

WESTERN CAPE BURDEN OF DISEASE REDUCTION PROJECT

Abbreviated Report 2008





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FOREWORD

Understanding the burden of disease is fundamental to planning and decision-making in health departments. At a provincial level the question is whether, by intervening “upstream” to address the causes of disease, it would be possible to reduce this burden of disease. Seen from a health-sector perspective, if such actions were successful, it would enable resources to be directed to address diseases that currently cannot be managed because of resource constraints.

The Western Cape Department of Health commissioned a study over a three-year period by a consortium of universities and institutions in the Western Cape, led by the Department of Public Health and Family Medicine at the University of Cape Town. Many of the potential interventions, particularly those that are “upstream”, are outside of the direct influence of the health sector and involve other provincial government departments and organizations outside of Government. This in turn highlights the need for intersectoral action to address the burden, which is challenging.

The Western Cape Provincial Government has made a commitment that the recommendations from the study will influence the manner in which resources are allocated in future. Similarly the Western Cape Department of Health is committed to both the institutionalization of the measurement and monitoring of the burden of disease, and to addressing the factors behind this burden.

This report is a popular executive summary of the complete report, which is intended to be more accessible and carry the message that to meaningfully address the burden of disease in the Western Cape and South Africa we must tackle the fundamental causes of disease wherever they occur.

My sincere thanks to all the researchers and institutional partners who contributed to this project and in particular Professor Jonny Myers, who provided leadership to the team. In addition Dr Tracey Naledi must be acknowledged, who coordinated the project within the department with enthusiasm and persistence.

Prof Craig Househam
Head of Health: Western Cape



WESTERN CAPE BURDEN OF DISEASE REDUCTION PROJECT

ABBREVIATED REPORT 2008

This abbreviated report is based on seven reports published in June 2007 from the work of the Burden of Disease Reduction Project led by the Department of Health in the Provincial Government of the Western Cape.

Copies of these reports can be obtained from the Cape Gateway website at:

<http://www.capegateway.gov.za/Text/2007/6/>

or from the University of Cape Town website at:

<http://www.oehru.uct.ac.za/publications/policy.php>

The reports were produced by a consortium of researchers from Universities and Research Councils led by the School of Public Health and Family Medicine of the University of Cape Town, including the University of the Western Cape, the University of South Africa, the Burden of Disease Research Unit and the Health Systems Unit of the South African Medical Research Council, the Human Sciences Research Council, and as a result of collaboration in the mortality surveillance system with the City of Cape Town.

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Introduction

Globally, the UN Millennium Development Goals (MDGs) place health at the centre of the development agenda. They focus on improving child health, maternal health and controlling epidemic disease (HIV/AIDS, TB, malaria) while targeting the social or upstream determinants of health notably poverty, malnutrition, education and women's empowerment. This is a departure from disease-oriented strategies (e.g. measles and polio programmes) which focus on the provision of health services, drugs, and health education, with little or no participation from other governmental sectors in tackling social determinants driving diseases. Global and local experience has shown that diseases and the need for health services simply continue to escalate where the disease-oriented approach rules.

Historical and current evidence indicates that upstream interventions are most effective in reducing the burden of disease e.g. the massive reduction in TB mortality in England during the 19th and 20th centuries due to structural changes well before the introduction of more

downstream antibiotic treatment which had a significant but much smaller effect from the 1950s onwards (McKeown, 1979).

Despite the appearance of the concept of intersectoral action at the Alma-Ata Conference on Primary Health Care in 1978 (WHO & UNICEF, 1978) which recognized the importance of upstream economic, social and political determinants additional to biological and health service determinants, implementation has been only modestly successful globally during the past 30 years. Recently the WHO instituted the Commission on the Social Determinants of Health (CSDH, 2007) to provide direction on how to address health inequities and their determinants.

The Western Cape in line with the national Accelerated Shared Growth Initiative of South Africa (ASGI-SA) has developed the Western Cape Provincial Growth and Development Strategy (PGDS) which aims not only to increase growth, but also to change "the spatial, social, economic and human landscape of the province in pursuit of a new vision: A Home for All".

In this context the Social Cluster of the Provincial Government of the Western Cape (PGWC) mandated the Western Cape Department of Health to lead the **Burden of Disease Reduction Project** with the following aims:

1. To characterise the components of the WC Burden of Disease (BoD) and their changing trends over time through the institutionalization of a surveillance system based initially on provincial mortality
2. To understand, particularly the upstream, determinants or risk factors for the most important BoD components and corresponding interventions targeting these risks that have shown effectiveness or promise.
3. To provide recommendations for reducing the BoD to the Provincial Government of the Western Cape.

The approach taken

The Western Cape Department of Health asked the UCT School of Public Health to lead a consortium of public health researchers at universities and research councils to partner with the Provincial and Cape Town City Health Departments in undertaking the BoD reduction project. One workteam was tasked with characterizing the provincial BoD, while a second comprised five expert working groups tasked with identifying especially upstream interventions against risks prioritized by the 5 main BoD components.

Characterising the Burden

The ideal way of measuring the BoD is to use a measure that reflects both mortality and morbidity components.

The disability-adjusted life year (DALY) is the standard method for measuring BoD and comprises the sum of years of life lost (YLL) due to premature mortality in the population and years lost due to disability (YLD) from a specific disease.

Due to lack of reliable Provincial morbidity data, the BoD project has had to focus on YLL as a cruder measure of burden. Based on the mortality surveillance system piloted by the City of Cape Town Health Department, the BoD project is currently institutionalising mortality surveillance system yielding YLLs in the Provincial Department of Health. The intention is to be able to publish mortality estimates for all districts and sub-districts in the province by the second half of 2009. Over time the surveillance system will enable continuous trend monitoring and updating of BoD priorities, allowing timeous inputs to departmental planning for appropriate public health responses.

Prioritising contributions to the BoD

Outcome (disease group)	% YLL
1. Major Infectious Diseases	22
2. Injury	19.8
3. Mental Disorders	---
4. Cardiovascular Disease	10.5
5. Childhood Diseases	>6

TABLE 1: Burden of Disease components in decreasing order of contribution to premature mortality as Years of Life Lost (YLL)

Table 1 shows the top 5 Provincial BoD contributions which together with their corresponding determinants were the basis for the constitution of the 5 expert groups.

Crude mortality surveillance data (YLLs) are unable to reflect the burden of disease which arises mainly from morbidity such as mental health disorders. Apart from a small number of suicides which constitute the tip of the iceberg at 2.3% of the BoD, most people will not die from mental health disorders which nevertheless constitute a significant health service and community burden. Prevalence data for mental health disorders are poor. A national study reported a 30% lifetime prevalence for South African adults which must constitute a substantial burden. There are no comparable data for the Western Cape which is likely to have disproportionately heavier burden. Alcohol and substance abuse are known to be important determinants of mental health disorders in the WC. In the National Injury Mortality Surveillance System from four major cities in South Africa, Cape Town recorded the highest percentage of alcohol positive deaths. Almost a quarter (22.1%) of the WC's BoD is

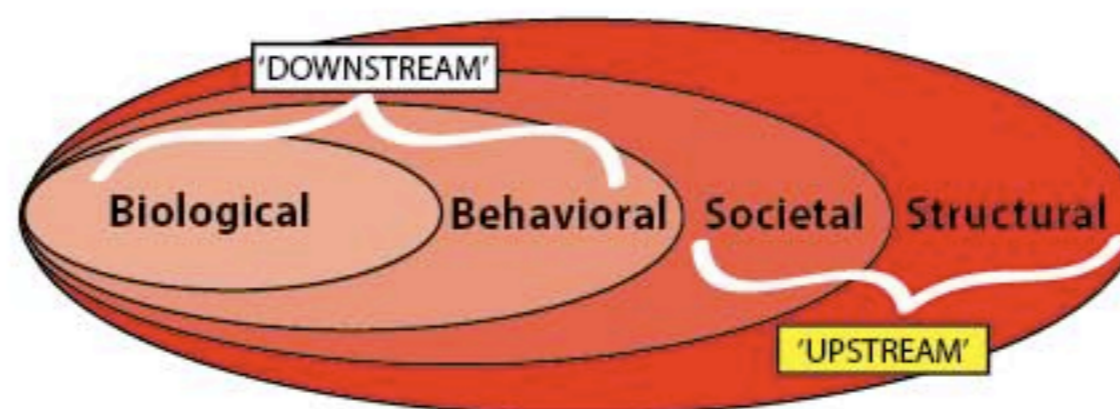
attributable to homicide, road traffic injuries and suicide compared to the national average of 10.5%. If this burden component is taken as a proxy for mental health disorders, it is clear that the Western Cape has a disproportionate mental health disorder burden compared to the national average.

Determining the risk factors and the evidence for interventions targeting risks

Responding to the mandate of the Health Department, upstream risk factors and corresponding interventions for the priority BoD contributors were approached using the conceptual framework in Figure 1.

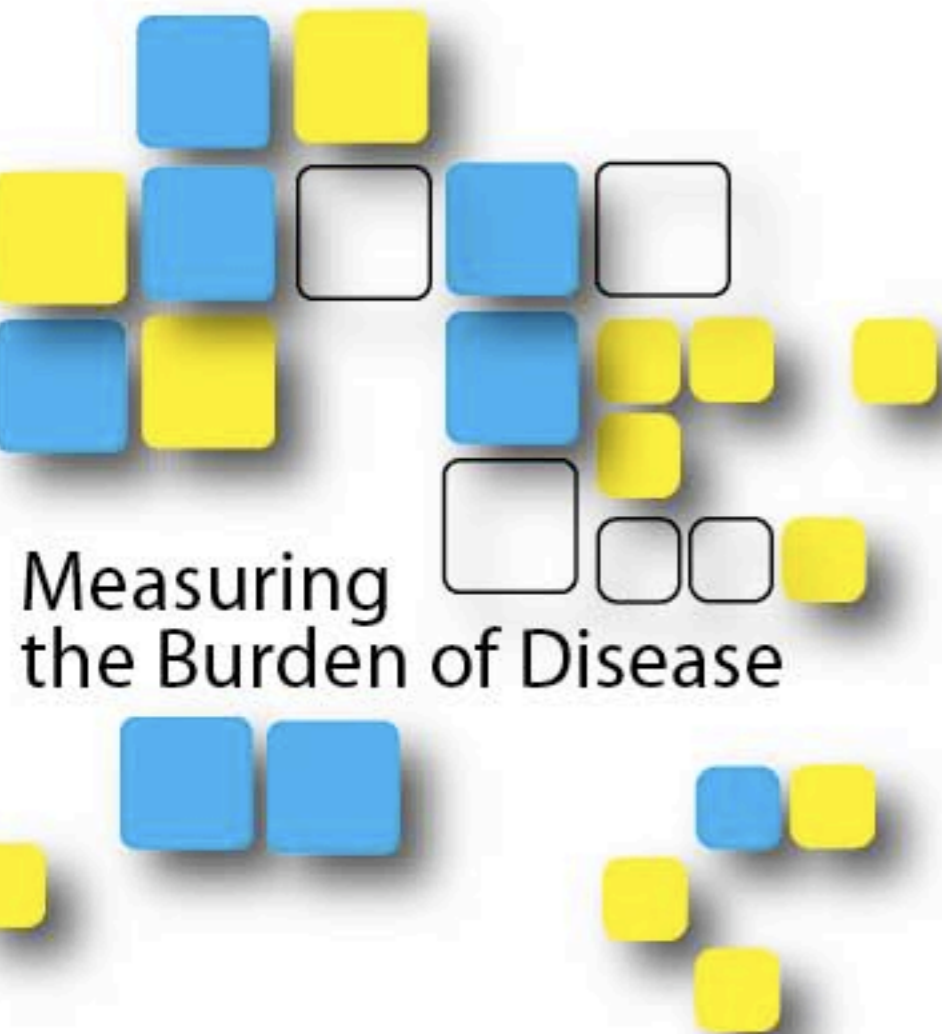
The term upstream refers to the socio-structural factors that are considered to be the "root causes" of illness, while downstream causes typically are the "final" or proximal or direct cause in a causal pathway. So for example, poverty (upstream) may lead to food insecurity (upstream) which leads to poor nutrition (downstream) which can result in B12 deficiency (downstream) which causes mental illness. Interventions against upstream factors and many of the interventions against even downstream risk factors (e.g. alcohol consumption), may themselves be upstream (e.g. directed at legislation or policy or community action on alcohol availability), and are located outside of the immediate ambit of the Provincial Department of Health. This is the second and other meaning of upstream when the concept is applied to interventions in this report.

Figure 1: Conceptual Model of Risk Factors for Disease



BoD Reduction Project outputs

The following sections of this report contain highlights of BoD reduction project findings and recommendations organized according to the 5 priority BoD contributors. The focus of the recommendations is mainly upstream, on the societal and structural interventions that would impact the Burden of Disease. They aim to provide policy makers with an evidence base that can add value to their decision making, and make a strong case for health to be viewed as a developmental issue requiring intersectoral action. An important project legacy is to provide a methodology for systematically monitoring and evaluating the impact of interventions aimed at reducing the Provincial burden of disease.



Measuring the Burden of Disease

Mortality data provides a method of evaluating the health status for the population as a whole.

Mortality statistics can be obtained from Statistics South Africa supplemented by additional data from the Dept of Home Affairs. These data provide interesting comparisons which can pinpoint health problems.

Fig. 1 and Fig. 2 show changes over time by age for women in the Western Cape and nationally for the whole of South Africa. In 1998/2000 there were rather similar patterns in age-related mortality but over time dramatic differences have evolved due to the HIV/AIDS epidemic. For South Africa as a whole, the rapidly rising peak of mortality in young adults is mainly as a result of the HIV/AIDS epidemic, with the majority of deaths occurring early in life, and relatively few deaths occurring in old age. This pinpoints an epidemic. While deaths have been rising among young adults in the Western Cape too, also as a result of HIV/AIDS, but at a much slower rate, the majority of deaths still occur among the elderly mainly as a result of chronic diseases. This pinpoints population growth with implications for service delivery. The

number of deaths are going up as the population increases. When looking at the different causes of death in 1997 in the Western Cape Province (Fig. 3) there is a striking difference in injury mortality (mainly arising from homicide and traffic fatalities) among young men where it was very high, and young women where it was low. When looking across time to 2005 what is noticeable is that there has been no substantial drop in injury for men and there has been a dramatic increase in HIV/AIDS related mortality for both men and women, particularly among the latter. An important health service consequence of rising AIDS deaths is that those requiring anti-retroviral therapy (ART) will increase in coming years.

