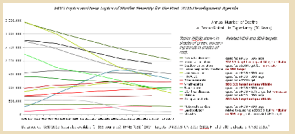
FACT SHEET: Trends on Old and New Post-2015 Challenges



This fact sheet provides trend diagrams on major topics of the Millennium Development Goals (MDGs) and the Post-2015 era. It *identifies progress, setbacks and new challenges,* beyond the MDG topics. Hence, it acts to provide evidence to help fulfil the UN Rio+20 conference commitment of "addressing new and emerging challenges".[1]

This paper utilizes data from the 2015 Global Burden of Disease (GBD) study on 240 causes of death, which has been conducted by an international consortium of more than 700 researchers across over 100 nations. The study is led by the Institute for Health Metrics and Evaluation (IHME) at the University of Washington, which has established collaboration and agreements on data exchange with the World Health Organization (WHO).[2]

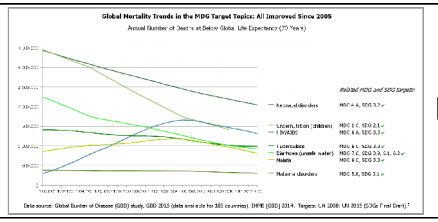
This fact sheet can assist in identifying major topics for the new set of UN Sustainable Development Goals (SDGs), which will succeed the Millennium Development Goals (MDGs) from 2015 to 2030. The SDGs have been proposed in the Final Draft of the Post-2015 Development Agenda, based upon recommendations of the UN Open Working Group on Sustainable Development Goals (OWG), and intended to be adopted by the UN General Assembly in September 2015.[3]

1 Global Mortality Trends in the MDG Target Topics

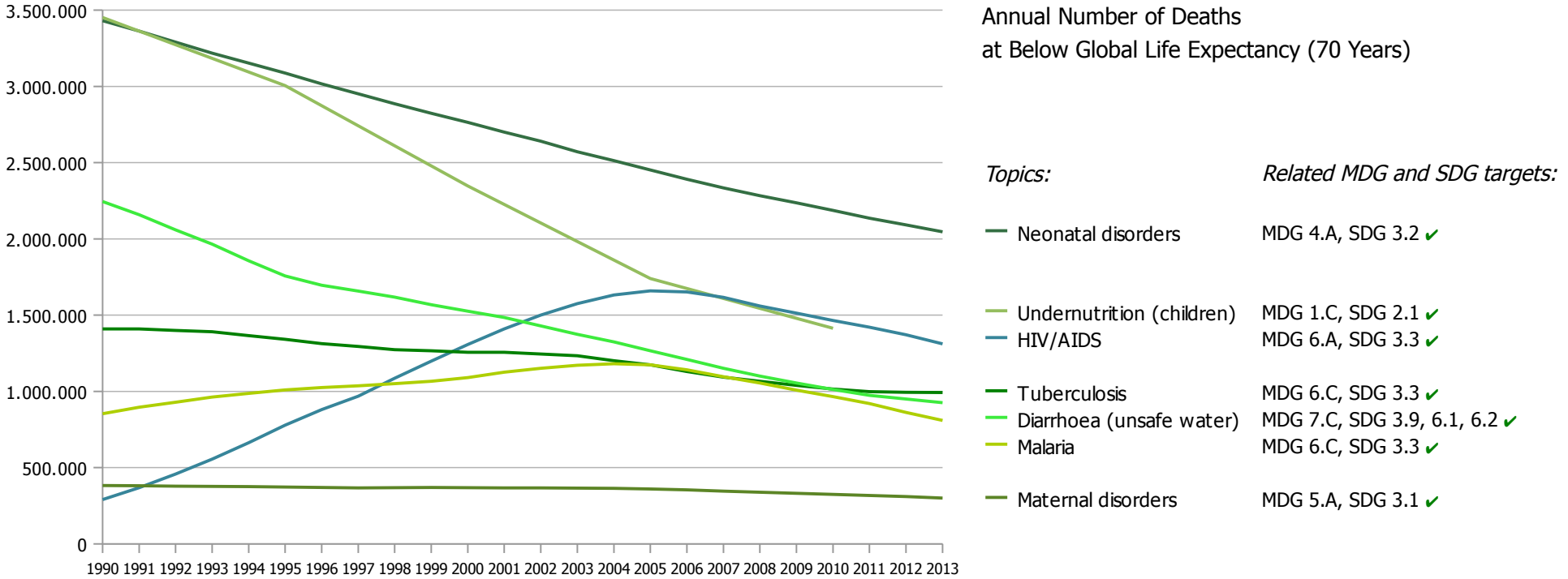
The first diagram depicts all mortality-related MDG target topics except poverty (no mortality data available) and child mortality (see data below).

