Prevention of Mental Disorders

EFFECTIVE INTERVENTIONS AND POLICY OPTIONS

SUMMARY REPORT

A Report of the
World Health Organization,
Department of Mental Health and Substance Abuse
in collaboration with
the Prevention Research Centre
of the Universities of Nijmegen and Maastricht

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Foreword

One of the primary goals of the World Health Organization (WHO) Department of Mental Health and Substance Abuse is to reduce the burden associated with mental, neurological and substance abuse disorders. Prevention of these disorders is obviously one of the most effective ways to reduce the burden. A number of World Health Assembly and Regional Committee Resolutions have further emphasised the need for prevention. WHO published a document on primary prevention of mental, neurological and psychosocial disorders in 1998 (WHO, 1998). However, this scientific field has seen rapid development of ideas and research evidence, necessitating a fresh review. This Summary Report (along with the forthcoming Full Report) attempts to provide a comprehensive overview of this field, especially from the perspective of evidence for effective interventions and associated policy options. This is in accordance with the WHO mandate to provide information and evidence to Member States in order to assist them in choosing and implementing suitable policies and programmes to improve population health. In an area like prevention of mental disorders this task is even more critical since much evidence is recent and untested in varied settings.

Mental disorders are inextricably linked to human rights issues. The stigma, discrimination and human rights violations that individuals and families affected by mental disorders suffer are intense and pervasive. At least in part, these phenomena are consequences of a general perception that no effective preventive or treatment modalities exist against these disorders. Effective prevention can do a lot to alter these perceptions and hence change the way mental disorders are looked upon by society. Human rights issues go beyond the specific violations that people with mental disorders are exposed to, however. In fact, limitations on the basic human rights of vulnerable individuals and communities may act as powerful determinants of mental disorders. Hence it is not surprising that many of the effective preventive measures are harmonious with principles of social equity, equal opportunity and care of the most vulnerable groups in society. Examples of these interventions include improving nutrition, ensuring primary education and access to the labour market, removing discrimination based on race and gender and ensuring basic economic security. Many of these interventions are worth implementing on their own merit, even if the evidence for their effectiveness for preventing specific mental disorders is sometimes weak. The search for further scientific evidence on effectiveness and cost-effectiveness, however, should not be allowed to become an excuse for non-implementation of urgently needed social and health policies. Indeed, innovative methods need to be found to assess the evidence while these programmes are designed and implemented. These methods should include qualitative techniques derived from social, anthropological and other humanistic sciences as well as stakeholder analysis to capture the complexity and diversity of the outcomes.

A particularly potent and unfortunately common threat to mental health is conflict and violence, both between individuals and between communities and countries. The resulting mental distress and disorders are substantial. Preventing violence requires larger societal efforts but mental health professionals may be able to ameliorate the negative impact of these phenomena by implementing some specific preventive efforts and by making humanitarian assistance more mental health friendly.

One of the crucial issues in the implementation of evidence-based prevention is the real-life applicability of laboratory-proven programmes, especially in widely varying cultural and resource settings. Rigorously controlled effectiveness trials seem to provide more definite evidence but in turn are less amenable to wider application across the world. Cultural and context variables should

be seen not as confounders but as essential elements of any programme to be applied in real-life situations. Adequate consideration of these factors while generating evidence is preferable to a post-hoc analysis. Cultural applicability makes the task of dissemination of evidence-based interventions complicated and slow; however, given the complexity of prevention programmes, this is to be expected.

The big unresolved question is: Who should pay for prevention? As the cost of health care is increasing worldwide, there is increasing competition for resources. This scenario puts prevention, which usually is a long-term outcome, at a disadvantage against treatment with near-term benefits. Economic, including commercial, interests are also more prominent in the treatment domain than in prevention, resulting in poor investments for prevention activities. Health care providers often do not see prevention as their primary responsibility, especially for interventions that are normally implemented by sectors other than health. Public health authorities and health professionals will need to take a leadership role here, even if they cannot find the necessary financial resources within the health sector to implement programmes. Collaboration between mental health, public health and other sectors is complex but necessary for making prevention programmes a reality. A good starting point for this collaboration is distillation of the evidence for effectiveness into key messages that are scientifically accurate but still easy to understand and practical enough to act upon. I hope that the present WHO publication takes us another step towards this direction.

