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ACTUARIAL SOCIETY OF SOUTH AFRICA

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Expansion of ARV programme in SA slows AIDS mortality rate

While no material changes have occurred in the estimated prevalence of HIV infections in South Africa compared to the previous Actuarial Society of South Africa AIDS and Demographic model, the new model released this week shows that the rapid expansion of South Africa's antiretroviral programme appears to have slowed down the AIDS mortality rate in recent years.

Peter Doyle, the Society's President, says the new model, referred to as ASSA2008, is the Society's first significant update of HIV/AIDS estimates since the release of the ASSA2003 model at the end of 2005.

The new model takes into account reported data for all recorded deaths up to 2008, recent antenatal surveys and household surveys, as well as recent data on the coverage of antiretroviral treatment and prevention of mother-to-child transmission programmes.

Professor Rob Dorrington, the main author of ASSA2008 and Director of the Centre for Actuarial Research at the University of Cape Town, points out that the 2008 model represents the culmination of several years of demographic and epidemiological research. "It therefore provides important information on how the epidemic has evolved and where it is heading."

"Deaths due to HIV related infections are often underreported and therefore the model provides a valuable tool to estimate HIV and AIDS related statistics," says Doyle.

The Actuarial Society's AIDS and demographic models are widely used by actuaries as a source of mortality estimates, with HIV prevalence assumptions for insured populations frequently being derived from this model. It also provides a useful tool in the areas of national health planning, population projections and social security reform, and budgeting for grants and HIV prevention and treatment programmes.

ASSA2008 Mortality Findings

The most substantial change to the previously published estimates is a downturn in AIDS mortality in recent years.

The ASSA2008 model estimates that the annual number of AIDS deaths in South Africa has reduced from 257 000 in 2005 to 194 000 in 2010.

This represents a significant departure from the estimates based on the ASSA2003 model, which projected that annual AIDS deaths would increase from 326 000 in 2005 to 388 000 in 2010.

The change in mortality estimates is partly due to revised assumptions about mortality rates in untreated HIV-infected individuals prompted by studies showing higher survival rates in African adults than had previously been assumed. However, the more substantial reduction in estimated AIDS mortality for 2010 is largely due to the rapid expansion of the South African antiretroviral treatment programme.

HIV prevalence

The new model estimates that last year 10.9% of the South African population was infected with HIV. According to ASSA2008 an estimated 5.5 million people were HIV positive last year, which is only marginally lower than the 5.8 million estimated by the ASSA2003 model. Both estimates are in line with the recent statistics published by UNAIDS, which estimates that in 2009 there were 5.6 million HIV positive people in South Africa.

The new model has also factored in substantial increases in condom use over the last decade, which is supported by findings from recent household surveys. ASSA2008 therefore estimates that HIV prevalence in young people aged 15 to 24 has dropped from 9.2% in 2005 to 7.7% in 2010. In contrast, HIV prevalence in South Africans aged 15 to 49 has increased slightly, from 16.4% in 2005 to 17% in 2010. The increase in HIV prevalence in older adults can be partly attributed to HIV-infected adults surviving for longer due to antiretroviral treatment.

Future mortality and prevalence

The Society warns that as new treatment guidelines and prevention strategies are introduced in South Africa, a new model will be needed to provide an ongoing accurate description of the impact that HIV prevention and treatment programmes are having in South Africa.

The ASSA2008 model does not, for example, allow for the new antiretroviral treatment guidelines that were introduced in 2010.

The new guidelines have relaxed the eligibility criteria for antiretroviral treatment, making treatment available to HIV positive people not yet in the advanced stages of the disease.

The ASSA2008 model assumes that treatment is initiated only in advanced stages of disease, and may not be an appropriate tool for assessing the impact of the new treatment guidelines as it may overstate the extent of AIDS mortality in future should these guidelines be successfully implemented.

Dorrington says that there is also still much uncertainty regarding long-term survival rates after antiretroviral treatment initiation. Future forecasts of AIDS mortality therefore need to be viewed with caution, he says.

The ASSA2008 model also does not allow for a number of recently introduced HIV prevention strategies in South Africa. Dorrington says most significant among these is the promotion of male circumcision, which has been shown to reduce rates of female-to-male transmission by around 60%. Also very significant is the recent nationwide HIV counselling and testing drive, and the shift towards greater HIV testing initiated by health workers.

Gender disparity

Although the revised mortality estimates for 2010 are very encouraging, there is growing evidence of gender disparity in the uptake of antiretroviral treatment.

The new model estimates that by the middle of 2008, the number of men receiving antiretroviral treatment (176 000) was still less than the number of untreated adult male AIDS cases (193 000). However, the number of women receiving antiretroviral treatment (339 000) was more than double the number of untreated adult female AIDS cases (169 000).

The higher number of women receiving treatment may be due to greater access to HIV screening and care through antenatal services, as well as a difference in health seeking behaviour.

AIDS Orphans

As a result of the lower estimated AIDS mortality rate, the estimated levels of AIDS orphanhood have also come down substantially.

The ASSA2008 model estimates that by the middle of 2010, there were 1.2 million children under the age of 18 whose mothers had died from AIDS (maternal AIDS orphans). The ASSA2003 model had projected an estimated 1.67 million maternal AIDS orphans in 2010.

Provincial differences

ASSA2008 provides demographic and HIV/AIDS statistics for South Africa, as well as for each of the nine provinces.

The demographic component of the ASSA2008 model has been updated to take into account the results of the 2007 Community Survey, and the model also takes into account provincial boundary changes that occurred in 2006, which led to noticeable changes in the population size in some provinces. Dorrington explains that the provincial estimates make the 2008 model an important resource for provincial government departments, both as a source of demographic data and as a source of local HIV/AIDS estimates.

Comparison of the provincial versions of the model shows that in 2010:

- HIV prevalence varied from 5% in the Western Cape to 14.8% in KwaZulu-Natal.

- Life expectancy at birth varied from 53.4 in KwaZulu-Natal to 64.7 in the Western Cape, reflecting differences in HIV prevalence between the provinces.
- Total fertility rates in 2010 varied from 2.15 children per woman in Gauteng to 2.75 children per woman in Limpopo.
- Population growth rates in 2010 varied from 0.5% per annum in Free State to 1.4% in Limpopo.

Ends

Note to editors: The ASSA2008 AIDS and Demographic model and a user guide are available online at www.actuarialsociety.org.za.

The Society released its first AIDS and Demographic model, named ASSA500, in 1996. ASSA2008 is the Society's sixth AIDS and Demographic model.

The models are designed by South African demographers and actuaries based on detailed South African data. Using these data, the models project into the future the numbers of South Africans living with HIV, new infections, AIDS deaths, AIDS sickness and many more statistics.

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The Actuarial Society of South Africa is the professional organisation for actuaries and actuarial students in South Africa. The vision of the Actuarial Society is an actuarial profession of substance and stature, serving, and valued by, our communities as a primary source of authoritative advice and thought leadership in the understanding, modeling and management of financial and other measurable risk.