



Western Cape Burden of Disease Reduction Project:

Volume 1 of 7: Overview of the report:

Myers J and Naledi T

&

Executive summaries of volumes 2 - 7

**Corrigall J, Pienaar D,
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Final Report 2007

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Contents of the Report as a Whole

There are seven volumes to this Report, including this one.

Volume 1 has a Foreword by Professor C Househam, Head of Health, Provincial Government Western Cape (PGWC), followed by an Overview of the Project to Reduce the Western Cape Burden of Disease, which seeks to identify appropriate interventions targeting upstream risks for the principal contributions to the Provincial Burden of Disease

Volume 2 describes the institutionalising of a mortality surveillance system in the Western Cape Province to measure the Burden of Disease and the impact of preventive interventions

The following five volumes address the identification of appropriate upstream interventions and ensuing policy recommendations for the following major contributors to the Provincial Burden of Disease:

Volume 3 — Major Infectious Diseases, including HIV/AIDS and TB

Volume 4 — Mental Health

Volume 5 — Injury, including that which is caused intentionally by violence; and that which is caused unintentionally through traffic crashes

Volume 6 — Cardiovascular Diseases. Ischaemic Heart Disease and Stroke

Volume 7 — Childhood diseases, including:

- a) HIV/AIDS;
- b) Diarrhoea;
- c) Low birth-weight;
- d) Acute Respiratory Infections; and
- e) Malnutrition

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Overview of the Western Cape Burden of Disease Reduction Project:

Volume 1

**Identification of appropriate
interventions targeting
upstream risk factors
for the principal components
of the Provincial Burden of Disease
and Recommendations for Policy**

Final report
June 2007

J E Myers and NT Naledi

Foreword to the Burden of Disease Project

Professor Craig Househam
Head of the Department of Health,
Provincial Government of the Western Cape

The Western Cape Province currently experiences a multiple burden of disease including infectious diseases (such as tuberculosis and AIDS, injuries from interpersonal violence and motor vehicle crashes), and chronic disease (such as diabetes, heart disease, and cancer). Mental-health disorders provide a further, unseen burden of disease, which are not generally reflected in mortality data but result in a major load on health facilities, especially with the burgeoning abuse of substances and in particular with regard to alcohol and “tik” in the Western Cape.

Understanding the burden of disease is fundamental to the planning and decision-making processes in health departments. Rather than being reactive to the pressures placed upon the health system, information is actively sought that will enable Government to act in a manner that begins to address - and indeed reduce - the burden of disease. The challenge remains as to whether, by intervening “upstream”, it is possible to reduce the burden of disease and significantly influence the disease profile in the province for the better. Seen from a health-sector perspective, if such actions are successful, it will enable resources to be directed to address diseases that currently cannot be managed because of to resource constraints.

To address this challenge, the Western Cape Department of Health commissioned a study over a three-year period by a consortium of universities in the Western Cape, led by the Department of Public Health and Family Medicine at the University of Cape Town. Many of the interventions, particularly those that are so-called “upstream”, in all likelihood will fall outside of the direct influence of the health sector. For this reason, the Burden of Disease Project will involve other provincial government departments, and organisations outside of Government. Within the Provincial Government of the Western Cape, the findings of the study will be handled within the Social Sector Cluster of departments and there is a commitment that recommendations will influence the manner in which resources are allocated in future.

This first report from the Burden of Disease study marks the first step in the journey to better understand the burden of disease and its causes in this province. It also indicates a commitment on the part of the Department of Health both to institutionalise the measurement and monitoring of the burden of disease, and to address the factors behind this burden in the Western Cape. I would like to thank all the researchers who have contributed to this report and Professor Jonny Myers, in particular, who has led the team.

Background

The Western Cape Province Mortality Report for 1997-2002 in Volume 2 of this larger Burden of Disease Project Report shows that the Western Cape suffers from a quadruple burden of disease, which comprises a “combination of pre-transitional conditions related to under-development, non-communicable diseases, injuries and HIV/AIDS”. This burden comes at a great cost.

The National Department of Transport, using national data from 1998, estimated that human casualty costs, vehicle damage and incident costs amounted to R 42,5 billion. More than half of these costs were related to human casualty (de Beer et al, 2004). This is more than double the annual budget of the Provincial Government of the Western Cape (PGWCa, 2007).

A recent study undertaken by the University of Stellenbosch suggested that, if the proportion of people receiving ARVs in the country increased to 50% of those in need, the effect of the epidemic on economic growth would be reduced by 17% (BER Stellenbosch, 2006). Another study (Leeder et al, 2005) estimated that by 2040 annual national disability grants for the 35-64 aged workforce would grow to eight times the year 2000 value to R4.2 billion, as a result of increasing cardiovascular diseases. This study further provided a perspective on the significant extent of traffic-related injury costs in South Africa at more than R20 billion in 1998.

To address the burden of disease, one needs to understand that determinants of health encompass both downstream biological and behavioural risk factors, and upstream societal and structural risk factors. The upstream risk factors touch on issues of development, such as: inequity, poverty, low income and unemployment, homelessness, social inclusion, and justice.

It is commonly understood that health is one of the outcomes of development. McKeown (1979) showed that historically decreasing death rates from infectious diseases in the United Kingdom happened prior to the advent of antibiotics or other effective medical interventions and were rather a consequence of improved nutrition, quality housing, cleaner drinking water and improved sanitation.

While health status is indeed a consequence of development, health effects are both positive and negative. Even though agrichemicals, applied to agricultural production, have had a significant positive impact on food supplies and food security, there has also had been an adverse impact on the epidemiology of malaria arising from increased resistance to insecticides. (WHO, 1976)

Although the mining industry in South Africa, moreover, has made a significant contribution to the economic development of the country, its operations have nevertheless taken their toll of mineworkers and their communities. Apartheid policies of segregation and social and economic inequality on the mines, for example, resulted in a large TB epidemic among African miners, from which the country has never recovered (Packard, 1989). The migrant labour system on which mining and other production was predicated has also played a significant role in the social disruption which in turn was largely responsible for the spread of the HIV epidemic in the region.

Conversely, the World Health Organisation estimated in 2003 that there were more than 1 billion overweight adults worldwide and that at least 300 million of them are obese as a result of rising income; a diet high in fats, saturated fats and sugars; less physically demanding work; automated transport; and labour-saving or entertainment technology in the home, resulting in less active leisure activities.

Globalisation brings great prospects for faster communication, the transfer of knowledge, and new technologies that can benefit health. Yet at the same time it brings market-force challenges which have manifested as an exodus of health professionals from developing to developed countries in search of stronger currencies, such as the dollar and the pound. (Friedman, 2004). This poses serious challenges to health security in affected countries as it impacts negatively on the capacity of health services to respond adequately to service needs.

While faster communication, transfer of knowledge, rising incomes, increased automated transport and less physically strenuous work are desirable and apparently improve the quality of life, they also impact negatively on health through the reduction of exercise and increase in overeating in relation to physical energy expenditure. These changes are marked as society undergoes the epidemiological transition from mainly infectious diseases to the combination of these with chronic diseases typical of developed societies. As an instrument to attain the goal of universal health, therefore, Public Health Policy must comprehensively address both positive and negative aspects of the determinants of health by highlighting the interdependence of individual, socio-economic and structural factors in disease prevention. Opportunities for collaboration among different sectors to address issues of development should be grasped and used to impact positively on human health.

The Millennium Development Goals adopted by 189 countries at the United Nations Millennium Summit in 2000 is partly a response to this need, and places health at the centre of the development agenda, while focusing on improving child health; maternal health and controlling epidemic diseases such as HIV/AIDS, TB and Malaria, but also at the same time targeting a reduction in poverty and malnutrition; the promotion of education; women's empowerment – all social determinants of health.

In 2005 the WHO instituted the Commission on the Social Determinants of Health (CSDH, 2007) which provides direction on how to address social factors leading to ill health and health inequities. The formation of the Commission is a clear sign that internationally the agenda to address the upstream risk factors is being strengthened.

While it is accepted that health is a developmental outcome, the [opposite view that health can be a driving force for development and economic upliftment has not been fully recognised. The Commission on Macroeconomics and Health asserts that, if upstream risk factors were controlled in conjunction with improved health services to address the downstream risk factors,

... impoverished families could not only enjoy lives that are longer, healthier, and more productive, but they would also choose to have fewer children, secure in the knowledge that their children would survive, and could thereby invest more in the education and health of each child...the improvements in health would translate into higher incomes, higher economic growth, and reduced population growth.

(Sachs, 2001)

The positive impact of improved health on development, which in turn can impact positively on health once again, may well constitute the potential motor of a virtuous cycle, with the end result being overall better health for the individual and the whole population.

The Provincial Government of the Western Cape, in line with the national imperatives of the Accelerated Shared Growth Initiative of South Africa (ASGI-SA), has developed the Western Cape Provincial Growth and Development Strategy (PGDS), which aims to change “the spatial, social, economic and human landscape of the province in pursuit of a new vision: A Home for All” (iKapa elihlumayo, 2006). In this regard, the PGDS has eight strategic objectives, namely:

1. Broadening economic participation;
2. Efficient “connectivity infrastructure”;
3. Effective public and non-motorised transport;
4. Liveable communities;
5. Resilient and creative communities;
6. Greater spatial integration;
7. A culture of tolerance and mutual respect; and
8. Effective governance institutions.

As argued above, the pursuit of many of these strategic objectives would have positive impacts on public health, because good health is a critical pre-requisite for development and, conversely, the achievement of these objectives would significantly impact on health security.

Knowing full well that the attainment of these goals requires the concerted action of the health sector, together with other social and economic sectors, the Provincial Government of the Western Cape (PGWC) duly mandated the Western Cape Department of Health to lead the process of delineating the specific components of the Burden of Disease in the Province. The Department was further tasked with providing evidence-based recommendations as to how these burdens might be reduced as a consequence of inter-sectoral collaboration in addressing the critical determinants — especially the upstream determinants — in order to build and sustain health security.

Introduction

Professor Craig Househam, Head of Health in the PGWC approached Professor Jonny Myers at the University of Cape Town School of Public Health to organise a brainstorming session with participation from Public Health Departments and Schools and other research agencies, such as the South African Medical Research Council (SAMRC) in the Province on how the burden of disease (BoD) in the province might be reduced, not just through preventive health interventions such as health promotion, and primary, secondary and tertiary prevention, but also through interventions that are more multi-sectoral and developmental in nature. A project was mooted on how the provincial BoD might be reduced: a desire that was consonant with the overall strategy of the PGWC for growing the Western Cape (iKhapa elihlumayo, 2006), and further taking[especial cognisance of the link between development — including social capital formation — and health.

A meeting was held on 12 September 2005, which established an advisory Project Reference Group (PRG). Further meetings resulted in the formation of a Project Management Team (PMT), and the work began with the scoping of relevant data and information, culminating in a proposal with the following aim and objectives:

Aim

To advise on how to reduce the burden of disease and promote equity in health in the Western Cape Province.

Overall Objectives

- To determine the extent of the burden of disease in the Western Cape Province along with the causes/risk factors disaggregated to BoD components and suitably prioritised;
- To determine the extent of the capacity and role of the Provincial Government and Non-Governmental Organisations and their responses in this regard;
- To identify and prioritise appropriate interventions to reduce the burden of disease and their associated risk factors, and to construct a framework for reducing substantively the measurable burden of disease;
- To formulate an approach to the phasing in and scheduling of interventions and activities within a designated time-frame.
- To enable the monitoring and evaluation of the disease burden and the associated risk factors, as well as evaluating the performance of interventions which targeted risk over time
- To bring about a sustainable and continuous reduction in BoD over time.

Process and methods

Organisation and Management of the Project

Professor Jonny Myers led the Project and the main contract was signed between PGWC and UCT, while subcontracts were drawn up by UCT to govern the relevant contributions from the other institutional partners. Dr Tracey Naledi was the PGWC Health Department leader.

The structure that crystallised during the course of the first year of this project comprised two workgroups. Work Team 1 was tasked with looking at Burden of Disease surveillance data and systems. Work Team 2 comprised five Expert Workgroups each with its own Champion. Expert Workgroup Champions, together with the Workgroup 1 Leader, and the PGWC Health Department and UCT School of Public Health leaders of the Project, constituted the Project Management Team (PMT).

Preparatory activities proposed for the immediate period to 1 April 2006 and for the first year 2006/7 involved an initial general scoping and synthesis of the Burden-of-Disease (BoD) components, their associated risk factors, and the most appropriate interventions which might reduce both the BoD and the risk factors in the Western Cape Province. An additional consideration was the identification of new work to be done by the Project in supplementing information about the existing BoD; modifiable risk factors and their appropriate interventions, and relevant policy outputs. By the end of January 2006, the scoping had been completed and an inventory of public (and private/NGO) sector intervention was compiled which described the known risk factors for the principal BoD components in the Western Cape Province. (See Appendix 1)

Work Process

The work envisaged for the first year of the Project until the end of March 2007 comprised six proposals, which were approved by the Provincial Head of Health in February 2006 and are shown in Table 1 on the following page.

During the course of the first year of the Project the first four proposals became the work of Work Team 1: a series of sub-projects which sought to develop and institutionalise a mortality- and morbidity-surveillance system in the Provincial Health Department. The main task of Work Team 1 in the Burden of Disease (BoD) Project, therefore, has been to develop empirical mortality data to feed into the Burden-of-Disease estimation process, and thereby examine the prospects for, and prepare for the institutionalisation of, mortality surveillance within the Provincial Government system, in particular within the Department of Health.

Table 1: Proposals for the Burden of Disease Project 2006/07

PROPOSAL 1: To produce estimates of the Provincial Burden of Disease for the Western Cape , using both morbidity and mortality data, both at a provincial level and at the level of the six districts, for the year 2005.
PROPOSAL 2: To optimally design a rapid mortality-surveillance system for districts with expert public health support from the MRC and UCT Public Health, and assist with its institutionalisation and rollout.
PROPOSAL 3: To ascertain the available information on the incidence and prevalence of mental-health morbidity, both nationally and in the Western Cape Province, in order to derive estimates of the BoD in Disability adjusted life years (DALYs) due to mental illness in the Province and explore the scope for conducting morbidity surveillance.
PROPOSAL 4: To ascertain the availability of current facility-based morbidity data within Western Cape health information systems, and its potential utility for input to the provincial Burden-of-Disease estimation.
PROPOSAL 5: To produce an inventory of public (and private/NGO) sector interventions that are aimed at reducing BoD risk factors
PROPOSAL 6: To compare the audit of interventions with a master list of interventions, in order to identify gaps and to evaluate existing interventions within the context of a surveillance system.

The BoD measure involves calculations using mortality and morbidity. Mortality is the main component of the BoD (with the exception of mental-health disorders) and morbidity estimates can usually be derived from a knowledge of morbidity/mortality ratios in the WHO Global Burden of Disease Study [Murray and Lopez, 1996].

The MRC Burden of Disease Unit, which is the principal contributor to the Provincial BoD Project, has produced estimates of the BoD, both for South Africa as a whole, and provincially for the year 2000. The MRC is also currently preparing a comparative risk assessment, which examines risk factors for the various components of the BoD for the year 2000 for South Africa and which appears as Appendix 1 in Volume 2 of this report. Work Team 1 has also conducted analysis of the HIV/AIDS epidemic and produced population estimates.

Official mortality statistics are currently produced several years after the actual events. Since 1997, moreover, official mortality statistics have not been broken down by Province but are available on a national basis only.

The principal task of Work Team 1, therefore, has been to provide more timeous, more valid, and more spatially disaggregated mortality data than are currently available from the official system of data collection, based on StatsSA. Four different and innovative approaches have been adopted in their efforts to improve the quality of existing mortality data.

In order to provide a more up-to-date mortality assessment, Work Team 1 has mainly been involved in developing systems that can be sustainably

institutionalised within Provincial Government structures, and which are capable of providing mortality data for the Western Cape that are accurate, timely, and capable of fine spatial disaggregation within the Province. What is being sought is a combination of the following:

- data collected directly from Home Affairs, which are coded and analysed within the province;
- input from both UCT and the MRC;
- an audit from the population register; and
- injury data from the mortuaries.

The output from this data processing effort will provide the Province with an institutionalised and integrated, rapid mortality-surveillance system, which can not only be used for BoD estimates, but also for the monitoring and evaluation of Provincial inequity and the interventions intended to reduce the Provincial BoD.

Work Team 1 is also currently trying to improve estimates for morbidity arising from mental-health disorders, as this BoD category has a larger morbidity than mortality component.

Work Team 2 completed Proposal 5 by the end of 2005, and Proposal 6 was transformed into five Expert Groups tasked with an in-depth evaluation of those priority interventions which were designed to address upstream risk factors for the optimal reduction of the Provincial Burden of Disease. The Expert Group areas were identified by considering the magnitude of the contribution of specific diseases and/or risk factors to the total burden of disease in the Western Cape. Table 2 lists the BoD components in their order of importance with regard to their contribution to the years of life lost (YLL).

Table 2: Burden of Disease components in decreasing order of contribution to premature mortality as Years of Life Lost (YLL)

Outcome (disease group)	% YLL	Major risk factor(s) for this outcome
1. Major Infectious Diseases	22	Unsafe sex
2. Injury	19.8	Alcohol abuse
3. Mental Disorders	---	Early Childhood Development
4. Cardiovascular disease	10.5	Obesity and Exercise
5. Childhood diseases	>6	Environmental factors

(Source: Bradshaw et al, 2004)

Expert Groups were established by appointing a small team of authors, lead by a designated "Champion", and assisted by referees with the relevant knowledge and experience. Peer and expert reviews were also sought, where possible. A review and synopsis of the evidence for risk factors was conducted and priority risk factors selected in order to focus

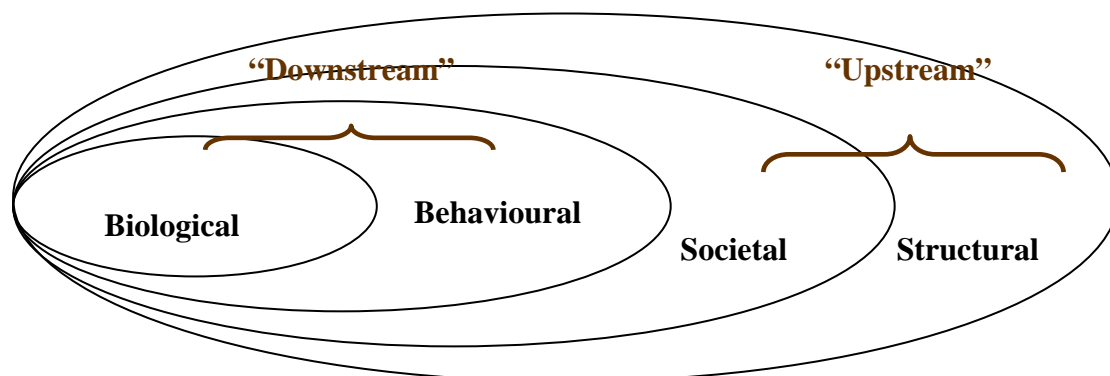
on associated interventions. Evidence for the effectiveness of such interventions were considered according to a range of criteria:

- equity;
- cost-efficiency;
- cost-effectiveness;
- their scope in terms of the coverage and intensity of the implementation for the relevant target group;
- their strategies for the mobilisation of stakeholder support;
- their synergy with other interventions targeting the five priority BoD components;
- their alignment with existing policy initiatives; and
- their appropriateness for the Western Cape regional context.

The Conceptual Framework

The term “upstream causes” refers to those socio-structural factors that are considered to be the “root causes” of illness, while “downstream causes” typically refer to the “final”, 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. A simplified version of this is presented in Diagram 1 below. It may be seen that the interventions against upstream factors and many of the interventions against even downstream risk factors (e.g. alcohol consumption), are themselves upstream (e.g. directed at legislation, 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



Some of the Expert Groups used variants of the basic framework shown in Figure 1 on the previous page, and these are fully detailed in the relevant reports.

The functions of the Expert Groups included:

- Scanning the range of interventions, including an audit of interventions in the Western Cape system;
- The critical evaluation of the evidence for these interventions, using various approaches and criteria; and
- Compilation of a final list of interventions, clearly delineating upstream interventions against important risk factors from downstream ones, defined as either health systems interventions or proximal interventions for the health outcome in terms of the conceptual model.

The list is a product of a critical-evaluation and expert-consensus process and comprises either –

- interventions for which there is good evidence (albeit not always local in the sense of developing countries, South Africa or even the Western Cape) in terms of the criteria listed above; or –
- interventions which are considered by a process of expert-consensual validation to be promising interventions worthy of serious consideration, whether this be through provisional implementation (piloting) or experimentation. Evaluation research covers both of these possibilities.

Project results and outputs

Description of the Project outputs appearing in this Report

The Report begins with this Overview as Volume 1. The work of Work Team 1 is reported in Volume 2, which presents three papers on mortality and the burden of disease in the Cape Town Metropole, the Boland-Overberg Region and the Western Cape Province as a whole, and makes recommendations concerning the need for the continued institutionalisation of BoD surveillance systems in the PGWC.

This is followed by five further volumes (Volumes 3 through 7), each of which deals with the report of one of the five Expert Groups that dealt with the top five BoD components. Detailed recommendations for interventions, along with a built-in executive summary, are to be found in each report, which brings together the best of global evidence and expert opinion with local knowledge and experience. The order of appearance follows the degree of contribution to the overall burden of disease in the Province, namely:

- Volume 3: HIV/AIDS;
- Volume 4: Mental Health;
- Volume 5: Injury (subdivided into that resulting from violence or traffic crashes);
- Volume 6: Cardiovascular diseases; and
- Volume 7: Childhood diseases.

This latter volume consists of an overall Executive Summary dealing with contributions on: HIV/AIDS; diarrhoea; low birth-weight; acute respiratory infection; and malnutrition.