Benedetto Saraceno

Director

Department of Mental Health and Substance Abuse

World Health Organization

Geneva

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Preface

Prevention of Mental Disorders: Effective Interventions and Policy Options, on which this Summary Report is based, offers an overview of international evidence-based programmes and policies for preventing mental and behavioural disorders. It focuses on primary prevention rather than secondary or tertiary prevention. It describes the concepts relating to prevention; the relationship between prevention of mental disorders and the promotion of mental health; malleable individual, social and environmental determinants of mental disorders; the emerging evidence on the effectiveness of preventive interventions; the public health policy and practice implications; and the conditions needed for effective prevention. This complements the work of another major World Health Organization report: *Promoting Mental Health: Concepts, Emerging Evidence, Practice* (WHO, 2004b; Herrman, Saxena & Moodie, 2004).

Prevention in mental health has a history of over 100 years. Since the early days of the mental hygiene movement at the beginning of the 20th century many ideas have been generated on possible strategies to prevent behavioural problems and mental disorders in children and adults. These have been partly translated into experimental activities in primary health care and schools and in public health practices. However, the systematic development of science-based prevention programmes and controlled studies to test their effectiveness did not emerge until around 1980. Over the past 25 years the multidisciplinary field of prevention science in mental health has developed at a rapid pace, facilitated by increasing knowledge on malleable risk and protective factors. This has resulted in a fast-growing number of scientific publications and effective programmes, as illustrated in this Summary Report. Prevention research centres, universities and other institutions, along with programme managers and practitioners, have generated evidence showing that preventive interventions and mental health promotion can influence risk and protective factors and reduce the incidence and prevalence of some mental disorders.

Prevention of Mental Disorders: Effective Interventions and Policy Options includes a selective review of the available evidence from a range of countries and cultures. Current knowledge is still mainly based on research in high income countries, although new research initiatives are emerging in developing countries. The current trend to exchange evidence-based programmes across countries challenges us to expand our understanding of the role of cultural and economic factors in prevention.

Both this Summary Report and the Full Report upon which it is based have been written for people in the many health and nonhealth sectors of governments and nongovernmental agencies in countries with low, medium and high levels of income and resources. These people are in a position to significantly influence the determinants of mental and behavioural disorders and the effectiveness of prevention efforts in ways that may not be obvious to them. It also offers insight into the spectrum of opportunities for health and mental health professionals to contribute to primary prevention and early intervention alongside treatment and rehabilitation. It supports health promoters in integrating mental health issues into their national and local health promotion and prevention policies and activities. It stimulates prevention and health promotion researchers to expand their knowledge of designing and implementing effective interventions. *Prevention of Mental Disorders: Effective Interventions and Policy Options* is written with the conviction that reducing the incidence of mental disorders in populations worldwide is only possible through successful collaboration between the multiple partners involved in research, policy and practice, including community leaders and consumers.

This Summary Report has been produced by the editors from the chapters and other material prepared for *Prevention of Mental Disorders: Effective Interventions and Policy Options* to give readers a sense of the issues and evidence-based interventions discussed in the larger and more detailed report. Our hope is that readers will be stimulated by this Summary Report and the Full Report, once available, to make prevention of mental disorders a priority issue in national and local health policies and to translate evidence, conclusions and recommendations into concrete plans for actions.

Clemens Hosman
Eva Jané-Llopis
Shekhar Saxena

Editors

Development of the Summary Report

This Summary Report has been prepared by the editors of *Prevention of Mental Disorders: Effective Interventions and Policy Options* (Clemens Hosman, Eva Jané-Llopis & Shekhar Saxena) which will be published by Oxford University Press in 2005. The editors have selectively chosen and in some cases adapted material from the chapters provided by the contributing authors to the full publication in order to give an overview of effective interventions and policy actions to reduce the risk of mental disorders. In doing so this report includes only an indication of the considerably more detailed discussions in the forthcoming publication and does not include all the references to the publications and research on which its conclusions are based. For a full compilation of references of all the discussed prevention strategies, programmes, policies and evidence on risk and protective factors the reader is referred to Hosman, Jané-Llopis & Saxena (eds), *Prevention of Mental Disorders: Effective Interventions and Policy Options,* Oxford University Press, 2005.