Infant mortality is another important indicator of the health of a community. The Western Cape has the lowest provincial infant mortality rates in the country.

Table. Provincial Infant mortality rate (deaths under 1 year per 1 000 live births)

	EC	FS	GP	KZN	LP	MP	NC	NW	WC	S Africa
2006	62	58	37	62	37	53	34	44	26	48

While infant mortality rates had been rising in the Western Cape in recent years due to HIV/AIDS (Fig. 4), by 2003 the Western Cape had proactively introduced strategies for prevention of mother to child transmission (PMTCT) and adult anti retroviral treatment. This intervention led to a dramatic fall in mortality from AIDS in infants in subsequent years (Fig.5).

Two drawbacks to the national data sources available for mortality are that they do not have sufficient spatial discrimination (data are not available below the level of the Province e.g. for the district), or are not up to date. Consequently, the burden of disease reduction project has instituted a system of rapid surveillance of mortality in the Western Cape, in order to obtain up to date information down to the health sub-district level in the Province.

Fig 6 shows how timely and localized data, in this case for Cape Town, can pinpoint inequities and health problems needing preventive public health interventions. Here, the rate of Years of Life Lost (YLL)/100 000 population,

is used as an indicator of premature mortality. The graph reflects the high overall burden of disease in disadvantaged communities, and when broken down by cause, shows that HIV/AIDS and other infectious diseases, as well as injury afflict the disadvantaged differentially. What is also shown is that the chronic disease burden (such as diabetes and heart disease) constitute a major component of the burden across all socio-economic groupings.

The BoD project has been able to successfully implement a mortality surveillance system, which is currently being rolled across the Province, which will provide up to date and fine-grained mortality data to inform Provincial policies and interventions targeting the risks to population health. This integrated and institutionalized information system facilitates planning, policy and implementation. While spatial variation in mortality allows precise geographical targeting of health problems needing interventions, temporal variation allows monitoring successes of failure of interventions.

FIGURE 1: Changes in female adult mortality. Western Cape, 2000 -2006

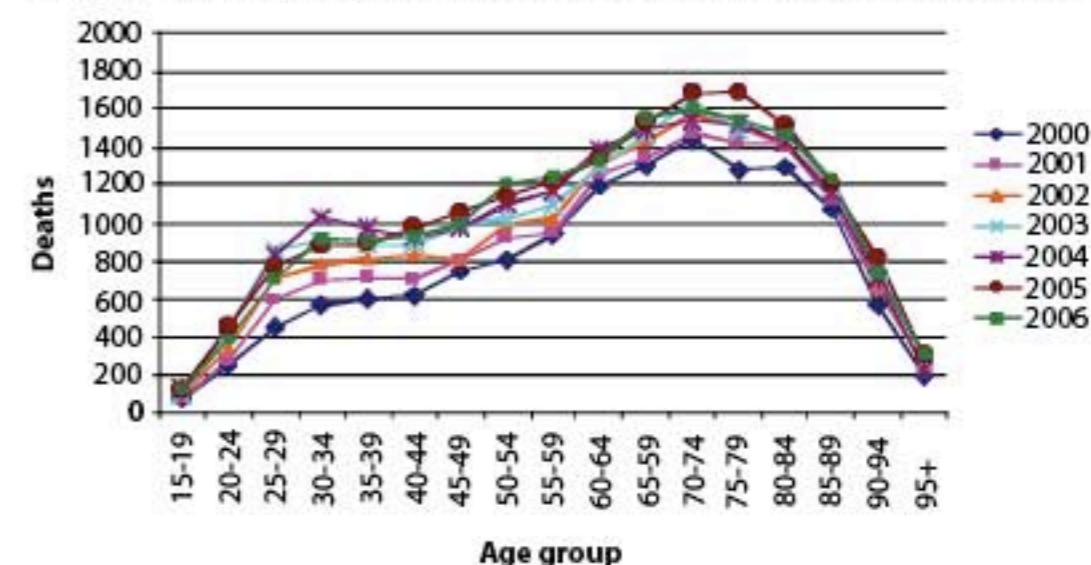


FIGURE 2: Changes in female adult mortality. South Africa 1998 -2006

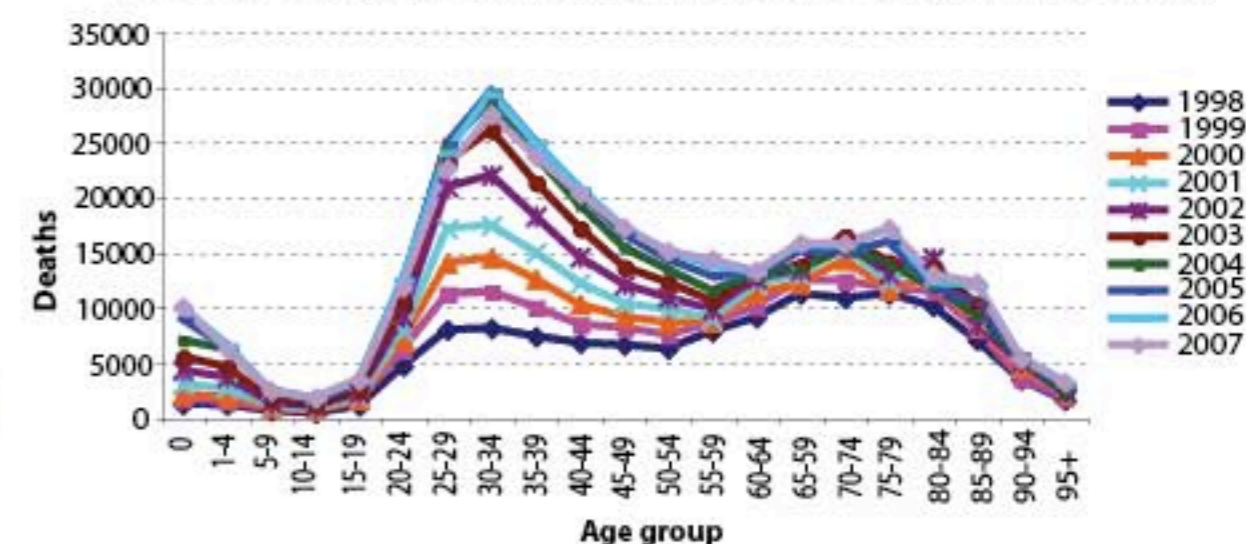


FIGURE 3: Changes in age and cause specific mortality by cause. Western Cape and South Africa 1997 and 2005