Work Team 1 Results

Important findings from the work of Work Team 1 include the demonstration that the Cape Town Metropole and the Boland-Overberg Region are experiencing rapid change in their patterns of mortality. Shifts in the ranking of BoD components are also in evidence and these include worrying, encouraging, and some surprising changes. That there is not a static picture of BoD in two significant districts in the Western Cape underscores the importance of a mortality-surveillance system that is up to date and can assist with the targeting and evaluation of interventions aimed at vulnerable groups or areas at different times. In short, a surveillance system of this sort is a critical requirement for intelligent and efficient Government functioning.

Another key finding relates to sub-Provincial spatial patterns of inequity - whether past, current or developing. Such patterns would normally be invisible, given the current mortality resolution down to the Provincial level only.

Worrying findings relate to the recent increases in HIV/AIDS and TB mortality and the interlinked nature of these epidemics, suggesting the necessity for suitably linked interventions. Chronic diseases, such as diabetes, are moving up the rank order rapidly and - as a category - constitute a leading cause of mortality affecting important sub-populations. Tobacco-smoking still constitutes a serious risk. The epidemiologic transition is responsible for high burdens of all the major components of BoD in the Province.

Encouraging findings show the impact of interventions such as PMTCT and ARV programmes on child mortality. Injury mortality is declining, although still unacceptably high, and continues to be linked to risks associated with youth, male gender, alcohol, and other substance abuse. At a low level of spatial disaggregation, Khayelitsha and Nyanga, while having a considerably higher BoD than other sub-districts in the Metropole, and despite an increase in HIV/AIDS mortality, have experienced a decrease in overall mortality due to a decrease in injury mortality. This is partly due to a multi-sectoral intervention led by the Department of Safety and Security in these suburbs.

Unexpected findings include an increase in child mortality from low birth-weight which may result from increased in-migration from neighbouring Provinces, eviction of farm labourers, and an increase in poor, informal settlement conditions.

For the Western Cape Province overall, the mortality profile is distinctly different from the national profile, particularly with respect to the HIV/AIDS epidemic, which is at a lower scale, while injuries and non-communicable diseases are more pronounced. There are marked gender differences in registered deaths with more male deaths, child mortality generally being higher for males, and a high injury burden for male deaths, due to TB, cardio-vascular and respiratory causes linked to excessive misuse of tobacco and alcohol. There is a rapid increase in adult HIV/AIDS-related deaths in the age groups between 20 and 59 in males, and 15 and 49 in females. Stroke is a major cause of death in the province.

Work Team 2 Results

While the detailed information provided in the report chapters makes for useful, and probably required, reading for readers with specific policy, management and technical tasks within the Provincial Government, we have also endeavoured to make the information in the report more readily accessible to the reader with a more general interest. This has been accomplished in two ways:

- a) Each chapter of the report has a comprehensive executive summary so that all reports are easily and rapidly accessible to those who are both interested in the detail and those who are not. The recommended interventions feature prominently in these executive summaries. Moreover, these executive summaries also appear as appendices in a special Overview chapter. Details of the recommendations, however, should be sought from the reports themselves, as the overall intervention title in the executive summary may not be all that

informative (e.g. “improve school mental health services” or “roll-out ECD”). The important details which distinguish these recommendations from what government is already doing in many cases are to be found in the text of the report chapters. While government is clearly already focusing in some of the right intervention areas, the devil is often in the detail.

- b) A synthesis of all the recommended upstream interventions from all chapters has been undertaken at high level. It was decided to avoid a “telephone directory” approach where abbreviated titles for all interventions are tabulated, as this was felt to be insufficiently informative. Rather Table 3 on the following page shows some high-level detail for the content and locus of interventions in terms of the generic conceptual model used in this Report. In particular the table shows only upstream interventions at the macro- or infrastructural level where policy is made, together with interventions at the governmental, social or community levels, where policy is implemented.

While a focus on upstream interventions may appear at first sight to be artificial, this is done to be faithful to the mandate of this work. One should never lose sight, however, of the very important health-sector interventions aimed at the individual, which also have an impact at the population level. For at least two of our top BoD components, namely Mental Health and Major Infectious Diseases, health-sector level interventions have potentially substantial impact at population level. The reason for this is that more downstream health-sector interventions targeting individuals can have important secondary or recursive prevention effects in reducing the BoD at the population level by interrupting the transmission of infectious agents or the propagation of psychological trauma within family units. Two ready examples are the effects of ARV therapy in reducing the rate of transmission of the HI virus, as well as reducing morbidity and mortality among those who receive it; and the impact of mental health services on the mental health of family members of patients with mental disorders. These interventions are therefore just as deserving of attention by policy-makers as more upstream interventions.

Table 3 is suggestive of which government departments may potentially be involved in the recommended interventions. As the thrust of this report is to highlight inter-sectoral interventions (the upstream focus,) we have attempted in this way to take some small tentative steps in linking departments in current and future inter-sectoral interventions. This linkage will obviously take different forms. One form might involve the leadership of the DOH, where the intervention is located within the health sector with important linkages to other sectors (e.g. oral rehydration therapy and water and sanitation services). Another involves a facilitative role by the DOH where interventions that have potential BoD impact and that fall under the aegis of other departments may be influenced by a health-perspective input or introduced as suggestions to other departments (housing design for ventilation and crowding, or traffic crash information systems).

Table 3: Categories of recommended upstream interventions	
Macro-level interventions	
Income inequality	Building the informal sector
Built environment	Housing
	Neighbourhood renewal
	Water and Sanitation
	Transport infrastructure
Environment	Air, water and soil pollution;
	Foodstuff contamination
Systemic requirements to target risks and effects of risk reduction programmes	Information systems
	Intergovernmental collaboration
Strengthening communities	
General	Community leadership
	Community participation
	Literacy
Media and communication	Advertising
	Communication campaigns
	Reduction of violence in the media
	Monitoring & intervention
	Product labelling

Address substance abuse	Regulations
	Psychological trauma
	Sports and recreation
Improved community safety and security	Firearms control
	Improving the criminal justice and social services/assistance
Workplace setting	
Education and childcare setting	Early Childhood Development
	Diet and exercise programmes at Schools

Selected Interventions highlighting successes or promise, based on global or local evidence (including the Western Cape Province, a world leader in HIV/AIDS interventions)

A few interventions are selected from the body of the Report, and presented below to illustrate some of the exciting possibilities for successful interventions which - if they were to prove feasible in the local context - would constitute the value of this Project. The selected interventions are not meant to be representative for all the BoD components and their associated risks addressed in this Report.

Major Infectious Diseases (MID)

Recommendation

Appropriate mass media messages, delivered on a large enough scale, can improve health-seeking behaviour and reduce stigma. TB/HIV integration can start at the VCT site by "empowering people with knowledge".

Unified, coherent messages, such as -

"TB is curable, if you finish a full course of the treatment"

and -

"ARVs can prevent death, if you test early for HIV"

- need to be transmitted to health workers and the general public alike via an extensive, mass-media campaign. These messages need to be simple, memorable, sustained, located beyond the sphere of the health services and should deliver similar content at every level of the treatment and prevention program. Apart from improving health seeking behaviour, their role is to reduce stigma and enhance community support.

Evidence and examples

There is accepted evidence that VCT can create positive behaviour change, while a recent Cochrane review [Vidanapathirana et al, 2007] has concluded that mass-media interventions have immediate and overall effects in the promotion of HIV testing.

Standardised models for VCT include: pre-test counselling, testing, post-test counselling and referral for further biomedical and psychological support. Protocols for VCT need to consider varied user groups, including pregnant women, couples, children, youth, sex workers, and adults and

children who have been sexually abused or assaulted. TB information is not currently emphasised in post-VCT test debriefing.

A study in a community of high HIV prevalence in Cape Town [Wood et al 2007], estimated that 63% of community adult cases with PTB remained unrecognised by the health services. This has clear implications for the health services, in terms of increased morbidity and mortality.

A media-based (radio) health education campaign on tuberculosis in Colombia in 2001 resulted in a 64% increase in the number of direct smears and 52% increase in the number of new cases of positive pulmonary TB [Jaramillo, 2001]. This showed that basic information can improve diagnostic coverage and strengthen the effect on infection risk by control programs with high cure rates.

With sufficient advertising of the importance of testing for HIV and TB in high risk areas, the VCT site could serve as the first point of contact of health services. This is worth developing because - in the current situation - TB clinics, STI sites, antenatal clinics, primary health-care facilities and hospitals serve as the HIV-testing point for most of those who enter the HIV/ART program.

Despite VCT counsellors receiving TB training, there is a large perceived gap in TB awareness at medical and non-medical VCT sites. While it is understandable that patients may not be receptive to TB information immediately after receiving an HIV-positive diagnosis, the VCT site itself could serve as a potential repository for diverse health information.

This should be explored with a view to disseminating TB information at these sites either through the employment of additional staff, or other ways, such as specifically designed methods, including media, which have been designed to be catchy, understandable, attractive, and easy to read (compared with what is currently on hand at the clinics).

These media need to be the starting point for propagating a number of clear/unambiguous messages, shared by patients and health workers at TB/HIV services alike. Possible messages could include for example: **“TB is curable, if you finish a full course of treatment”** and **“ARVs can prevent death, if you test early for HIV”**. The full content and wording of these messages need to be explored further through wider consultation and focus-group involvement.

Requirements include: establishing the current media status quo; auditing existing VCT messaging; and developing new media messages. The goals would be: to strengthen VCT sites; get more people to VCT sites on the basis of sustained positive media-messaging; and to use VCT sites for enhanced preventative behaviour and health knowledge.

Mental Health

Recommendation

Invest in Community Development projects in the most deprived areas of the Western Cape (as identified by the Multiple Deprivation Index); compulsory savings, micro-finance, training and gender equity should be key components of these interventions. Health issues should be explicitly included through, for example, a community health worker who is trained and then does health-promotion type work, or via the establishment of community groups (e.g. a “new mothers” group)

Outcomes .

- Poverty alleviation
- Improved mental health
- Reduced domestic violence
- Improved child nutrition
- Improved child survival
- Empowerment of Women
- Economic Growth

Evidence and examples

The ***Bangladesh Rural Advancement Committee (BRAC)*** is the world’s largest NGO in terms of the scale and diversity of its interventions (Chowdhury & Bhuiya 2001). One of its projects is the ***Rural Development Programme (RDP)***, which is a poverty-alleviation and women’s-empowerment programme that has reached nearly 3 million poor women in more than 50 000 villages in Bangladesh.

In each village, a Village Organisation (VO) is formed by the poorest villagers. Activities of the VO members include awareness and advocacy for human rights and the initiation of a compulsory savings programme. BRAC staff train members of the VO in different trades (e.g. village health worker, poultry vaccinator) who then provide for the members of the VO and sell their services to other villagers for a small fee. After a month of membership, VO members may apply to BRAC for an individual loan which is granted for use in income-generating activities or for housing.

Several studies have been conducted to evaluate the programme; BRAC members’ financial status improved after joining the project and BRAC households spent significantly more money on food and had greater amounts of money left over for other expenditures than non-BRAC households. BRAC families also had lower rates of malnutrition, improved child survival and improved mental health. The effect on physical violence against women was mixed; members who had savings and credit without training reported more domestic violence, compared to non-members, but those who had savings, credit and training reported significantly less violence than non-members (Chowdhury & Bhuiya 2001). The effect of

training on reducing mental distress was also noted and highlights the necessity of providing appropriate training so that participants are able to utilise their credit effectively. While this study is not without its limitations¹, the evidence is convincing.

A similar micro-finance intervention was tested in the Limpopo Province of South Africa; the ***Intervention with Micro-finance for AIDS and Gender Equity (IMAGE)*** combined a micro-finance intervention for poor women with a participatory curriculum of gender and HIV education using a community-development approach (Pronyk et al 2006). The efficacy of the intervention was tested using a randomised-controlled trial design and found significant improvements in household assets, communication with household members about sexuality, and a reduction of intimate partner violence in women receiving credit compared to controls.

Recommendation

Home-visiting interventions for new parents in high-risk areas (as defined by the Multiple Deprivation Index) should be undertaken and evaluated. Ideally, programmes should seek to employ local community members and provide them with the necessary training and resources.

Outcomes

1. Child

- Improved cognitive abilities
- Reduced emotional/behavioural problems
- Reduced child abuse
- Reduced incidence of unintentional injuries
- As adolescents: reduced substance use, reduced criminal behaviour

2. Mother

- Improved parenting skills
- Reduced post-natal depression
- Improved maternal employment
- Improved maternal education
- Improved social capital

¹ See Volume 4: Mental Health Workgroup Report (Burden of Disease Project) for a full discussion of the limitations

Evidence and examples

In a meta-analysis of home-visiting interventions in the USA, Sweet and Appelbaum (2004) found that most (76%) of the programmes targeted high-risk families, while the types of services included:

- | | |
|---|-----------|
| ➤ parenting education | 98% |
| ➤ social support | 58.3% |
| ➤ parent counselling | 41.7% |
| ➤ information on child development | 91.7% and |
| ➤ child health or developmental screening | 33.3% |

Most programmes began between birth and three years of age and most (75%) employed professionals, while 45% also employed para-professionals.

The results of the meta-analysis indicate that, overall, children in families who received home visiting fared better than did control-group children in terms of cognitive, socio-emotional and child-abuse outcomes. Parents also benefited, with reported improvements in parenting skills and maternal education. A systematic review of experimental studies on the impact of home visiting by Kendrick et al (2000) showed that home-visiting programmes are effective in improving parenting skills, the home environment, and the child's intellectual development, and in decreasing child behavioural problems, while tending to improve the detection and management of post-natal depression, as well as acting to reduce the frequency of unintentional injury.

One study indicates that the benefits derived from home-visiting interventions may persist until adolescence: randomised controlled trials of a two-year nurse home-visiting programme for pregnant teenagers showed reductions in child abuse, increased maternal employment, and reduced substance disorders and criminal behaviour in the children at age 15 years in the intervention groups (Saxena et al 2006).

The Community Mothers Programme is a community-based intervention that recruits and trains volunteer mothers in low socio-economic areas to provide support and general health advice to new mothers in their community. Outcomes include improved maternal mental health, parent-child interaction and child nutrition. Follow-up studies at seven years after the intervention found that these benefits had been sustained and extended to subsequent children (Jané-Lopis 2005). Furthermore, the intervention was found to have additional spin-offs for the volunteers who had become involved in other community projects including adult literacy and counselling. This intervention has been replicated in Ireland, Australia, the Netherlands and the USA where similar outcomes have been demonstrated (Jané-Lopis 2005).

Cardio-Vascular Diseases and Diet

Recommendation

Develop and test a school-based programme based on successful examples from other countries. It should include a classroom curriculum on diet & health (as applied to CVD) which is provided by trained teachers; a physical activity programme in which all children participate; a healthy school environment; and parental involvement. Parents can be included by having special open days at the schools and by sending information to them through the children. They can also be involved in the planning of such a programme at the pilot schools selected. A healthy school environment means that no smoking is allowed anywhere in the school and grounds; there are adequate sport facilities; and the tuck shop or feeding scheme provides only healthy food options.

Outcomes

- Children will have a healthier food intake at school
- Children will gain knowledge required to make healthy lifestyle choices
- Children will be more physically fit and this, together with a healthier diet, can prevent overweight
- Children and their parents will gain knowledge regarding CVD and its determinants
- A smoke-free environment means that children will not be exposed to their teachers (role models) smoking in front of them
- Teachers will also gain the knowledge and skills required for a healthy lifestyle.

Evidence and examples

The Know Your Body Programme (KYBP) was one of the best school interventions evaluated (Manios et al. 1999). The KYBP was undertaken in a developing setting (the island of Crete) among primary-school children in Greece. The children were targeted over a period of six years from grade 1 to 6. This programme was based on social-learning theory and included three important components: a classroom curriculum on diet and health, which was provided by trained teachers; a physical activity programme, in which all children participated; and parental involvement. Parents were included by having special open days at the schools and by sending information to them through the children. Altogether 45-50 hours were spent on the intervention annually. Not only did this programme significantly improve weight status but it also showed the best practice with regard to behavioural and social outcomes. After six years there were significant improvements in knowledge among the children and in their intake of energy, fat, mono-unsaturated and saturated fats. The researchers ascribe the success of the programme to the long period of

the intervention as well as the high parental involvement and the compliance of the teachers.

PATHWAYS also showed best-practice outcomes for behaviour and for psycho-social outcomes among Native American children in the United States of America. The programme was very successful in changing behaviour, knowledge, self-efficacy and food choice intentions, even though there were few significant clinical changes (Caballero et al.2003). This intervention took place over a period of three years and was targeted at 8- to 11-year-old Native American children. The intervention placed a strong emphasis on cultural identity, and used educational methods such as story-telling. The programme comprised a nutrition and health curriculum offered by trained teachers; a physical activity programme for learners; and changes to meals offered in the school canteen. There was also a strong parental focus.

Cardio-Vascular Disease and Exercise

Recommendation

Develop a mass-media campaign targeting 25-60 year olds in the Western Cape Province. Select a clear message to encourage physical activity; such as the slogan used by Australia: **“Exercise regularly, not seriously”** Use newspapers, magazines, radio and television to promote the slogan. It is important to inform all NGOs, health professionals and health educators before the campaign starts, in order to ensure their cooperation.

Outcomes

- Health professionals will become more aware of the importance of physical activity.
- Adults in the population will become more aware of the importance of physical activity and may, in turn, increase their own activity levels. (In Australia, 25% of the population increased their levels of physical activity.
- Adults who participate are likely to become more physically fit and require less medical attention.
- There will be additional benefits such as a decrease in smoking
- Physical activity has been shown to have a strong preventive effect on the development of diabetes.
- Physical activity promotes weight loss (or weight gain).
- Physical activity has a lowering effect on blood-pressure.
- Messages will also reach other groups, such as adolescents.

Evidence and examples

Agita Sao Paulo (Matsudo et al.2001) in Brazil is a well-recognised campaign and brand, with more than half of the Sao Paulo population aware of the campaign. In addition, in a random household survey conducted in 1996 and repeated in 2000, the proportion of men and women who were meeting the CDC and US Surgeon General's physical activity guidelines increased from 30% to 55%. The World Health Organisation recognised Agita Sao Paulo as an exemplar initiative, thereby providing a role model for other countries, particularly those in the developing world. (WHO Workshop on Physical Activity and Public Health, Beijing, October 2005)

Agita Sao Paulo is still ongoing after its launch in Sao Paulo in 1996. There are two main types of activities. Firstly, mega-events are those which aim to reach a large number of people simultaneously (at least 1 million) and are used to launch new programmes or to strengthen existing ones. They are also linked to existing cultural and seasonal events, holidays or celebrations.

The second type of activity is led by the partner institutions, such as government, NGOs, or the private sector, who have joined and expressed commitment to Agita and its aims. These institutions are responsible for organising and implementing ongoing activities. Physical-activity advocacy materials employed by the partners include, for example, printing a physical-activity message on employee pay slips, the company letterhead, or in newsletters and magazines.

The New South Wales mass media campaign (Bauman et al., 2001), which was part of the national "Active Australia" initiative, targeted 25- to 60-year-olds who participated in insufficient amounts of physical activity, but were ready to become more active. This was a multi-media campaign incorporating television, radio, and print media, and which repeated the slogan: "Exercise: you have to take it regularly, not seriously." More than 25% of the target audience increased their levels of physical activity to at least 30 minutes per day, for at least five days per week. Part of the success of this campaign may have been attributed to the distribution of information packs to health professionals well before implementation, thereby ensuring the additional dissemination of the message by the health-care professionals themselves, who were already trusted by the community.

Both programmes exemplify the key elements of success previously identified for mass-media campaigns including:

- working with local government infrastructure;
- education and supporting activities for teachers, community or social workers, physicians and health care workers;
- keeping the message simple with frequent exposures;
- the effective use of paid and unpaid media, and - most importantly - supporting downstream activities at a community or local level.

Injuries related to traffic crashes

Recommendation	
Interventions are required which target the key risk factors for traffic injuries:	
Risk Factor	Intervention
Youth	Age restrictions
Inexperience	Graduated licence systems
Aggressive behaviour Speed Alcohol abuse Non-use of seat belts	Law enforcement
Lack of roadworthiness	Vehicle testing and adaptation through regulation and enforcement
Distraction	Avoid cell-phone usage while driving and restrict roadside advertising
These interventions need to be instituted through the introduction of appropriate legal restrictions, backed up by frequent random enforcement, and followed by swift and severe penalties.	

Evidence and examples

Worldwide research shows that speed is the principal risk factor for traffic-related injury. Additionally, young drivers speed more frequently than older drivers. Young novice drivers are at increased risk of crash injury, and the risk among teenage drivers is higher than among any other comparable age group. Excess or inappropriate speed is a common contributory factor in crashes involving young drivers. In South Africa, at least 17% of drivers surveyed exceeded the speed limit (Department of Transport, 2006) and it is estimated that 34.4% of all fatal crashes occur due to inappropriately high speeds (RTMC, 2007). The severity of injury increases significantly at speeds higher than 40km/h. Pedestrians have a 90% chance of surviving car crashes at 30 km/h or below, but less than a 50% chance of surviving impacts at 45 km/h or above (Peden et al, 2004).

In 2002 internationally, males accounted for 73% of deaths and 70% of DALY's lost because of road-traffic injuries, while traffic fatality rates per 100,000 population of people aged over 60 were the highest of all age categories in the low- and middle-income countries (Peden et al, 2004).

Impairment by alcohol continues to contribute to crash injury and increases the risk. All non-zero BAC [EXPLAIN IN FULL] levels carry more risk than zero BAC, and crash risk starts to rise sharply at levels of 0.04 g/dl (Peden et al, 2004).

The non-use of seat belts and child restraints more than doubles the risk of injury as well as its severity. Statistics presented by the Child Accident Prevention Foundation of Southern Africa show that only 1 in 5 children admitted to hospital as a result of a road-traffic crashes were wearing a suitable restraint (Arrive Alive, 2007).