The diagram shows that, up until 2005, HIV/AIDS and malaria were the only MDG target topics not improving in terms of mortality. However, after 2005, efforts to reverse these trends succeeded: *all topics improved.*

See next page



Global Mortality Trends in the MDG Target Topics: All Improved Since 2005



Data source: Global Burden of Disease (GBD) study, GBD 2015 (data available for 188 countries); IHME [GBD] 2014.[4] Targets: UN 2008; UN 2015 (SDGs Final Draft).[5]

The strongest decreases were observed in undernutrition in childhood, diarrhoeal diseases (largely attributable to unsafe water) and neonatal deaths. Child mortality was reduced by a similar proportion, from 12.1–12.7 million deaths in 1990 to 6.28–6.29 million in 2013 (GBD; UNICEF; MDG Target 4.A).[6] No mortality data is available on extreme poverty (MDG Target 1.A), but trends are likely correlated with these topics.[7] Progress was slower for tuberculosis and maternal mortality. For 5 of the 9 topics mentioned, the MDG targets have been met at the global level.[8]

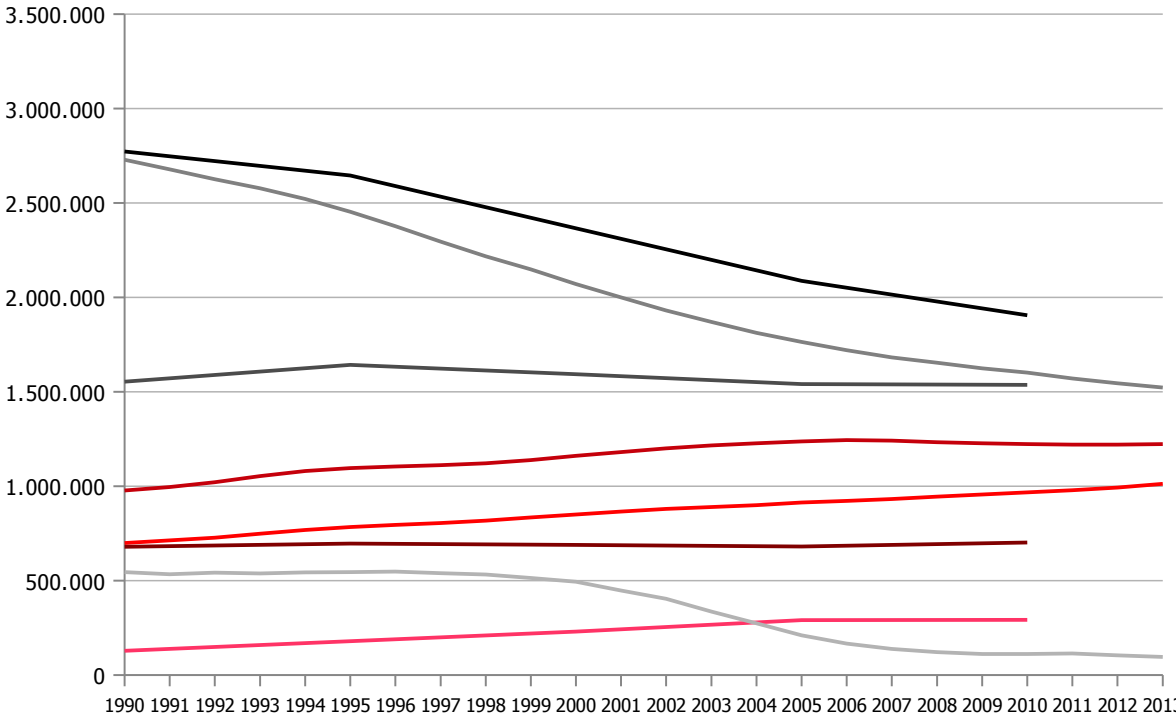
All these MDG targets are rightly proposed to be *continued in the SDG targets* in order to complete "unfinished business" and to strive for more ambitious objectives (UN).[9] It is also to be appreciated that in the Final Draft, SDG 3.2 on neonatal and child mortality now defines its target levels in clearly quantified terms.[10]

2 New and Emerging Challenges

The second diagram depicts trends on available time series data on topics that have levels of mortality similar to the MDG topics and arise due to limited access to vital resources (such as food, clean air or health care).

The data indicates smaller decreases in the number of deaths for the new topics compared to the issues addressed by MDG targets (except for measles, which was substantially improved through a target by the World Health Assembly[11]). Some topics even worsened: over the period 1990–2013, *viral hepatitis* (by 44.9%) and *road accidents* (25.1%),[12] and over

New Topics of Similar Severity to the MDG Topics: Slower Positive Development Compared to MDGs, Some Negative Trends



Annual Number of Deaths
at Below Global Life Expectancy (70 Years)

Topics (worsening trends shown in shades of red):	*SDG targets in the Final Draft:*
Indoor air pollution	SDG 3.9: hardly quantifiable, no indicator*
Lower respiratory infections (mainly pneumonia)	**no target proposed**
Outdoor air pollution	SDG 3.9: quantifiable, but no mortality indicator*
Road accidents	quantifiable SDG 3.6 ✔
Viral hepatitis	**target not quantifiable (SDG 3.3)**
Occupational risks	**target not quantifiable (SDG 8.8)**
Lead pollution	related to SDG 3.9, but no indicator*
Measles	no SDG target proposed, but substantial progress made on WHO target

Data source: Global Burden of Disease (GBD) study, GBD 2015 (data available for 188 countries); IHME [GBD] 2014.[13] Targets: UN 2015 (SDGs Final Draft).[14]

* The current UN technical draft for post-2015 indicators does not include an indicator for this variable (UNSC 2015).

