Project Report

"Cause of Death"

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Outline:

- Background
- Methods: Main issues for calculating causes of death
- Key findings

Background

- Causes of death(Cod) is one of the most fundamental metrics for population Health.
- Trends in Cod provide an important summary of whether society is or is not making progress in reducing burden of premature mortality and especially avoidable mortality.
- Usually Cod assessments show success and failures of Health information Systems and provide directions of how to improve them.
- GBD 1990 was the first comprehensive study to present the global leading Causes of death.

Global causes of death assessment: main Issues

- The universe of data
- Efforts to assess and enhance quality and comparability of data.
- The statistical modeling strategy.
- Causes of death constrained to sum to all-cause mortality.

Top down hierarchical map

Group A:
Communicable, maternal, perinatal and nutritional conditions D.Intestinal infectious Diseases
1. Diarrheal disease a.Cholera
c.Shigelllosis i.Rotaviral enteritis

Group B: Non communicable diseases H.Cardiovascular and circulatory diseases 4.Cerebrovasculardisease
b.Hemorrhagic stroke

Group C: Injuries
A. Unintentional injuries 1.Transport Injuries a.Road injury
a3. injury-motorized two-wheeler rider

Causes of death ensemble modeling

1. Causes of death ensemble modeling, CODEm(133 causes), including all major causes except HIV. CODEm selects models and ensembles of models based on out-of-sample performance.
2. Negative binomial (12 causes).
3. Fixed proportion models(27 causes)
4. Disaggregation by pathogens or sub-causes(36 causes)
5. Natural history models(8 causes)
6. Mortality shock regressions(2 causes)/

Combining results: Cod Correct algorithm

•Because we developed single-cause models, it was imperative as a final step to ensure that individual cause estimates summed to the all-cause mortality estimate for every age-sex-country-year group.

•This is one of the innovations of this study:

1. Implemented taking into account uncertainty in every cause of death Model outcome.
2. We proportionately rescaled every cause such that the sum of the cause-specific estimates equaled the number of deaths from all causes generated from the demographic analysis (by country, year, age, and sex).
3. We applied Cod Correct in a hierarchical way

Key findings

•The shifting pattern of the number of deaths by cause across time, countries, And age groups is consistent with the three key drivers of change.
•Despite the important epidemiological shift in the world, the MDGs related deaths in Sub Sahara Africa represent 60% of all deaths in that region during 2010.

- New set of analytical approaches and methods:

1. Improved diagnostic redistribution
2. The modeling strategy depends of the strength of available data: CODEM And Cod Correct are both innovations in the field

- Adding time trends and quantifying the uncertainty differentiate GBD 2010 from similar studies in the past, however without correction of known bias, comparability is impossible.

THANKS