South African research also shows that cell-phone use while driving increases injury risk fourfold (SASITS, 2007), while international research shows a significant slowing in reaction time for those using cell-phones (Peden et al, 2004).

Over an eight-year period from 1995 to 2002, the Colombian capital, Bogotá, with a population of seven million, implemented a range of policies which followed the recommendations listed above, in order to reduce fatal and non-fatal injuries from external causes. As a result, the number of traffic-related deaths fell over the period by almost a half – from 1,387 in 1995 to 697 in 2002. Two important measures were: to set up a unified data system on violence and crime, and to adopt measures to improve the performance and image of traffic police. This was accompanied by concerted campaigns to change behaviour at a population level and by the conversion of space into pedestrian spaces (Peden et al, 2004).

Injuries related to Violence

Recommendations

1. Reliable injury surveillance is institutionalised;
2. Multiple and comprehensive interventions are devised in consultation with a broad range of experts, including the criminal justice system, prevention agencies and academic and research organisations;
3. These interventions should target high-risk areas;
4. They should be well-documented and monitored to assist in evaluation and replication if successful;
5. Primary prevention should be a priority and
6. Interventions should also include long-term strategies that fundamentally address norms and behaviours that lead to violence and aggressive behaviour by promoting a culture of tolerance, human rights and social development to redress inequity;
7. Civic involvement should be encouraged; and
8. The programme should be adopted and institutionalised at a provincial and municipal level to ensure accountability and sustainability.

Outcomes

Based on an adequate information system and on random targeted surveys, it is expected to observe **a decreased incidence** of –

- fatalities and severe injuries;
- drivers exceeding the speed limits;
- drivers exceeding alcohol-intake limits; and
- all of the above involving young drivers

Evidence and examples

Dramatic reductions in injury rates, and in fatal injuries due to violence in particular, have been shown in two well-documented studies in the Colombian cities of Cali and Bogotá. In Cali, rates of fatal violence declined from a peak of 126 per 100,000 population in 1994 to rates of about 100 per 100,000 since 1998. In Bogotá, the decline was more dramatic, from the 1994 peak of 82 down to 23 per 100,000 over a ten-year period. Guerrero (2006) attributes the comparative success of the Bogotá programme to several key factors. These included substantial investment in social infrastructural projects and the enhancement of public spaces and a larger budgetary allocation to policing and the criminal justice system. Another important factor was that the duration of the programme was not affected by changes in local government that seemed to negate some of the interventions implemented in Cali.

According to Guerrero (2006), the Cali programme embraced the following guiding principles:

1. As violence is a multi-causal problem, it requires multiple and comprehensive interventions;
2. Interventions should be based on scientific research and underpinned by reliable injury surveillance;
3. Primary prevention should be the priority;
4. Responsibility for civil security should be shared by the government, police and citizens; and
5. The foundations for peace and safety are:
 - 5.1. a culture of tolerance;
 - 5.2. the promotion of social development to redress inequity; and
 - 5.3. the promotion of human rights.

The guiding principles in Bogotá were similar, although they were better institutionalised, with the Mayor's Office establishing a sub-secretariat in the local council: the Programme of Security and Congruous Living (Guerrero 2006).

Underpinning the prevention approach in both cities were strategies to improve social citizenry through social development, political empowerment and enhanced social cohesion (Concha et al. 1994). Public education was integrated into both Colombian violence prevention programmes in Cali and Bogotá, and media campaigns were a central component. DESEPAZ provided education on civil rights matters for both the police and the public at large, which included television advertising at peak viewing times, highlighting the importance of tolerance for others and self-control. Cultural and educational projects aimed at schools and families were undertaken in collaboration with local Non-Governmental Organisations to promote discussions on violence and help resolve interpersonal conflicts. (Concha-Eastman & Guerrero 2002). In Bogotá, the Mayor was at the forefront of a long-lasting and highly visible civic and cultural education campaign (Guerrero 2006).

Partnerships were formed between local government and academic institutes to realise reliable information systems on crime, violence and injury to identify risk factors and inform prevention strategies. Among the interventions arising from this improved surveillance were strategies to reduce alcohol sales at high-risk periods and to discourage the carrying of firearms, as well as an increased investment in police and judicial systems, and in public-education campaigns (Guerrero,2006).

This resonates with the intervention tested by the Provincial Department of Safety and Security, which prioritised certain police stations in Cape Town for additional resources and attention from 2003. In Khayelitsha, for example, an operational centre and two new police stations were built and resourced; sector policing was introduced; community partnerships were forged; and shebeen trading hours were restricted. Consequently, there was a marked reduction in injury mortality in this sub-district, as shown in the Cape Town mortality figures given in Volume 2 of this Report. It is conceivable that by applying some of the guiding principles of the Colombian strategies, this intervention may have been even more effective.

For those interested in the detail of the interventions, this is to be found in a close reading of the relevant report chapters.

Conclusions

For Workgroup 1, the principal take-home message is that the data collected directly from Home Affairs data (currently for the Cape Town Metropole and the Boland-Overberg Region) provides very much better quality and finer geographical disaggregation than that which can be supplied by Statistics South Africa, and that the former should continue to be the primary source of mortality data,

As a consequence of information flowing from the Cape Town mortality-surveillance system, emerging health issues and vulnerable groups can be identified and targeted for interventions. Moreover, these interventions can be monitored using these same data.

The richness of the information arising from mortality data for the Province, the value that this has already been added, and further enhancements in the future are illustrated by the three papers produced by Workgroup 1. This work provides a substantial and concrete basis for a government intelligence function which, if successfully institutionalised, will be able routinely to establish Provincial health status, and to monitor and evaluate governmental and other intervention programmes aimed at the reduction and transformation of the BoD over time.

Some progress has been made during the first year of the Provincial BoD Project in institutionalising an integrated mortality-surveillance system, drawing from all available sources of mortality data in the most appropriate manner for the task at hand. The BoD project is modest, however, while the mortality surveillance task is large. During the course of this first year, it became obvious that Project resources are no substitute for Provincial Government institutionalisation of a Province-wide mortality-surveillance system.

As far as Workgroup 2 is concerned, the authors of this Report are not so arrogant as to suppose that they have broken entirely new ground and made many new discoveries unknown to policy-makers, managers, and technical experts in government.

What this report has managed to do, however, is to highlight how much of the current burden of disease is due on the one hand to behavioural factors - notably in the area of social mores with regard to alcohol, road-use behaviour, sexual practices, and health-seeking behaviour, and how these factors are themselves linked to even more upstream infrastructural risks of material and social deprivation. Consequently, the report highlights the crucial need for upstream interventions, if reducing the burden of disease is to be seriously addressed.

The further downstream an intervention is, the easier it is to estimate its effectiveness and cost-effectiveness. For the more upstream interventions, though, it is much more difficult to disentangle the effects

of such interventions, owing to the complex causal mediation of effects across multiple BoD components. On the other hand, it is precisely the notional multivalent (and hence greater, if much more difficult to measure) effects of upstream interventions that make these so much more attractive to policy-makers and managers.

Additionally, many of the upstream interventions against risk factors for the BoD components share substantial commonalities in their BoD impacts. The further upstream the intervention takes place, for each relevant risk factor, or for antecedent determinants in the causal pathway for the risk factor concerned, the greater the confluence of risk for, and intervention effect on, most or all of the prioritised BoD components. Consequently, there is an increasing difficulty methodologically to disentangle or isolate the effects of interventions on reducing components of the BoD as these move upstream. The WHO Commission on the Social Determinants of Disease has grappled with these problems of evaluating the impact of upstream interventions (CSDH, 2007; WHO 2006). There are neither simple methods nor easy solutions when attempting to estimate the multiple direct and indirect (or mediated) effects of upstream interventions. A complex approach combining quantitative and qualitative evaluation methods is required to assess upstream interventions. This goes far beyond simple quantitative effect and cost estimation.

There are indeed many areas of overlap between what this report recommends and the contents of the Western Cape Provincial Programme Of Action for 2007/2008 recently published by the Department of the Premier (PGWCB, 2007). We are only too aware of the hard work that goes on in various Provincial and Local Authority departments in devising policy for, and implementing, interventions to reduce the BoD. We have not conducted a critical audit for interventions in place, but have merely listed these in a previous publication (Inventory, 2006).

Recommendations

Returning full circle from the outputs of Work Team 2 to those of Work Team 1 we note that there is much work to be done in the immediate future. A top priority, given the extremely rapid changes we are currently experiencing (for example, in mortality patterns at population, district and sub-district levels; and in increases in birth rates linked to migration and epidemics of infectious disease), the impacts of interventions in whatever sector on population level data, is going to be **a reliable and valid information system institutionalised within Provincial Government** structures with the capacity to provide rapid information in response to queries from managers and policy-makers, and to enable the provision of data down to the finest level of geographical or administrative categories.

Perhaps, then, the most important message we wish to send is that pertaining to **the primary and critical importance of information systems and their indispensability in the process of planning and implementing interventions**. Through surveillance data and research based on either such data, or on primary data collected afresh, rational decisions can be made with important implications for the planning process, effectiveness in reducing the BoD and the cost-efficiency of selecting intervention choices. It is this information infrastructure that is unfortunately underdeveloped. This is something that cannot be bought into the government system from outside institutions. It must be established firmly within the routine normal operations of government.

A strong recommendation from Work Team 1 is that **the Provincial Department of Health create the appropriate permanent and routine structures and allocate the necessary resources to sustainably roll out the integrated mortality surveillance system** as depicted in Figure 3 of the Executive Summary for Volume 2 to all six districts over the next few years. The role of Project members in this process became increasingly clear over the past year as that of guidance, support and training in the collection and processing of quality data to provide valid information on the state and trends for mortality in the Province. Project members can assist with analysis of these improved data and with the further institutionalisation of routine analysis for the production of appropriate indicators by Provincial staff.

The Office of the Premier has developed a draft monitoring indicator framework for the Provincial Growth and Development Strategy (PGDS), which is a good start in implementing an intergovernmental Monitoring and Evaluation process. Surveillance information will be the guide to achievements in terms of development strategies in the Province, and will be constantly available to check progress in all PGDS endeavours, thereby promoting growth, equity, empowerment and environmental integrity. If all else fails, it will certainly tell us where things are going wrong. We rather hope, however, it will confirm that the Province is firmly on track

with regard to the multiple parallel paths to development, and in what measure, and how precious resources for development may be utilised to optimise and humanise economic growth into the future.

This study did not set out to tell Province what it already knows. Rather we hope that the recommended interventions will permeate the higher level strategic policy objectives which the Province already has in place by providing more concrete proposals for implementation and for action in order to achieve the current, broader goals. This Report provides a menu of interventions from which policy-makers can pick and choose in accordance with feasibility and practicability.

In order to further distill the suggested critical interventions of the PGWC, the Project Management Team (PMT) is planning a Health and Development Summit in June 2007 with the aim of providing an overview of the Western Cape's burden of disease and its upstream determinants. Evidence of successful interventions addressing these determinants will be presented, together with relevant lessons from the global experience. This interaction with a wide range of Provincial and Local Government representatives will provide participants the opportunity to:

1. Collectively examine the upstream determinants of the Burden of Disease in the Western Cape Province;
2. Clarify the feasibility of identified intersectoral and intergovernmental interventions in the Western Cape; and
3. Prioritise and synchronise the selected interventions.

Prior to the summit, the PMT will engage with key individuals in the PGWC to perform the preparatory work in order to ensure that the summit results in key decisions being taken that could result in Provincial action to integrate the recommendations from the BoD project into the governmental planning process.

We further hope that the recommendations arising from this Project will assist current planners and implementers to assess whether the interventions currently under their control are appropriate to our setting and are achieving results at reasonable cost and without too much opportunity cost; whether new interventions with proven effectiveness or promise should be adopted and adapted instead of, or in addition to, those currently deployed; and whether current interventions which do not appear to be working, or are unlikely to work, should be dropped.

The devil always remains in the detail.

While some currently deployed interventions may be nominally present, when one scratches beneath the surface, the detailed implementation phase may be still far into the future. Other interventions, while certainly implemented may be insufficiently targeted to the groups at high risk who would benefit most.

This is where we really hope this report can be of assistance.

The Future of the Provincial Government of the Western Cape's Burden of Disease Project

More narrowly, this Project over the next two years will need to address, in order of decreasing priority, the following:

1. The institutionalisation of surveillance capacity which carries on from Year 1;
2. The study of, and engagement with, the implementation structures and functions that will hopefully follow from the Health and Development Summit to take place in June 2007;
3. A limited number of other research projects examining issues and questions that arose during the course of Year 1; and, less likely,
4. Studies looking at new interventions in our local setting, or evaluating old or new interventions. Given the small budget, such work should rather be funded from other sources.

While the likely work in Category 1 above flows from the original objectives of this project, a concrete illustration of the work suggested in Category 2 is provided below.

Integrating interventions in multiply deprived settings

There is a large degree of overlap of risk factors across the five main components of the Burden of Disease. For example, alcohol abuse is a risk factor for HIV, injuries, other mental disorders, and cardio-vascular disease. Similarly, factors such as poverty and unemployment result in the concentration of the five disease groups in geographic locations where there are high levels of deprivation. Given these observations, it is clear that the most efficient way of decreasing the burden of disease is to target integrated interventions to multiply deprived settings. Targeting multiply deprived settings is important in the context of income inequality in the Province; the Western Cape has the highest Gini-coefficient in the country (0.62 compared to the national average of 0.57) (Western Cape Department of Social Development, 2005). Given this inequality, concentrating social investment in these areas is key to addressing both development aims and health inequalities.

Integrated interventions are interventions that address more than one component of the burden of disease and may comprise a single or multi-faceted intervention. For example: a recreation programme is a single intervention that reduces cardio-vascular disorders and substance abuse, which in turn would be expected to reduce mental illness, injuries and HIV. A multi-faceted intervention would address several BoD components through implementing more than one programme (e.g. a recreation programme plus an anti-alcohol abuse campaign).

Multiply deprived settings are electoral wards that have been ranked as the most deprived according to the Multiple Deprivation Index. The South African Multiple Deprivation Index study (Noble et al, 2006) utilises five domains to measure deprivation, namely:

1. income and material deprivation;
2. employment deprivation;
3. health deprivation;
4. education deprivation; and
5. living environment deprivation.

Community Development is an approach that “seeks to develop the social, economic, environmental and cultural well-being of communities” through the development of existing community networks (Arole et al, 2005, p243). Community members are brought together to identify and prioritise local problems which are then addressed by the collaborative action of the community, government, non-governmental organisations and private business. The strengths of this approach are that the interventions are locally relevant, the process is empowering for communities and ensures that interventions are sustainable (Patel et al, 2005; Jané-Lopis & Barry, 2005).

A draft framework of how interventions could be integrated is presented in Diagram 1 on the following page, and is described below. This framework would need to be further developed, while the piloting of such a project in one or two wards is recommended.

Description of a hypothetical integrated intervention

Step 1: Select the most deprived areas in the Western Cape

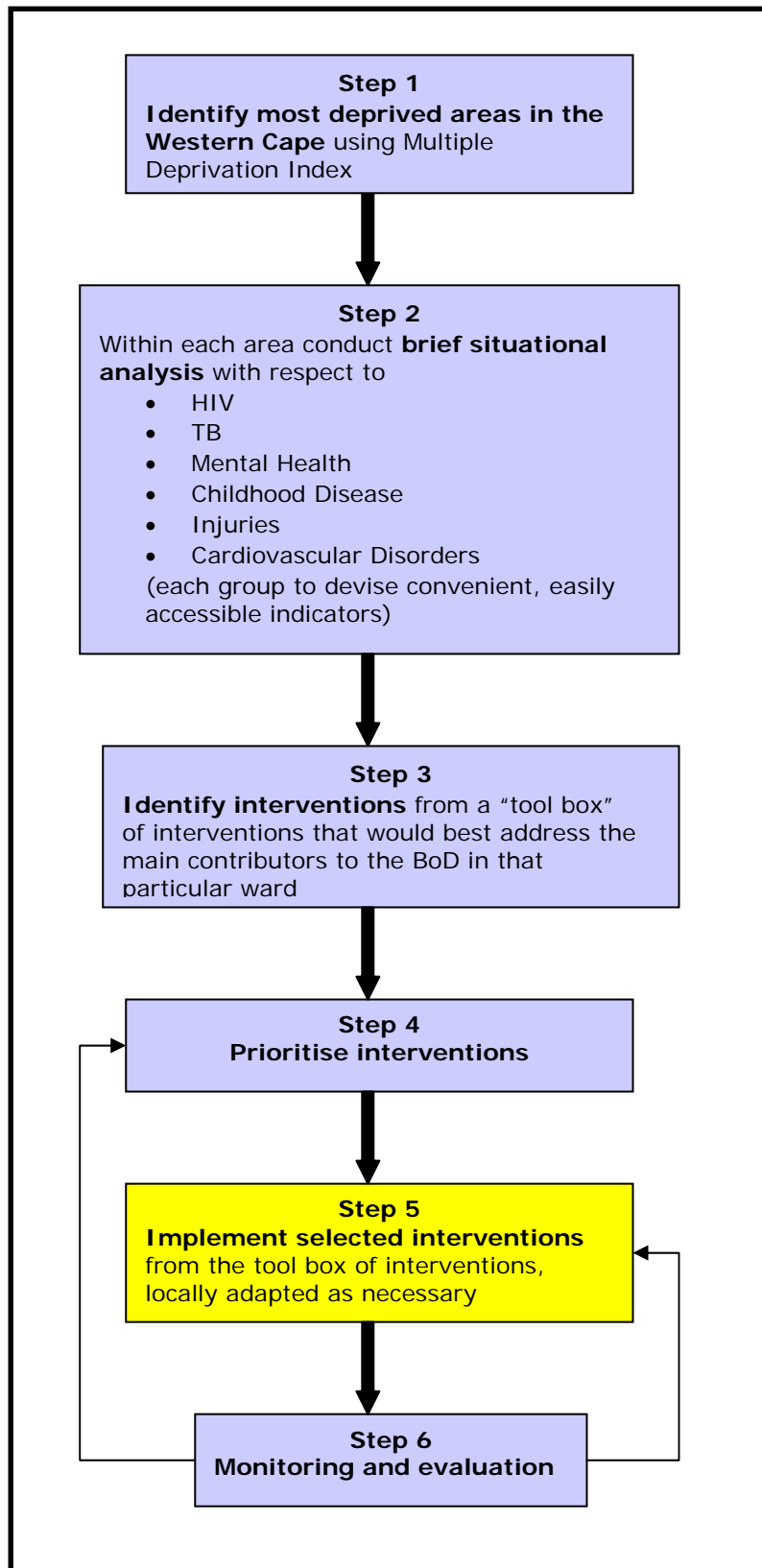
The Multiple Deprivation Index would be used to generate these areas which are obtainable at the level of the electoral ward. Oudtshoorn is an example of such an area and will be used here as an example.

Step 2: Conduct a brief situational analysis of the burden of disease

The population of Oudtshoorn would be evaluated for the relative prevalence of all five BoD components in consultation with Local Government and local communities in Oudtshoorn. Indicators would have to be developed by each workgroup, but could conceivably be as follows:

- HIV: Ante-natal HIV prevalence
- Injuries: Homicide and road-traffic crash prevalence
- Mental Health: Homicide and/or substance-abuse prevalence
- Cardio-vascular disorders: Hypertension, Diabetes prevalence in local clinics
- Childhood disorders: Immunisation coverage, malnutrition admission rates

Diagram 1: Example of how interventions can be integrated in multiply deprived areas



These figures could be compared to provincial figures to determine the relative importance of these health issues in Oudtshoorn. Findings would be presented to and discussed with local government, health providers and communities (the stakeholders). The purpose of this consultative process would be to foster support for the initiative, establish local priorities and to raise awareness of the local health issues.

Steps 3 & 4 : Identify and prioritise suitable interventions

Once the health priorities of the ward had been established the appropriate "tool box" of interventions (from the five BoD reports) would be presented and discussed with the stakeholders as above in order to select the most appropriate, acceptable, desirable, and feasible interventions for Oudtshoorn. The principles guiding the selection of interventions should include: the ability of interventions to address several components of the burden of disease to create employment, and to create social capital; and the ability of the intervention to reach the most vulnerable members of the population (for example, the poorest of the poor). Interventions from the toolbox may need to be adapted to the setting in question.

Example: If the main health problems identified in Oudtshoorn are HIV, Injuries and Mental Health, then the interventions required should attempt to address all of these areas. Given the identified health problems, the interventions should focus on alcohol, sexual behaviour, health services and recreation. All four of these interventions would then simultaneously address HIV, injuries and mental health, and would thus act synergistically to decrease the burden of disease. Recreational facilities could also distribute condoms; health services could refer clients to recreational facilities; and so forth.

Step 5: Implement the interventions

Support for selected interventions would be sought from the stakeholders to include private-public funding, volunteering of resources, and so forth. Specific aims, objectives and time-lines for achievable outcomes should be defined. Interventions would then be implemented by the stakeholders with Local Government as the driving force.

Step 6: Conduct monitoring and evaluation

Monitor and evaluate inputs, processes, outputs and outcomes per intervention implemented. After a suitable time period remeasure the Multiple Deprivation Index in the ward (Oudtshoorn) and compare to baseline measurement.

Advantages of this approach

- Community empowerment
- Efficiency of integrated and targeted interventions
- Sustainability
- Poverty alleviation
- Increased social capital
- Improved health
- Reduction of inequality in the Western Cape Province
- Locally appropriate interventions
- Improved governance

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Executive Summary

Volume 2: Mortality Surveillance

Background

The main task of Workteam 1 in the Burden of Disease (BoD) Project has been to review the empirical data available for Burden of Disease estimation in the province and through this to examine the prospects, and prepare, for the institutionalisation of mortality surveillance within the Provincial Government system, in particular within the Department of Health.