the period 1990–2010, *occupational diseases and accidents* (3.2%) and *lead exposure* (129%).[15] Two of these challenges have no quantifiable SDG target at all (hepatitis and occupational risks). Deaths below 70 years from viral hepatitis exceeded those from tuberculosis in 2013 and will exceed those from AIDS, and even pneumonia too, making *hepatitis the biggest infectious killer of the post-2015 era,* if current trends continue.[16] Global-2015 recently submitted proposals to make these targets quantifiable where necessary.[17]

Pneumonia is another topic neglected by the SDGs. It is the disease with the biggest impact among lower respiratory infections (WHO; GBD).[18] Deaths from pneumonia are decreasing, but pneumonia still remains the biggest child-killer among the contagious diseases, and likely the biggest infectious killer for all ages in total.[19] It *deserves a quantifiable SDG target just as much as HIV/AIDS or tuberculosis do.* Global2015 proposed an according target.[20]

The proposed SDG Target 3.9 states:

> *By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.*[21]

However, the current technical draft of the UN Statistical Commission for the post-2015 indicators *does not include any indicators on the numbers of these deaths and illnesses.* Instead, it only proposes one indicator for this target, which refers to the number of people exposed to outdoor air pollution,[22] despite the WHO provided estimates of 4.3 million premature deaths due to *indoor air pollution* and 3.7 million due to *outdoor air pollution* in 2012.[23] The GBD study provided annual time series data for 187 countries (also for *lead pollution* and *diarrhoeal diseases,* largely attributable to contaminated water).[24] Global2015 created proposals to include these relevant indicators, among others.[25]

Furthermore, since the numbers of deaths from indoor air pollution and diarrhoeal diseases (see first diagram) are already decreasing, it can hardly be determined what it means to *"substantially reduce"* these decreasing numbers of deaths. Therefore, Global2015 suggested *making the current proposal for SDG target 3.9 quantifiable for its topics with a decreasing trend too, by referring to a trend improvement:* "By 2030, substantially *improve the trends in* the number of deaths ..."[26]

3 Conclusion on Old and New Challenges

A combination of the two diagrams above, presenting all the topics together, can be found in the annex (on p. 6). The table on the right gives a summary on the MDG target topics and major new and emerging challenges.

All mortality-related MDG target topics are continued by quantifiable SDG targets (highlighted in green in the table on the right). There are several new and emerging challenges with mortality levels similar to these MDG topics. However, only 3 of those new topics have a quantifiable SDG target, and 2 of them lack a related indicator. Altogether, *5 new and emerging challenges lack a clearly quantifiable SDG target,* and a further 3 topics lack a related post-2015 indicator (highlighted in red in the table on the right).

Closing these gaps can, for the most part, be achieved by minor changes (tweaking of targets) and would not harm the delicate balance of the Post-2015 Development Agenda but would strengthen it instead. This way, *the SDGs could tackle all the million-killers that stem from limitations in necessary living conditions.* If no agreement can be reached to improve the draft SDG Targets for adoption by the UN General Assembly in September 2015, it would be particularly beneficial if an option or mechanism to add targets could be included in the follow-up and review section of the Post-2015 Development Agenda, as done with some targets in the MDGs in 2005.[27] However, the Post-2015 Agenda and its targets would gain impact if they succeed to address all major challenges from the beginning.

Old and New Post-2015 Topics: Mortality and Target Coverage

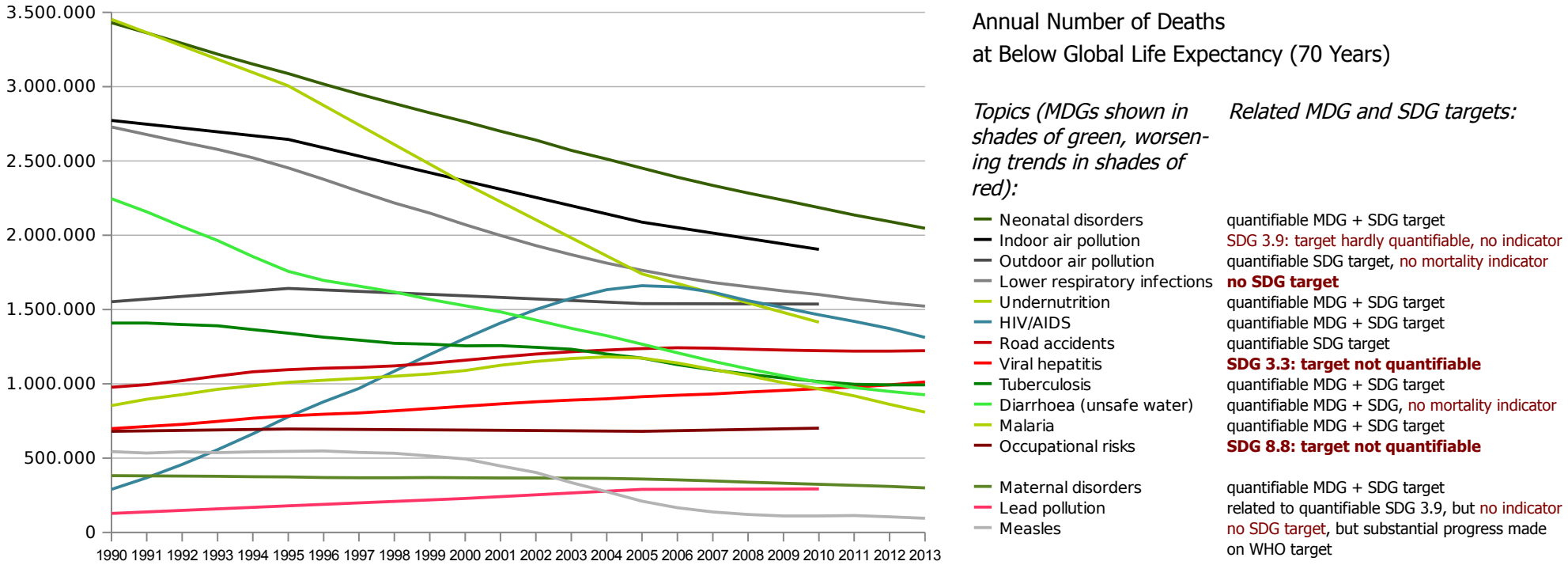
Annual Number of Deaths at Below Global Life Expectancy (70 Years)