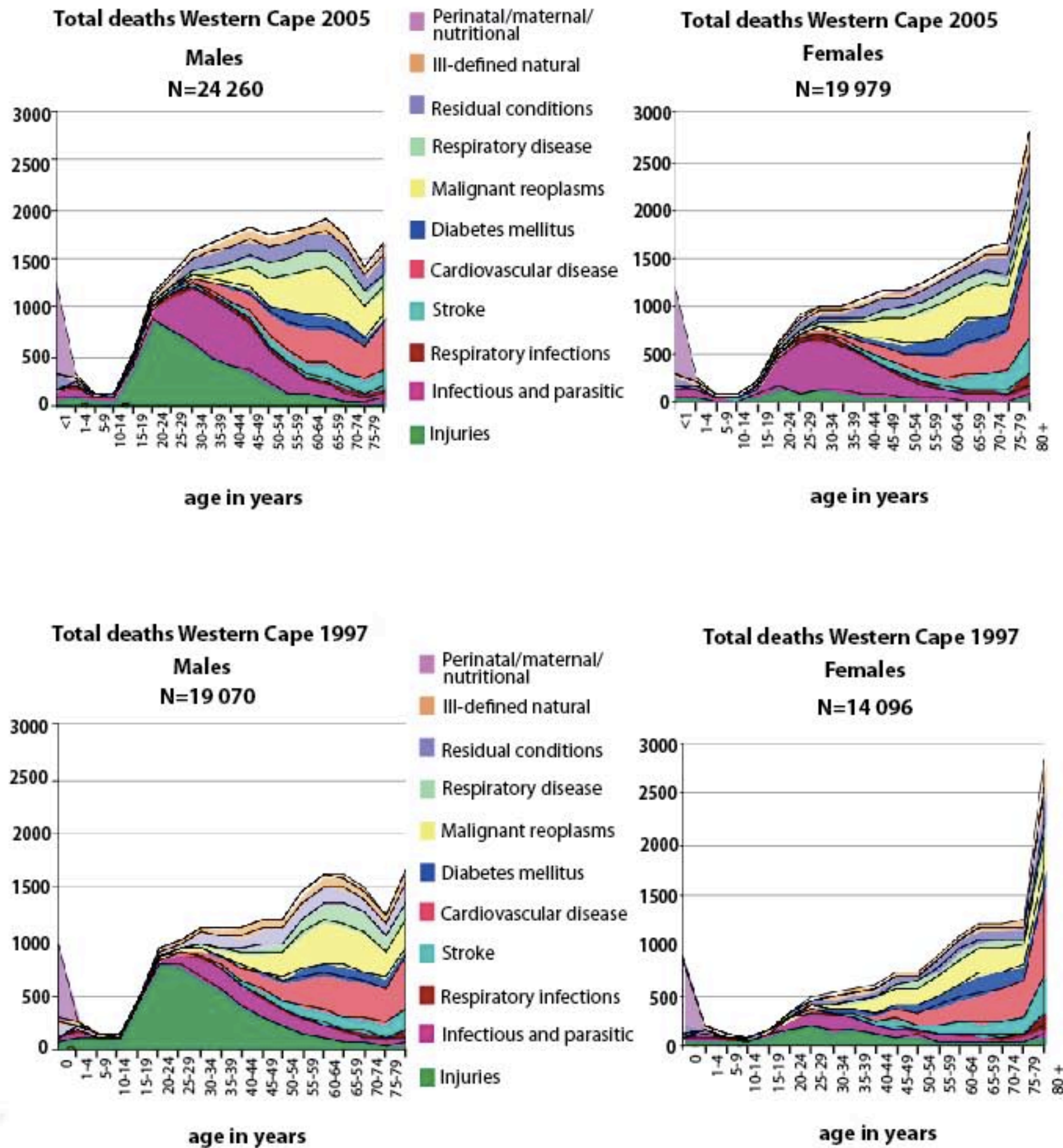


FIGURE 4: Rise in mortality under 1 year of age, Western Cape, 1999-2003

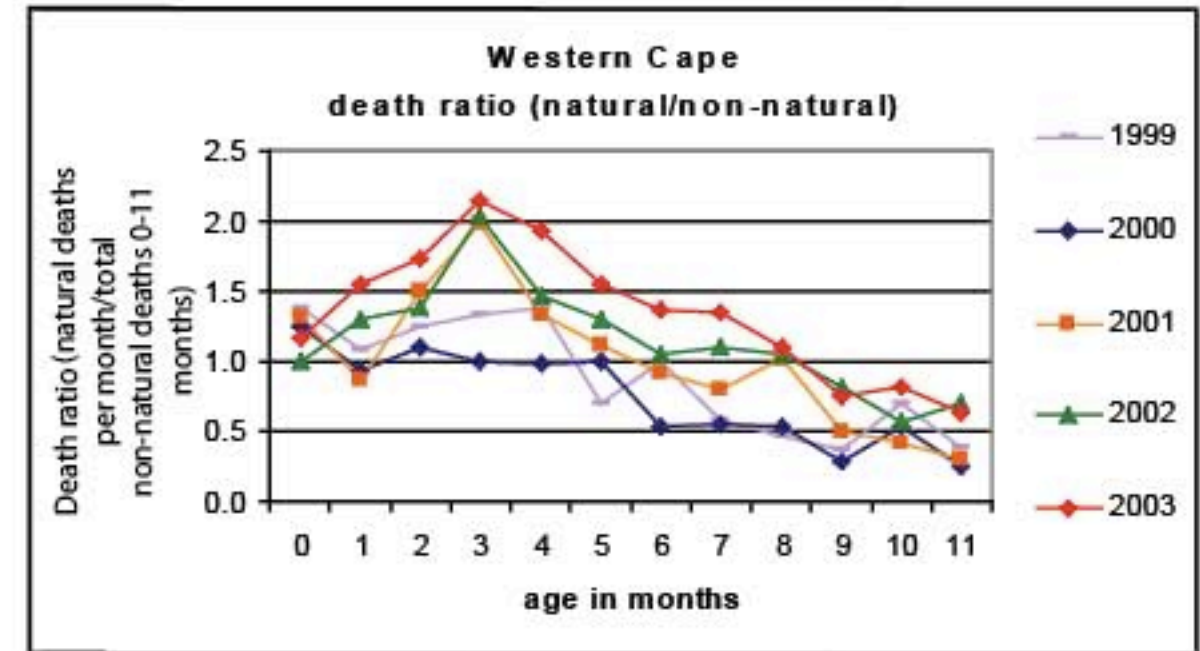


FIGURE 5: Fall in mortality under 1 year of age, Western Cape, 2003 - 2006

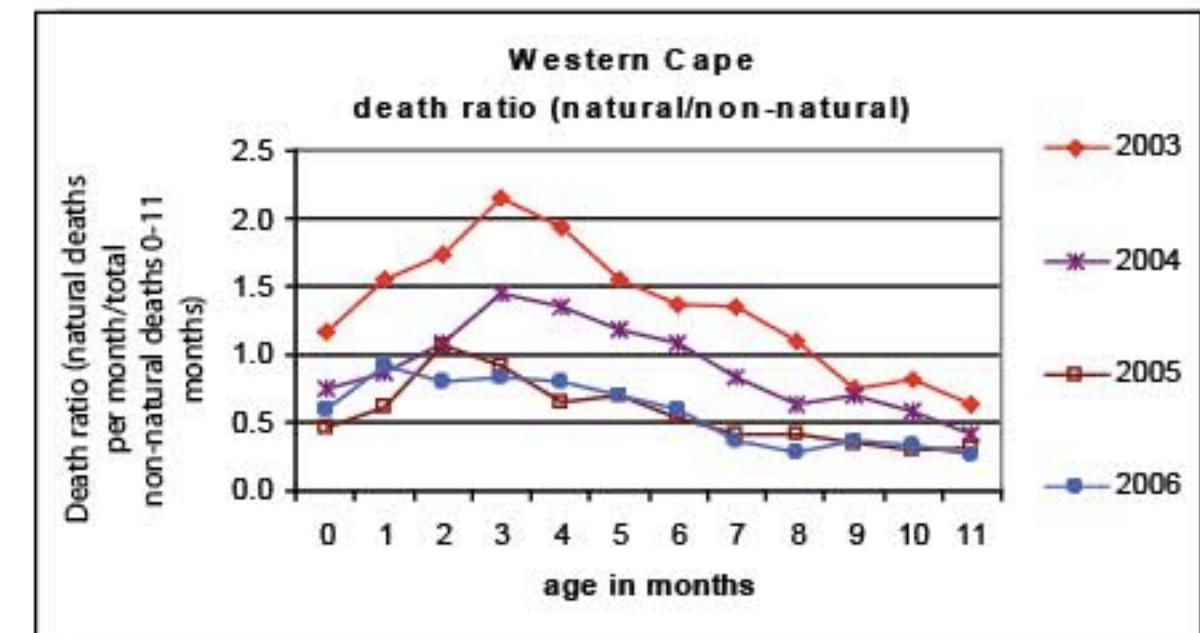
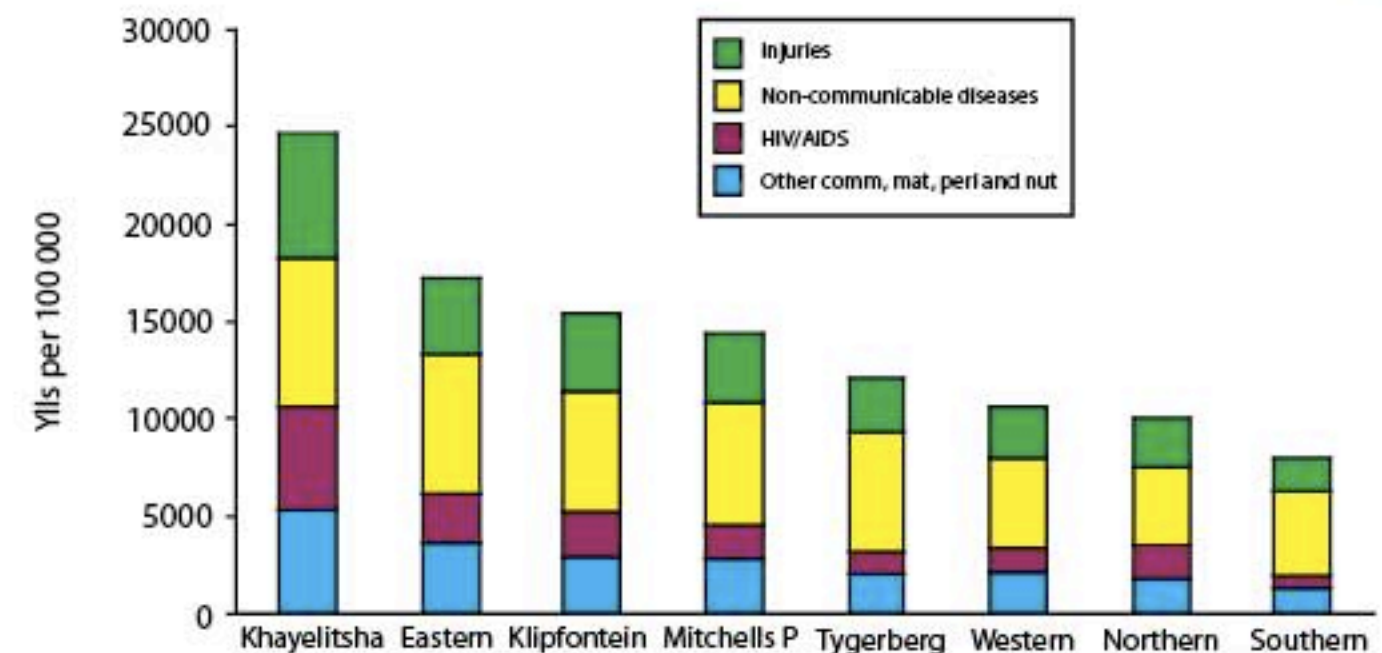
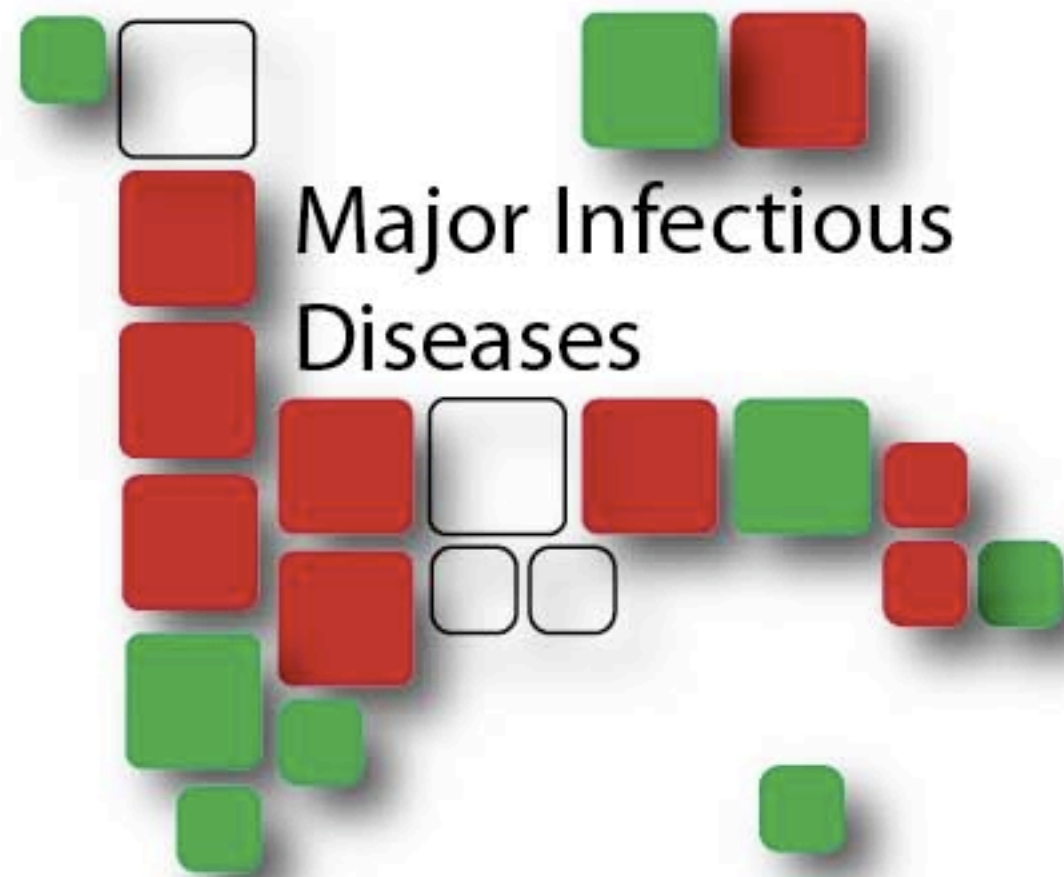


FIGURE 6: Differential mortality patterns across the sub-districts of Cape Town 2006





Major Infectious Diseases

HIV and TB constitute the largest component of the burden of disease in the Western Cape Province, accounting for just under a quarter of total years of life lost. Since 1997 HIV prevalence has increased by 11-12% annually, to a province-wide prevalence of 15.1% in 2006. There is however much variation in HIV prevalence at a sub-district level. In 2006 the Khayelitsha sub-district had the highest antenatal HIV prevalence of 32.7% while the Klein Karoo had the lowest at 3.9%. Also notable is that the epidemic is in different stages of maturity in different parts of the province. The Khayelitsha and Klipfontein sub-districts' HIV prevalence appear to be stabilising (at a high level), while prevalence continues to increase rapidly in other areas, especially in the Eden district.

Despite having the lowest prevalence of HIV nationally, the Western Cape Province has the highest incidence of new cases of TB in South Africa. This incidence has been increasing at 8-10% annually for the last 7 years. Research evidence indicates that TB incidence continues to escalate after HIV prevalence has stabilized.

TB is differentially distributed within the Province as a whole, and within the Metro, and is concentrated in areas of high HIV prevalence. 22 TB 'hotspots' have been identified, 18 of which are in the Metro and 4 beyond the Metro.

All four TB 'hotspots' beyond the Metro are recognized areas of migrant settlement.

Areas of high HIV prevalence are experiencing a high proportion of smear-negative TB disease and services are having difficulty confirming a TB diagnosis. Retreatment TB and drug-resistant TB is on the increase across the province. The numerical load of re-treatment cases remains in the Metro, but, as a proportion of total cases, there is evidence of a high re-treatment burden in the rural areas.

Risk

The single biggest risk factor for TB is concurrent HIV infection. A person who has recently been HIV infected has twice the risk of acquiring TB as an HIV-negative person, while someone with advanced HIV disease has a risk that is difficult to quantify but could be as much as 50-100 times that of an HIV-negative individual. The other major risk factor for TB is the socio-economic clustering of poverty, unemployment and overcrowding. In the Western Cape this is being exacerbated by migration.

The risk of acquiring HIV, apart from the risk of mother-to-child transmission, mainly derives from the practice of unsafe sex. Yet a significant proportion of the population is not using condoms. This risk is heightened by the overlapping nature of sexual networks, relatively high partner turnover and partner concurrency. Other factors that serve to increase the risk for HIV include: generally poor levels of education; transactional sex; mobility; migration; and the socio-economic clustering of poverty, unemployment and overcrowding. Pockets of other high-risk groups — such as intravenous drug users, commercial sex workers, and men who have sex with other men — while not contributing significantly to the burden of HIV disease currently, must be considered when planning for future prevention strategies.

The chronic nature of HIV disease has a particular impact on the Provincial burden of disease. Whereas, for example, traffic accidents, violent deaths or childhood diarrhoeal episodes are incident events that might or might not occur in the future, the major proportion of the Western Cape's burden of HIV exists currently.

If vehicles were banned from roads henceforth, traffic fatalities would stop, but if HIV transmission was stopped today, the Western Cape would still have an existing pool of around 300 000 HIV-infected individuals who would progress to advanced HIV disease.

For planning purposes therefore, it is conceptually useful to consider that most of the future burden of tuberculosis in the Western Cape will arise from two populations:

- 1) The existing (and still growing) pool of people living with HIV, in whom, as HIV disease progresses, TB has an exceptionally high probability of occurring.
- 2) The currently HIV-negative population living in impoverished, overcrowded conditions. These conditions both facilitate transmission of the TB organism and constitute a risk factor for HIV transmission.

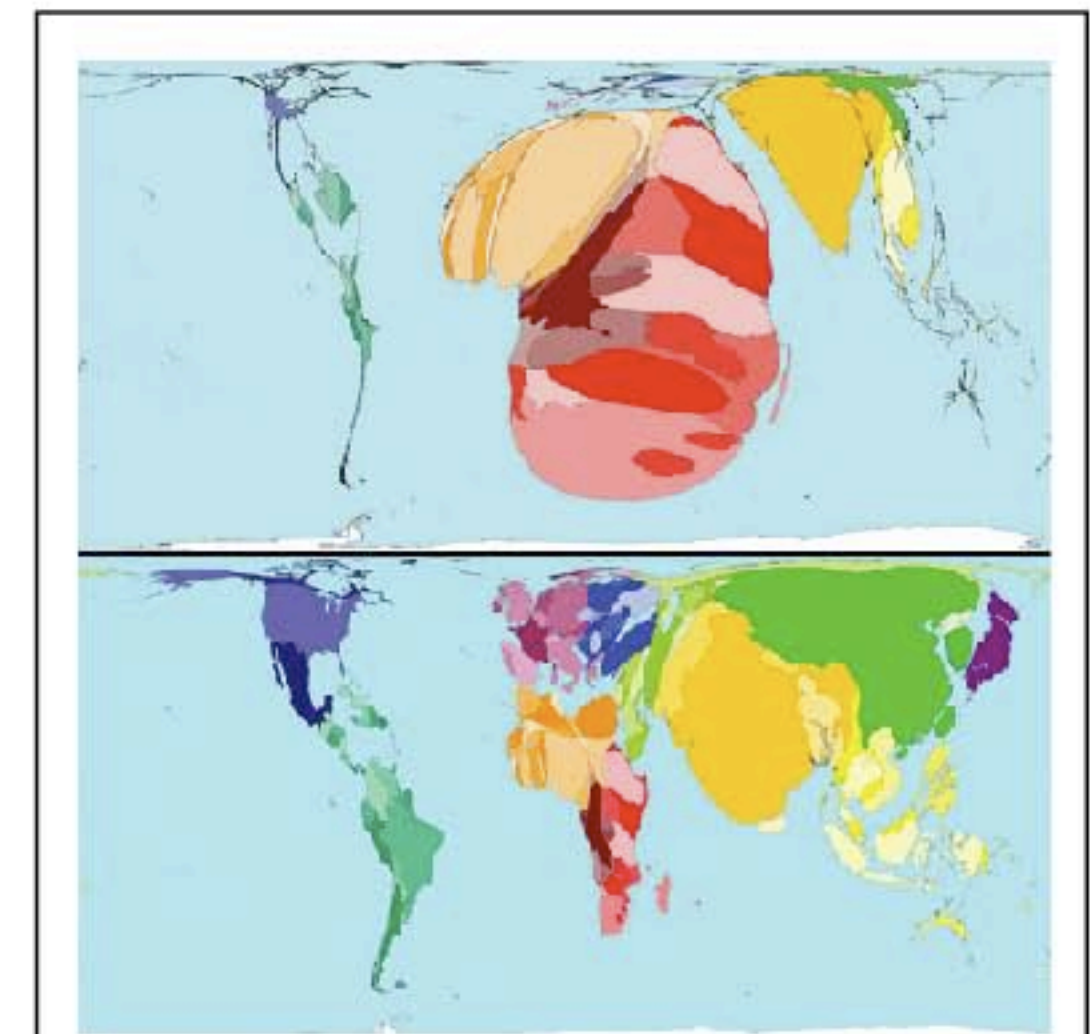


FIGURE 1: Cartogram illustrating the proportional cost of HIV/AIDS in the world (Top), compared to the size of the continents when adjusted according to population. (Bottom)