The BoD measure involves calculations using mortality and morbidity. Mortality is a crucial component of the BoD and captures a large part of the burden (with the exception of mental health disorders) and morbidity estimates can usually be derived from a knowledge of morbidity:mortality ratios in the WHO Global Burden of Disease Study [Murray & Lopez, 1996].

The MRC Burden of Disease Unit, which is a contributor to the Provincial BoD Project, has produced estimates of the BoD, both for South Africa as a whole and for the Western Cape Province for the year 2000. The MRC is also currently preparing a comparative risk assessment which examines risk factors for the various components of the BoD for the year 2000 for South Africa. The 2000 estimates assisted in the identification of the reviews that have been conducted in the BoD project.

Official mortality statistics are currently produced by Statistics South Africa. Since 1997 official mortality statistics have not been broken down by Province, but are available on a national basis only. The current official system for processing death data is shown in schematic form in Figure 1.* In contrast, Cape Town Metropole has been collecting its own cause-of-death statistics which can be analysed at sub-district level. This system has been extended to the Boland-Overberg health region. The MRC/UNISA Crime, Violence and Injury Lead Programme has been collecting information from mortuaries on injury-related deaths. The MRC BoD Research Unit has established a rapid mortality surveillance system, which has been drawn from the]basic details of deaths that are included on the population register.

* Figures appear on pages 46 to 48

Methods

In order to provide a more up-to-date mortality assessment, Work Team 1 has mainly been involved in developing systems to provide mortality data for the Western Cape Province that are accurate, timely, and capable of fine spatial disaggregation within the Province.

Work Team 1 has thus adopted a four-fold approach to collecting better data:

1. The first approach involves consolidating the current mortality surveillance systems and refining the system to do it in-house. This has been a special project, involving the MRC BoD Unit; the Cape Town Metropole; the Provincial Health Department; and Project members, with better quality controls for data collection and analysis. The project also builds on the local mortality surveillance system that has been instituted in the Metropole for over five years as a collaborative project between the Metropole, MRC and UCT. A similar system was instituted in the Boland-Overberg Region, beginning in 2004.

This system is illustrated in Figure 2, and shows the source of the data utilised in Paper 1 for Cape Town mortality and in Paper 2 for mortality in the Boland-Overberg Region.

The BoD project has enabled a common reporting format and methodology to be established between the Metropole and the Province. This is one of the key steps in the process of institutionalising the mortality surveillance system within Government. It is the intention that the Provincial Government roll out such systems to cover the four remaining health districts in the Province with the contribution and guidance of Work Team 1. This process of institutionalisation will involve a close and formal relation between the Provincial Department of Health and the Department of Home Affairs.

The proposed, finally institutionalised local mortality surveillance system is shown in Figure 3.

2. The second approach has been to utilise data from Statistics South Africa, which has generated Paper 3 for Western Cape mortality as a whole. These data have been specially tabulated on a complete provincial basis, though not with any further spatial disaggregation. This data is still available for analysis up to 2002, although data up to 2005 will become available later this year. The results of analysis of these data have been somewhat disappointing, in that, although they have indicated a considerable and rapid change in mortality in the province, the data are temporally very far behind those that can be collected directly using the first approach above. The absence of any detailed spatial breakdown below the provincial level is a serious

drawback, as is the lack of information regarding the causes of injury deaths. There have also been serious errors detected in the coding of causes of death among infants, which makes much of the Statistics SA data for this age group invalid.

3. The third approach has been to obtain data directly from the Population Register of the Department of Home Affairs. This data is not publicly available. It has the disadvantage of only recording those deaths which have an official ID number, but which has nevertheless proved generally adequate. It is also the most up-to-date of all systems discussed above, with data being available within a month or two after death. There are problems with the cause-of-death classification and it has proved possible to use only a crude classification, separating causes of death into natural and non-natural (i.e. external) categories.

Spatial disaggregation is limited by the distribution of the various offices of the Department of Home Affairs. Yet it does have considerable utility as an audit tool for checking the completeness of the data currently being collected in the Metropole and Boland-Overberg Region. Continuous analysis of these data, which is not yet complete, has led to the provision of very up-to-date information on provincial post-neonatal mortality rates, revealing a likely effect of the Provincial Prevention of Mother-To-Child Transmission (PMTCT) intervention programme to interrupt vertical HIV transmission. Childhood diseases have been identified by this Project as one of the top five contributors to the BoD. Linking this source of mortality data to registered births (which are known at municipal level), therefore, can lead to extremely useful and rapid information on neonatal, infant and child mortality, as well as maternal mortality, and the situation with regard to orphans.

4. The fourth approach is to integrate data from the mortuaries in the Western Cape (now a Provincial responsibility, falling under the Department of Health) into these other systems to provide a level of detail on violent death not currently obtainable in the national systems. The UNISA/MRC Non-natural Injury Surveillance System is an example of an existing system that has been based on mortuary data.

Thus a combination of data collected directly from the Department of Home Affairs, coded and analysed within the province, with input from UCT and the MRC, combined with an audit from the population register, and injury data from the mortuaries, will provide the province with an institutionalised and integrated and rapid mortality surveillance system, that can not only be used for Burden of Disease estimates, but also for the monitoring and evaluation of Provincial inequity, as well as those interventions which are intended to

reduce the Provincial BoD. This remains the principal aim of the Provincial BoD project.

Work Team 1 is currently working further on the improvement of estimates for morbidity arising from mental health disorders, as this BoD category has a larger morbidity component than a mortality component.

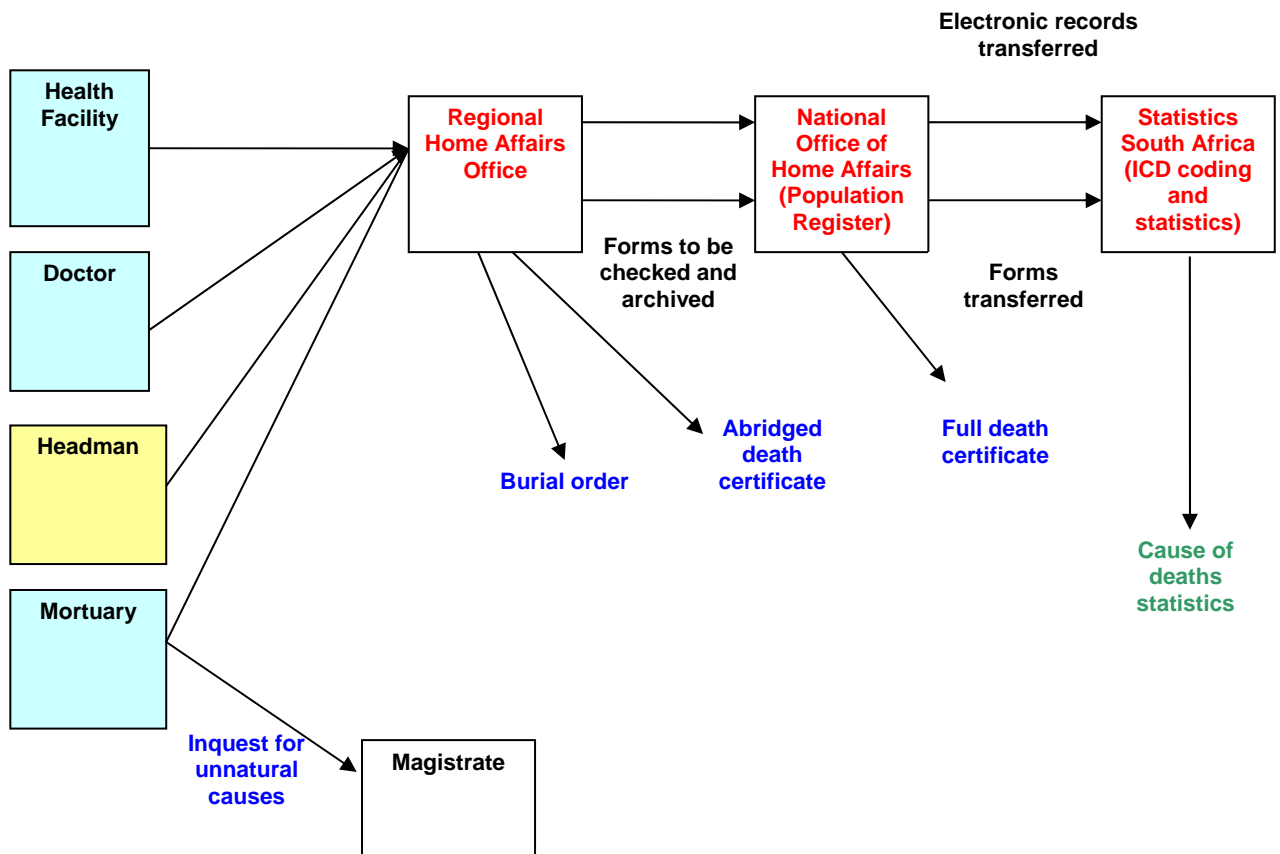


Fig 1 Current Official system for processing death data

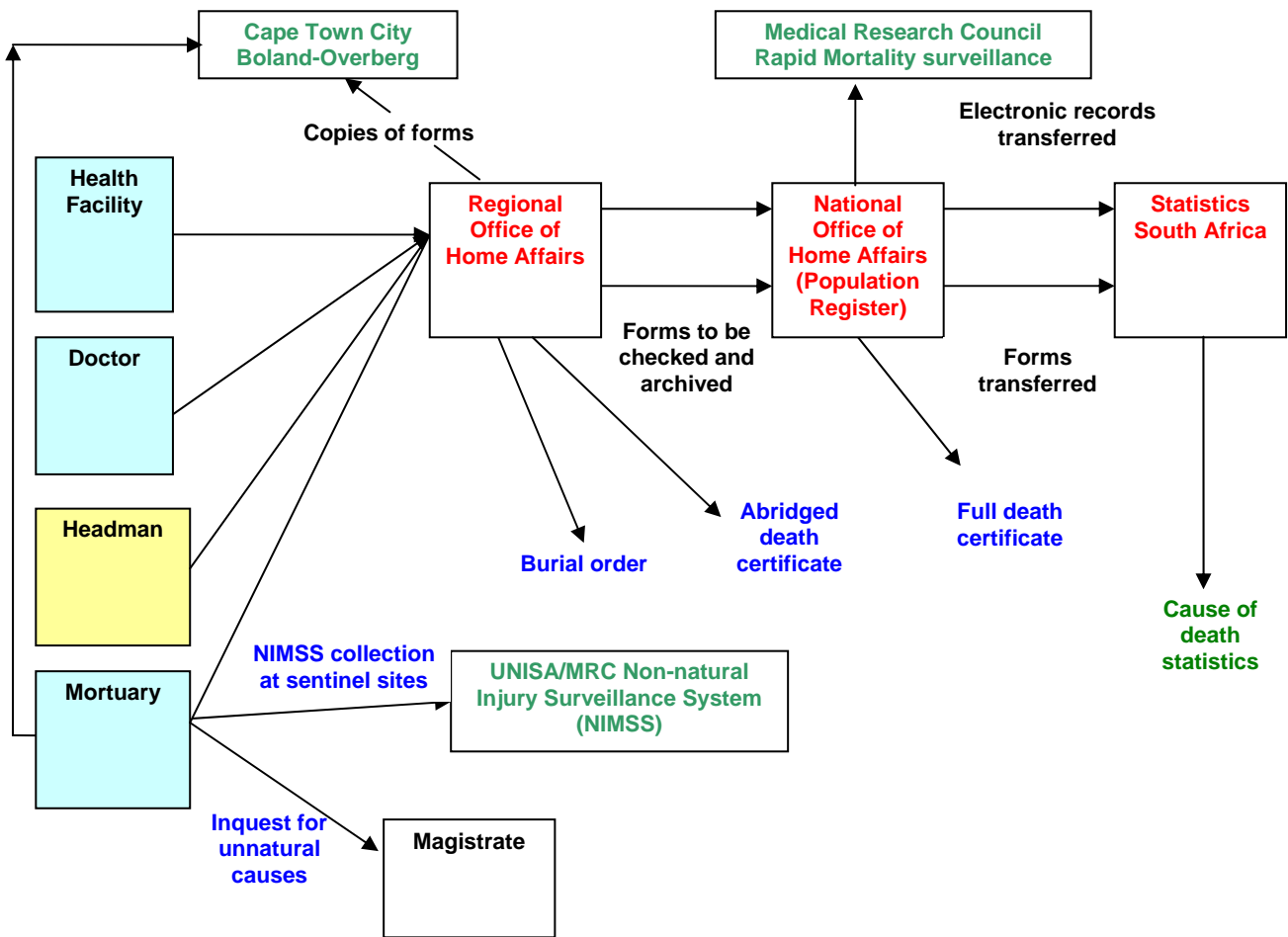


Fig 2. Current Burden of Disease Project system for processing death data

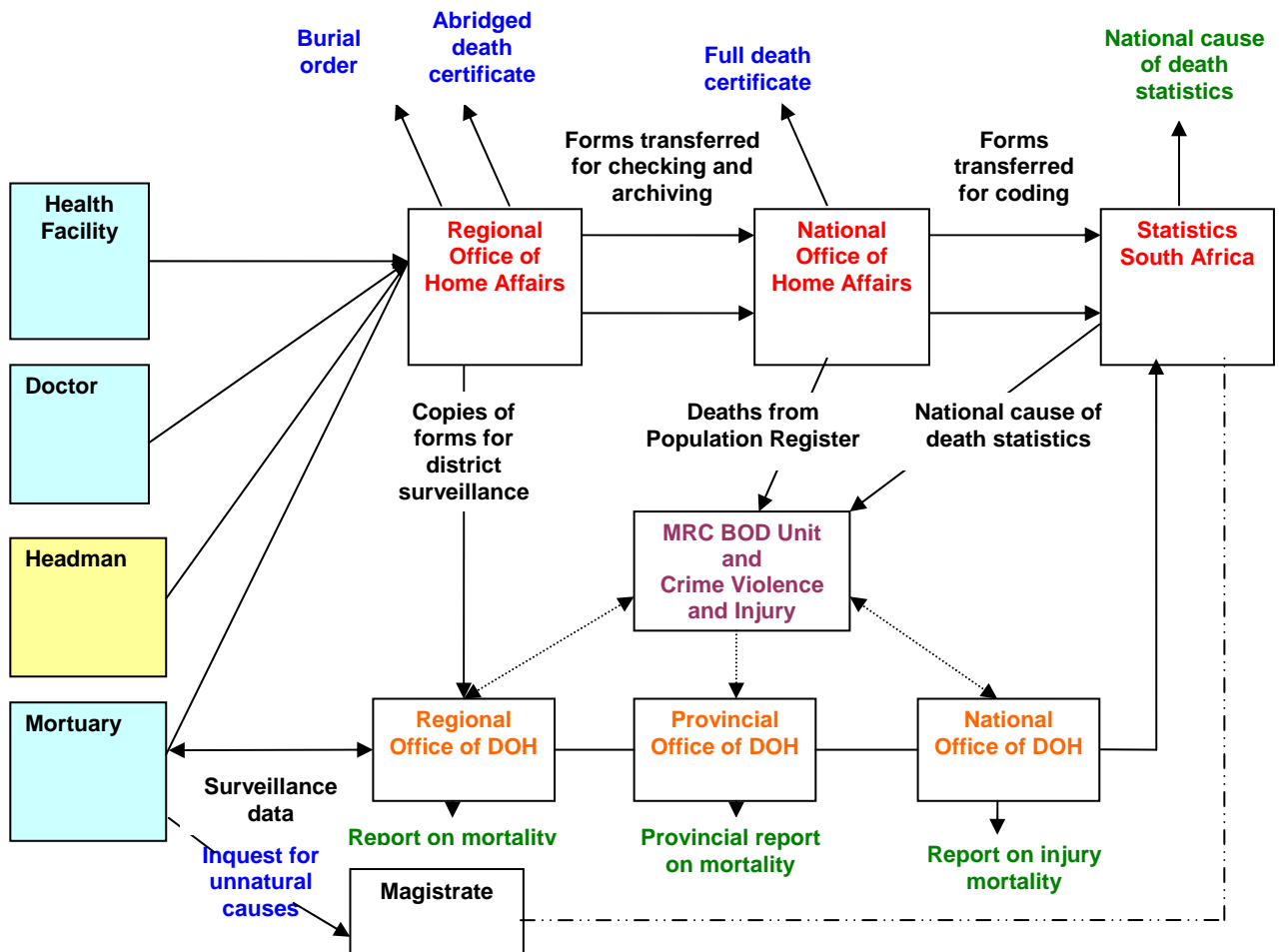


Fig 3 Proposed Western Cape system for processing death data

Selected Results

Cape Town

The Cape Town routine local mortality-surveillance system provides a wealth of data on the health of the city's population. Where it has been considered appropriate in terms of mortality, this data has provided an opportunity to assess priority health-intervention programmes for the first time.

Cape Town is experiencing a changing pattern of mortality.

For females, while the overall age-standardised mortality rate has not changed during these four years, there has been an **increase in HIV/AIDS mortality** and a decrease in the non-communicable disease death rate.

The overall age-standardised **mortality rate for males is much higher than that for females**, but has also declined slightly during this period. The death rates from injuries and from non-communicable disease have decreased, while there has been **an increase in the HIV/AIDS mortality rates**.

The differential pattern of mortality between the various sub-districts is marked, and shows the still existing **patterns of inequity in the City**. Such **differentials can be masked** when mortality measures are aggregated, which serves to emphasise that health information ought to be collected at the lowest, or smallest possible, level of spatial disaggregation.

While **HIV/AIDS mortality has increased dramatically since 2001**, it appears to have **stabilised in 2004**, possibly demonstrating the **impact of the PMTCT and ARV programmes**, although the Cape Town data for 2005 is not yet complete.

The data for 2001 to 2004 show that **HIV mortality has become the leading cause of premature mortality** in the city, and that **TB remains in third place**. HIV/AIDS and TB are now closely linked. Aside from TB being one of the indicator conditions for AIDS, there is **clear evidence that the TB epidemic is being fuelled by the HIV epidemic**. These data therefore reflect the impact of the dual HIV/AIDS and TB epidemics in this Province. Where HIV/AIDS and TB were reported on the death certificate, the underlying cause was assumed to be HIV/AIDS in accordance with ICD 10 guidelines. For TB programme purposes, however, this co-morbidity was indeed recorded.

Mortality due to injuries is extremely high, although there is evidence of a declining trend. Nevertheless, injury mortality rates —

particularly **homicide** and **road-traffic fatalities** — are still **among the highest in the world**, particularly with regard to men. Of particular concern are the high homicide and road-traffic injury fatality rates among **male youth**. Although this has been linked to **alcohol** and other **substance abuse**, limited routine data has been collected in this area. Urgent attention needs to be given to identifying and implementing strategies to prevent injuries.

Diabetes, stroke and ischaemic heart disease are all among the leading causes of premature mortality and have **shifted rankings** over this short period of surveillance with **diabetes going from 8th in 2001 to 5th place** in 2004. Mortality rates due to non-communicable diseases are high, with variations along the lines of the epidemiological transition. Non-communicable diseases account for a high proportion of premature mortality in adult women. **Smoking** rates are high in the “coloured” population especially among females.

Child mortality appears to have remained **constant** over this period, but there is an **unexpected increase in mortality from low birth-weight**, a trend which needs further investigation. There is a further suggestion that **child mortality due to HIV/AIDS has started decreasing**. As indicated above, however, the study period over which this has been observed covers only the beginning of the full-scale PMTCT roll-out.

The **absence of the impact of mental-health disorders** is noted when using only mortality data.

As a consequence of the information emerging from the Cape Town mortality-surveillance system, **emerging health issues and vulnerable groups can be identified and targeted for interventions**. Moreover, interventions can be monitored using these same data.

Khayelitsha and Nyanga have a considerably higher BoD than other sub-districts in the Metropole. Yet, despite an increase in HIV/AIDS mortality in Khayelitsha, overall mortality has decreased in this sub-district, mainly due to a reduction in injury mortality. This may be due partly to a **multi-sectoral intervention** led by the Department of Safety and Security, which prioritised certain police stations — including those of Khayelitsha — for additional resources and attention. In Khayelitsha itself, for example, an operational centre and two new police stations were built and resourced; sector policing was introduced; community partnerships were forged; and shebeen trading hours were restricted.

The Boland-Overberg Region

The Boland-Overberg Region is experiencing an even more rapid changing pattern of mortality.

In the Boland-Overberg Region, **changing mortality is noticed over even a very short period**. The top four causes of death have remained the same between 2004 and 2005, but **the ranking has changed**. **Tuberculosis** has become the leading cause of premature mortality in 2005, after ranking second to homicide in 2004. Homicide now ranks third, with **HIV/AIDS** in second place, and with road-traffic injuries ranking fourth. These top four conditions account for 40% of the premature mortality in the region.

Spatial variation between sub-districts is marked for many conditions.

Some highlights of the findings for the Boland-Overberg Region are:

Tuberculosis is the leading cause of mortality in the region with mortality rates much **higher than** those experienced in **Cape Town** (86 per 100 000, as opposed to 50 per 100 000 in 2004).

HIV/AIDS mortality rates have continued to increase, but are **lower than those in Cape Town** (50 per 100 000 as opposed to 80 per 100 000). The increase in mortality in Witzenberg — owing to a significant increase in HIV/AIDS mortality and a marked increase in mortality owing to tuberculosis — is further cause for concern.

Homicide mortality rates decreased between 2004 and 2005, among males. The **profile of homicide is quite different** from that found in Cape Town: the use of firearms is very limited in the Boland-Overberg Region and homicide rates among females are almost double those experienced in Cape Town. (This differentiation of the causes of violent death is not possible when using Statistics South Africa data).

Overall, mortality rates due to non-communicable diseases in the Boland-Overberg Region are slightly lower than those in Cape Town (577 as opposed to 626 per 100 000). There are marked differences in the profile, however, with mortality rates due to cardiovascular conditions and cancers being similar, while **mortality due to respiratory conditions is higher in the**

Boland-Overberg Region than in Cape Town, and **diabetes mortality rates are lower**.