Topics (green: MDGs)	*Under-70 deaths*	*MDG and SDG Targets*
Neonatal disorders	2.05 million (2013)	quantifiable MDG + SDG target
Indoor air pollution	1.91 million (2010)	SDG 3.9: hardly quantifiable, no indicator*
Outdoor air pollution	1.54 million (2010)	quantifiable SDG target, but no mortality indicator*
Pneumonia/lower respiratory infections[28]	1.52 million (2013)	**no SDG target at all**
Child undernutrition	1.41 million (2010)	quantifiable MDG + SDG target
HIV/AIDS	1.31 million (2013)	quantifiable MDG + SDG target
Road accidents	1.22 million (2013)	quantifiable SDG target
Viral hepatitis	1.01 million (2013)	**SDG 3.3: not quantifiable**
Tuberculosis	992 000 (2013)	quantifiable MDG + SDG target
Diarrhoeal diseases (unsafe water)	926 000 (2013)	quantifiable MDG + SDG target, but no mortality indicator*
Malaria	809 000 (2013)	quantifiable MDG + SDG target
Occupational risks	701 000 (2010)	**SDG 8.8: not quantifiable**
Maternal disorders	300 000 (2013)	quantifiable MDG + SDG target
Lead pollution	292 000 (2013)	related to quantifiable SDG 3.9, but no indicator*
Measles	95 500 (2013)	no SDG target, but substantial progress made on WHO target

Data: GBD 2015; IHME [GBD] 2014.[29] Targets: UN 2008; UN 2015.[30] * UNSC 2015.

ANNEX

MDG Topics and New Topics of Similar Severity for the Post-2015 Development Agenda

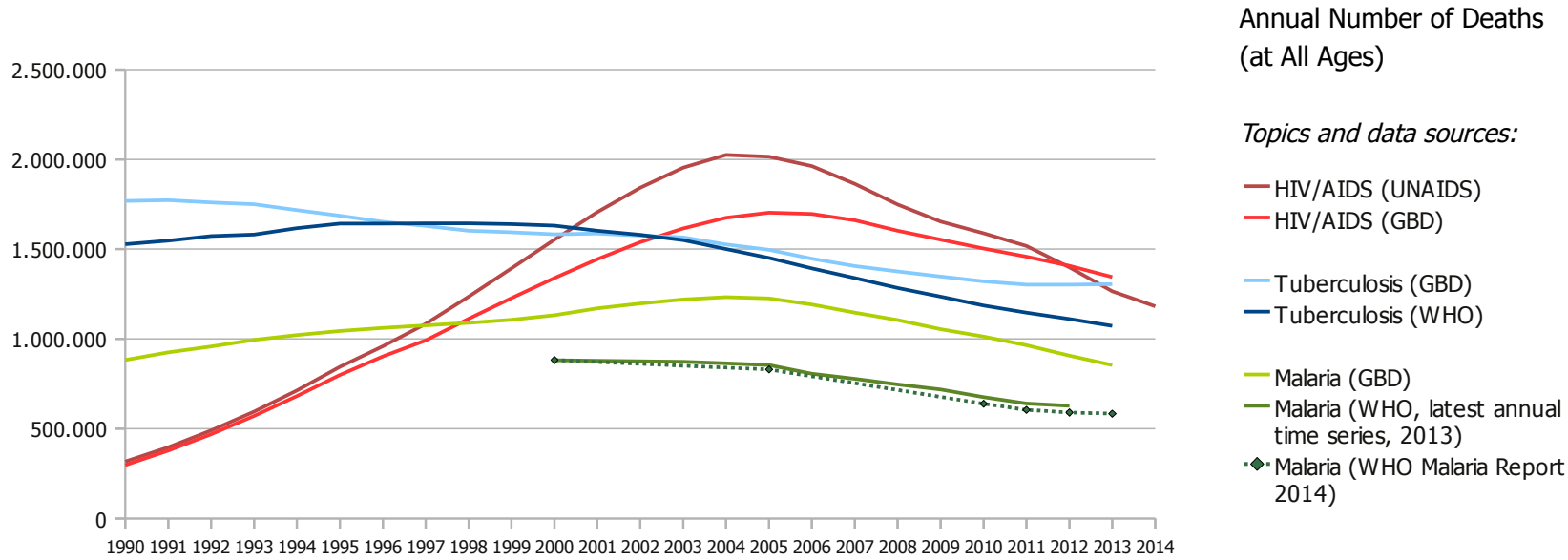


Data source: GBD 2015 (data also available for 188 countries); IHME [GBD] 2014. Targets: UN 2008; UN 2015 (SDGs Final Draft). Indicators: UNSC 2015.[31]

This diagram combines the two diagrams above. It is rather complex but allows direct comparison of old and new topics (e.g. hepatitis exceeding tuberculosis). Since 2005, improvements have been achieved for all mortality-related MDG topics (depicted in shades of green). New and emerging challenges show slower progress (depicted in shades of grey), or even worsening trends (depicted in shades of red).