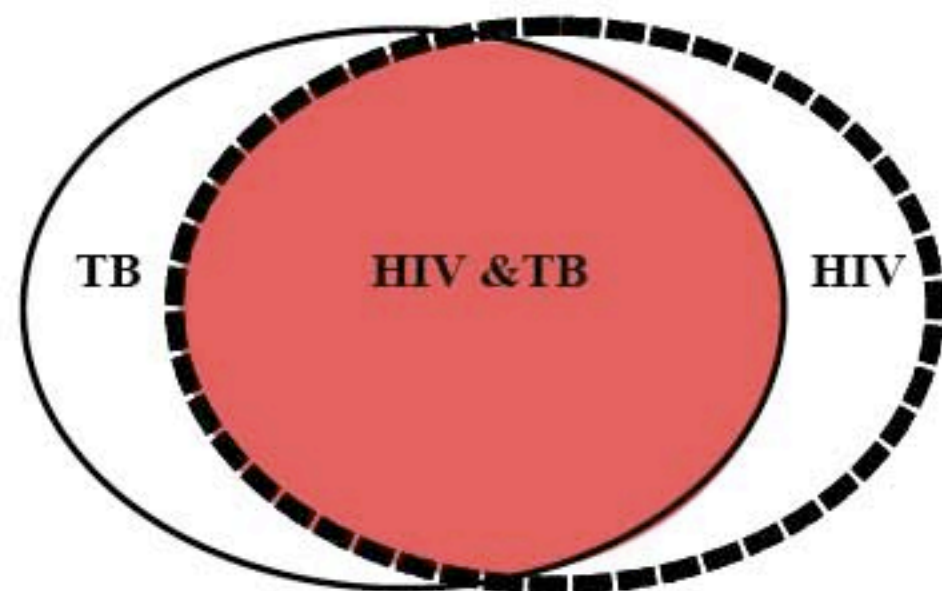


FIGURE 2: Diagram representing the relationship between HIV AIDS and Tuberculosis

Upstream Interventions

This report concurs fully with the recommendations of the Western Cape Accelerated HIV-Prevention Strategy to obtain fuller coverage of proven interventions, and endorses an upstream perspective supporting interventions targeting societal and infrastructural risks for both HIV and TB. Many of these upstream interventions are covered elsewhere in this report and if implemented will over the long term impact both more downstream behavioural and biological risks, and help prevent infection. In order to reduce the burden of tuberculosis, interventions are required that will reduce HIV transmission by changing human unsafe sexual behaviour at the population level. Infrastructural and social development will help to make such difficult interventions more feasible.

More Downstream Interventions

In the short- to medium-term, strategies need to be devised to cope with the expected increase in tuberculosis disease that will arise from high-risk populations. In order to reduce tuberculosis morbidity and mortality among the HIV-infected pool, HIV disease must be prevented from progressing to an advanced stage.

This means HIV-infected people must:

1. be identified
2. be made aware of their exceptional risk for TB
3. have ready access to diagnostic and treatment services
4. receive adherence support for TB and ART medication

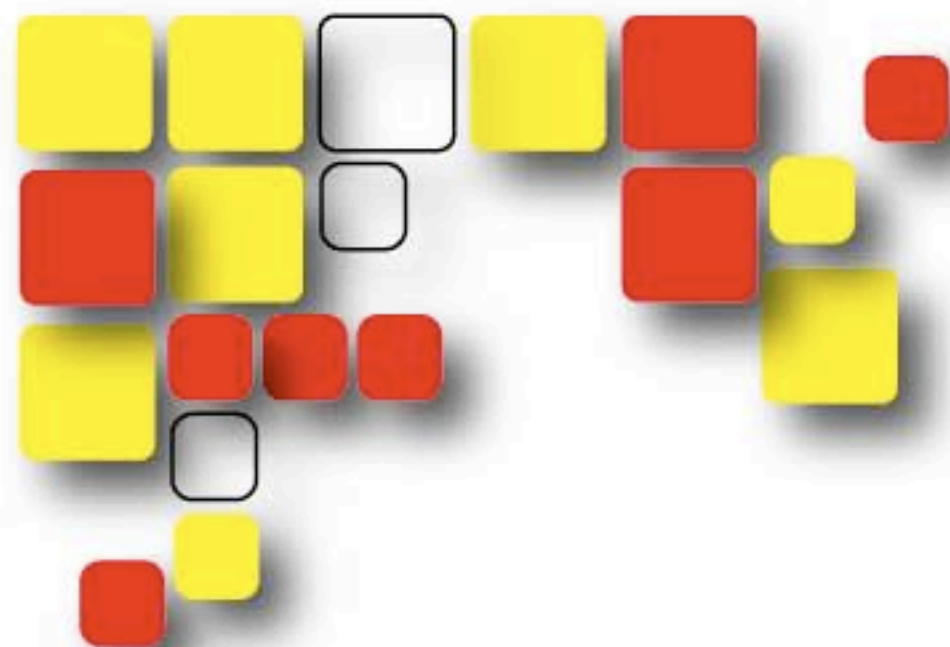


Recommendations

- **Address upstream infrastructural risks** associated with poverty, housing and education through intersectoral action with other governmental and non-governmental partners
- promote delayed sexual debut among young people and limiting sexual partner numbers overall and concurrently among the sexually active.
- **Use role-model led mass-media advertising and community participatory campaigns to:**
 - identify those at risk for TB by increasing the awareness within specific, targeted high HIV-prevalence communities of the symptoms and signs of TB. Emphasise the curability of TB, and link this to access to TB diagnostic services
 - significantly increase the awareness within specific, targeted high HIV-prevalence communities of the risk of HIV. Emphasise the treatability of HIV, and link this to voluntary counselling and testing (VCT) campaigns
 - use every opportunity to destigmatize both HIV and TB
- **Health services should:**
 - identify and manage high risk groups early by targeting HIV and TB "hotspots"
 - actively pursue HIV and TB case finding
 - simplify public access to health services by strengthening health service capacity at the sub-district level
 - integrate prevention and treatment by:
 - o increasing the resources and uptake for VCT
 - o introducing opt-out HIV testing in clinical settings
 - o promoting sexual, health-seeking and adherence behaviour change
 - o scaling up integration of TB and HIV/ART and PMTCT programmes



Mental Health Disorders



Common mental disorders such as depression, anxiety, substance (drug and alcohol) misuse and childhood behavioural disorders make a large contribution to the burden of disease both globally and in the Western Cape. In general, mental illness is far more disabling than physical illness, with neuropsychiatric disorders accounting for the third highest proportion of the burden of disease (BoD) in South Africa. Mental illness also contributes heavily to the burden of HIV/AIDS, interpersonal violence and road-traffic incidents, largely through drug and alcohol abuse.

A recent household survey, the South African Stress and Health Study (SASH) found that 16.5% of South African adults suffer from a common mental disorder and it is estimated that the figure may be as high as 22% in the Western Cape. Approximately 17% of children and adolescents in the Western Cape are estimated to be affected by mental disorders and the Youth and Risk Behaviour Survey of 2002 found that as



many as 28% of South African high school learners report having sought medical treatment after attempting suicide.

Mental disorders pose a major obstacle to achieving a number of core development goals, such as economic growth, education and employment. Mental illness affects a person's concentration, memory, energy, motivation and social capital and as a result people who suffer from mental illness often struggle to complete schooling successfully or obtain and maintain employment. For industry, losses arise from high absenteeism and low productivity that result from illnesses such as depression and alcohol or drug abuse. The extent of losses incurred is vast: in the European Union, the annual cost of mental illness totals 3-4% of the Gross National Product. South Africa can ill-afford such substantial losses to its economy.

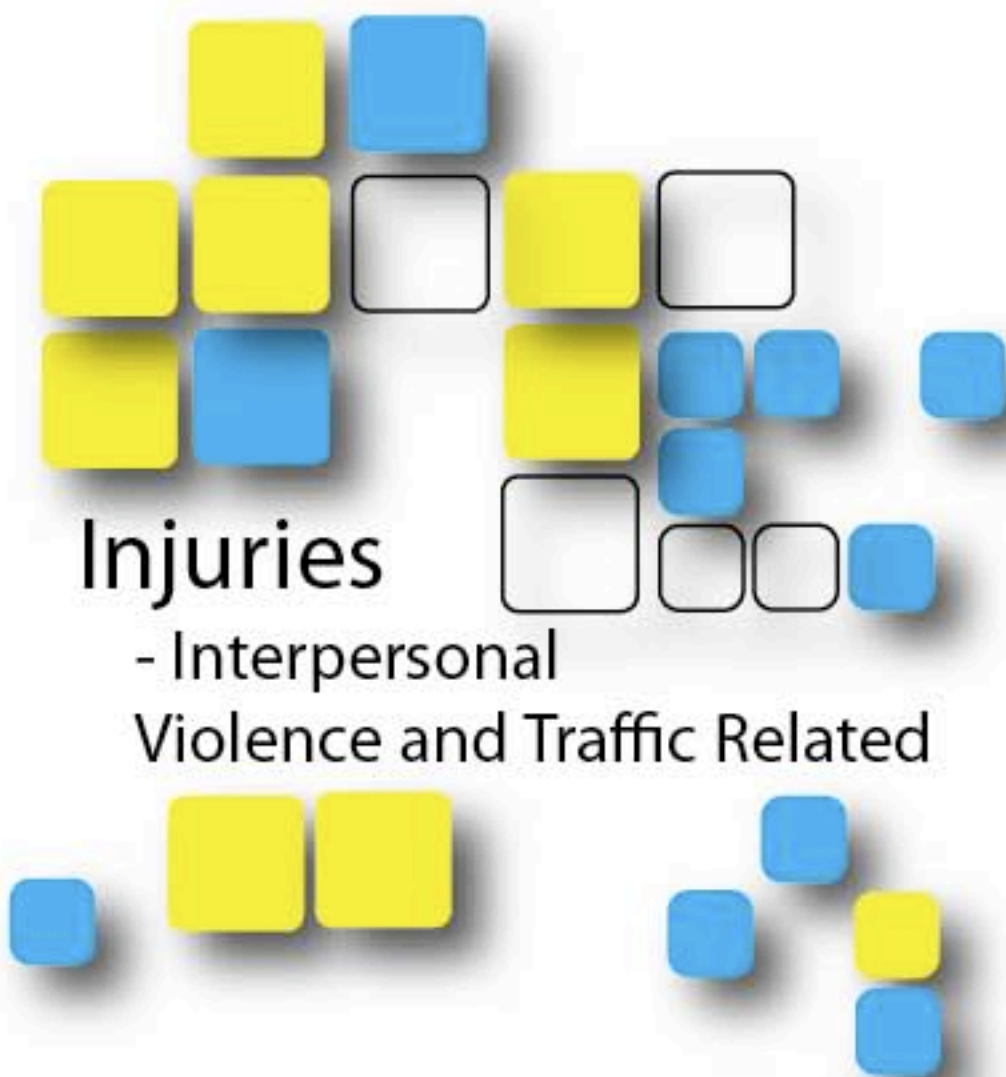
The Multiple Deprivation Index (MDI) is a summary multi-dimensional measurement of poverty across five domains: income and material; employment; health; education; and living environment deprivation. It is calculated at the electoral ward level and is therefore a critical tool in enabling targeted interventions to areas most in need.

The major determinants of common mental disorders in the Western Cape relate to multiple deprivation (housing, infrastructure, food, poverty, unemployment, childcare), alcohol and drug abuse and dependence, exposure to violence, poor access to pre-school programmes and mental health care), exposure to crime and violence and drug and alcohol abuse. Table 1 summarises these into five main factors. Both upstream factors such as improving access to quality housing as well as more downstream factors such as providing access to mental health care need to be addressed. For interventions to be maximally cost-effective the following would be crucial:

- 1) Interventions should be targeted at communities with high levels of multiple deprivation as defined by the Multiple Deprivation Index
- 2) Inter-sectoral action is essential given the inter-relationship of risk factors across sectors. For example, designing housing that promotes social capital, mental health and discourages violence requires collaborative work between the Departments of Health, Social Development, Housing and Community Safety. Addressing complex issues such as alcohol abuse requires coherent policies from departments promoting the development of the alcohol industry and those that seek to minimise the economic, social and health costs of alcohol-related harm.
- 3) Monitoring and evaluation of interventions through the development of an inter-sectoral information system that allows managers in one sector to access relevant information from other sectors. For example, alcohol abuse interventions could be evaluated by violence or road traffic incident statistics.