Infant mortality has remained fairly **constant** in the Boland-Overberg Region since 1997, with the suggestion of a downward trend. There is a **marked variation between sub-districts**, however, with Witzenberg having the highest rates. Infant mortality rates in the Boland-Overberg Region (about 31 per 1000 LB) are higher than in Cape Town (24 per 1000 LB). **Prematurity and low birth-weight are the leading cause of neonatal deaths, while the leading cause of death in infants is diarrhoea**. Ill-defined deaths rank second and account for a high proportion of deaths in late neonatal and post-neonatal infants.

Western Cape Province (from Statistics South Africa Data)

In spite of its lack of timeliness, and spatial disaggregation, this analysis of a special tabulation of data for the Western Cape Province, supplied by Statistics South Africa, has revealed much about the mortality in the Province. It is clear that the **mortality profile is somewhat different from the national profile**. The Western Cape also experiences the quadruple burden that has been described as the combination of pre-transitional conditions related to under-development, non-communicable diseases, injuries and HIV/AIDS. Nevertheless, this data shows that the **HIV/AIDS epidemic is at a lower scale** than in other provinces and that **injuries and non-communicable diseases are more pronounced**.

There are also **pronounced gender differences** in the registered deaths, with consistently more male deaths than females, even though the Province has more females than males. **Child mortality is generally higher for males** than for females, which is also reflected in the Western Cape data. In the age groups over 5 years, the **high injury burden** contributes substantially to the higher numbers of male deaths. In 1997, however, there was also a consistently higher number of **male deaths from natural causes** across all ages. This appears to be a result of the higher number of **TB deaths among males**, as well as **cardio-vascular and respiratory causes**, which would be related to the higher **tobacco** and **alcohol** use among males.

Over the period 1997 to 2002, there was a **rapid increase in the number of young adult deaths** between 20 and 59 in males, and 15 and 49 in females, resulting from increases in **HIV/AIDS** and related conditions. By 2002, the number of natural **deaths among women aged 20-29 years**

exceeded the number of deaths among males. In the 60+ age group, the numbers of male and female deaths are similar, but the female deaths occur at much older ages than males. The nature of non-communicable diseases differs between males and females. **Stroke is a major cause of death in the Province.** Males, however, appear to have the occurrence of ischaemic heart disease at younger ages, while females have diabetes at younger ages. It will be important to calculate age-specific rates in the older ages to assess the trends.

Nevertheless, the data collected directly from Home Affairs data (currently for Cape Town and the Boland-Overberg Region) provide very much better quality than that which can be supplied by Statistics South Africa, and should continue to be the primary source of mortality data.

Conclusions and Recommendations

Some progress has been made during the first year of the Provincial BoD Project in institutionalising an integrated mortality-surveillance system which draws from all available sources of mortality data in the most appropriate manner for the task at hand.

The richness of the information arising from mortality data for the Province, and the value that has already been added and could be added on continuously in the future, are illustrated by the three papers produced by Workgroup 1 in Volume 1. This work provides a substantial and concrete basis for an intelligence function of Government, which may be repeatedly used to establish the Province's health status, and to further monitor and evaluate Governmental and other intervention programmes which seek to reduce the burden of disease over time. The possibility also remains for transforming the pattern or profile of the burden of disease, using this type of intelligence-gathering and processing system.

While the task of mortality surveillance is large, the BoD project is rather small. During the course of this first year, it became obvious that the limited Project resources will not be able to substitute adequately for proper Provincial Government institutionalisation when it comes to operating such a surveillance system. A strong recommendation from Workteam 1, therefore, is that **the Provincial Department of Health create the appropriate permanent and routine structures and allocate the necessary resources to sustainably roll out the integrated mortality-surveillance system**, as depicted in Figure 3, to all six districts over the next few years.

The proper role of Project members in this process became increasingly clear over the past year. It would best provide guidance, support, and training in the collection and processing of that quality data which would best portray the state of, and trends for, mortality in the Province. Additionally, the Project members may well be able to assist with the analysis of these improved data, and with the further institutionalisation of analytic methods and the production of appropriate indicators by Provincial staff.

For Year 2 Workgroup 1 foresees the aligning its activities with those listed at the end of the Overview Chapter, or Volume 1 of this Report. Specifically, this includes their continuing with the Provincial institutionalisation of mortality surveillance through the roll-out of the rapid mortality-surveillance system to more districts. It is also hoped that Workteam 1 can become involved, together with the other members of the Project, in an integrated intervention in a multiply deprived setting, as outlined at the end of the Overview Chapter.

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Reports which follow in the full edition of Volume 2

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Groenewald P, Bradshaw D, van Niekerk M, Jefferies D, van der Merwe W. (2007) Report on cause of death and premature mortality in the Boland Overberg Region, 2004-2005

Brody L, Bradshaw D, Bourne D, Laubscher J (2007) Report on Western Cape Province Mortality 1997–2002. An analysis of empirical cause of death data collected by Statistics South Africa from death notifications

Executive summary

Volume 3: Major Infectious Diseases

Background

The aim of the Provincial Burden of Disease Project is to provide a framework for a multi-sectoral strategy that will address the most common causes of morbidity and mortality in the Province.

When considered together in the Western Cape Province, HIV/AIDS and Tuberculosis (TB) constitute the largest burden of premature mortality (22% of years of life lost) and rank among the three major causes of years of life lost. The Workgroup for Major Infectious Diseases (MID) was established to concentrate on these two diseases and was asked to develop a theoretical framework for identifying the risk of HIV and TB infection.

The MID Workgroup was further asked to examine the evidence for risk, as well as to consider the effectiveness of current interventions aimed at preventing these diseases, and to provide recommendations based upon this evidence. The document published as Volume 3 presents a review of the epidemiological profile of both diseases in the Province and incorporates primary evidence of risk to guide further interventions. It also includes an audit of current HIV/AIDS and TB interventions, together with their roles and key outcomes.

Provincial disease profile

The annual antenatal HIV survey shows a yearly increase in the prevalence of HIV infections in the Western Cape since 1990, but also demonstrates a great unevenness and heterogeneity in HIV prevalence at sub-district level. The Western Cape remains the province with the highest incidence of new cases of TB in South Africa, despite it having the lowest overall prevalence of HIV.

There is a significantly differentiated distribution of disease at the local geographical level, characterised by so-called TB "hotspots" in areas of rapid urbanisation and high HIV prevalence. The biological interaction between HIV/AIDS and TB is a fundamental cause behind a large proportion of the disease distribution observed.

Risk

A theoretical framework for risk was developed and a review of current evidence is presented in terms of downstream (biological and individual) and upstream (societal and structural) factors.

The biggest risk factor for TB identified to date is concurrent HIV infection. Another major risk factor is the socio-economic clustering of poverty, unemployment and overcrowding, which is being exacerbated by migration. For planning purposes, it is conceptually useful to consider that most of the future burden of tuberculosis in the Western Cape will arise from two populations: the existing, and growing, pool of people living with HIV and the currently HIV-negative population living in impoverished, overcrowded conditions.

The risk of acquiring HIV, apart from the risk of mother-to-child transmission, mainly derives from the practice of unsafe sex. While national surveys, in conjunction with condom distribution data, illustrate an increasing acceptance of male condom usage, this has not brought about the expected reductions in HIV prevalence. This disappointing outcome is partly related to the difficulties of maintaining consistent and correct condom use, but is also related to a still significant population not using condoms. Also implicated is the structure and overlapping nature of sexual networks. Risk is exacerbated by relatively high partner turnover and partner concurrency. This in turn relates to vulnerabilities reproduced through power and gender disparities and the imbalanced or coercive nature of some sexual encounters. Other contributing causes include generally poor levels of education, transactional sex, mobility, migration, and the socio-economic clustering of poverty, unemployment and overcrowding.

While not contributing significantly to the numerical burden of HIV disease at the moment, pockets of other high-risk groups, such as intravenous drug users, commercial sex workers, and men who have sex with other men, must be considered when planning for future prevention strategies.

Recommendations

The Western Cape Accelerated HIV-Prevention Strategy (AHPS) has itself already recommended a concerted effort to obtain fuller coverage of the proven interventions, and with sufficient intensity for them to achieve the required impact. While this report concurs fully with this recommendation, it further uses an upstream perspective to produce additional recommendations.

In order to reduce the burden of tuberculosis over the long term, HIV transmission needs to be halted. In the short to medium term, however, strategies need to be devised to cope with the expected increase in tuberculosis disease that will arise from two high-risk populations: the

approximately 320 000 HIV-positive individuals projected to be living in the Western Cape by 2010, among whom there is an exceptionally high probability of TB occurrence, and the HIV-negative population who currently live in disease-burdened, socio-economically deprived areas that place them at risk of both TB and HIV acquisition.

To reduce tuberculosis morbidity and mortality among those who are HIV-positive, yet unaware of their sero-status, public health care needs to focus on the prevention of, and earlier detection of, TB. This would include the following:

- Identifying those at risk by:
 - Increasing the resources directed towards, and uptake of, Voluntary Counseling and Testing
 - Introducing opt-out HIV testing in clinical settings
- Significantly increasing the awareness of specific, targeted communities with regard to risk and linking this to VCT campaigns
- Active case finding
- Simplifying public access to health services (strengthening the health service capacity at the sub-district level).

Large investments in infrastructural development are necessary to effect these changes.

In order to reduce HIV transmission, the public health sector needs to address the disparate vulnerability to HIV infection that is experienced by women, the poor, migrants, and other disenfranchised groups. While awareness of HIV status is one aspect of prevention, it is more important to concentrate on the contexts of vulnerability. These range from vulnerabilities produced as a result of mobility; interactions between HIV risk and alcohol abuse; and disempowerment, which largely (but not exclusively) reproduces engendered vulnerability. Underlying all vulnerability, however, is exposure to overlapping sexual networks, while a further exacerbating factor is the high viral load among newly infected individuals who have concurrent partners. For a number of compelling reasons, a strong emphasis should be placed on promoting delayed sexual debut among young people, as well as limiting the overall numbers of sexual partners and sexual-partner turnover among those who are sexually active. To this effect, large-scale media campaigns have been shown to improve VCT uptake, and VCT has been shown to influence behaviour positively.

Addressing upstream risks associated with poverty, housing and education requires effective cross-cutting partnerships. Downstream recommendations are framed within the existing programmes for HIV and TB.

Current recommendations therefore include:

- Initial targeting of HIV and TB “hotspots”;
- Epidemiologically-led behavioural interventions;
- Early identification and management of high-risk groups and their contexts;
- Integration of prevention and treatment; and
- Scaling-up and adaptation of relevant public health services, including the integration of TB and HIV/ART services and the optimisation of the PMTCT programme.

Executive summary

Volume 4: Mental Health

Introduction

Following an initiative from the Head of the Western Cape Provincial Department of Health, a Project Task Team was appointed to delineate the extent of, and identify the main contributors to, the burden of disease (BoD) in the province. Five disease groups were identified as the largest contributors to the total burden of disease in the Western Cape, as shown in Table 1 below. Five corresponding workgroups were constituted to develop policies for the prevention of these diseases to significantly decrease the burden of disease in the Province.

Table 1: The five major contributors to the Burden of Disease in the Western Cape Province

Disease group
1. Major infectious diseases
2. Mental disorders
3. Cardio-vascular diseases
4. Childhood diseases
5. Injury

The Mental Health Workgroup was established in this context and is a consortium of multi-sectoral and intergovernmental public health and mental health experts. The aim of this workgroup is to devise recommendations for interventions to reduce the burden of mental illness in the Western Cape Province of South Africa. The main focus is on preventing *common* mental disorders such as: depression, substance abuse, childhood behavioural disorders, and Post-Traumatic Stress Disorder. By implication, the aim is to provide interventions that promote and sustain mental health.

Investing in Mental Health: Nice ... but *necessary*?

As illustrated in Volume 4 of this report, mental illness has a major impact on individual and population health, educational outcomes, teenage pregnancy, social capital, community violence, poverty, and the economy of a country.

From an economic perspective, the impact of mental illness is vast. The annual costs of mental disorders have been calculated at \$147 billion in the United States and at 3-4% of the Gross National Product in the European Union (WHO, 2005). Unfortunately, data of this kind is not available in South Africa, but — for alcohol abuse alone — the annual economic costs are estimated at between 0,5 and 1,9

percent of the country's Gross Domestic Product, about R8,7-billion a year. When the further costs of drug abuse are added, the figure rises to at least R10-billion a year (Benjamin, 2006). It is noteworthy that across the globe, the majority of financial costs incurred from mental health problems are due to absenteeism and decreased productivity rather than costs of mental health treatment and care.

In terms of its impact on population health, the onset of mental illness results in significantly greater disabilities than most physical illnesses and as such accounts for a large proportion of the Burden of Disease. At a global level, five of the ten leading causes of disability are psychiatric conditions (WHO, 2004). In South Africa, neuro-psychiatric disorders account for the second highest proportion of the local burden of disease, after HIV/AIDS (Bradshaw, 2003). In the Western Cape Province alone, more than 22% of all disability is due to 'emotional' and 'intellectual' disability (Statistics South Africa, 2001).

The impact of mental health will be grossly underestimated, however, if one excludes the impact it has on physical illness, since the risk-taking behaviour associated with mental disorders includes substance abuse, smoking, and unsafe sex. Mental illness, therefore, results in markedly higher risks for injuries, cardio-vascular disorders, and HIV (Herman & Jané-Lopis, 2005) — all of which are major contributors to the Burden of Disease in the Western Cape Province. Considered in this light, mental health is itself an "upstream" determinant of multiple health outcomes.

Mental health is also a determinant of multiple socio-economic outcomes; the mentally ill are more likely to be unemployed, live in inadequate housing and in poor neighbourhoods, and are less likely to complete schooling. Furthermore, mental illness — and in particular substance abuse — is associated with less social capital and greater community violence. In South Africa, 58% of homicide deaths and 57% of road-traffic injury deaths are associated with alcohol abuse (MRC, 2005). Socio-economic factors are also significant determinants of mental health, with unemployment, poverty, low social capital and community violence all associated with increased mental illness.

Multi-component mental health interventions can therefore improve a broad range of outcomes, including:

- an improvement in mental and physical health;
- the reduction of poverty;
- an increase in social capital; and
- a reduction in violence.

Interventions that improve mental health "not only enhance positive mental health, but also contribute to the reduction of risk behaviours such as tobacco, alcohol and drug misuse and unsafe sex; the reduction of social and economic problems such as dropout from school, crime, absenteeism from work and intimate partner violence; and the reduction of rates, severity of, and mortality from physical and mental illness."

Moodie & Jenkins (2005) *International Journal of Health Promotion and Education*.
Supplement: The evidence of mental health promotion effectiveness: strategies for action.
2: 42-46

The Prevalence of Mental Disorders in the Western Cape

The South African Stress and Health Survey (SASH) is a household survey that has recently been completed and seeks to estimate the national prevalence of mental illness. The results show that nearly one in three South Africans will have an episode of mental illness in their life-time (Stein et al, in press); but annual prevalence and disorder prevalence figures are still pending. Aside from this data, there is currently no other source of reliable data on the prevalence of mental disorders in the Western Cape Province nor in South Africa as a whole (Corrigall, 2006). Nevertheless, expert consensus suggests that Depression, Generalised Anxiety Disorder, Substance Disorders, Post-Traumatic Stress Disorders and Childhood Behavioural Disorders are the commonest psychiatric disorders in the Western Cape Province (Kleintjies et al, 2006).

The mortality data on injuries provides a proxy measure for the extent of mental health problems, including substance abuse, in the Western Cape Province. As only a small fraction of the mentally ill commit suicide, and given the high rates of substance abuse associated with homicide and road-traffic injuries, the latter will provide the most accurate proxy measure for the burden of mental illness. As a marker of the comparative prevalence of mental disorders across the Provinces of South Africa, it is noteworthy that the Western Cape Province has the highest proportions of premature deaths due to homicide, road traffic injuries and suicides as illustrated in Table 2 below (Bradshaw et al, 2004).

Table 2: Percentage contribution of homicide, road traffic injuries and suicide to total DALYs per province, and for South Africa.

	Western Cape	Gauteng	KwaZulu-Natal	South Africa
Homicide	12.9%	8.3%	4.7%	6.8%
Road Traffic	6.9%	4.4%	2.8%	3.7%
Suicide	2.3%	1.5%	0%	0%
Total % of ALL DALYs	22.1%	14.2%	7.5%	10.5%

Note: Homicide, road traffic and suicide deaths may be considered proxy measures of mental disorders. (Figures from Bradshaw et al 2004.)

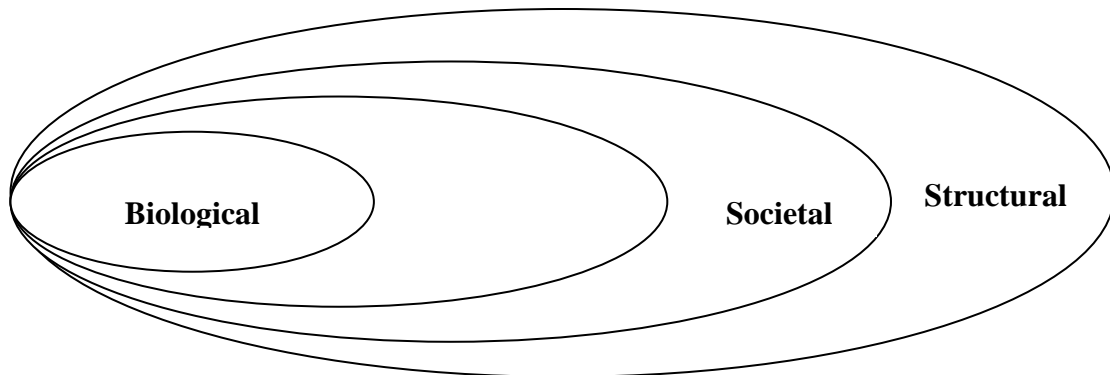
In terms of future trends, global projections indicate that the situation will worsen with depression predicted to be the second leading cause of disability worldwide in 2020 (WHO, 2004).

- **30% of adults in the Western Cape Province will develop a mental disorder in their life-time**
- **Homicide, road-traffic injuries, and suicide rates can give an indication of the extent of mental illness in the Province: suicides alone are a poor proxy measure**

Upstream Determinants of Mental Health in the Western Cape

The Mental Health workgroup was asked to identify and address the “upstream” determinants of mental illness. The term “upstream” refers to those socio-structural factors that are considered to be the “root causes” of mental illness, while downstream causes typically are the “final” 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 can cause mental illness. A simplified version of this is presented in Diagram 1 below.

Diagram 1: A Conceptual Model of Risk Factors for Disease



A review of the literature and consultation with experts in the field identified six “risk” areas where it was felt interventions would be most useful:

1. **Multiple Deprivation** (poverty, unemployment, food insecurity, and housing shortages)
2. **Substance Abuse** (alcohol and drug abuse)
3. **Mental Health Systems** (prevention and screening, access to treatment)
4. **Trauma** (prevention of mental illness after exposure to violence)
5. **Pre-school** (access to affordable, high quality pre-school facilities)
6. **Recreation** (access to a range of sports and other recreational facilities)

Furthermore, interventions in these areas should aim to increase social capital and employment, both significant determinants of mental health.

The literature review also identified **particular groups that are at increased risk** for mental illness as follows:

- The unemployed and underemployed
- Women (Depression and Generalised Anxiety)
- Men (Substance use disorders)
- People living in poverty
- Single parents
- People with chronic illness (HIV and other)
- Refugees

Certain '**critical periods**', where particular stages of the life-cycle are associated with higher risks for mental illness (and greater potential for preventive interventions), were identified. These include: early childhood, adolescence, early adulthood and the peripartum period (the period surrounding child birth).

Recommended interventions

The proposed recommendations were derived from an analysis of risk factors and evidence for interventions; an identification of gaps in the current programmes; and an examination of the policy context in the Western Cape Province. It should be noted, however, that several departments of the Provincial Government of the Western Cape are already undertaking many interventions in the focus areas of this report. The recommendations that follow here are therefore intended to contribute to this work. Moreover, owing to the short time allocated to this project, consultation with all the relevant government departments has not been possible and the recommendations presented here are thus equally contingent on further discussion at the Development and Health Summit, scheduled for June 2007.

Only the *types* of interventions are presented in this brief summary; for details on *how* these interventions could be implemented, the reader is directed to the relevant section in the Mental Health Report (Volume 4 on the CD). In the computerised version of this report, available on Compact Disc, each topic is hyperlinked to the relevant section in the report. For the reader's convenience, key points are also highlighted within the text itself. Interventions which have been underlined below indicate that these recommendations are based on strong evidence; those references which have not been underlined have not been adequately researched, but are considered very promising.