Five topics, all new ones, are not considered through a quantifiable target in the Final Draft for the Post-2015 Development Agenda. Four entities, old and new ones, lack an indicator in the UNSC indicators draft.[32]

A Comparison of Available Annual Trend Series from the WHO/UNAIDS with GBD Study Data



Data sources: UNAIDS 2015 (revision of July 14th); WHO 2015b; WHO 2013a; WHO 2014e; GBD 2015.[33]

The WHO and UNAIDS provide annual time series only on HIV/AIDS, tuberculosis and malaria.[34] Comparison with data series from the GBD study reveals similar trends but different absolute levels of mortality estimates. On AIDS deaths, the peak in 2004/05 was substantially higher according to UNAIDS in comparison with the GBD study, but in 2013 the level was lower for UNAIDS data. On tuberculosis, GBD figures are higher for 1990 and 2013, but the WHO trend exhibits a peak in 1998. Finally, malaria deaths estimated by the GBD study are substantially higher than those estimated by the WHO. These discrepancies result from different estimation methods and a different span of underlying data; the GBD study claims to use more data than the WHO and UNAIDS.

Notes

1 UN 2012 (resolution), § 12 ("We therefore renew our commitment to sustainable development, assessing the progress to date and the remaining gaps in the implementation of the outcomes of the major summits on sustainable development and addressing new and emerging challenges."), § 85, § 104.

2 WHO 2015; IHME 2015.

3 UN 2015; OWG 2014.

4 GBD 2015 (tabular data, files/categories: Diarrheal diseases, HIV/AIDS, Malaria, Maternal disorders, Neonatal disorders, Tuberculosis; global "mean" estimates [metric "deaths", unit "number"] for age-groups from "early neonatal" to "65 to 69", male and female; sums: review's calculations); on maternal and childhood undernutrition (1990–2010): IHME [GBD] 2014 (online database, search term: "Undernutrition deaths by year by age", age-groups from "0-6 days" to "65-69 years"; sums: review's calculations) – this data only takes into account impacts due to undernutrition during childhood and due to maternal undernutrition.

The diagram focusses on deaths among people aged under 70 years, since the global life expectancy was 70 years in 2012 (WHO 2014, life expectancy at birth, both sexes, global, 2012), and mortality at younger ages is considered a better indicator here for the severity of an issue than total mortality. It makes a difference whether people die at child age, at middle age (which has low mortality rates), or at old age (which has high mortality rates anyway). However, this does not imply that mortality at older ages should not be taken seriously.

This fact sheet focusses on trends based on time series data provided by the GBD study in order to cover a broad range of topics that are based on one consistent methodology, for the ease of comparison between topics. The WHO only provides annual time series for deaths from HIV/AIDS, tuberculosis and malaria (additional time series data on topics is limited to under-five mortality). The available time series show similar trends to the GBD study, but higher levels for HIV/AIDS (up until 2012) and tuberculosis and lower levels for malaria:

- AIDS deaths (all ages) were estimated by UNAIDS to have increased from 317 000 in 1990 to 2.03 million in 2004, and subsequently to have been reduced to 1.27 million in 2013 and 1.18 million in 2014 (UNAIDS 2015, online database, search term: "AIDS-related deaths", item "All countries - AIDS-related deaths, Number", tab "Data", Range: Select all [lower and upper estimates: 260 000–430 000 in 1990, 1.68–2.73 million in 2004, 1.05–1.70 million in 2013 and 983 000 to 1.59 million in 2014]). This data reflects the downwards revision of 14 July 2015.
  The corresponding figures by the GBD study were 298 000 in 1990, 1.70 million in 2005 (the peak year) and 1.35 million in 2013, respectively (GBD 2015, file/category HIV/AIDS, global "mean" estimates [metric "deaths", unit "number"] for "All Ages", male and female, sums: review's calculations; median estimates [apparently] and 95% uncertainty intervals: 286 000 [227 000–370 000] in 1990 and 1.34 [1.26–1.48] million in 2013 [GBD 2015a, 131 (table 2)]).
- Tuberculosis deaths (all ages) rose, according to the WHO, from 1.53 million in 1990 to 1.64 million in 1998, and subsequently decreased to 1.07 million in 2013 (WHO 2015b [tabular data], category "e_mort_exc_tbhiv_num" [estimate of numbers of death excluding deaths from TB and HIV co-infection], sums: review's calculations [lower and upper estimates: 1.04–2.09 million in 1990, 1.16–2.13 million in 1998 and 631 000 to 1.58 million in 2013]; this WHO data is more up-to-date than the WHO TB Report 2014 data since it has been revised in 2015).
  The GBD study estimated a rather consistent decrease from 1.77 million in 1990 to 1.60 million in 1998, and subsequently to 1.31 million in 2013 (GBD 2015, file/category Tuberculosis, global "mean" estimates [metric "deaths", unit "number"] for "All Ages", male and female, sums: review's calculations; median estimates [apparently] and 95% uncertainty intervals: 1.79 [1.67–1.95] million in 1990 and 1.29 [1.17–1.41] million in 2013 [GBD 2015a, 131 (table 2)]).
- The rate of decrease in malaria deaths (all ages) were estimated by the WHO to have slowed from 881 000 in 2000 to 864 000 in 2004, before accelerating to 627 000 in 2012 (WHO 2013a [tabular data], global [low and high estimates 670 000 to 1.11 million in 2000, 656 000 to 1.09 million in 2004 and 473 000–789 000 in 2012]). This data was used in the WHO Malaria Report 2013 (WHO 2013b, 62–63) and represents the latest available annual time series from the WHO. The 2014 WHO Malaria Report provided a non-annual time series starting at 882 000 deaths in 2000 and decreasing to 830 000 in 2005, then to 590 000 in 2012 before reaching 584 000 deaths in 2013 (WHO 2014e, 38 [table 8.3, b, World] [lower and upper bounds 599 000 to 1.10 million in 2000, 547 000 to 1.03 million in 2005, 376 000–742 000 in 2012 and 367 000–755 000 in 2013]).
  According to the GBD study, malarial deaths escalated from 1.13 million deaths in 2000 to a peak of 1.23 million in 2004, and subsequently fell to 907 000 in 2012 and 854 000 in 2013 (GBD 2015, file/category Malaria, global "mean" estimates [metric "deaths", unit "number"] for "All Ages", male and female; sums: review's calculations).

See also the diagram on the comparison of trend estimates in the annex on p. 7. The discrepancies between the GBD study and the WHO/UNAIDS result from different estimation methods and a different span of underlying data; the GBD study claims to use more data than the WHO and UNAIDS.

The WHO also provides annual time series only on under-5 deaths from diarrhoeal diseases, lower respiratory infections and measles. The UN Inter-agency Group for Child Mortality Estimation (UN IGME) provides an annual time series on neonatal deaths, which cannot be compared to deaths from neonatal disorders estimated by the GBD study. Neonatal deaths are all deaths up until 28

days after birth, while deaths from neonatal disorders exclude deaths from infectious diseases but include deaths beyond 28 days of age related to neonatal conditions.

5 UN 2008; UN 2015, 9, 10, 11.

6 GBD 2015a, 140 (table 3: from 4.51 million deaths among neonates age <1 month in 1990 to 2.61 million in 2013 and from 7.61 million deaths among children age 1–59 months in 1990 to 3.67 million in 2013; sums: review's calculations); UNICEF 2014, 98 (Number of under-five deaths, World: from 12.7 million in 1990 to 6.29 million in 2013).

7 Income poverty below $2 per day has strong associations with inadequate water and/or sanitation (36–51%), indoor air pollution (33–50%) and underweight children (23–37%) (Blakely et al. [WHO] 2004, 1942, 2068–2069; WHO 2002, 51).

8 MDG 1.A to halve extreme poverty had been reached in 2010, according to a very complex estimation model (WB 2012, 2; WB 2013, "Headcount (%)" 1990 and 2010; UN 2013, 4, 7). The targets in MDG 6.A to reverse the incidence trends in HIV/AIDS, tuberculosis and malaria had been reached by 2005 at the latest (UNAIDS 2010, 7; UN 2010, 40; WHO 2013, ix, 6; WHO 2014d, 16; WHO 2013b, 62 [25% decrease in the incidence rate], 63 [42% decrease in the mortality rate]; see also the data in note 4 above). Target MDG 7.C to halve the proportion of people without access to safe drinking water was reached according to the indicator access to improved water sources, although these often do not provide safe water; the related target on basic sanitation has not been met (WHO et al. 2012, 4; UN 2012a, 52; WHO et al. 2013, 9; UN 2013, 47; WHO 2013c, 19).
MDG 1.C to reduce the proportion of undernourished people by 50% (compared to 1990) only achieved a reduction of 44.5% (FAO 2015, 9; based on a very complex estimation model). Furthermore, MDG 4.A to reduce child mortality by two thirds (including neonatal mortality) and MDG 5.A to reduce maternal mortality by three quarters have not yet been met, nor are they expected to be (UNICEF 2014, 5; WHO 2013c, 14; WHO et al. 2014, 2).

9 SDG Targets 1.1, 2.1, 3.1, 3.2, 3.3, 3.9, 6.1 and 6.2 (UN 2015, 9, 10, 11).

10 In the Final Draft, SDG Target 3.2 states: "By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1000 live births and under-5 mortality to at least as low as 25 per 1000 live births" (UN 2015, 10). This quantification is based on objectives suggested by UNICEF and the WHO (see sources and details in Global2015d, 2).

11 The World Health Assembly agreed on the 2015 target to reduce measles mortality by 95% compared to 2000 levels, and to reduce annual measles incidence to less than five cases per million (WHO 2010, 6 [targets]; WHO 2010a [endorsement]).

