

# **COORDINATING MEETING ON MORTALITY ESTIMATION**

**January 10-11, 2005**

**UNICEF House, 3 UN Plaza, New York, NY 10017. USA**

## **LIST OF PARTICIPANTS**

Gareth Jones, Consultant  
Ken Hill, JHU  
Patrick Gerland, UN-PD  
Francois Pelletier, UN-PD  
Cheryl Sawyer, UN-PD  
Trevor Croft, UNICEF  
Attila Hancioglu, UNICEF  
Edilberto Loaiza, UNICEF  
Mary Mahy, UNICEF  
Neff Walker, UNICEF  
Ed Bos, WB  
Emi Suzuki, WB  
Kenji Shibuya, WHO  
Mie Inoue, WHO

### **Monday, 10 January**

1. The meeting started with a quick review of the activities completed on the commitments for 2004 from the May meeting.

#### **General Tasks**

*July:* *Prototype for database developed (UNICEF).*  
Trevor Croft reported that this activity was completed, presented and discussed.  
*HIV Monte Carlo Completed (if Nick agrees, Neff to inquire)*  
This activity was not implemented.

*August:* *U5MR split into IMR and Neonatal Model (Ken)*  
No major development beyond the already activities completed by Ken under CHERG. It was decided to keep this topic under the CHERG domain  
*Time-series model (David)*  
No invitation was extended to David. UNICEF will follow up

*September:* *Database up and running (UNICEF)*  
Activity mostly completed by November

*October:* *Initial Round of Review*  
No implemented

*November:* *Review Meeting to determine consensus*  
No implemented

*December:* *Estimates available*  
UNICEF produced estimates but not discussed with other agencies  
WHO produced estimates, and sent to its Member States for comments

## Individual Tasks

Thomas:

- *Contact Commission of the South Pacific Community regarding access to data.*  
Contact was established and some interested was shown by four countries
- *Contact Russian experts.*  
No report on this

Kenji:

- *Access Pacific Island dataset, Western-pacific regional office*

Do not have a data collection plan. Publication of: Taylor R, Bampton D and Lopez AD.

Contemporary patterns of Pacific Island mortality. *International Journal of Epidemiology*. 2004 Oct 1. (attached)

- *CIS training*  
WHO is proposing a regional workshop for September 2005
- *Develop smoothing rule*  
WHO proposes to use population moving averages

Ken:

- *Conduct cross national examination of age patterns of U5MR, IMR and neonatal using WHS/DHS*

Not completed and agreed to postpone this activity and perhaps suggested as part of CHERG activities

Trevor and Ken:

- *Examination of confidence intervals on indirect estimates*

A good amount of work has been completed with interesting and solid results

Trevor:

- *Development of database with consultant*

Activity in progress

- *Provide single year data for David (U5MR and IMR from DHS data) this weekend for 5/6 countries*

Activity completed for 85 data sets

- *Get estimates from RHS from CDC (include birth history) – indirect and direct estimates with basic data for indirect*

Partially completed but needs additional work with CDC by UNICEF

Gareth:

- *Populate the database including documentation*

Done with a limited number of countries

- *Put together estimates and metadata*

Partially completed

- *Circulate note on gender disparities*

Not completed

Ed:

- *Provide LSMS with mortality modules*

Difficult to implement since LSMS does not use a “standard/core” questionnaire. Also, constraints in terms of quality control at the country level

Ties:

- *Taking proposal to Health Metrics Board Meeting in June*

Mentioned in the last meeting but did not receive attention. To be reviewed during next meeting

2. WHO presentation and discussion on the estimates obtained from countries with reasonably good vital registration systems (VR) and the estimates of the total number of under-five deaths obtained from the U5MR estimates.

a) WHO and UNICEF have agreed to use a common set of U5MR estimates:

- use WHO's estimates for good VR countries;
- otherwise employ UNICEF's estimates.

b) WHO estimated U5MR from VR with high completeness (>90%) for 50 countries and time-series data since 1985<sup>1</sup>. When data for 2003 are available, U5MR are directly computed from VR. Otherwise, trends of  $\logit(I_5)$  from VR are fitted by a weighted regression against time for each sex to predict U5MR for 2003. Weights are based on annual percentage change depending on the size of population and degree of errors (in case of small countries). See Annex 1 for the equation.

c) For small countries with good VR and with population size below 500 000, WHO's smoothing rule was applied by using moving averages as follows:

Population size	Moving average (years)
10,000-30,000	5
30,000-200,000	4
200,000-500,000	3

d) The group has agreed on the preference for the life table approach to compute the number of deaths among children under five years, rather than applying the number of live births. However, it was also agreed that in want to balance the gain in precision by this procedure with the extra amount of work needed. To this end we agreed that this desirable procedure will be assessed in the following months along the structure and procedure of the data baser in process of development. See Annex 1 for a description of the formula used under the life table approach.