I Multiple Deprivation

1. Improve access to quality housing by –
 - o improving the quality and type of state-subsidised housing;
 - o improving the capacity of housing applicants to make financial contributions to their homes;
 - o increasing the housing subsidy amount available per applicant;
 - o decreasing the demand for housing; and
 - o fostering community participation and support for housing delivery
2. Expand neighbourhood renewal projects
3. Ensure proper monitoring and evaluation of poverty-alleviation programmes
4. Ensure that current employment programmes include evidence-based intervention methods (as described in this report)
5. Pilot community development micro-credit projects in the most deprived areas
6. Improve access to social assistance grants
7. Provide free, or subsidised, high-quality child-care facilities

8. Expand and evaluate existing programmes addressing adult literacy and food insecurity

II Substance Abuse (alcohol, 'tik' and other substances)

1. Enforce existing laws on alcohol, 'tik' (methamphetamine), and other drugs
2. Restrict or ban the advertising of alcohol
3. Conduct concurrent anti-alcohol and anti-drug media campaigns that challenge prevalent beliefs and 'norms'
4. Substantially increase the cost of alcohol
5. Reduce the availability of alcohol by strengthening the Liquor Act
6. Provide adequate substance-dependence treatment services
7. Increase references to substance abuse in other health-promotion messages
8. Include substance-abuse prevention programmes in school curricula
9. Train primary-care and other health workers in screening and brief interventions for substance abuse and dependence
10. Incorporate the addressing of substance abuse in multi-faceted community development interventions

III Mental Health Services

1. Improve school-based mental health services
2. Develop and implement workplace mental health programmes
3. Develop and implement home-visiting interventions for new parents in high-risk areas
4. Invest in media campaigns to increase mental health literacy (knowledge about mental health and illness) and decrease stigma
5. Integrate mental health services into general medical services and make adequate provision for: human resources, training, facilities, protocols and information management
6. Ensure mental health facilities are available at secondary and tertiary hospitals, which should include the appointment of all relevant specialists and sub-specialists
7. Employ more dedicated mental-health professionals at general hospitals and in outpatient services
8. Provide dedicated mental health professionals and resources to maternal, HIV and trauma services
9. Build community mental health services (as described in this report)
10. Utilise a continuous care model for the management of patients
11. Establish a Mental Health Information System

IV Trauma

1. All health services must be trauma-informed and competent
2. Increase the number of trauma-competent mental-health staff in general medical services
3. Develop an adequate referral network across sectors
4. Train mental-health professionals in trauma-focused psychotherapy and pharmacotherapy
5. Ensure sufficient mental-health services are provided
6. Develop resources for the emergency placement of trauma survivors who may require such placement to ensure their safety
7. Develop critical-incident stress-management programmes in workplaces with high trauma exposures
8. Prevent retraumatisation: train occupational groups working with trauma victims (police, lawyers, and district surgeons) in methods of dealing with trauma victims
9. Develop post-graduate training programmes in trauma
10. Disaster plans should include a detailed psycho-social response plan
11. Evaluate and support non-governmental organisations currently filling the gap in trauma services e.g. Child Welfare, Rape Crisis, FAMSA, Lifeline

V Pre-school education

1. Develop quality ECD teacher-training programmes
2. Develop quality ECD programmes according to the standards set by the Department of Social Development
3. Urgently roll-out high-quality ECD programmes to areas with highest Multiple Deprivation Index

VI Recreation

1. Promote and support physical activity and sport
2. Promote and support other leisure and recreational activities in arts, culture and leisure sports, for example: ballroom and Latin dancing, volleyball, chess, indigenous games and pool
3. Design recreational projects to increase social capital
4. Evaluate the mental-health outcomes of existing sports and recreation programmes
5. Protect and promote green and natural spaces
6. Provide affordable and safe transport to recreational facilities or areas
7. Target sports and recreation programmes at high risk groups

Relationship of interventions to iKapa Elihlumayo

Until recently, health has been viewed predominantly as an expenditure item with few 'returns', and health improvements have been regarded as a social good resulting from, rather than contributing to, economic growth (WHO, 2006). The WHO Commission on Macro-economics and Health was established in 2000 to interrogate these assumptions and has ably demonstrated that investment in health is a key engine for economic development and poverty alleviation. For example, it is estimated that a six-fold return would be expected from investments in a set of essential health interventions (WHO 2006). These findings are consistent with the work of development economists who have found that "small improvements in life expectancy can have a large effect on income, education and democracy" (Fielding, 2002: 410).

The relationship of health to human development is probably more self-explanatory and is reflected in the inclusion of health indicators in the United Nations' Human Development Index and Millennium Development Goals. The review of evidence on the determinants of mental health shows that uneven development also impacts on mental health: income inequality and multiple deprivation are universally associated not only with poorer physical health, but also with poor mental health.

In the light of these findings, the recommended interventions presented in this report were considered in the context of iKapa Elihlumayo. The Provincial Growth and Development Strategy (PGDS) aims to develop the Western Cape into a place where

... all residents will enjoy a quality of life characterised by greater levels of equality, improved access to economic and social opportunities, assets and resources and healthy living environments that foster well-being.

(Department of the Premier, 2006:21).

The strategy aims to achieve these goals through shared growth and integrated development. The four interdependent elements of the iKapa Elihlumayo development strategy are [growth, equity, empowerment and environmental integrity](#): the direct impact of the recommended interventions and then the expected improvement in mental health on these four aspects of development and the [eight strategies](#) of the PGDS are shown in Tables 3 and 4.

From the tables it is evident that the interventions themselves, as well as the expected improvements in mental health, would contribute to realising the imperatives of iKapa Elihlumayo. As such, interventions should be targeted to areas with the greatest need for development.

Table 3: The impact of recommended interventions and mental health outcomes on the four principles of Shared Growth and Integrated Development

Interventions	Growth	Equity	Empowerment	Environmental Integrity
Multiple Deprivation	✓	✓	✓	✓
Substances of Abuse	✓	✓		
Pre-school	✓	✓	✓	
Trauma	✓	✓	✓	
Recreation	✓	✓	✓	✓
Mental Health Services	✓	✓	✓	
Outcome				
Improved mental health	✓	✓	✓	

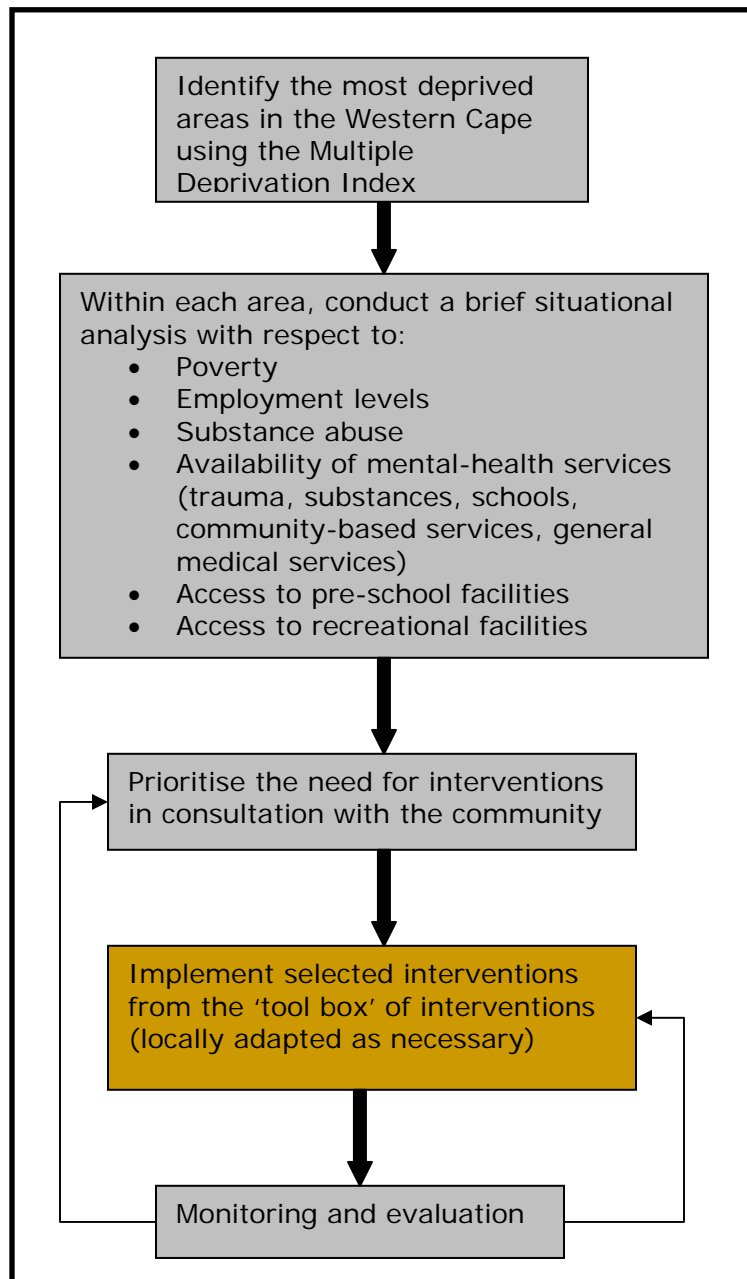
Table 4. The impact of recommended interventions on the eight strategies of iKapa Elihlumayo

Intervention Group	Strategy 1: Economic Participation	Strategy 2: Connectivity infrastructures	Strategy 3: Effective transport	Strategy 4: Liveable Communities	Strategy 5: Resilient communities	Strategy 6: Spatial Integration	Strategy 7: Tolerance, respect for diversity	Strategy 8: Effective governance institutions
Multiple Deprivation	✓	✓	✓	✓	✓	✓	✓	✓
Substances of Abuse	✓			✓	✓		✓	✓
Pre-school	✓			✓	✓		✓	✓
Trauma	✓			✓	✓		✓	✓
Recreation	✓	✓	✓	✓	✓	✓	✓	✓
Mental Health Services	✓				✓		✓	✓

Integrating interventions in multiply deprived settings

While the recommended interventions may be adopted as stand-alone interventions, every effort should be made at an integrated approach in high-risk areas. Since the most vulnerable groups in the Western Cape Province are those who experience multiple dimensions of poverty or deprivation, multi-faceted interventions are likely to be the most effective. An example of how interventions could be integrated is presented in Diagram 2. Other Burden of Disease interventions could easily be added to this model.

Diagram 2: An example of how interventions could be integrated in multiply deprived areas



Monitoring and Evaluation

Monitoring and evaluation is a key part of any system change and there are several reasons to monitor social issues. Firstly, the practice of monitoring provides useful data with which to influence policy development, and helps to determine the outcomes, effectiveness and efficiency of social programmes. Without such data, decision-makers do not have the information they need for policy design or resource allocation (Dawes & Bray, 2007). Secondly, a good monitoring system allows decision-makers to determine whether a programme was actually implemented; whether it was implemented in the manner originally intended; and — if those requirements have been met — whether it has proved to be effective. Input, process, output, and outcome indicators thus need to be developed to evaluate the effectiveness of interventions. More broadly, the surveillance of mental illness and its determinants is a vital component of decreasing and planning for the burden of mental illness.

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Executive summary

Volume 5: Violence-related Injury

Background

Violence is the major contributor to the high rates of injury, accounting for 12.9% of premature mortality in the Western Cape Province, compared to 6.9% for road traffic injuries (Bradshaw et al, 2004). In the Western Cape, the ratio of premature mortality due to violence — when compared to road traffic injuries — was greater than in most other provinces. This review briefly describes the known risk factors for violent and aggressive behaviour; the prevalence of some of these risk factors in South Africa and the Western Cape; and provides a brief summary of the evidence for prevention strategies.

The first section of Volume 5 of this report uses the public-health approach to violence-prevention and focuses exclusively on interpersonal violence. This form of violence itself can be divided into two basic subcategories:

- (1) family and intimate partner violence, which refers to violence that occurs mainly within the home (for example: child, partner, or elder abuse); and
- (2) community violence, which usually takes place outside the home and is either directed at strangers (for example: random violence, or sexual assaults, such as stranger rape) or acquaintances (for example: bullying; or sexual assaults, such as date rape).

The ecological model used in this report is congruent with the one used by the other workgroups which have been addressing mental health, cardiovascular disease, infectious diseases and child health. The model specifies four ecological levels: the biological, the behavioural, the societal, and the structural.

It is important to note that scientifically evaluated violence-prevention programmes are limited to a handful of those aimed at the individual and relationship levels. Interventions at these levels of influence are more common, more affordable, easier to design and implement, and also easier to evaluate. Evaluation of community and societal violence-prevention strategies is complicated by numerous interacting variables and, as a result, there are relatively few programmes aimed at the community and societal levels of influence and also relatively little evidence for their effectiveness. Nevertheless, there are a number that show promising results and should be considered for implementation at the provincial level.

Risk factors

The risk and protective factors that determine both the likelihood of exposure to violence and the predisposition to aggressive or violent behaviour can be listed according to the different ecological levels as follows.

Biological risk factors

- Demographic factors, such as age and sex
- Other biological factors: an abnormal heart rate, or neurological damage that results in psychological or personality disorders

Behavioural risk factors

- Problems in early childhood development: hyperactivity; impulsiveness; poor behavioural and attention problems; the early onset of negative conduct (such as aggressive, oppositional, disruptive, and destructive behaviours); poor diet
- Alcohol and substance abuse

Societal risk factors

- Family environment: the number of children in a family; mothers having a child at a young age; low levels of family cohesion; single-parent households; low socio-economic status; harsh physical punishment; parental aggression towards children; parental conflict monitoring and supervision; intimate partner violence
- Community environment: violent friends; violent neighbourhoods; witnessing violence; activities relating to gangs, guns, and drugs; the level of unemployment; population density and mobility; the carrying of weapons; social integration; social capital
- Socio-cultural factors: the endorsement of violence to resolve conflict; traditional gender and social norms of oppression; the ineffectiveness of political structures; the destructive and misleading role of media

Structural factors

- Poverty and social status: low socio-economic status; relative deprivation and social inequality; low educational attainment; high rates of unemployment
- Recent migration and urbanisation
- Inadequate housing and infrastructure

Interventions

Effective (underlined) and promising interventions are summarised below, according to key violence-prevention themes:

Upstream

Investing in early interventions

- Lead monitoring and toxin removal;
- Increased access to pre- and post-natal care for children aged 0 to 3 years;
- Multi-context, long-term interventions that impact on multiple dimensions of a child's environment; and
- School-feeding schemes to ensure adequate nutrition in all grades throughout the schooling years.

Increasing positive adult involvement

- Incentives for young adults and high-risk youths to complete high school and post-secondary education or vocational training.

Strengthening communities

Alcohol

- Implementing a coherent liquor-outlet policy which brings informal outlets into the regulated market;
- Encouraging community mobilisation against alcohol misuse;
- Establishing norms and guidelines for school-based programmes, based on best practices;
- Implementing product restrictions, including restrictions on the size of packaging and clearer, legible labels regarding content;
- Restricting products that appeal to youth;
- Reducing alcohol availability for ages 12 years to 19 years; and
- Establishing integrated programmes that address alcohol and substance abuse alongside other violence-prevention initiatives.

Education and childcare

- Implementing programmes which provide youths with incentives to complete secondary schooling;
- Implementing school-based prevention programmes which are aimed at reducing date-related violence;
- Introducing child-protection service programmes;
- Improving school settings for children; and
- Installing metal detectors in schools for children aged 3 to 19 years.

Firearms

- Enforcing longer waiting periods for firearm purchases;
- Holding gun-owners liable for damage caused by gunfire;
- Promoting the safe storage of firearms and other lethal weapons; and
- Enforcing laws which prohibit the illegal transfers of guns to youth.

Changing cultural norms

- Conducting campaigns to increase public awareness of child maltreatment;
- The “naming and shaming” of intimate-partner violence offenders;
- Establish adult recreational programmes;
- Prioritise community policing;
- Reducing the glorification of violence by the media, especially on television and film;
- Public information campaigns for children aged 9 to 11 years to promote pro-social norms;
- Change cultural norms that support violence such as those that support male dominance over females, parental dominance over children, and violence as a means of conflict resolution;
- Mobilise community women’s networks to challenge the prevailing aggressive norms and beliefs, in order to reduce the tolerance of violence, and to teach perpetrators to fear the consequences of their destructive behaviour; and
- Work with young men to change their own attitudes towards, and their behaviour with regard to, gender-based violence and violence in general.

Reducing income inequality

- Establish job-creation programmes for the chronically unemployed for ages 20 and older;
- Strengthen police and judicial systems for all ages to ensure more equitable access, protection, and legal recourse. In South Africa this would include better services for victims, witnesses and suspects; as well as more streamlined and efficient investigation and judicial procedures.
- Reduce poverty — for all ages;
- Address housing density and residential mobility programmes; and
- Implement micro-finance projects for women.

Improving the criminal justice and social welfare systems

- Facilitate easier access to social support for women and families;
- Introduce further legislation to criminalise the maltreatment of children, intimate-partner violence, and elder abuse;
- Introduce mandatory arrest for intimate-partner violence;
- Improve services for the identification and treatment of elder abuse;
- Train health-care professionals in the identification and referral of high-risk youth, battered women, victims of elder abuse, child maltreatment, and sexual violence;
- Improve services for children who witness violence;
- Create safe havens for children on high-risk routes to and from school upstream; and
- Increase shelters and crisis centres for battered women and victims of elder abuse.

Downstream

Investing in early interventions

- Introduce therapeutic foster care for children aged 0 to 3 years;
- Implement preschool enrichment programmes for children aged 3 to 11 years;
- Provide mentoring for children aged 3 to 11 years;
- Implement school-based child-maltreatment prevention programmes for children aged 3 to 11 years;
- Introduce home visitation aimed at reducing violence directed at children aged 0 to 3 years; and
- Provide training for young parents aimed at reducing violence among children aged 0 to 5 years.

Increasing positive adult involvement

- Provide mentoring for children aged 12-19 years;
- Provide family mentoring for families with children aged 12-19 years;
- Introduce home-school partnership programmes to promote parental involvement for children aged 3 to 11 years; and
- Provide after-school programmes to extend adult supervision for children such as wilderness programmes and other outdoor programmes for youth at risk.

Strengthening communities

Alcohol

- Pilot and implement brief interventions for high-risk and hazardous drinkers.

Education and childcare

- Introduce social development programmes for children between the ages of 3 and 19 years;
- Encourage academic enrichment programmes for children aged 12 to 19 years; and
- Introduce temporary foster-care programmes for chronic delinquents for children aged 12 to 19 years.

Changing cultural norms

- Reduce unintended pregnancies (aimed at preventing violence against children aged 0 to 3 years);
- Introduce peer mediation or peer counselling for children aged 12 to 19 years;
- Encourage and expand life-skills training programmes; and
- Recreational programmes for children aged 3 to 19 years.

Improving the criminal justice and social welfare systems.

- Introduce treatment programmes for victims of maltreatment for children aged 0 to 3 years;
- Introduce services for adults who were abused as children, and for ages 20 and older;
- Introduce treatment for child and intimate-partner abuse offenders for ages 20 and older; and
- Introduce screening by health-care providers for maltreatment of children.

Scientifically evaluated violence-prevention programmes are limited to a handful aimed at the individual and relationship levels, as these are easier to evaluate and tend to be more common (Dahlberg & Butchart 2005).

Dahlberg and Butchart (2005) identified several levels of effectiveness for the evaluation of violence-prevention programmes. The most stringent criteria include:

- evaluations using a strong research design;
- evidence of a significant prevention effect;
- evidence of a sustained effect (i.e. the effect extends beyond the duration of the programme); and

- replication of a programme with demonstrated preventive effects across different settings.

The small number of effective interventions relates to the difficulty in measuring actual reductions in physical violence: a relatively rare occurrence, and which may result from a complex web of factors that influence individuals and relationships over a long period of time. Internationally, the evaluation of violence-prevention programmes has frequently considered their effectiveness in changing knowledge and attitudes — such as peer-education programmes — rather than their behaviour or the reduction in the incidence of injuries, which would provide more important outcomes (Dahlberg & Butchart. 2005).

The synergy between the interventions with evidence of effectiveness and the Provincial Growth and Development Strategy are shown in Table 1 below. It is clear that there is a particular resonance with three of the key areas, namely: growth, equity and empowerment.

Table 1: The impact of recommended violence prevention interventions on the four principles of Shared Growth and Integrated Development

Interventions	Growth	Equity	Empowerment	Environmental Integrity
Lead monitoring and toxin removal	/	/	/	/
Completing secondary schooling	/	/	/	
School-based prevention to reduce dating violence	/	/	/	
Mobilising women's networks to challenge norms and beliefs	/	/	/	
Changing young men's attitudes and behaviours on violence and gender-based violence	/	/	/	
Therapeutic foster care for children 0-3 years	/	/	/	
Preschool enrichment programmes for children 3-11 years	/	/	/	
Home visitation to reduce violence for children 0-3 years	/	/	/	
Training in parenting aimed to reduce violence for children 0-5 years	/	/	/	
Mentoring for children aged 12-19 years	/	/	/	
Family mentoring for families with children aged 12-19 years	/	/	/	
Social development programmes for children between the ages of 3 and 19 years	/	/	/	
Academic enrichment programmes for children aged 12-19 years	/	/	/	
Life-skills training programmes	/	/	/	

In relation to the **eight strategies of iKapa Elihlumayo** it is clear that there is a clear congruence with strategies 4,5,7 & 8 (Table 2).

Table 2: The impact of recommended interventions on the eight strategies of iKapa Elihlumayo

Interventions	Strategy 1 Economic participation	Strategy 2 Connectivity infrastructures	Strategy 3 Effective transport	Strategy 4 Liveable communities	Strategy 5 Resilient communities	Strategy 6 Spatial integration	Strategy 7 Tolerance, respect for diversity	Strategy 8 Effective governance institutions
Lead monitoring and toxin removal				√	√			√
Completing secondary schooling	√				√		√	√
School-based prevention to reduce dating violence				√	√		√	
Mobilising women's networks to challenge norms and beliefs					√		√	
Changing young men's attitudes and behaviours on violence and gender-based violence					√		√	
Therapeutic foster care for children 0-3 years				√	√			
Preschool enrichment programmes for children 3-11 years				√	√			
Home visitation to reduce violence for children 0-3 years		√		√	√		√	
Training in parenting aimed to reduce violence for children 0-5 years				√	√			
Mentoring for children aged 12-19 years				√	√		√	√
Family mentoring for families with children aged 12-19 years				√	√		√	
Social development programmes for children 3-19 years	√			√	√			√
Academic enrichment programmes for children 12-19 years	√			√	√			
Life-skills training programmes	√			√	√		√	

Prevention capacity

Violence prevention requires comprehensive intervention strategies involving all sectors of society to address core sets of underlying causes and risk factors, including governments, NGOs and civil society, as well as the general public and the private sector.

Government departments

Departments and ministries with a stake in violence prevention span all five of the Government's communication clusters.