12 Between 1990 and 2013, under-70 deaths caused by viral hepatitis (acute or chronic) increased from 698 800 to 1.0128 million (+44.9%), and under-70 deaths caused by road accidents from 977 600 to 1.223 million (+25.1%) (GBD 2015, files/categories Road injuries and for viral hepatitis: Hepatitis A, Hepatitis B, Hepatitis C, Hepatitis E, Cirrhosis due to hepatitis B, Cirrhosis due to hepatitis C, Liver cancer due to hepatitis B and Liver cancer due to hepatitis C; global "mean" estimates [metric "deaths", unit "number"] for age-groups from "early neonatal" to "65 to 69", male and female; sums and percentages: review's calculations).

13 On the 1990–2013 annual time series: GBD 2015, files/categories: Viral hepatitis includes the GBD categories for acute and chronic hepatitis: Hepatitis A, Hepatitis B, Hepatitis C, Hepatitis E, Cirrhosis due to hepatitis B, Cirrhosis due to hepatitis C, Liver cancer due to hepatitis B and Liver cancer due to hepatitis C (sums: review's calculations). The data excludes cirrhosis and liver cancer attributable to other causes, such as alcohol use. Further categories: Lower respiratory infections, Measles, Road injuries. All values are global "mean" estimates [metric "deaths", unit "number"] for age-groups from "early neonatal" to "65 to 69", male and female; sums: review's calculations
On the 1990–2010 time series: IHME [GBD] 2014, search terms: Deaths by year by age "Ambient particulate matter pollution" (the quotation marks are necessary); Deaths by year by age Household air pollution; Deaths by year by age Occupational risks; Deaths by year by age Lead; age-groups from "0-6 days" to "65-69 years"; sums: review's calculations.
On deaths attributable to occupational diseases and accidents, there are substantially higher estimates by the ILO and TUT et al. (2.33 million deaths in 2010/11; ILO 2014, 33–34; sum: review's calculation; based on TUT et al. 2014, 13).
GBD 2015 and IHME [GBD] 2014 also provide mortality data at country level.
On the 70 years threshold, see note 4 above. Total number of deaths below 70 years of age: review's calculations from GBD age-group data.

14 UN 2015, 10, 13.

15 Between 1990 and 2010, under-70 deaths attributable to occupational risks (diseases and accidents) increased from 679 800 to 701 300 (+3.2%), and under-70 deaths attributable to lead exposure from 127 500 to 292 300 (+129%) (IHME [GBD] 2014, search terms: Deaths by year by age Occupational risks; Deaths by year by age Lead; sums and percentages: review's calculations).

16 See diagram in the annex on p. 6 for the increasing trend in viral hepatitis (acute or chronic) and the decreasing trends in tuberculosis, HIV/AIDS and pneumonia (which forms the main part of lower respiratory infections). If current trends continue, under-70 deaths from viral hepatitis will exceed those from HIV/AIDS in a few years, and those from lower respiratory infections before 2030 (which implies even earlier for pneumonia). On tuberculosis, deaths below the age of 70 caused by viral hepatitis increased to 1.01 million in 2013, while those caused by tuberculosis

decreased to 992 000 (GBD 2015, category Tuberculosis and for viral hepatitis: Hepatitis A, Hepatitis B, Hepatitis C, Hepatitis E, Cirrhosis due to hepatitis B, Cirrhosis due to hepatitis C, Liver cancer due to hepatitis B and Liver cancer due to hepatitis C; global "mean" estimates [metric "deaths", unit "number"] for age-groups from "early neonatal" to "65 to 69", male and female; sums: review's calculations). For further details on pneumonia and hepatitis data, see Global2015 2015b, 2, 4.

17 We proposed the following changes in the targets:
- On viral hepatitis, change in the draft SDG Target 3.3 "combat hepatitis" to "halt the increase in new infections and slow down the increase of deaths from hepatitis" (Global2015 2015b, 4) or, more simply, to "substantially improve trends in the number of deaths from hepatitis" (Global2015 2015d, 3).
- On occupational diseases and accidents, addition to draft SDG Target 8.8 (which aims to "promote safe and secure working environments for all workers"):
  - "… and, by 2030, improve on current trends in the number of deaths from occupational diseases and accidents by one quarter of the 2015 level"
  - or, if an absolute reduction is preferred: "… and reduce by 2030 the number of deaths from occupational diseases and accidents by one quarter" (the level of trend improvement or absolute reduction was derived from the average mortality trend improvement achieved by the MDG Targets, referring to a 15-year time frame; since current trends in occupational risks are only slightly increasing, the quantitative difference between a relative trend improvement and an absolute reduction is minor; Global2015 2015a, 2)
  - or, if a minor change without quantification is preferred: "… and, by 2030, substantially improve the trends in the number of deaths from occupational diseases and accidents" (Global2015 2015d, 5).
- On lead exposure, the related SDG Target 3.9 is already quantifiable for this growing problem. However, no indicator has been proposed by the UN Statistical Commission to assess progress on the target to "substantially reduce the number of deaths and illnesses from hazardous chemicals" (as stated in draft SDG Target 3.9 [UN 2015, 10]; on the indicator proposal for Target 3.9, see note 22 below, or UNSC 2015, 17). Global2015 suggested an indicator "Number of deaths from lead exposure", utilizing the available data from the GBD study (in collaboration with the WHO) (Global2015 2015c, 6).