3. Review and discussion of country specific mortality estimates

This part of the meeting was devoted to present and discuss the procedures used by UNICEF to produce trends and current estimates. The aim of the discussion was to agree on the standard approach to be applied with the data base in process of development. During the exercise, a good number of countries were analyzed to illustrate different situation regarding data availability, population sizes, conflict situations, etc. The WB raised questions and issues for 17 specific countries where the existing evidence appears not to be clear. The final agreement/decision on these 17 countries is included in Annex 2.

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<sup>1</sup> Argentina, Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, Cuba, Cyprus, Czech Republic, Denmark, Dominica, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Kuwait, Latvia, Lithuania, Luxembourg, Malta, Mauritius, Netherlands, New Zealand, Norway, Poland, Portugal, Qatar, Romania, Russian Federation, Saint Lucia, Saint Vincent and the Grenadines, San Marino, Singapore, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States of America and Uruguay.

## Tuesday, 11 January

### 4. Use of weights in the mortality estimation model.

Up until now we have been using the weights included in the green book. Yet, recent estimates produced by UNICEF have modified the use of weights to take into consideration unusual data results. “Eye balling” has been used in many of the recent UNICEF’s mortality estimates making difficult the possibility of reproducing the produced estimates. In order to maintain transparency and to keep the possibility of reproducing the agreed estimates the following procedures were agreed to be followed for the mortality data base: Use the “green book” model to obtain mortality estimates using the following weights:

<u>Three points:</u>	2.0, 1.8, 1.2
<u>Five points:</u>	2.0, 1.8, 1.2, 0.8, 0.4
<u>Indirect estimates:</u>	0.0, 0.2, 1.2, 1.2, 1.2, 0.8, 0.4
<u>Time since first birth:</u>	1.5, 1.5, 1.0, 1.0, 0.0

### 5. Extrapolation procedures from existing data.

- Backwards no more than five years
- Forward will be decided on case by case bases

6. For the assessment of “goodness of fit” when adjusting the model to existing data, the suggestion is to use the root mean square error (by time segment perhaps?). This estimate can be easily being incorporated into the current procedure used by UNICEF in the new data base.

7. Data blocks. Agreement was emphasized on the need to obtain any other available data but and to promote the standardized data collection and reporting for mortality. These sources include:

- LSMS: the WB will explore further the possibility for analysis and standard data collection
- RHS, PAPFAM, WFS, CPS, DHS, Gulf Family and Health Surveys, and MICS: UNICEF will follow up for both data collection, reporting and analysis
- Population census: Population Division including the US Bureau of Census
- Vital registration and WHS: WHO
- Other?

### 8. Miscellaneous:

- HIV/AIDS
- Conflict situations, we will visit this issue later on
- PD to provide an existing report on mortality by sex (up to 1997/98)
- Finalize the module for mortality estimation obtained from data on the time since first birth.

### 9. Decisions

- Common database (CDB): by May, upload countries with good VR + 17 countries discussed during January meeting + top 40 countries of under-five deaths
- Harmonization of estimates: project  $\logit(I_5)$  from VR data for countries with high completeness of VR; otherwise fit trend line using Hill/Jones methods
- Life table approach to compute the number of deaths, rather than using the number of live births
- Meeting in April-May to discuss on: a) Common Database, b) preparation of CEE/CIS meeting

10. Immediate actions:

	<b><u>Task</u></b>	<b><u>Responsible</u></b>	<b><u>Deadline (2005)</u></b>
1.	Write a summary for 17 countries discussed. UNICEF will upload the data in data base	WB	End of January
2.	Good vital registration countries, uploaded in data base	WHO	End of February
3.	Preparatory meeting for the CEE/CIS September meeting	UNICEF	April-May
4.	40+ countries uploaded in data base	UNICEF	April-May
5.	Mortality estimates by gender, 1997/98 document	PD	End of March
6.	HIV/AIDS: curves for 4-50 countries with prevalence of 1% or more	UNICEF	Middle of February
7.	Meeting to discuss points 1 to 4	UNICEF	April-May