Risk Factor	Mediators of Risk	Interventions
Multiple Deprivation	Poor access to quality housing	Improve access to housing that promotes mental and physical health
	Living in neighbourhoods with poor infrastructure	Invest in neighbourhood renewal projects that improve the neighbourhood as a whole
	Food insecurity	Increase access to food, social assistance and employment
	Income poverty and unemployment	Invest in micro-credit programmes, improve access to social assistance, expand unemployment programmes, provide treatment for mental illness and substance abuse
	Poor availability of affordable child-care	Provide state-subsidised child care and increase access to pre-school programmes
Alcohol and Drug Abuse and Dependence	Alcohol and drugs are cheap and easily available	Increase price, restrict availability (reduce times and locations of alcohol sale), introduce responsible server regulations and improve law enforcement
	Widespread promotion and social acceptance of drinking alcohol	Restrict advertising of alcohol, enhance media resistance and challenge social acceptability of drunkenness and binge-drinking through media
	Insufficient political support to restrict the promotion and availability of alcohol	Use mass media to instigate public debate on alcohol use and enhance public advocacy and political will to address alcohol-related policies
	Poor access to mental health care and substance abuse treatment programmes	Increase access to mental health care and substance abuse treatment
Exposure to violence	High levels of crime, community and domestic violence	Reduce violence (see section on violence)
	Poor detection of trauma-related mental health problems	Train health workers in all settings to screen for mental health problems in trauma survivors
	Poor access to mental health care	Increase access to mental health care
	Insufficient places of safety appropriate for victims of domestic violence	Invest in a wider number and range of places of safety
	Retraumatization of survivors by health workers, police or justice system	Train staff dealing with trauma survivors to be trauma-competent
	Lack of adequately trained trauma-professionals	Develop post-graduate training programmes for Trauma psychology
	Lack of consistent support for non-governmental organisations dealing with trauma victims	Provide consistent support to expand organisations currently providing high quality trauma interventions
Poor access to pre-school programmes	Lack of access to pre-school programmes	Urgently roll-out pre-school programmes in areas with high multiple deprivation
Poor access to mental health care	Poor access to mental health support in schools	Expand and develop school-based mental health programmes
	Inadequate primary, secondary and tertiary level mental health care services	Urgently expand mental health care services
	Lack of integration of mental health care in HIV, obstetric and trauma services	Integrate screening, prevention and treatment of mental illness in HIV, obstetric and trauma services

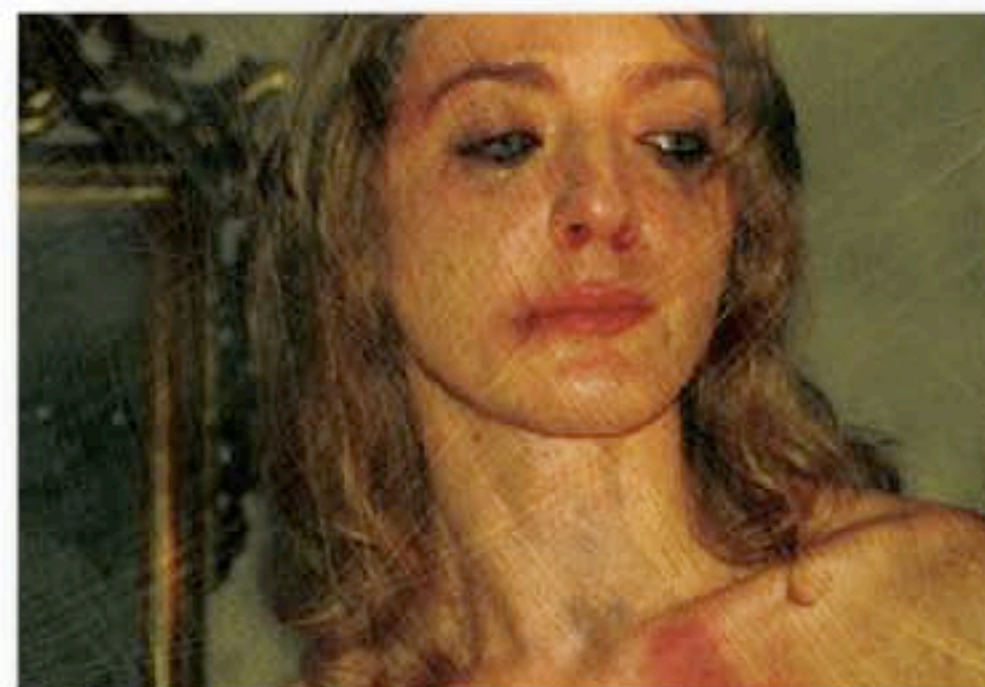




Poverty, deprivation and inequality are strong determinants. Urban living with increased population density, degraded environment, overloaded infrastructure, and stretched service delivery is associated with higher injury and homicide rates. The highest homicide rates in Cape Town are recorded in Nyanga (132 per 100 000) and Khayelitsha (120 per 100 000) compared with the South Suburbs (60 per 100 000)

Societal risks begin with early childhood family relationships including large numbers of children, poor family cohesion, single parent households, young mothers, partner and child abuse and harsh punishment. A quarter of men in the Western Cape have witnessed abuse of their mothers, and were three times more likely to abuse their partner.

Having violent friends is a risk for violent behaviour and substance abuse among the youth. The Western Cape has a history of social problems associated with street crime and gangs, which engender violence in residents with negative mental health implications for children.



Reduced social capital, manifesting as low social cohesion and interpersonal mistrust, have been linked with higher violence rates. A Cape Town study found that 32% of pregnant adolescents and 18% of matched controls had been forced into their first sexual experience and in the Lavender Hill and Steenberg, over 70% of a sample of primary school children reported exposure to violence.

Traditional gender and social norms are associated with female partner abuse. Such abuse is aggravated by the existence of armed conflict where violence is an everyday occurrence. In the Western Cape, 38% of male and 8% of female learners admitted carrying weapons in the past six months.

The effectiveness of policing for social protection and crime and violence-prevention is also a key determinant of violence levels.

Behavioural risks include individual personality characteristics and the quality of social interactions, which are aggravated by environmental factors. Problems experienced with early childhood development can predispose youth to violent behaviour. There is also evidence that diet and exposure to lead may affect aggressiveness and risk-taking behaviour.

Interpersonal violence prevention

Violence claims an estimated 1.6 million lives worldwide with 90% of these in low- to- middle-income countries. This only reflects a fraction of the overall impact of violence on global health and development. In South Africa, most violence is interpersonal rather than self-inflicted and homicide rates are five and eight times higher than the global average for females and males respectively. In the Western Cape, interpersonal violence accounted for 12.9% of premature mortality and was the second leading cause of years of life lost (YLLs) after HIV/AIDS.

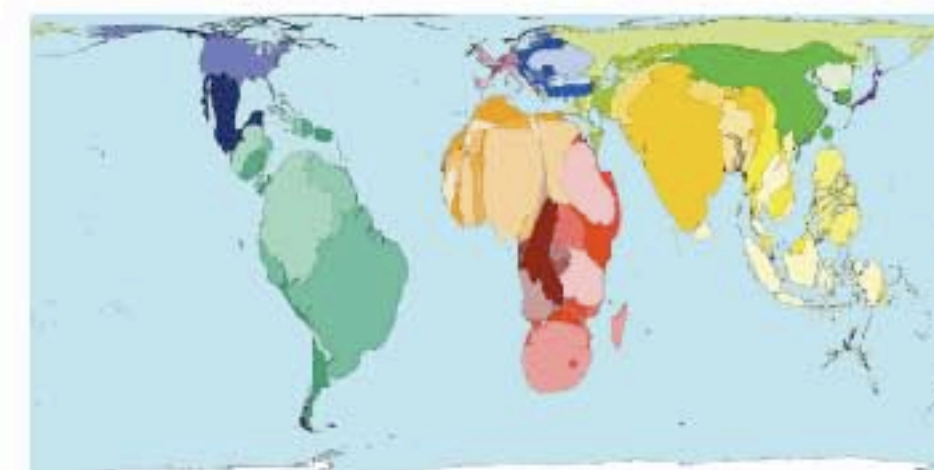
The focus of the BoD project is upstream for violence risks and related interventions.

Risks for violence

Structural risks include major social and demographic changes e.g. migration, urbanisation or modernisation which are associated with increased youth violence.



Cartogram comparing the numbers of self-inflicted deaths estimated for 2002



Cartogram comparing the numbers of violent deaths estimated for 2002

The association between trauma and alcohol and substance abuse is well-documented. Alcohol is associated with child abuse and intimate-partner violence. More than half of the patients presenting for injuries from violence in South Africa tested positive for alcohol usage and urinalysis among arrestees in major cities found nearly half of murder suspects testing positive for drugs.

Age and sex are the principal **biological** risks, with young males at greater risk for being both perpetrators and victims of violence. Males are more frequently victims of physical abuse, and females of sexual abuse. Children constitute a large portion of victims for violence generally and sexual abuse in particular.

Review of proven and promising interventions

The hierarchy of anti-violence interventions prioritises sustainable upstream primary preventive interventions (reducing deprivation and inequality and early education), rather than purely downstream interventions (behaviour change via policing and law enforcement) which remain however, critically important. Strategies include reducing income inequality and social deprivation; improving criminal justice and social welfare systems resources; changing cultural norms to promote gender equality and respect for the elderly while challenging negative norms associating violence with masculinity, racism or and sexism; strengthening communities through reducing the alcohol availability and improving childcare facilities; investing in the early childhood education; increasing positive adult involvement in the monitoring and supervision of children and adolescents.

The need for an intersectoral approach

Efforts to address the burden of violence in the Western Cape require an inter-sectoral approach that spans the criminal justice, health, and infrastructural domains. There is also a need to balance achievable short-term targets to offset the long-term nature of many of the strategies most needed to affect fundamental shifts in socio-cultural attitudes and the propensity towards aggressive and



violent behaviour. Thus, if the typical perpetrator in the Western Cape is a young male dependent on alcohol and living in an area with severe structural and social problems including unemployment, poverty, poor services (schools, healthcare, transport, etc) and numerous armed gangs that support a drug trade, the Provincial Government may wish to provide certain “quick-fix” solutions (for example, through improving the criminal justice system), while investing heavily in those programmes most likely to affect a fundamental and lasting change in the long-term. Appropriate investment in programme documentation and evaluation will be important factors in driving long-term investment, ensuring effectiveness and enabling replication of successful programmes. Evaluation should, wherever possible, include the measurement of behaviour change or actual changes in injury rates.

Example. Bogota, Colombia,
A violence prevention programme partnering local government and academic institutions included social development, political empowerment, enhanced social cohesion and substantial investments in the enhancement of public spaces, transportation, policing and the criminal justice system, resulting in dramatic decreases in rates of interpersonal violence over a ten-year period. The homicide rate dropped to a quarter of 1994 levels by 2003. A key success factor was the programme’s institutionalisation within the municipality and hence its sustainability through changes in government, unlike a similar but failed intervention in another city, Cali.



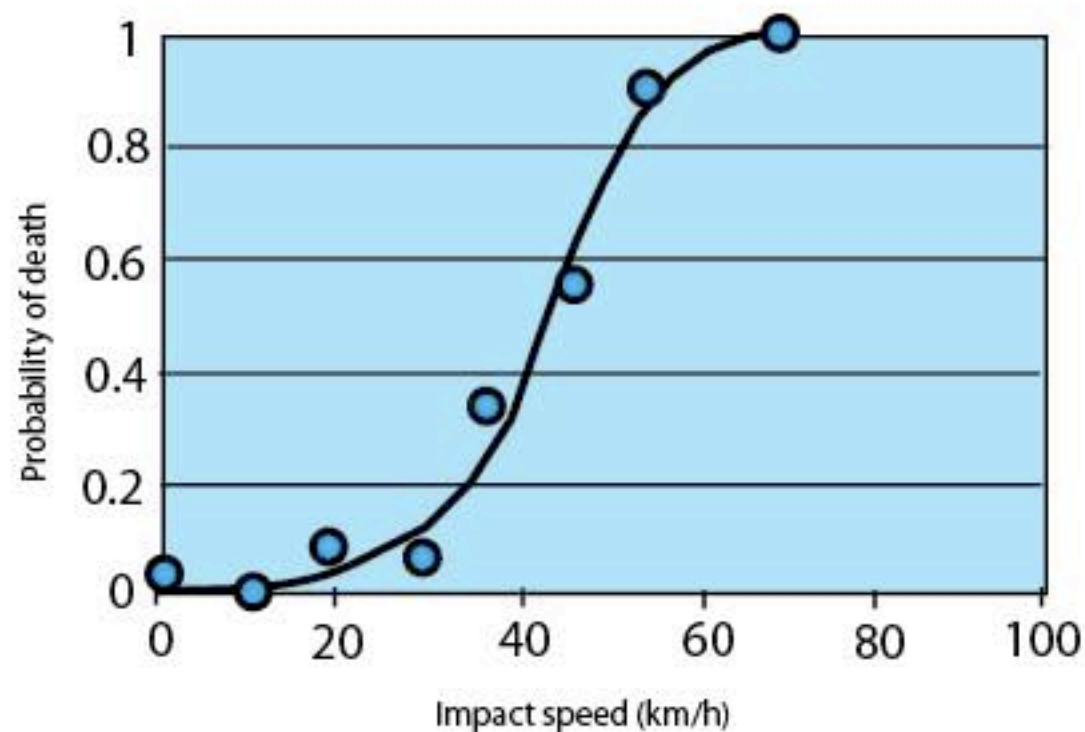
Road Traffic Injury (RTI) Prevention

Global estimates show 1.2 million people killed and 50 million injured in road crashes with 85% of road deaths in developing countries. RTIs kill 18000 per year and cost an estimated R42.5 billion in South Africa in 1998 alone. Injuries are the second biggest contributor (20%) to the Provincial BoD with the road traffic injuries accounting for 7% of premature mortality in the Province, which is 40% higher than the National contribution at 5%.

RTIs are not random or inevitable "accidents" but highly predictable and preventable. Upstream risks and interventions typically fall in sectors other than health. For example, upstream risks include lack of double carriageways rather than quality of emergency care. Upstream interventions include legislating for speed governors in engines rather than policing speeding motorists). Risky driving leads young people into hazardous situations which they are inexperienced in handling. Of RTI deaths in Cape Town, more than half the drivers and two thirds of pedestrians have blood alcohol concentrations over the legal limit (0.05g/dl or 2 standard drinks for males). Up to 84% of drivers experience aggression with 18% involved in arguments or assaults; while half regularly exceed speed limits and speed through yellow or red robots. The risk of dying in crashes increases from 10% at 30KPH to 90% at 60KPH. Nationally more than R85m in fines was outstanding in 2005, while typically on 17% of fines issues are received.