Research agencies

There are numerous departments within tertiary education and academic research institutions address issues relating to violence.

Civil society and non-governmental organisations

There are a number of non-governmental organisations that span the disciplines of human security and social justice to the implementation of interventions for specific typologies and aspects of violence.

Conclusion

It is clear that efforts to address the burden of violence in the Western Cape Province require a multi-sectoral approach that spans the criminal justice, health, infrastructure and policy 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 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, health care, transport, and so on) — and numerous armed gangs that support a drug trade, the Provincial Government may wish to provide certain “quick-fix” solutions, through improving criminal justice, while investing heavily in those programmes most likely to affect a fundamental and lasting change in the **long term**.

It is also clear that any provincial strategies arising from these reviews will need to be underpinned by **accurate and reliable reporting systems** that will assist in targeting communities most in need of intervention as well as assisting with the ongoing evaluation and monitoring of key strategies. Hence, there is an urgent need to develop violence prevention strategies in the local context, but one of the key challenges is the current absence of **research information and documentation**. In order to assess and replicate successful strategies, each needs to include:

- appropriate theoretical underpinnings;
- comprehensive documentation
- specific measured outcomes; and
- a detailed monitoring and evaluation strategy that should be established prior to the onset of the project and that will also include non-governmental agencies such as universities, NGOs and research institutes

Executive summary

Volume 5: Traffic-related Injury

Background

Internationally, the contribution of road-traffic injuries to the burden of injury is an emerging priority, since their contribution to the global burden of disease was expected to rise to 5.1% of DALYs lost by 2020 (Murray and Lopez, 1995). In South Africa, the contribution for YLL is already at 5% and in 2000 the Western Cape was ahead of the trend at 6.9% (Bradshaw et al, 2004). Within the City of Cape Town, where the National Injury Mortality Surveillance System provides full coverage of fatalities, the following patterns were characteristic:

- a high percentage of male deaths (78%);
- a high percentage of pedestrian deaths (>60%);
- high alcohol-relatedness of deaths among both drivers (> 50% of deaths) and pedestrians (>60%); and
- distinct peaks over weekends among adults and among children of school going age in the mornings and early afternoons.

(Prinsloo, 2004).

As detailed in the *World Report on Road Traffic Injury Prevention*, road-traffic injury is largely preventable and predictable. Caused only by humans themselves, it is amenable to rational analysis and counter-measure and is both a multi-sectoral issue and a public health issue. All sectors, including health, therefore need to be fully engaged in responsibility, activity and advocacy in order to prevent road-traffic injuries. Moreover, it is a social equity issue, because those who do not possess motor vehicles bear a disproportionate share of road injury and risk, and thus equal protection for all road users should be sought. The vulnerability of the human body demands a limiting design parameter for the traffic system, while the management of excessive speeds is crucial. Conventional driving errors and pedestrian behaviour ought not to produce regular deaths and serious injury, and the traffic system should help users to cope with increasingly demanding conditions. Technology transfer from high-income to low-income countries needs to fit local conditions and should address research-based local needs (Peden et al. 2004).

There is no disputing the importance of road traffic collisions as a national and provincial priority, because of their contribution not only to the burden of disease, but also to the economy. Apart from physical injuries, road traffic collisions also damage personal property and can severely inconvenience other commuters and hence productivity. According to the Arrive Alive campaign, the estimated cost of road traffic collisions in 2002 was in the region of R42.5 billion (Department of Transport, March 2004).

Consequently a separate review on road traffic injuries was commissioned as part of the Provincial Government of the Western Cape's Burden of Disease Project. The second section of Volume 5 explores the risk factors for public and private transport; examines those interventions which have sought to reduce the incidence of death and disability in the Province; considers the latest thinking nationally and internationally about road injury prevention; and lists those existing or proposed measures within their appropriate settings. The section reviews the known risk factors; examines the best practices and interventions for road traffic injuries; describes the risk factors and groups at risk in the Western Cape, based on currently available data; and provides policy makers with an initial basket of feasible interventions that meet the specific needs of the province.

Risk factors and interventions

One of the challenges is to re-align the risk factors and interventions into an ecological framework that is congruent with the Burden of Disease project. Most other texts use the public health triad or the systems approach that divides the factors into three influential vectors:

- (1) exposure to risk;
- (2) crash involvement; and
- (3) crash severity.

Factors influencing exposure to risk tend to comprise mainly infrastructural and social upstream factors, whereas risk factors influencing crash involvement are usually individual biological or behavioural and hence downstream with two exceptions: inadequate visibility due to environmental factors and defects in road design which are infrastructural. These factors are only downstream, however, in the sense of their being more proximal to the driver and hence these factors are considered relevant to the Burden of Disease Project. Similarly, risk factors influencing crash severity are a mix of proximal and distal interventions in terms of our ecological model. These would include actual health department-related downstream measures, such as the response time of emergency services, and the quality and quantity of hospital services for crash victims.

Biological risk factors

- Demographic factors such as age (young for aggression, old for decreased alertness) and gender (for aggression)
- Other biological factors include a variety of acute and chronic conditions that may pose a risk to the driver passengers and other road users, such as: epilepsy, neurological disorders, heart disease, or poor eyesight

Suggested interventions

- A graduated driver licensing system for new drivers.
- Restricted licences for young drivers (especially young males).
- Improved licensing system geared to health and behavioural problems, based on examination
- The continued monitoring and evaluation of process, output and outcome indicators

Behavioural risk factors

- Alcohol and substance abuse
- Aggressive driving behaviours include: speeding and moving violations among drivers, and risk-taking behaviour by all road users
- Fatigue
- The use of hand-held cell-phones while driving
- Failure to use seat-belts and child restraints
- Crash helmets not being worn by users of two-wheeled vehicles

Suggested interventions

- Vigorous and regular random breath testing;
- Stricter enforcement with more severe penalties, not just fines
- Better administration and follow-up of fines: at the time of writing only 17% of fines were being paid
- A "no-nonsense" approach to fine recovery and enforcement
- Compulsory courses and training for substance abusers
- The visible enforcement of moving and other violations
- Education campaigns at various locations and using various media that are integrated with current enforcement priorities
- Monitoring and evaluation of process, output and outcome indicators

Societal risk factors

- The way in which the media promotes unsafe and risky behaviour and unrealistic lifestyle choices through, for example, the advertising of expensive and fast cars as status symbols
- A general culture of lawlessness
- Irregular detection of criminal behaviour with regard to traffic offences, and ineffective enforcement

Suggested interventions

- Further educational and public campaign interventions
- Advertising policies for the motor industry which seek to restrain harmful advertising (with regard to speed, environmental damage, and the overall promotion of a “macho” image) as is the case for tobacco and alcohol abuse
- Policies to challenge a culture of legal impunity
- Demerits and confiscation of vehicles
- Occupational health regulation for professional drivers with respect to fatigue and regular, compulsory medical tests for professional drivers (while the same rigour might be applied equally to other drivers)
- Cost benefit and multi-criteria analyses and constant monitoring and evaluation of this balance

Structural risk factors

- Economic factors, including social deprivation and poverty
- Land-use planning, with poor access to employment and services
- Rapid urbanisation and the consequently inadequate provision of basic infrastructure
- Limited opportunities for safer modes of travel
- The mixture of high-speed motorised traffic with more vulnerable road users
- Insufficient attention to the integration of road function with decisions about speed limits, road layout and design
- The large number of vulnerable road users (such as pedestrians) in urban and residential areas
- Travelling in darkness
- Defects in road design, layout and maintenance, which can also lead to unsafe road-user behaviour
- Inadequate visibility
- Roadside objects not being crash protective
- Policies that permit fast cars yet provide insufficient vehicle-crash protection for occupants, pedestrians, and cyclists

Suggested interventions

- Spatial development and planning policies in respect of:
 - reducing the need for travel (more efficient land-use)
 - the segregation of 4-wheel, 2-wheel and pedestrian pathways;
 - multiple carriageways;
 - speed controls and traffic calming
 - crash-prevention structures at “hotspots” (by introducing compulsory medians, for example)
 - prioritising public mass transit over private vehicle use

- Policy and law regarding motor vehicle design:
 - intelligent speed devices
 - alcohol-detection ignition locks
 - crash safety design for different collision types (such as car-on-car and car-pedestrian – no bull-bars)
 - reduction in the car-on-car light intensity of headlamps, high-mounted rear stoplights
 - audible seat-belt alarm
 - tax benefits for sensors to tighten seatbelt pre-crash
- Independent safety audits of infrastructure
- Policies to increase visibility
 - lights-on for daytime travel and street lighting for night-travel to increase visibility
 - retro-reflective components in school wear
- Vehicle safety and operation standards rigorously maintained by law — also a boost to the motor maintenance industry
- Regulate advertising in media that emphasises speed and aggression, and restrict general advertising that distracts drivers

Table 1 below postulates interventions for a range of risk factors and assesses their feasibility in the Western Cape Province. It is clear that these strategies broadly interface with the strategic priorities of the Provincial Growth and Development Strategy, namely: growth, equity, empowerment and environmental integrity. With regard to the **eight strategies of iKapa Elihlumayo**, there is a particular congruence with strategies 1, 2, 3, 4 and 6, namely: **Economic participation, connectivity infrastructure, effective transport, liveable communities, and spatial integration.**

Conclusion

It is unclear to what extent the numerous strategies outlined in this document (of which many are included in existing South African road safety strategies) are being implemented, nor what effect they are having. What is clear is that these strategies need to be underpinned by a rigorous information system to monitor and evaluate key process, output and outcome indicators. This should include cost-benefit analyses and the constant monitoring and evaluation of this balance. This process should utilise an integrated multi-disciplinary team that is independent of implementing agencies in order to ensure an unbiased and optimum adherence to best practices for safety promotion and injury prevention. Studies to assess the effectiveness of interventions which are process-related, such as the behavioural impact of changes in vehicle technology, worldwide experience of education, better enforcement, and so on, should be undertaken along with analysis of pre-crash conditions. Integration of the Engineering and Health Care professions are seen as key to these aspects.

Table 1: Feasibility of potential interventions in the Western Cape Province for a range of risk factors

Risk Factor	Summary of Issues	Possible Traffic Interventions	Feasibility of Intervention in the Western Cape	Assess-ment of Priority (High/Med/Low)
Biological Factors				
Being a young male	Worldwide evidence shows that young drivers and motor-cyclists present a greater traffic risk. 26% of all drivers involved in collisions were between 26-35 years old.	1. Graduated driver's licensing system. 2. Improved licensing system geared to health and behavioural problems, based on examinations or tests. 3. Public information and awareness campaign.	1. Good 2. Good 3. Good	1. Medium 2. Medium 3. Medium
Poor road-user eyesight	Insufficient analysis and data.	1. Bi-annual re-tests for drivers over 70.	1. Good	1. Medium
Behavioural Factors				
Inappropriate or excessive speed	Majority of pedestrian collisions are on freeways, indicating a speed problem. Probability of death increases with speed.	1. Speed management at "black spots". 2. Speed law-enforcement programmes randomly implemented. 3. Better pedestrian infrastructure. 4. Smarter vehicle design.	1. Good 2. Good 3. Good 4. Poor	1. High 2. High 3. High 4. Poor
Alcohol	Alcohol consumption increases the likelihood of a collision occurring, as well as the likelihood that death or serious injury will occur. Around 4% of all drivers tested at above the recommended BAC.	1. Law enforcement programmes. (including random testing) 2. Public information, Education and awareness programmes. 3. Demerit system. 4. Confiscation programme	1. Good 2. Good 3. Good (experiment in place) 4. Good	1. High 2. High 3. Medium 4. Medium 5. Poor

		5. Smart-vehicle design (Alcohol ignition systems)	5. Poor (dependency on imports)	
Use of medicinal or recreational drugs	Similar impact to alcohol.	1. Public information, Education and awareness programmes. 2. Demerit system. 3. Confiscation programme	1. Good 2. Good 3. Good	1. High 2. Medium 3. Medium
Fatigue	Clear correlation between fatigue and collisions.	1. Public information, Education and awareness programmes. 2. Subject to random checking	1. Good 2. Good	1. High 2. High
Cell phones	Up to eight fatalities per annum as a result of driving while using a cell phone.	1. Law enforcement programmes. 2. Public information and awareness campaign.	1. Good 2. Good	1. High 2. High
Seat-belts and child restraints not used	17% of drivers, 36% of front passengers and 97% of rear passengers do not wear seat belts.	1. Law enforcement programmes. 2. Annual vehicle tests. 3. Public education and awareness campaigns.	1. Good 2. Good 3. Good	1. High 2. High 3. High
Crash helmets not worn by users of two-wheeled vehicles	Studies have found that non-wearing of crash helmets can lead to up to 3 times as many head injuries in riders.	1. Law enforcement programmes. 2. Public information, education and awareness campaigns.	1. Good 2. Good	1. High 2. High
Aggressive driving behaviour/ risk taking by all road users	Worldwide evidence shows that young drivers and motorcyclists present a greater traffic risk. Thrill seeking and over confidence rated high amongst contributory factors towards risk of collisions.	1. Law enforcement programmes. 2. Graduated driving license system 3. Public awareness programme	1. Good 2. Good 3. Good	1. High 2. High 3. High

Societal Factors				
Role of the media	Media currently glamourises fast driving and inappropriate lifestyle choices.	<ol style="list-style-type: none"> 1. Educational programmes to create awareness. 2. Advertising policies for the motor industry restraining harmful advertising (speed, environmental damage, macho image) similar to tobacco and alcohol. 	<ol style="list-style-type: none"> 1. Good 2. Good 	<ol style="list-style-type: none"> 1. High 2. Medium
Culture of lawlessness	Culture of impunity.	<ol style="list-style-type: none"> 1. Policy to prevent culture of impunity. 2. Demerit system and confiscation of vehicles. 3. Occupational health regulation for professional drivers in respect of fatigue and driver medicals at certain ages and conditions. 	<ol style="list-style-type: none"> 1. Medium 2. Good (currently on trial) 3. Good 	<ol style="list-style-type: none"> 1. High 2. High 3. High
Poor rule of law and ineffective enforcement	Deterrents to lawlessness not strict enough and enforcement is poor.	<ol style="list-style-type: none"> 1. Create meaningful deterrents 2. Enforcement levels needs to be high so that the perceived level of apprehension will be high. 3. Apprehension to be followed by swift adjudication. 4. Improve automated offence enforcement e.g. cameras 	<ol style="list-style-type: none"> 1. Good 2. Good 3. Good 4. Good 	<ol style="list-style-type: none"> 1. High 2. High 3. High 4. High
Structural Factors				
Economic factors, including social deprivation	<p>Main form of travel by foot and minibus taxis.</p> <p>About 60% of total fatalities are pedestrians.</p> <p>Children and young over-represented.</p>	<ol style="list-style-type: none"> 1. Improve pedestrian infrastructure. 2. Shorter pedestrian routes. 3. More affordable public transport mass transit. 	<ol style="list-style-type: none"> 1. Good. 2. Good. 3. Unknown. 	<ol style="list-style-type: none"> 1. High. 2. Medium. 3. Medium.
Demographic factors	Majority of collisions occur in urban areas; majority of pedestrian collisions occur on major Cape Town freeways.	As above	As above	As above

Land-use planning practices	Location of centres of employment at large distances from centres of population leading to increased mobility.	As above	As above	As above
Mixture of high-speed motorised traffic with vulnerable road users	Infrastructure inadequate and unsafe (almost no lighting)	<ol style="list-style-type: none"> 1. Independent safety audits. 2. Segregation of users. 3. Education and awareness campaigns. 4. Better crash protection measures 	<ol style="list-style-type: none"> 1. Good 2. Medium 3. Good 4. Good 	<ol style="list-style-type: none"> 1. High 2. High 3. High 4. High
Insufficient attention to integration of road function: speed limits, road layout and design	Infrastructure designed without appropriate independent safety audits. 76.7% of all collisions occur between dusk and dawn.	<ol style="list-style-type: none"> 1. Independent road safety audits. 2. Traffic calming and management measures. 	<ol style="list-style-type: none"> 1. Good 2. Good 	<ol style="list-style-type: none"> 1. High 2. High
Opportunities for safer modes of travel	Lack of integrated public transport system and choice. Minibuses constitute 3.2% of the vehicle population but are involved in 7% of all collisions.	<ol style="list-style-type: none"> 1. Increase affordability of public transport. 2. Increase safety and perception of alternative transport. 3. Ensure vehicle safety and operation standards are maintained. 	<ol style="list-style-type: none"> 1. Medium (costs) 2. Good (Metrorail has new mass transit plan) 3. Good (taxi recap process to rid country of un-roadworthy taxis) 	<ol style="list-style-type: none"> 1. Medium 2. High 3. High
Travelling in darkness	76.7% of all collisions occur between dusk and dawn.	<ol style="list-style-type: none"> 1. Improved transport infrastructure. 	<ol style="list-style-type: none"> 1. Good 	<ol style="list-style-type: none"> 1. High
Vulnerable road users (e.g. pedestrians) in urban and residential areas	Vehicles not designed to be pedestrian friendly, sharing of space with motorised traffic, lack of segregation.	<ol style="list-style-type: none"> 1. Segregated pedestrian and motorised transport system. 2. Better crash protection measures. 3. Public information, education and awareness campaigns. 	<ol style="list-style-type: none"> 1. Poor (costs) 2. Poor (costs) 3. Good 	<ol style="list-style-type: none"> 1. High 2. High 3. High

Vehicle factors – such as braking, handling and maintenance	High offence rates relating to roadworthiness of vehicles resulting in injury and fatalities.	<ol style="list-style-type: none"> 1. Regular vehicle testing for road-worthiness. Increased testing for public service vehicles. 2. Smart vehicle design (electronic stability) 	<ol style="list-style-type: none"> 1. Good 2. Poor (dependency on imports, but strong local aviation and defence industry) 	<ol style="list-style-type: none"> 1. High 2. Poor
Defects in road design, layout & maintenance which can also lead to unsafe road user behaviour	Lack of independent road safety audits to optimise the road network safety network. More than 2% of fatalities in 2006 were attributed to poor road conditions and design (RTMC).	<ol style="list-style-type: none"> 1. Independent road safety audits at various stages of the design and planning. 2. Remedial actions at collision black-spots. 	<ol style="list-style-type: none"> 1. Good 2. Good 	<ol style="list-style-type: none"> 1. High 2. High
Inadequate visibility due to environmental factors	Lack of maintenance of roadside features.	<ol style="list-style-type: none"> 1. Improved regular road side maintenance measures. (Possibly from safety audits) 	<ol style="list-style-type: none"> 1. Good 	<ol style="list-style-type: none"> 1. Medium
Inappropriate or excessive speed	More than 30% of fatalities occurred countrywide as a result of a vehicle speeding.	<ol style="list-style-type: none"> 1. Speed management systems at 'black spots'. 2. Speed law enforcement programmes. 3. Better pedestrian infrastructure 	<ol style="list-style-type: none"> 1. Good 2. Good 3. Good 	<ol style="list-style-type: none"> 1. High 2. High 3. High
Roadside objects not crash protective	Collisions between drivers and roadside objects cause significant numbers of injuries and fatalities.	<ol style="list-style-type: none"> 1. Independent road safety analysis. 2. Provision of improved infrastructure as a result of audits: collapsible road furniture, safety barriers, crash cushions at bridges, etc. 3. Regular road maintenance programmes to clear debris, trees, etc. 	<ol style="list-style-type: none"> 1. Good 2. Good 3. Good 	<ol style="list-style-type: none"> 1. High 2. High 3. High
Insufficient vehicle crash protection for occupants, pedestrians, cyclists	Vehicles not road-worthy, ageing fleet, lack of regular testing, visibility of vehicles, design of vehicles to reduce impact on other road users.	<ol style="list-style-type: none"> 1. Implement improved vehicle design standards 2. Regular roadworthy testing regime 3. Daytime running lights for all vehicles 4. Modify vehicle fronts to protect vulnerable road users. 	<ol style="list-style-type: none"> 1. Poor (dependency on overseas market) 2. Good 3. Good 4. Poor (as 1 above) 	<ol style="list-style-type: none"> 1. Medium 2. High 3. High 4. Medium

Executive Summary

Volume 6: Cardiovascular Diseases

Volume 6 of this Report is concerned with interventions to reduce the burden of cardio-vascular disease (CVD) in the Western Cape Province (WC) of South Africa. This is important because CVD is the leading cause of death among both men and women in the Western Cape Province, accounting for one in four deaths (25%); followed by malignant neoplasms (16%); infectious and parasitic diseases (excluding HIV/AIDS) (10%); injuries (9.7%) and HIV/AIDS (8.4%) (Bradshaw et al. 2004). Compared with the rest of the country non-communicable diseases (which CVDs are part of) accounted for a much larger proportion of deaths in the Western Cape (58%) than nationally (38%). It is the third leading cause of premature years of life lost (YLLs) in the Province (Bradshaw et al. 2004), after major infectious diseases (HIV/AIDS and TB) and injury from violence and traffic-related causes.

The transition of CVD and other chronic diseases from being a disease of the wealthy to the one of the poor has been documented in the United Kingdom, South Africa and the USA (Kaplan and Keil, 1993; Bradshaw et al, 2002; Marmot et al, 1991). For example, chronic diseases were relatively rare in the African-American community in the 1960s, but now their incidence equals or exceeds that of the white population of the United States (Reddy, 1993). A similar progression is being seen in South Africa (Bradshaw et al, 2004). It further needs to be kept in mind that — in developing countries, where the epidemiological transition has advanced fairly rapidly — there appears to be a progressive reversal of the social gradient, with the poor becoming the most vulnerable victims of chronic diseases, such as CVD (Reddy and Yusuf, 1998).