18 In addition to pneumonia, lower respiratory infections include influenza and acute bronchitis (WHO 2015a, "Influenza and pneumonia (J09-J18)" and "Other acute lower respiratory infections (J20-J22)" [chronic lower respiratory infections, such as emphysema and chronic bronchitis, are considered in the category chronic obstructive pulmonary disease (COPD)]; WHO 2008, 14, 111 ["mainly pneumonia"]; GBD 2015a, 127). For details, see Global2015 2015, note 52 (p. 19).

19 See second diagram, related GBD data and Global2015 2015b, 1 (also taking into account the latest data from the WHO).

20 SDG Target 3.3 should include: "By 2030, … improve on the current trends in the number of premature deaths from pneumonia by one quarter ..." Alternatively, if the target is not to accommodate different country trends, it could refer to an absolute reduction: "… halve the number of premature deaths from pneumonia". The quantitative levels are derived from the average mortality trend improvement that was achieved by the MDG Targets, referring to a 15-year time frame. Since pneumonia deaths are already falling, the proposed absolute reduction is higher than the proposed relative trend improvement, but both would lead to the same outcome by 2030 (Global2015 2015b, 2 [including diagrams on the target trends by 2030]).

21 UN 2015 (Final Draft), 10.

22 SDG Indicator 3.9.1: "Population in urban areas exposed to outdoor air pollution levels above WHO guideline values" (UNSC 2015, 17).

23 WHO 2014a, 1, and WHO 2014b (4.3 million deaths in 2012 attributable to air pollution in households cooking over coal, wood and biomass stoves; the joint effects of indoor and outdoor air pollution are estimated at 7 million deaths in 2012 [WHO 2014c, 1 (p. 7 in the PDF file)]).

24 IHME [GBD] 2014, search terms: Deaths by year by age "Ambient particulate matter pollution" (the quotation marks are necessary); Deaths by year by age Household air pollution; Deaths by year by age Lead; GBD 2015, file/category Diarrheal diseases.

25 We proposed to add the following indicators regarding SDG Target 3.9 (utilizing GBD data available for global and national levels):
- Number of deaths from lead exposure
- Number of deaths from outdoor (ambient) air pollution
- Number of deaths from indoor (household) air pollution
- Number of deaths from water contamination (alternatively: deaths from diarrhoeal diseases) (Global2015 2015c, 6).

26 Global2015 2015c, 3.

27 In 2005, the World Summit of the UN General Assembly added 3 targets to the MDGs: MDG Target 5.B for universal access to reproductive health, MDG 7.B to reduce the rate of biodiversity loss and MDG 7.C to halve the proportion of people without access to basic sanitation (UN 2006, § 24).

28 Pneumonia forms the biggest part of lower respiratory infections; the figure refers to lower respiratory infections, since the GBD study provides no complete estimate on pneumonia deaths.
29 GBD 2015; IHME [GBD] 2014; sums of deaths below 70 years of age: review's calculations from GBD age-group data (for referencing and data details as well as some figures from the ILO, UNAIDS and the WHO, see notes 4 and 13 above).
30 UN 2008; UN 2015 (Final SDGs Draft), 9–13.
31 See notes 4 and 13 above.
32 Five new topics have no clearly quantifiable target (or, in the case of pneumonia, no target at all). One MDG topic and three new entities have no SDG indicator. See diagrams on p. 2 and 3 (and the text on the indicator for target 3.9 on p. 4).
33 UNAIDS 2015, online database, search term: "AIDS-related deaths", item "All countries - AIDS-related deaths, Number", tab "Data" (revised data of 14 July 2015); WHO 2015b (tabular data), category "e_mort_exc_tbhiv_num", sums: review's calculations; WHO 2013a (tabular data), global (latest annual time series); WHO 2014e, 38 (table 8.3, b, World); GBD 2015 (tabular data), files/categories HIV/AIDS, Tuberculosis, Malaria; global "mean" estimates [metric "deaths", unit "number"] for "All Ages", male and female; sums: review's calculations. See also note 4 above, which compares figures from these mortality trend estimates for HIV/AIDS, tuberculosis and malaria.
34 The WHO also provides annual time series only on under-5 deaths from diarrhoeal diseases, lower respiratory infections and measles. The UN Inter-agency Group for Child Mortality Estimation (UN IGME) provides an annual time series on neonatal deaths, which cannot be compared to deaths from neonatal disorders estimated by the GBD study. Neonatal deaths are all deaths up until 28 days after birth, while deaths from neonatal disorders exclude deaths from infectious diseases but include deaths beyond 28 days of age related to neonatal conditions.

Annotation
All numbers are shown to three significant digits, if available (no matter if and where the decimal point may appear). This keeps the rounding error below ±0.5%. Nevertheless, all calculations are based on unrounded numbers.

Publication and Contact Details
Global2015, Berlin, July 2015. Download: http://www.global2015.net/file/global2015sdg_trends.pdf
Acknowledgements for research, statistics and editing: Marie-Eve Bedard MA, Camilla Casarotto BA(Hons), Eva Hauber M.Sc., Meenal Joshi M.Sc., Dipl.-Pol. Lars Vogelsang (concept and coordination), Michael Bradford Wiley BA and those who contributed to previous Global2015 research.
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