Priority Risks and Interventions		
	Risks	Interventions
Structural	Multiple deprivation with ¾ of the population dependent on public transport or walking; Lack of transport infrastructure separating motorised from non-motorised users; lack of safe, cost effective, environmental friendly mass transit; poor road design	Integrated Infrastructure development for separating mixed road use; mass motorised transit; non-motorised transport development
Societal	Culture of impunity, ineffective enforcement, irresponsible advertising	Enforcement of speeding and DUI violations
Behavioural	Speeding, Driving under the influence of alcohol, aggressive driving	Seatbelt, child restraint and helmet use;
Biological	Age and being male	License restrictions

BELOW: Graph showing the probability of death according to speed



Recommendations

Equity aspects in planning and resource allocation are paramount in seeking protection for all road users, as those who do not possess motor vehicles currently bear a disproportionate share of road injury and risk. The following recommendations summarise the three key concepts in delivering a safe and equitable transport system.

1. Sustainable upstream structural interventions should be prioritised ahead of more downstream interventions targeting behaviour change in road users.

- Infrastructural development can also promote health and safety by increasing walking, cycling, improving air quality, and cleaner air, provided these are accessible, convenient and safe.

- Driving under the influence (DUI) and speeding enforcement are top priority more downstream interventions.

2. Intersectoral action is key

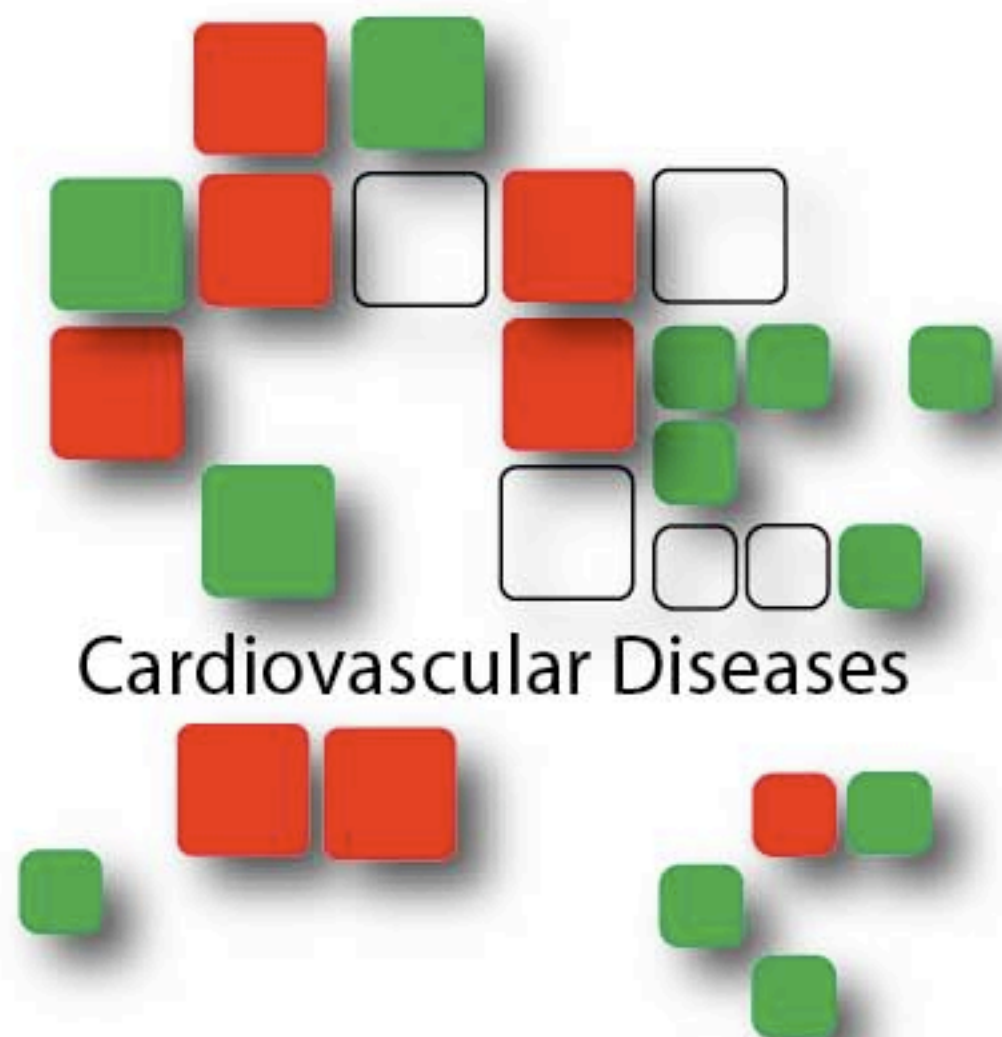
- This should involve government departments, the private sector, NGOs and the research community
- Interventions must integrate technical, engineering and health care components and promote equity.

3. Interventions should be supported by an integrated information system.

- This system must be capable of monitoring and evaluating effectiveness and efficiency.
- It should be managed by an integrated multi-disciplinary independent of implementing agencies.

Example: Vehicle speeds

Every effort is required to reduce vehicle speeds, which constitute a major determinant of crash incidence and severity, particularly in areas where fast-moving vehicles, pedestrians and cyclists share the road. Speed limits on urban arterial roads with encroachment from informal settlements and areas with substantial pedestrian activity (schools and shops) should be regularly reviewed with a view to road engineering, enforcement or vehicle design solutions. In addition to more effective enforcement, successful interventions will require substantive changes to the socio-cultural landscape (driving behaviours), and restrictions on motor-vehicle design and advertising (facilitating and glamorising fast aggressive driving).



Provincial Disease Profile

Cardiovascular disease (CVD) is an important contributor to the Western Cape (WC) burden of disease accounting for just over 10% of the years of life lost, which adjusts for the fact that the WC population is older than the national average. Looking at numbers of deaths, Non-communicable diseases (NCDs), including CVD, account for 38% of the number of deaths nationally, while in the Western Cape, they account for 58% of deaths with CVD as the leading cause, resulting in a quarter of all deaths. CVDs and NCDs have traditionally been thought of as diseases of increasing affluence in South Africa and elsewhere. Figure 6 on page 7 shows, however, that burden of chronic disease is similar for different socioeconomic groups, if a little greater for the most disadvantaged.

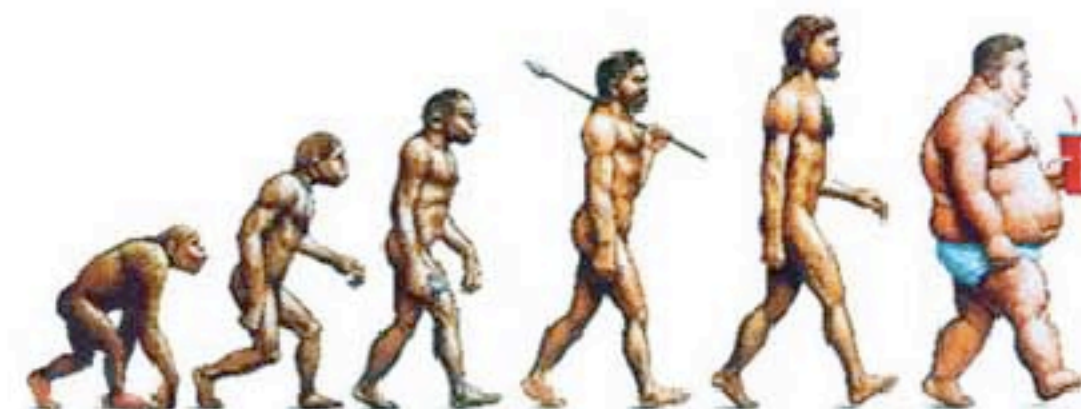
Risk Factor Profile

An unhealthy lifestyle, characterized by a lack of regular physical activity, an unhealthy diet and use of tobacco products have been widely recognised as the most important and modifiable causes of CVD. An unhealthy diet is characterised by a high fat (and saturated fat) intake; low fibre intake; low intake of fruit and vegetables and a high intake of salt and sugar. An unhealthy lifestyle in turn may lead to obesity, high blood pressure and diabetes (among other conditions).

Data on overall lifestyle patterns indicate that South Africans do not generally follow the recommended healthy lifestyle guidelines. For example, the Demographic & Health Survey (DHS) in 2002 reported that 36.7% of men and 9.4 % of women in South Africa smoke tobacco daily (average 21.4%). The WC had the highest prevalence of smoking of all the provinces; with more than 44% of men and 27% of women considered to be active smokers. Of particular concern is the large prevalence of pregnant women in the WC who smoke tobacco. Although there are limited data on physical activity, the Youth Risk Behaviour Survey (YRBS) indicated that 41.7% of high school learners participated in insufficient or no physical activity. Further, a national WHO survey in 2003, found that less than one third of South Africans met international recommendations for health-enhancing physical activity (i.e. to accumulate 30 minutes of moderate activity on most, but preferably all days of the week), and that nearly half were reportedly inactive (46%). Surveys from the Western Cape report similar findings.

The prevalence of overweight and obesity in women is high in the WC (57.1%), and highest of all provinces in men (38.4%). Dietary intake data on adults in Cape Town are also cause for concern. Studies have shown their diet is too high in fat and saturated fat (from animal products), too low in fruit and vegetables and too high in salt, sugar and other refined carbohydrates (which are low in fibre. Black South Africans who have

migrated from rural areas to Cape Town have, over time, increased their fat, saturated fat, and sugar intake and decreased their fibre and carbohydrate intakes with increasing time spent in the city.



Intervention:

Based on the high prevalence of smoking, unhealthy diets and lack of physical inactivity, the health authorities in the WC have to take action now to prevent CVD from escalating even further over the next few decades. Based on a review of more than 300 interventions, the working group proposed the following “upstream” (or policy/environmental) “midstream” (or community) and “downstream” (or individual) strategies and policies which target these lifestyle behaviours and may thereby reduce the risk profile in the WC.

1. Lifestyle modification methods to improve DIET of the population in the WC

- a) Ban advertising of foods during children’s programs on radio & TV or reduce the market pressure on children by regulating advertising and obtaining cooperation from the mass media and Internet providers.

b) Introduce advertising and educational campaigns (multi-media) to promote increased consumption of fruit and vegetables and decreased consumption of fat, saturated fats, sugar and salt. This includes developing and building-on to the food-based dietary guidelines of the Department of Health.

c) Ensure that communities have access to healthy and safe foods (food security) – such as food gardens, food outlets.

d) Develop and implement a policy for schools on foods which are allowed to be sold/provided at the schools-including feeding schemes and tuckshops.

e) Introduce a nutrition & healthy lifestyle curriculum aimed at schoolchildren for the prevention of CVD.

f) Ensure that all state facilities provide healthy foods (high in fruit and vegetables, low in salt, sugar and fats) to staff, inmates and patients.

g) Develop a system of incentives for companies who introduce healthy canteens and physical activity facilities for their staff.

2. Lifestyle modification methods to improve PHYSICAL ACTIVITY

a) Urban development to provide access to areas for physical activity and non-motorised transport.

b) Introduce advertising campaigns (multi-media) to promote physical activity.

c) Introduce a physical activity curriculum aimed at schoolchildren for the prevention of CVD.

d) Ensure that all schools have adequate space and facilities for physical activity.

e) Ensure that all communities have access to safe areas where they can be physically active.

3. Lifestyle modification methods to reduce TOBACCO use and alcohol

a) Increase the price of alcohol and cigarettes

b) Ban advertising of alcohol

c) Introduce a schools policy of a smoke free environment

Immediate actions to be taken

1) Evaluate foods currently sold/provided at schools

2) Evaluate the current nutrition (& healthy lifestyle) curriculum taught to children at schools in WC

3) Determine whether there are/have been "Healthy Lifestyle" interventions at schools, worksites, communities

4) Pilot a school-based intervention on healthy nutrition, physical activity and smoking.

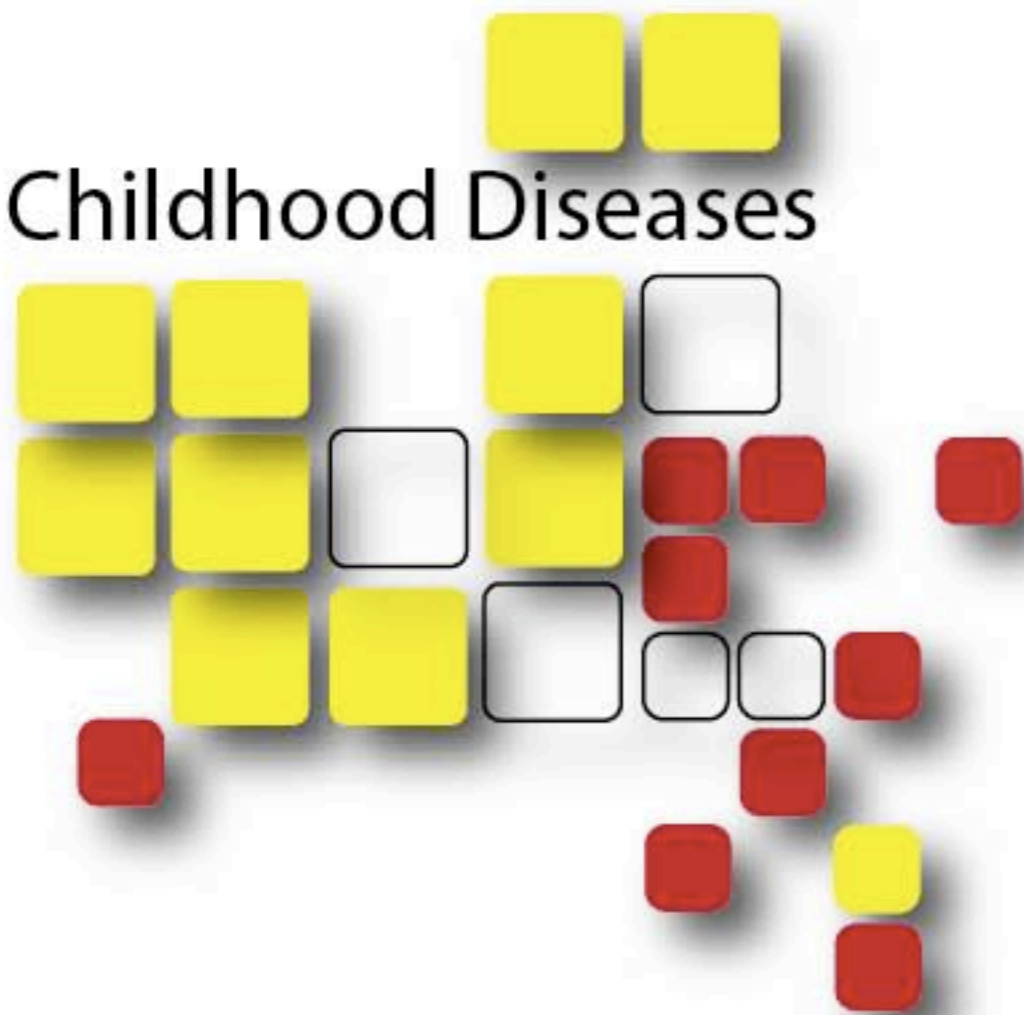
5) Pilot a healthy-nutrition (& physical activity and smoking) intervention in worksites in the WC

Summary:

The WC experiences a significant burden of disease due to non-communicable diseases, which are partly preventable through lifestyle interventions, government policies and environmental interventions. Critically important determinants of lifestyle reside in the context of socio-economic structures and the built environment, and it is important that policy development and interventions take place inter-sectorally for maximal reduction of risk and successful implementation of interventions. The work of NGO's, government, and the private sector should combine to develop promising initiatives, planned strategies and efficient resource allocation for interventions aimed at stemming the tide of NCD's in this province.

