - d) A follow-up meeting was proposed for October (possibly in conjunction with a follow-up meeting on adult mortality).
- 6) At the conclusion of the third day of the meeting, a number of next steps were agreed to follow up in the area of adult mortality:
 - a) Resolve extreme differences in life expectancy (WHO, UNPD).
 - b) Follow up on availability of census data on household deaths (UNPD and others).
 - c) Develop standard formats for collecting and storing tabulations of census data on mortality (UNPD and others).
 - d) Complete the methods protocol for death distribution methods (Part 1: UNPD, Part 2: Ken Hill).
 - e) Consider development, packaging of analytical tools (offer of help from USCB).
 - f) Hold a meeting in October on adult mortality with focus on death distribution methods (organized by UNPD, possibly in tandem with maternal mortality meeting).
 - g) In general, it was agreed that the focus of work in the near future on the indirect estimation of adult mortality should focus on death distribution methods (using both vital registration and census household death data). Information derived using other methods should be considered as well, but any efforts to derive original estimates using orphanhood or sibling survival techniques should be taken up at a later stage.

- h) Investigate possibility of holding regional training workshops to help build national capacities in mortality estimation. UNICEF and WHO might be able to work with their existing networks of contacts in countries and regions to organize such meetings. UNPD will check on possibilities for participating, but its role would probably be more on the substantive rather than organization side of such meetings.

LIST OF PARTICIPANTS

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Coordinating Group on Mortality Estimation

July 5-7, 2006

UNICEF House at 3 UN Plaza, New York.

Conference Room 4th Floor

AGENDA

Wednesday, 5 July 2006: Review of current procedures for compiling data and arriving at point estimates of mortality

- | | |
|---------------|---|
| 11:00 – 11:30 | Welcome and Overview |
| 11:30 – 1:30 | A Strategy of Mortality Estimation for National Populations
(see paper from UN Population Division) |
| 1:30 - 2:30 | LUNCH |
| 2:30 - 3:45 | Updates and current procedures for child mortality by agencies
(WHO, World Bank, US Census Bureau, UN Population Division,
Ellison Institute, and UNICEF). Individual presentations |
| 3:45 – 4:00 | COFFEE BREAK |
| 4:00 – 5:30 | Discussion of current procedures |

Thursday, 6 July 2006: Country estimates of U5MR and IMR and Mortality data base mechanisms.

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|---------------|---|
| 9:00 – 10:30 | Country by country analysis and discussion of estimates |
| 10:30 – 11:00 | COFFEE BREAK |
| 11:00 – 1:00 | Country by country analysis and discussion of estimates |
| 1:00 – 2:30 | LUNCH |
| 2:30 – 3:30 | Mortality data base: Discussion of mechanisms for data entry and
documentation, estimation, uploading, and reporting |
| 3:30 – 3:45 | COFFEE BREAK |
| 3:45 – 5:30 | Other pending issues, challenges and new commitments
(estimation errors, time since first birth estimates, infant mortality
estimation, etc.) |

Friday, 7 July 2006: Adult Mortality

Note new location: UN Population Division, Seminar Room, DC2-1949
(Two United Nations Plaza, 19th floor)

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| 9:00 – 10:30 | Overview (Ken Hill) and current practices (by agency) |
| 10:30 – 11:00 | COFFEE BREAK |
| 11:00 – 1:00 | Current work using incomplete vital registration data
(Ken Hill and UNPD) |
| 1:00 – 2:30 | LUNCH |
| 2:30 – 3:30 | Maternal mortality (Neff Walker, Ed Bos) |
| 3:30 – 3:45 | COFFEE BREAK |
| 3:45 – 5:30 | Directions for future work, collaborative arrangements, etc. |