## ANNEX 1: EQUATIONS

### A. Weighted regression equation

Equation :  $\text{logit}(l_5) = a + b(y)$  where  $y$  is the year

Weight : based on annual percentage change

weight =  $\exp[-r(y_t - y_{t-1})]$  where  $r$  is the rate of depreciation

- For a larger population ( $> 750,000$ ):  $r = 0.25$  to incorporate the longer trends
- For a small population ( $\leq 750,000$ ) or root mean square error  $\geq 0.01$ :  $r = 0.50$  to assign higher weights to the recent years

### B. Life table approach to derive number of under-five deaths

$${}_nM_x = \frac{{}_nq_x}{n[1 - (1 - a_x){}_nq_x]}$$

${}_nM_x$  x (number of *population*)

## ANNEX 2

Communication from Emi Suzuki with a summary of the decisions taken by WB regarding the 17n countries analyzed during the meeting:

*As promised, here I would like to follow up the 17 countries we discussed at the meeting. Among these 17 countries, here is a file for the 7 countries that the World Bank (WB) will use regression estimates or that there were some issues to look at.*

*(See attached file: AfterUNICEFMeeting.xls)*

- 1. Algeria - WB will use UNICEF SOWC05 estimates.*
- 2. Azerbaijan - WB will use UNICEF SOWC05 estimates.*
- 3. Burundi - WB will use UNICEF SOWC05 estimates.*
- 4. Dominican Republic - WB will use UNICEF SOWC05 estimates.*
- 5. Eritrea - World Bank's data for DHS 1995 direct estimates were incorrect. It was suggested to correct them and look at the results. After the meeting, WB corrected it and decided to use UNICEF SOWC05 estimates, as UNICEF estimates were close to DHS 1995 & 2002 direct estimates.*
- 6. Gabon - WB will use UNICEF SOWC05 estimates.*
- 7. Kazakhstan - WB will use UNICEF SOWC05 estimates.*
- 8. Kyrgyz Republic - WB will use UNICEF SOWC05 estimates.*
- 9. Lesotho - WB did not have MICS 2000 indirect estimates. It was suggested to add them and re-do the regression. After the meeting, WB added the estimates, re-did the regression and WB will use the regression estimates. UNICEF wanted the estimates from Demographic Survey 2001. Here is the one.  
(See attached file: Lesotho Demographic Survey 2001 Indirect Estimates.xls)*
- 10. Mauritania - It was suggested to put no weights on DHS 2001 indirect estimates and re-do the regression. After the meeting, WB re-did the regression by putting no weights on DHS 2001 indirect estimates and WB decided to use the regression estimates.*
- 11. Mozambique - It was suggested to add estimates from census 1997 and re-do the regression. After the meeting, WB added estimates from census 1997 and re-did the regression. WB will use the regression estimates.*
- 12. Namibia - WB will use UNICEF SOWC05 estimates.*
- 13. Nepal - WB will use UNICEF SOWC05 estimates.*
- 14. Pakistan - WB will use regression estimates.*

*15. Tajikistan - It was suggested to re-do the regression by (1) getting all 3 points from Demographic Survey (DS) 2002 direct estimates done by UNFPA if possible, and (2) put less weight on TLSS (Tajikistan LSMS) 1999 and put no weight on TLSS 2003. After the meeting, WB re-did the regression by fixing (2) (put half weight on TLSS 1999 and no weight on TLSS 2003), and decided to use the regression estimates. WB has asked UNFPA for the 3 data points from DS 2002 direct estimates (but it will take time and it is not very likely that UNFPA will re-do the estimates as they said the outside consultant who actually did the data analysis has completed the task and left).*

*UNICEF wanted the data from DS 2002, TLSS 1999 and 2003. Here is the report for DS 2002.*

*(See attached file: TDS part 1 (eng).doc)(See attached file: TDS part 2 (eng).doc)*

*Also here is the data from DS 2002, TLSS 1999 and 2003. (East life table is used for indirect estimates.)*

*(See attached file: Tajikistan data.xls)*

*16. Turkmenistan - WB will use UNICEF SOWC05 estimates*

*17. Uzbekistan - It was suggested to re-do the regression by putting 5 points from DHS 1996 direct estimates and by putting new DHS (Health examination survey) 2002. After the meeting, WB re-did the regression taking care of these suggestions and examined the results and decided to use UNICEF SOWC05 estimates.*