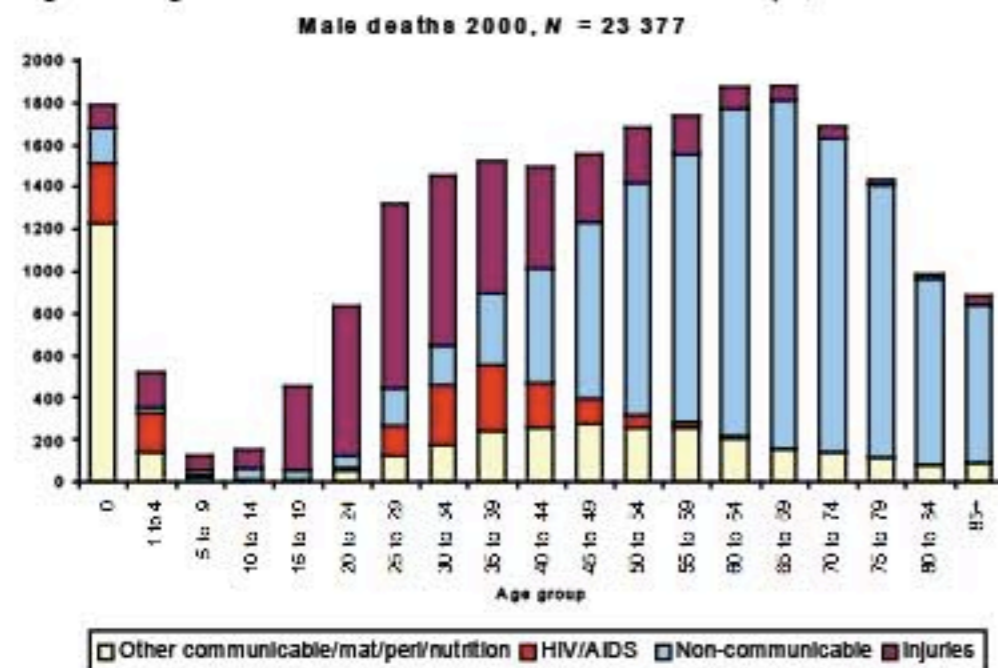


Childhood Diseases

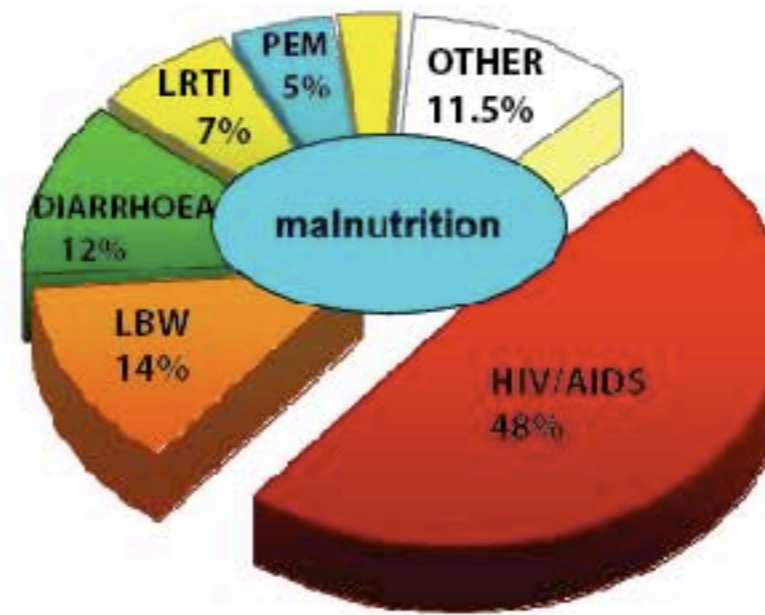


The great majority of deaths in children occur in infancy (under one year of age) and the 1-4 age group. Deaths in the age group 0-4 years account for a significant percentage of all deaths in the South African population (See Figure 1). Leading indicators of child health in the Western Cape are the infant mortality rate (IMR, 26 per 1000 live births in 2006) and the under-five mortality rate (U5MR, 39 per 1000 live births in 2006).

Figure 1: Age distribution of deaths in the Western Cape, 2000



Leading causes of under five mortality, South Africa, 2000



The dominant causes of mortality and morbidity remain nutritional deficiencies and infectious diseases. According to the South African National Burden of Disease study provincial estimates of 2000, the leading "proximal" causes of U5MR in the Western Cape were similar to other provinces, namely HIV/AIDS (largest proportion of deaths); low birth weight (LBW); diarrhoeal disease; lower respiratory infections (LRTI); and protein energy malnutrition (PEM).

While malnutrition is not always a direct cause of death, it has been shown to be a contributing cause to 50% of childhood deaths. However, since 2001, the Western Cape has implemented an effective Prevention of Mother to Child Transmission programme, and more recent data indicate that death in children due to AIDS may have been significantly reduced (see Figure 2).

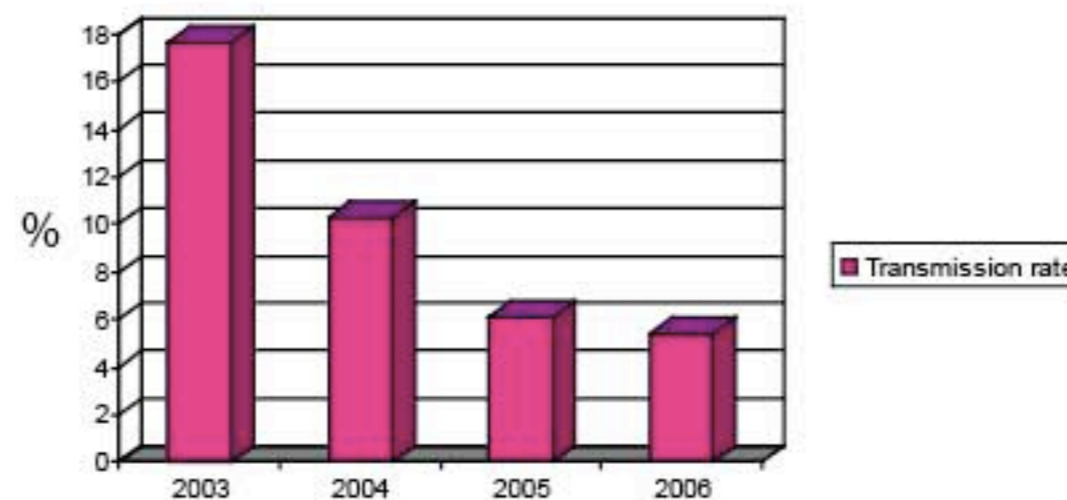


Figure 2: Mother to Child Transmission of HIV: Western Cape Province 2003 - 2006

Although the Western Cape has lower childhood mortality rates than other provinces, these remain unacceptable, and major inequalities exist between population groups and geographical areas. The greatest burden of childhood death and disease is concentrated among the poor and the rate of improvement in these groups in the Western Cape is minimal, with both the country and the province unlikely to attain Millennium Development Goal 4.

There are manifestations of growing inequalities in the distribution of economic and social resources between rich and poor. Moreover, the gap in health outcomes between richer and poorer groups is growing, and the "proximal" causes of childhood illness and death are underlain by such "distal" factors as:

- low and declining real incomes;
- poor female education and conditions of employment
- unhealthy environments (housing, water, sanitation); and
- inadequate access to quality maternal and child health services.

Recommendations

1. Actions should be aimed at the development of well-managed and comprehensive programmes involving the health sector, other sectors and communities. The challenge is to successfully implement efficacious interventions within the framework of comprehensive primary health care to prevent, treat and mitigate the effects of many childhood illnesses.

Key programs that must be strengthened and supported include:

- Promotion and support of breastfeeding
- Growth monitoring and nutrition programmes

- The Expanded Program of Immunization
- The delivery of maternal and neonatal health care
- The Integrated Management of Childhood Illnesses
- The Prevention of Mother to Child Transmission programme

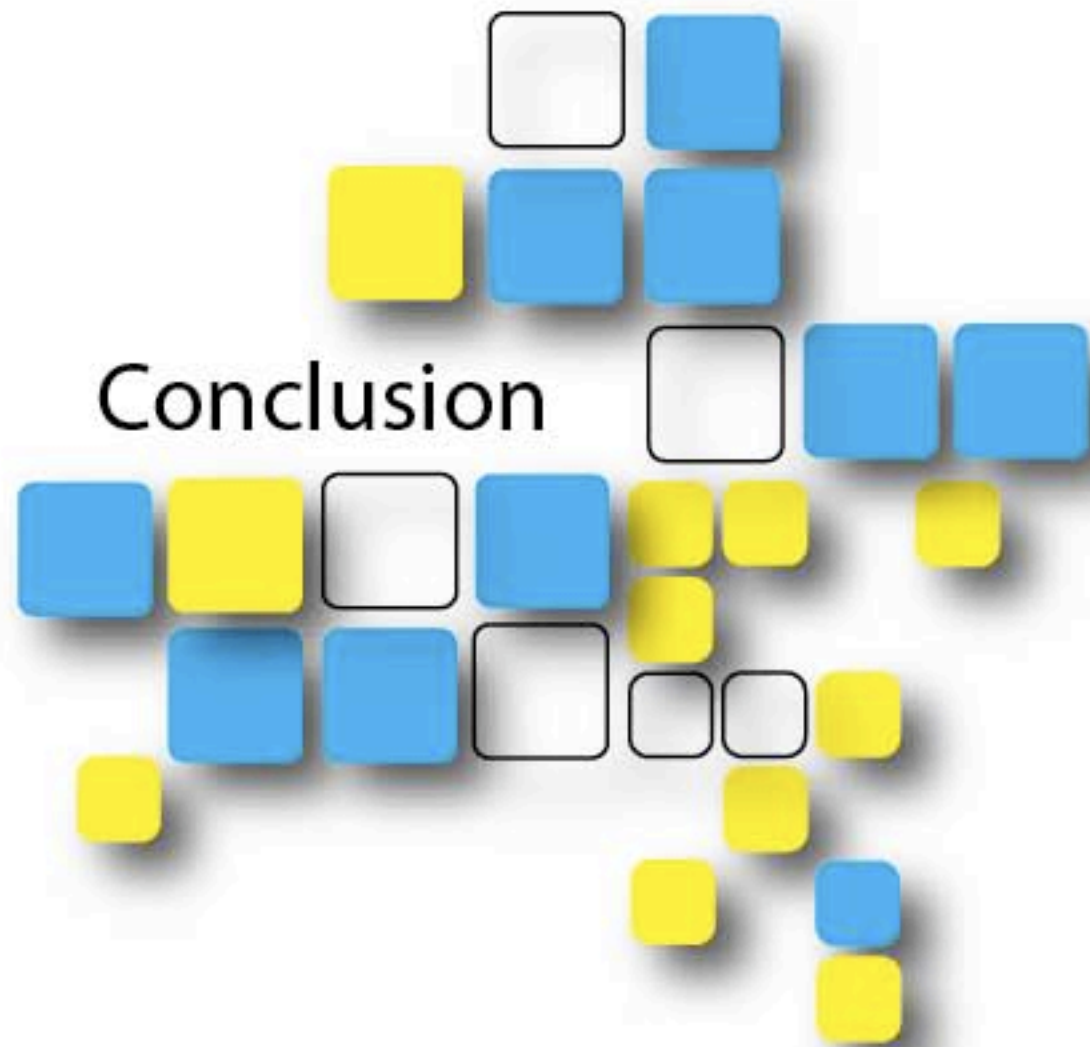
2. Implementation of sustainable upstream structural interventions that address poverty, inequality and their underlying determinants

- Reduction of exposure to gastro-intestinal pathogens through provision of adequate sanitation and basic allocation of free water
- Provision of more accessible and affordable public transport
- Addressing issues related to population movement between the Eastern Cape and the Western Cape
- Improve social and labour policies that create employment and improve welfare, including old age pensions and the Child Support Grants
- Smoking control programs and interventions to reduce indoor and outdoor air pollution

3. Maternal education and employment

- Advocate for the preferential deployment of pregnant women, legislated maternity leave and breast-feeding time for working women.
- Creative pro-poor economic interventions that include community-based employment, and food and income-generation projects for indigent pregnant women.
- Intervention that is explicitly targeted to areas where average educational status is low





Intersectoral action for reducing the provincial burden of disease

Provincial experience with implementing intersectoral action for Health

Both the mandate for the Burden of Disease Project and its reported results make it clear that although this work is led by the health sector, all other government sectors must be involved. Typically upstream interventions for sectors outside of health are more fundamental, involving leading roles for one or more sectors other than the health, and more effective in reducing the BoD, as shown by the decline of Tuberculosis in developed countries before the advent of antibiotics.