Based upon WHO and World Bank data (Walter et al, 2006), it has been predicted that — over the next 30 years — not only will there be an almost doubling of deaths due to CVD in South Africa, but that an increasing proportion of these will be among the working-age group (ages 35-64), compared to other age groups. Furthermore, it is estimated that — by 2030 — 41% of CVD deaths will be occurring in this age group. The economic costs both directly (health care) and indirectly (such as loss of wages) will be high.

In the last three decades, it has been well documented that the primary causes of the high prevalence of CVD are due not to genetics alone but largely to environmental factors, specifically an unhealthy lifestyle.

The three most important causes of an unhealthy lifestyle are:

- (1) lack of regular physical activity;
- (2) long-term use of tobacco products; and
- (3) the consumption of an unhealthy diet.

An unhealthy diet is one characterised by its high fat (and saturated fat) intake; low fibre intake; low intake of fruit and vegetables; and high intake of salt and sugar. An unhealthy lifestyle in turn may lead to obesity, high blood pressure and diabetes, among other diseases (WHO, 2003).

Data on overall lifestyle patterns indicate that, on average, South Africans are not engaging in practices recommended for good health. In 2002, for example, it was reported that 36.7% of men and 9.4 % of women in South Africa smoke tobacco daily (Demographic & Health Survey — DHS, 2002). The Western Cape Province has the highest prevalence of smoking of all the provinces: 44.7% of men and 27% of women. Of particular concern is the large proportion of pregnant women in the Western Cape who smoke tobacco. The prevalence of overweight and obesity is also high in the Province among women (57.1%) and highest of all provinces among men (38.4%). Although there limited data are available on physical activity, the Youth Risk Behaviour Survey (YRBS) indicated that 41.7% of high school learners participated in insufficient or no physical activity.

Dietary intake data on adults in the City of Cape Town are also cause for concern, since an unhealthy diet predisposes to CVD. Studies have shown that diets are 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, or too low in fibre. (Langenhoven et al, 1988; Bourne et al, 1993). Black South Africans who have migrated from rural areas to Cape Town have — with increasing time spent in the city — tended to increase their fat, saturated fat, and sugar intake and decreased their fibre and carbohydrate intakes (Bourne et al, 1993).

As a result, the health authorities in the Western Cape need to take action now to prevent CVD from escalating even further over the next few decades. In this regard, health promotion is one of the most powerful tools at our disposal. Hence members of the Working Group have reviewed the interventions (or programmes) for the prevention of CVD that have been undertaken globally since 1995, in order to make recommendations for interventions in the Western Cape itself.

A review of more than 300 interventions found that very few programmes were located in developing countries and that none of those published were from sub-Saharan Africa. Numerous successful sustainable and cost-effective interventions, however, have the potential to be used in the South African context. The following examples are based on best practice (scientifically valid) studies reviewed.

Multi-component school programmes which included:

- a nutrition-based curriculum taught to learners by trained teachers;
- a physical activity component for learners;
- a healthy school environment, including healthy foods available at the school canteen or shop; and
- parental involvement in the programme

had the most successful outcomes. The best results were attained when the programme ran over three years for children from Grade 4 to Grade 6.

Two excellent examples in this regard are the **PATHWAYS** study (Caballero et al, 2003), which was developed for Native Americans and the **Know Your Body Program** (Manios et al, 1999) which was offered to primary school children in Crete. Both of these studies were adapted to local culture, values and norms, and showed positive behavioural, clinical and psycho-social outcomes.

A number of **worksite interventions** were successful in improving the diet and health status of employees. The successful studies were characterised by the following:

- nutrition and physical activity advice by means of group sessions;
- a physical activity programme instituted at the worksite;
- changes in the food service available to the staff; and
- use of printed materials and multi-media at the worksite to promote health messages.

One of the most important factors in promoting successful outcomes was the involvement of an employee committee in planning and managing a worksite nutrition and exercise intervention programme. A good example of this is the **Treatwell Five-a Day** programme (Sorensen et al, 1999).

Based on an extensive review of evidence, the following recommendations with regard to policy were made by the Working Group:

1. Lifestyle modification methods to improve the diet of the residents in the Western Cape Province

- Ban advertising of foods during children's programmes on radio & TV, or reduce the market pressure on children by regulating advertising and obtaining cooperation from the mass media and Internet providers.
- Introduce advertising and educational campaigns (multi-media) to promote the increased consumption of fruit and vegetables and the decreased consumption of fat, saturated fats, sugar and salt. Include the development of, and building on to, the food-based dietary guidelines of the Department of Health.

- Ensure that communities have access to healthy and safe foods (food security) — such as food gardens, and informal food outlets.
- Develop and implement a policy for schools on those foods which are allowed to be sold or provided free at the schools — including feeding schemes and tuck shops.
- Introduce a nutrition & healthy lifestyle curriculum aimed at schoolchildren for the prevention of Cardio-Vascular Diseases
- Ensure that all State facilities provide healthy foods (high in fruit and vegetables; low in salt, sugar and fats to inmates and patients).
- 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

- Ensure that urban development includes access to areas for physical activity.
- Introduce advertising campaigns (multi-media) to promote physical activity.
- Introduce a physical activity curriculum aimed at schoolchildren for the prevention of Cardio-Vascular Diseases.
- Ensure that all schools have adequate space and facilities for physical activity.
- 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

- Increase the price of alcohol and cigarettes.
- Ban all advertising of alcohol.
- Introduce a school policy of a smoke-free environment.

4. Immediate actions to be taken

- Evaluate foods currently sold or provided free at schools in the Western Cape Province.
- Evaluate the current nutrition (& healthy lifestyle) curriculum taught to children at schools in the Western Cape Province.
- Determine whether there have been any “Healthy Lifestyle” interventions in the Western Cape schools, worksites, and communities.
- Pilot a school-based intervention on healthy nutrition, physical activity, and against smoking in the Western Cape.
- Pilot a healthy-nutrition, physical activity and anti-smoking intervention at worksites in the Western Cape.
- Develop a school-based programme for overweight and obese children.

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Executive summary

Volume 7: Childhood Diseases

Recommend Interventions

Volume 7 in this Report addresses the issue of Childhood Diseases.

Since the major causes of young child mortality are highly interlinked, most interventions would be expected to result in improved outcomes for more than one disease. These recommendations broadly follow the logic of the conceptual framework for malnutrition, addressing proximal risk factors before going on to more distal upstream determinants.

Maternal education is an effective intervention to address all causes, but — since levels of female education in the Western Cape Province are generally high — the potential for further intervention in this area would be limited, unless such an intervention is explicitly targeted to areas where average educational status is low.

Interventions to improve immunity

Promote and support breast-feeding

- Promote exclusive breast-feeding up to six months at least, with support of continued breast feeding up to at least 12 months. This would be expected to have far-reaching benefits in addressing the burden of childhood disease.
- Advocate for legislated maternity leave and breast-feeding time for working women, especially those working in the domestic and agricultural sectors.
- Advocate for the preferential deployment of pregnant women to do less physically demanding work.
- Involve media and education, coupled with support and incentives for mothers who choose to breastfeed that are equivalent in value to those provided to formula feeding mothers.
- There is accumulating evidence of the effectiveness of breastfeeding counsellors/supporters: the Provincial Government of the Western Cape should consider training and employing such cadres.
- Mixed feeding should be actively and publicly discouraged in view of the compelling evidence that it is the worst option in terms of vertical HIV transmission. Mothers who choose not to breast-feed should be supported. The background paper on the burden of paediatric HIV by Kroon and Eley provides a detailed discussion of the controversies and

difficulties regarding safe feeding policies. It is essential to develop a well-considered infant feeding policy for the Western Cape.

Nutrition programmes

- SUPPORT AND STRENGTHEN THE INTEGRATED NUTRITION PROGRAMME in the province. Improved child nutrition will result in less malnutrition and reduce the burden of ARI, diarrhoea, LBW and HIV infection, with a significant impact on U5MR. Improved maternal nutrition would be expected to lessen the burden of LBW.
- SUPPORT COMMUNITY-BASED AND DRIVEN NUTRITION PROGRAMMES. Such programmes can be effective in reducing the prevalence of malnutrition. There is good evidence internationally and locally that effective communication strategies and fine community coverage with CHWs or similar personnel are essential components of such programmes. People who do not understand the linkages between these programmes and the nutritional status of their children or who do not have the support of their partners are less likely to participate. In addition, it is clear that interaction with, and involvement of, key stakeholders drawn from local structures is essential for sustainabilityⁱ.
- MICRONUTRIENT SUPPLEMENTATION INCLUDING ZINC. Zinc supplementation should be routine for malnourished children. Daily prophylactic elemental zinc, 10 mg to infants and 20 mg to older children, may substantially reduce the incidence of pneumonia, particularly in malnourished children. The provincial Vitamin A supplementation programme should be expanded and improved. Food-based approaches to dietary diversification (food gardens, inclusion of nutrient-rich vegetables and fruits among zero-rated VAT items should be considered).
- REVIEW THE PRIMARY SCHOOL NUTRITION PROGRAMME to incorporate foods that are either cultivable or cheaply available through normal retail outlets. Include a nutritional education component in the PSNP. Liaise with relevant other sectors, for example: agriculture, trade, to optimise longer-term impact of PSNP.
- GROWTH MONITORING should be emphasised, with appropriate local action or referral to the health sector.
- IMPROVE COMPLEMENTARY FEEDING in terms of composition, frequency and hygiene, including fortification and/or supplementation with key micronutrients.

Immunisation coverage

REINVIGORATE THE EXPANDED PROGRAM OF IMMUNISATION (EPI), aiming for sustained universal coverage. Here the employment of Community Health Workers should be seriously considered, perhaps as part of the Expanded Programme of Public Works. Serious consideration should be given to adding pneumococcal conjugate vaccine — such a decision

should follow an open and transparent priority-setting process. It should be informed by careful evaluation of cost and expected benefit within the context of available resources and other priorities, and open to debate and challenge by stakeholders.

Interventions to reduce exposure to infection and harmful environments

PREVENTION OF MOTHER-TO CHILD TRANSMISSION OF HIV PROGRAMME (PMTCT).

While the PMTCT Programme has been successfully established and currently protects many Western Cape children from vertically acquired HIV infection, it could be improved by a number of interventions. These include:

- improved reproductive planning and early pregnancy determination for HIV positive women
- measures to increase the acceptance of HIV testing
- optimisation of ARV protocols to reduce transmission
- the establishment and implementation of a safe feeding policy.
- Regarding the latter, much greater attention needs to be paid to the feeding component of PMTCT programmes. Evidence is accumulating (**Goodstart project**) of extensive mixed feeding occurring in all provinces, including the Western Cape. Support for exclusive feeding (breast or formula) needs to be provided by community-based counsellors/supporters

There is also concern about persistent vertical HIV transmission in the case of mothers from other provinces who come to the Western Cape for obstetric care.ⁱⁱ We are not aware of any initiatives to investigate the causes and implications of this phenomenon for child care in general and PMTCT in particular. We strongly recommend an investigation into this.

SMOKING CONTROL PROGRAMMES.

Develop family and care-giver smoking control programmes. These aim to reduce exposure to environmental tobacco smoke (ETS). "Best practice" smoking-control programmesⁱⁱⁱ have a strong community component and include:

- Preventing the initiation of tobacco use among young people.
- Promoting cessation among young people and adults.
- Eliminating nonsmokers' exposure to ETS.
- Identifying and eliminating the disparities related to tobacco use and its effects among different population groups.

The United States' Center for Disease Control and Prevention has produced a brief and excellent document outlining the evidence for, and elements of, such campaigns.

ESTABLISH INTERVENTIONS TO REDUCE INDOOR AND OUTDOOR AIR POLLUTION

The specific interventions recommended in order of cost effectiveness are:

- Education on "top-down" ignition of fires
- Stove maintenance and replacement
- Housing insulation
- Electrification
- Improvements in energy efficiency through housing improvements

A South African example of such an approach is the Gauteng and Mpumalanga project "*Basa njengo magogo*" (light a fire like a grandmother).

REDUCE EXPOSURE TO GASTRO-INTESTINAL PATHOGENS.

This includes provision of adequate or improved sanitation and increasing the basic allocation of free water (presently 25 litres per person per day), as well as hygiene education and soap provision. Improve the promotion of ORT using home-based ingredients, supported by appropriately trained Community Health Workers.

HANDWASHING AND PROVISION OF SOAP may potentially significantly reduce ARI and diarrhoea incidence

Interventions targeting Low Birth-Weight

Immediate level

1. STRENGTHEN AND DEVELOP REPRODUCTIVE AND SEXUAL HEALTH SERVICES

- Family planning -pregnancy planning, contraception, pre-pregnancy nutrition.
- Early pregnancy diagnosis service - access to local good quality early basic antenatal care and PMTCT.
- Develop good (IMCI type) case management guidelines for LBW. ("Integrated management of neonatal illness" - IMNI)
- Develop rapid response patient transport service to allow PT delivery in secondary and tertiary level hospitals.

2. ANTENATAL CARE, OBSTETRIC CARE AND CASE MANAGEMENT GUIDELINES, including family planning and regular antenatal care will prevent unwanted pregnancies, reduce closely spaced births, reduce teen pregnancies and detect causes of low birth-weight. These need to be improved in both coverage and quality. Good obstetric care and case management guidelines are equally important for good outcomes.

Food supplementation during pregnancy: A pregnant woman should have access to adequate nutrition before during and after delivery in order to maintain a good nutritional status.

Underlying level

SUBSTANCE-ABUSE CONTROL PROGRAMME (smoking, alcohol and other substances especially "tik"). Reduce smoking during pregnancy and exposure to environmental tobacco smoke (as well as smoke from burning fossil fuels).

Basic level

- Address poverty, inequality and their underlying determinants through social and labour policies that create employment and improve welfare. Here improved coverage of old age pensions and the Child Support Grant are key
- Address inequalities in access to land, and those micro- and macro-economic policies, including trade policy, that are impacting negatively on employment, incomes and diets.
- Make public transport more accessible and affordable through subsidised transport to ante natal care
- Creative pro-poor economic interventions for indigent pregnant women
- Address issues related to population movement between the Eastern Cape and the Western Cape.

Interventions targeting paediatric HIV

Immediate level:

1. **Strengthen and develop reproductive and sexual health services**
 - a. **Family planning** -pregnancy planning, contraception,
 - b. **early pregnancy diagnosis service** - access to local good quality early basic antenatal care and PMTCT

2. **Integrate PMTCT** into overall mother and child health strategy i.e develop and strengthen links (communication and referral channels) between sexual and reproductive health service and child health and nutrition services.
3. **Develop and promote case management guidelines for all HIV exposed infants**, including early case detection (4-6 week PCR), early protection against infection (Bactrim and INH), early initiation of HAART, and secondary and tertiary support for primary level programmes.
4. **Safe feeding and better growth and nutrition monitoring**

(See the background paper on Paediatric HIV.)

Robust **promotion of background exclusive breast feeding** as the norm in the general population. **Link BFHI to the development of Community Based EBF programs (“CBEBF”)** – note that BFHI is already being linked to the Better Births Initiative (BBI). Under the auspices of Nutrition Departments at teaching institutions, **promote robust development of a feeding counseling** curriculum, increase capacity to train feeding counselors (prioritise selection of trainees from high risk communities) who should be deployed in their own communities. Upskill them and **expand their brief to include growth and nutrition monitoring** especially for high risk children like LBW and those exposed to HIV. Develop an *individualised feeding choice assistance tool [IFCAT]* to assist PMTCT counsellors to advise patients which feeding choice is safest for them. (also explore pasteurised EBM and Donor EBM options)

Underlying level

1. Parental survival programmes (including linking parents into local HIV management programmes)
2. Community-based employment, food and income-generation projects
3. Maternal Education: Maternal education is an effective intervention but — since levels of female education in the Western Cape are generally high — the potential for further intervention in this area would be limited unless such an intervention is explicitly targeted to areas where average educational status is low.

Basic level

- Address poverty, inequality and their underlying determinants through social and labour policies that create employment and improve welfare. Here improved coverage of old-age pensions and the Child Support Grant are key
- Address inequalities in access to land, and those micro- and macro-economic policies, including trade policy, that are impacting negatively on employment, incomes and diets.
- Make public transport more accessible and affordable through subsidised transport to ante natal care
- Address issues of poverty, inequity, poor access to health care and population movement between the Eastern Cape and Western Cape.

Conclusions

Poor child health and nutrition impose significant and long-term economic and human development costs — especially on the poorest communities, further entrenching their impoverished status. Improving child health and nutrition is not only a moral imperative, but a rational long-term investment.

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 being extremely unlikely to attain Millenium Development Goal 4. Moreover, the gap in health outcomes between richer and poorer groups is growing.

The dominant causes of mortality and morbidity remain nutritional deficiencies and infectious diseases, with HIV/AIDS contributing significantly.

The above “proximal” causes of childhood illness and death are underlain by such “distal” factors as:

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

These are manifestations of growing inequalities in the distribution of economic and social resources between rich and poor.

The past few decades have seen impressive advances in our understanding and technical ability to prevent, treat and mitigate the effects of many childhood illnesses. Key examples are:

- immunisation;
- treatment of diarrhoeal dehydration;
- and prevention of mother-to-child transmission of HIV infection.

The challenge, increasingly, is to implement successfully these efficacious interventions — especially among the poorest — and to adopt social policies that improve equity in child health.

Despite a widening gap between rich and poor, in terms of health outcomes and access to services, there are examples of successful large-scale child health and nutrition programmes. Most of these examples demonstrate the successful implementation of a comprehensive primary health-care approach where interventions have addressed simultaneously both the immediate (proximal) and the underlying (distal) factors impacting on child survival and health.

In a few, low-income countries broad-based approaches have resulted in significant and often sustained improvements in child and maternal health. In all of these examples — as well as in the past experience of now-industrialised rich countries — such improvements have been secured through a combination of social policies and efficacious public health interventions. In all cases a favourable political context facilitated such comprehensive and equity-oriented approaches. Such contextual factors are crucial not only in ensuring investment in social services but also in providing an infrastructure and community mobilisation within which effective technologies and interventions may be most successfully and widely promoted.

Participatory programme design and implementation seem to be fundamental features of many successful programmes which, in addition, need to attend to such key factors as coverage, targeting, intensity and resource mobilisation.

The dearth of examples of large-scale successful comprehensive child health programmes can be largely attributed to the dominance over the past two decades of conservative macro-economic policies. This situation can also be attributed to an accompanying narrowing of the primary health care approach, whereby some technical interventions have been preserved and promoted, while interventions to address broader social determinants (as well as participatory processes) have been denigrated or abandoned. Such “selective”, technicist approaches have been vigorously promoted as ‘packages of care’, which are sometimes unthinkingly abstracted from the systems and processes needed to implement and sustain them.

Public health systems, especially in poor countries and including South Africa, have been considerably weakened in the past decades by a combination of conservative macro-economic policies and health policies that constitute "health sector reform". Chronic underfunding of health (and social) services has led to a serious weakening of the "delivery" infrastructure, and especially of the human resource component. Health personnel capacity has been severely undermined as a result of the above fiscal crisis and the impact of HIV/AIDS. In addition, active recruitment of personnel by those rich countries experiencing a health workforce shortage has further depleted this resource and seriously aggravated the dysfunctionality of health systems.

The current HIV/AIDS pandemic and the new initiatives launched to address it, could potentially aggravate the crisis in child health and healthcare by diverting attention and resources away from the other – more common – health problems, and from their more fundamental, social determinants. There is also a strong possibility that new 'vertical' programmes and structures will be created, further delaying the long-term imperative of creating strong and sustainable 'horizontal' health systems. The time is long overdue for energetically translating policies into actions.

The main actions should centre around the development of well-managed and comprehensive programmes involving the health sector, other sectors and communities. The process needs to be structured into well-functioning district systems which require, in most countries, to be considerably strengthened, particularly at the household, community and primary levels. Here comprehensive health centres and their personnel should be a focus of effort, and investment in and the reinstatement of community health workers and other community workers (eg treatment and breastfeeding counsellors) should be seriously considered.

The successful development of decentralised health systems will require targeted investment in infrastructure, personnel and management, and information systems. A key primary step is capacity development of district personnel through training and guided health systems research. Such human resource development must be practice-based and problem-oriented and draw upon, and simultaneously reorientate, educational institutions and professional bodies.

Clearly, the implementation and sustenance of comprehensive primary health care requires inputs and skills that demand resources, expertise and experience not sufficiently present in the health sectors of the Western Cape. Here partnerships with non-governmental organisations with expertise in various aspects of community development is crucial.

The engagement of communities in health development needs to be pursued with much more commitment and focus. The identification of well-functioning organs of civil society, whether or not they presently are active in the health sector, needs to be urgently pursued.

A note on equity

Unequal access to the benefits of belonging in a society is an almost universal problem. It has to be addressed through human rights approaches. These recommendations deal with fundamental social and economic rights. They will involve several sectors and are far-reaching in scope, with considerable resource implications. They cannot be implemented at once.

Therefore it is of fundamental importance that the poorest and most marginalised areas and communities, those with the highest child mortality rates, should be targeted as a matter of great priority.

ⁱ LT Bourne, M Hendricks, B Mzamo, N Siegfied, H Goeiman. MASIPHUHLISE - "Let us Produce"/"Let us Develop": The Bloekombos Integrated Nutrition Programme. <http://www.mrc.ac.za/healthdevelop/bloekomsummary.htm> [accessed 5 March 2007]

ⁱⁱ I Human, M Kroon, N Bergman, S Fawcus, B Ntwana. *Mowbray Maternity Hospital & Khayelitsha Midwife Obstetric Unit, Cape Town*. Patient population movement in a Cape Town obstetric service. *S Afr Med J* 2003 (letter).

ⁱⁱⁱ Anon. *Best Practices for Comprehensive Tobacco Control Programs*. Centers for Disease Control and Prevention, Atlanta, Georgia. 2000. http://www.cdc.gov/tobacco/tobacco_control_programs/stateandcommunity/best_practices/0_0_pdfs/bpintrod.pdf [accessed March 5, 2007].

