I BEST OF THE WEEK (04 lug – 10 lug 2022)

Projections of Global Mortality and Burden of Disease from 2002 to 2030

PLoS Med., November 2006; doi: 10.1371/journal.pmed.0030442

Abstract

Background

Global and regional projections of mortality and burden of disease by cause for the years 2000, 2010, and 2030 were published by Murray and Lopez in 1996 as part of the Global Burden of Disease project. These projections, which are based on 1990 data, continue to be widely quoted, although they are substantially outdated; in particular, they substantially underestimated the spread of HIV/AIDS. To address the widespread demand for information on likely future trends in global health, and thereby to support international health policy and priority setting, we have prepared new projections of mortality and burden of disease to 2030 starting from World Health Organization estimates of mortality and burden of disease for 2002. This paper describes the methods, assumptions, input data, and results.

Methods and Findings

Relatively simple models were used to project future health trends under three scenarios—baseline, optimistic, and pessimistic—based largely on projections of economic and social development, and using the historically observed relationships of these with cause-specific mortality rates. Data inputs have been updated to take account of the greater availability of death registration data and the latest available projections for HIV/AIDS, income, human capital, tobacco smoking, body mass index, and other inputs. In all three scenarios there is a dramatic shift in the distribution of deaths from younger to older ages and from communicable, maternal, perinatal, and nutritional causes to noncommunicable disease causes. The risk of death for children younger than 5 y is projected to fall by nearly 50% in the baseline scenario between 2002 and 2030. The proportion of deaths due to noncommunicable disease is projected to rise from 59% in 2002 to 69% in 2030. Global HIV/AIDS deaths are projected to rise from 2.8 million in 2002 to 6.5 million in 2030 under the baseline scenario, which assumes coverage with antiretroviral drugs reaches 80% by 2012. Under the optimistic scenario, which also assumes increased prevention activity, HIV/AIDS deaths are projected to drop to 3.7 million in 2030. Total tobacco-attributable deaths are projected to rise from 5.4 million in 2005 to 6.4 million in 2015 and 8.3 million in 2030 under our baseline scenario. Tobacco is projected to kill 50% more people in 2015 than HIV/AIDS, and to be responsible for 10% of all deaths globally. The three leading causes of burden of disease in 2030 are projected to include HIV/AIDS, unipolar depressive disorders, and ischaemic heart disease in the baseline and pessimistic scenarios. Road traffic accidents are the fourth leading cause in the baseline scenario, and the third leading cause ahead of ischaemic heart disease in the optimistic scenario. Under the baseline scenario, HIV/AIDS becomes the leading cause of burden of disease in middle- and low-income countries by 2015.

Conclusions

These projections represent a set of three visions of the future for population health, based on certain explicit assumptions. Despite the wide uncertainty ranges around future projections, they enable us to appreciate better the implications for health and health policy of currently observed trends, and the likely impact of fairly certain future trends, such as the ageing of the population, the continued spread of HIV/AIDS in many regions, and the continuation of the epidemiological transition in developing countries. The results depend strongly on the assumption that future mortality trends in poor countries will have a relationship to economic and social development similar to those that have occurred in the higher-income countries.

J. Skarbinski et al.

Risk of severe clinical outcomes among persons with SARS-CoV-2 infection with differing levels of vaccination during widespread Omicron (B.1.1.529) and Delta (B.1.617.2) variant circulation in Northern California: A retrospective cohort study

The Lancet Regional Health - Americas, June 2022; doi.org/10.1016/j.lana.2022.100297

Abstract

Background

The incidence of and risk factors for severe clinical outcomes with the Omicron (B.1.1.529) SARS-CoV-2 variant have not been well-defined.

Methods

We conducted a retrospective cohort study to assess risks of severe clinical outcomes within 21 days after SARS-CoV-2 diagnosis in a large, diverse, integrated health system.

Findings

Among 118,078 persons with incident SARS-CoV-2 infection, 48,101 (41%) were during the Omicron period and 69,977 (59%) during the Delta (B.1.617.2) period. Cumulative incidence of any hospitalization (2.4% versus 7.8%; adjusted hazard ratio [aHR] 0.55; 95% confidence interval [CI] (0.51-0.59), with low-flow oxygen support (1.6% versus 6.4%; aHR 0.46; CI 0.43-0.50), with high-flow oxygen support (0.6% versus 2.8%; aHR 0.47; CI 0.41-0.54), with invasive mechanical ventilation (0.1% versus 0.7%; aHR 0.43; CI 0.33-0.56), and death (0.2% versus 0.7%; aHR 0.54; CI 0.42-0.70) were lower in the Omicron than the Delta period. The risk of hospitalization was higher among unvaccinated persons (aHR 8.34; CI 7.25-9.60) and those who completed a primary COVID-19 vaccination series (aHR 1.72; CI 1.49-1.97) compared with those who completed a primary vaccination series and an additional dose. The strongest risk factors for all severe clinical outcomes were older age, higher body mass index and select comorbidities.

Interpretation

Persons with SARS-CoV-2 infection were significantly less likely to develop severe clinical outcomes during the Omicron period compared with the Delta period. COVID-19 primary vaccination and additional doses were associated with reduced risk of severe clinical outcomes among those with SARS-CoV-2 infection.

S. Le Vu et al.

Age and sex-specific risks of myocarditis and pericarditis following Covid-19 messenger RNA vaccines

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Abstract

Cases of myocarditis and pericarditis have been reported following the receipt of Covid-19 mRNA vaccines. As vaccination campaigns are still to be extended, we aimed to provide a comprehensive assessment of the association, by vaccine and across sex and age groups. Using nationwide hospital discharge and vaccine data, we analysed all 1612 cases of myocarditis and 1613 cases of pericarditis that occurred in France in the period from May 12, 2021 to October 31, 2021. We perform matched case-control studies and find increased risks of myocarditis and pericarditis during the first week following vaccination, and particularly after the second dose, with adjusted odds ratios of myocarditis of 8.1 (95% confidence interval [CI], 6.7 to 9.9) for the BNT162b2 and 30 (95% CI, 21 to 43) for the mRNA-1273 vaccine. The largest associations are observed for myocarditis following mRNA-1273 vaccination in persons aged 18 to 24 years. Estimates of excess cases attributable to vaccination also reveal a substantial burden of both myocarditis and pericarditis across other age groups and in both males and females.