The challenge for government is to integrate strategies to reduce the BoD by addressing the major upstream determinants of health. Following the Western Cape provincial success in preventing mother-to-child transmission of HIV and antiretroviral programmes, preventing injury is the next

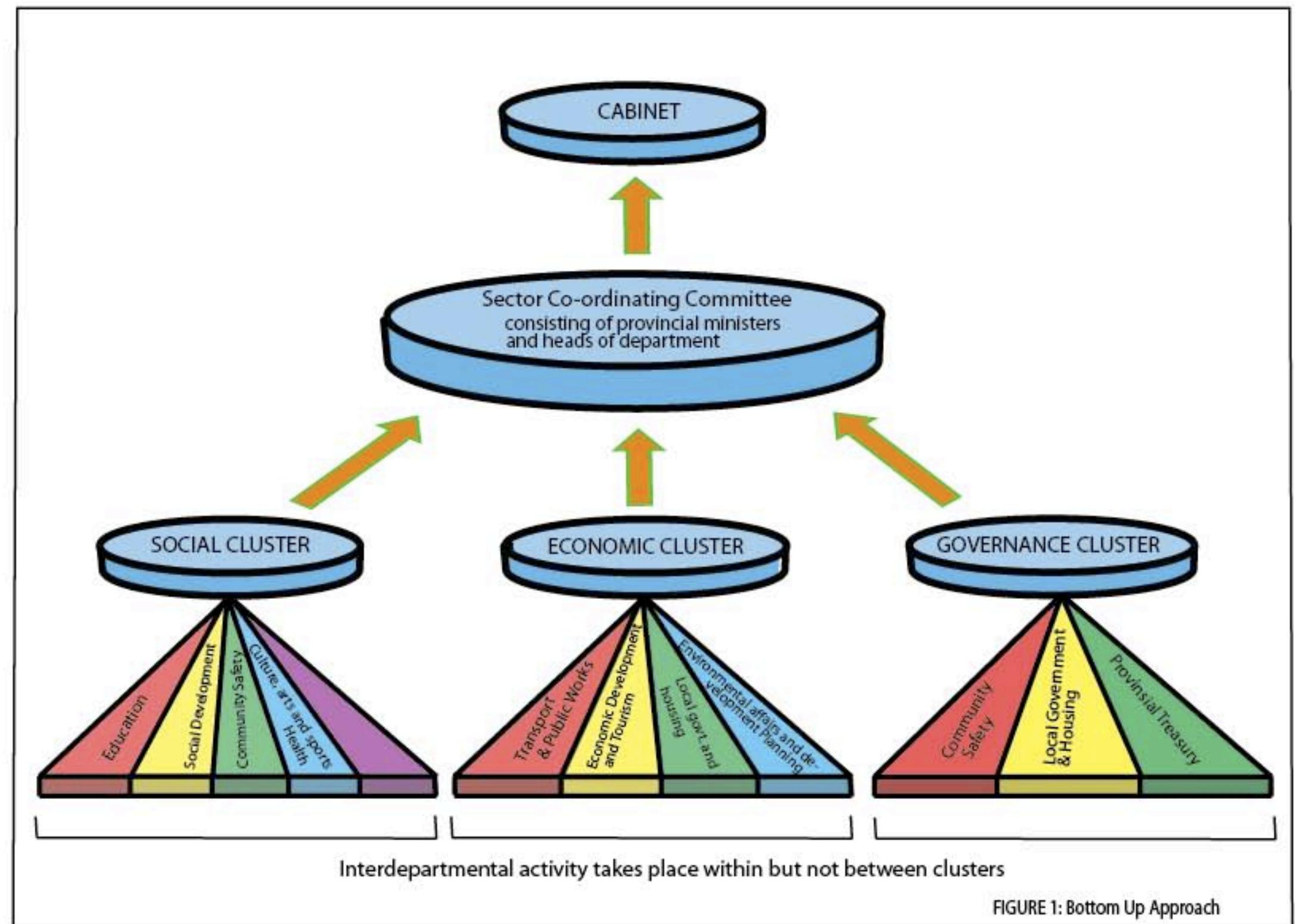


FIGURE 1: Bottom Up Approach

priority. An upstream and intersectoral approach is needed, but as the BoD project is led by the health sector, how easily can other government sectors and stakeholders become involved?

The Burden of Disease project is one of some 32 cluster-based multi-departmental cabinet committee work streams typically led by a single provincial government department. While key intersectoral linkages may be difficult to establish across clusters, these are drawn together at higher level sector coordinating and top management committees which report to cabinet. This bottom-up approach (Figure 1) achieves partial success but is insufficient for converting shared prevention goals into co-ordinated preventive actions. Strong support by influential individuals, including

ministers, does not guarantee the substantive participation by different sectors required to ensure the success of complex inter-departmental interventions, which then risk remaining silo-based.

The Western Cape Provincial government is in good company. Many governments have attempted to engage in intersectoral action for health since the 1978 Alma-Ata launch of the concept of intersectoral action and primary health care. The World Health Organisation continues through its Commission on the Social Determinants of Health to call on governments to harness the disease-reducing potential of social policies for tackling "the causes behind the causes" of the burden of disease.

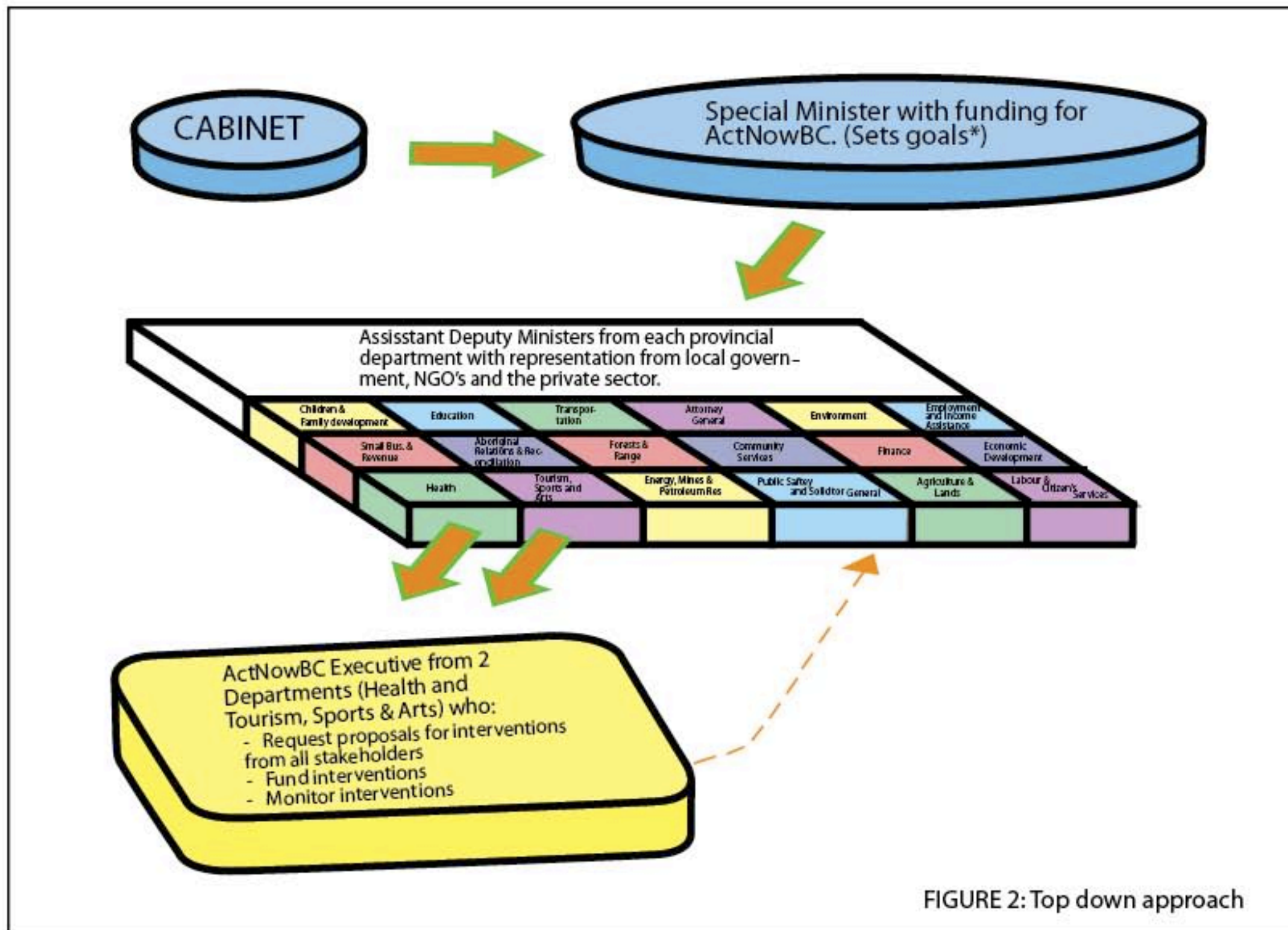


FIGURE 2: Top down approach

ActNow BC - a novel Canadian structure for Intersectoral Action for Health

In British Columbia (BC), the provincial government launched the 'ActNow BC' initiative in 2005, which aims to make BC the healthiest jurisdiction to host the 2010 Paralympic Games. The principal risks underlying their major contributors to the Burden of Disease include alcohol in pregnancy, tobacco, poor diet and lack of exercise. ActNow BC set modest and attainable goals and timeframes for risk reduction.

Their novel structure (Figure 2) facilitating intersectoral

planning and action for health consists of a special Minister for ActNow BC presiding over a council of Assistant Deputy Ministers representing all departmental sectors. A small executive structure shared between two Departments (Tourism, Sports and Arts, and Health) provides stewardship and co-ordination between stakeholders (including other provincial departments, municipalities, the private sector and NGOs) in achieving its goals. ActNow has its own budget and outsources intervention implementation, monitoring and evaluation of the interventions it funds. It is therefore a top-down and more complete intersectoral facilitatory approach to reducing priority risk factors.

It does this by entraining multiple sectors and agents to lead initiatives aimed at reducing risk factors at the infrastructural, social, individual and biological levels to promote health and wellbeing.

Differences between the Western Cape Province and British Columbia

The Western Cape is less developed and less well resourced with a much higher burden of disease and wider range of risk factors. Since unsafe sex is the top provincial and national risk factor, the leading role played by the Western Cape Provincial Government in successfully reducing the contribution of HIV/AIDS to the burden of disease needs to be sustained. The Provincial government needs to focus next on problems related to alcohol, violence and traffic-related injury. A more modest version of the Canadian model concerned with one or two key intersectoral interventions targeting alcohol and violence or traffic-related injuries might be feasible.

Targeting alcohol harms and violence and traffic-related injury risks is quintessentially intersectoral, and partnerships are key for successful action.

An appropriate, high-level provincial oversight structure, possibly located in the Department of the Premier, could be tasked with planning, implementation, monitoring and evaluation of intersectoral interventions for health.

Growing evidence demonstrates the benefits of intersectoral co-operation to society and to the achievement of the goals of each sector. The health of the Provincial population and the efficiency of public services (including health services) can only benefit.

Targeting alcohol risk

Successful interventions targeting alcohol risk include reducing access to alcohol, modifying the drinking context, drunk-driving counter-measures, and regulating alcohol promotion and advertising. The 2008 Western Cape Liquor Bill, which regulates the trade and therefore availability of alcohol, could be used to implement evidence-based policies to reduce alcohol-related harms, but the absence of a requirement for inter-sectoral accountability in its promulgation limits its scope and efficacy. The Bill aims to bring the numerous illegal shebeens into the mainstream liquor industry by equitable licensing and legislation to permit liquor outlets (taverns) in single-dwelling residential areas. Yet it is unclear about density norms which would limit the proliferation of such taverns. Enacting the Bill is likely to increase access to alcohol by extending hours and days of trade (Sunday sales), and the latest draft seems to lessen the role of the municipalities and communities. It also envisages education of liquor licensees to limit alcohol harm, whereas global evidence indicates that these interventions are ineffective and expensive since they depend on effective liquor and traffic law enforcement. Effective interventions include strategies such as increased pricing, shorter trading hours and reductions in the number of outlets.

A bill drafted by the Economic Development and Tourism Department, and supported by the Environmental Affairs and Development Planning Department (both in the economic cluster) may therefore actively increase a major underlying risk factor for violence, injury and other negative outcomes that departments in the social cluster must address – notably Health, Social Development and Safety and Security. Although concerns raised in public hearings and by affected departments will be addressed, the lack of coherence between policies that increase access to alcohol and those aimed at decreasing alcohol abuse and alcohol-related harms illustrate the urgent need for more effective and equitable inter-departmental or inter-cluster collaboration.

Targeting violence

The successful violence prevention programme example is from Bogota, Colombia, whereas in the Western Cape, high homicide rates were mainly firearm-related. Key success factors were the programme's institutionalisation within local government, guiding intersectoral principles prioritising social development and cohesion, political empowerment, and investment in public infrastructure. Partnerships between local government and academics were built on an understanding that interventions should be scientific research based and underpinned by reliable injury surveillance. Interventions systematically targeted high-risk times, places and activities (weekends, public carrying of firearms, and unrestricted alcohol sales), and ongoing epidemiological monitoring permitted continuous assessment and programme improvement. Owing to its success, similar programmes were rolled out in five other Colombian municipalities, with evidence of substantial reductions in homicide. This is applicable to the Western Cape, where significant reductions in violence could be achieved by moving from the criminal justice-driven approach to a multi-sectoral strategy which recognises that violence prevention is a key outcome of economic, social and human development policies.

Targeting traffic-related injury

For road traffic injury prevention, equity in planning and resource allocation are particularly important, since those who do not possess motor vehicles bear a disproportionate share of road injury and risk. Intersectoral partnerships are key to realising sustainable upstream interventions targeting infrastructural improvements, which should be prioritised ahead of downstream interventions that target behaviour change in road users. Non-motorised mass transit can also promote health and safety by improving air quality, and increasing walking and cycling. Multiple departments and stakeholders should be involved, especially the Department of Transport and Public Works. Cross governmental and interagency participation is essential given the existence of multiple national, provincial and municipal stakeholders, including the private sector, NGOs and research community. To support this strategy, the BoD project has proposed an integrated transport reporting and management information system including comprehensive information on transport collisions, injuries and fatalities, risk factors and usage patterns and includes all modes of transport, to several national, provincial and local government agencies.



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