The sections of this Summary Report reflect the working titles of the chapters in the Full Report as listed below. Attribution to the authors of these chapters has not always been made in the Summary Report. When citing from this report it would be appropriate to acknowledge the relevant chapter authors.

Details of the full Report

Hosman C, Jane-Llopis E & Saxena S, eds (2005). Prevention of Mental Disorders: Effective Interventions and Policy Options. Oxford, Oxford University Press.

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Editors

Professor Clemens Hosman
Director
Prevention Research Centre on Mental Health Promotion and Mental Disorder Prevention
Radboud University Nijmegen and Maastricht University

Nijmegen/Maastricht, The Netherlands

Dr Eva Jané-Llopis
Head of Science and Policy
Prevention Research Centre on Mental Health Promotion and Mental Disorder Prevention
Radboud University Nijmegen and Maastricht University

Nijmegen, The Netherlands

Dr Shekhar Saxena
Coordinator
Mental Health: Evidence and Research
Department of Mental Health and Substance Abuse
World Health Organization
Geneva, Switzerland

Advisers

Dr Thomas Bornemann
Director for Mental Health
The Carter Center
Atlanta GA, USA

Professor Sheppard Kellam
Johns Hopkins School of Hygiene and Public Health
Baltimore MD, USA

Dr Beverly Long
World Federation for Mental Health
Atlanta GA, USA

Dr David McQueen
Associate Director for Global Health Promotion
Centers for Disease Control and Prevention
Atlanta GA, USA

Dr Patricia Mrazek
Mental Health Policy Consultant
World Federation for Mental Health
Rockville MD, USA

Contributors to the full report

Dr Peter Anderson
Public Health Consultant

Nijmegen, The Netherlands

Dr Tim Ayers
Department of Psychology, Program for Prevention Research
Arizona State University
Tempe AZ, USA

Professor William Beardslee
Judge Baker Children's Center
Children's Hospital Boston and
Harvard Medical School
Boston MA, USA

Professor Aart-Jan Beekman
Department of Psychiatry
Free University
Amsterdam, The Netherlands

Dr José Manoel Bertolote
Coordinator
Management of Mental and Brain Disorders
Department of Mental Health and Substance Abuse
World Health Organization

Geneva, Switzerland

Professor Anthony Biglan
Oregon Research Institute
Eugene OR, USA

Professor C Hendricks Brown
Department of Epidemiology and Biostatistics
University of South Florida, Tampa and
Department of Biostatistics and Mental Health
Bloomberg School of Public Health at Johns Hopkins
Baltimore MD, USA

Professor John Copeland
Department of Psychiatry
University of Liverpool
Liverpool, United Kingdom

Professor Mark Dadds
NHMRC Senior Research Fellow and Professor
School of Psychology
University of New South Wales
Sydney, Australia

Dr Spring Dawson-McClure
Department of Psychology
Program for Prevention Research
Arizona State University
Tempe AZ, USA

Dr Celene Domitrovich
Prevention Research Center
Pennsylvania State University
University Park PA, USA

Dr J Mark Eddy
Research Scientist
Oregon Social Learning Centre
Eugene OR, USA

Professor Maurice Elias
Department of Psychology
Rutgers University
Piscataway NJ, USA

Professor Mark Greenberg
Prevention Research Center
Pennsylvania State University
University Park PA, USA

Ms Meredith Harris
Research Fellow
ORYGEN Research Centre
The University of Melbourne
Melbourne, Australia

Professor Helen Herrman
St Vincent's Mental Health Service Melbourne and
The University of Melbourne Department of
Psychiatry
Melbourne, Australia

Dr Cees Hoefnagels
Associate Professor
Prevention Research Centre on Mental Health
Promotion and Mental Disorder Prevention
Department of Health Promotion and Education
Maastricht University
Maastricht, The Netherlands

Professor Harold Holder
Prevention Research Center
Pacific Institute of Research and Evaluation
Berkeley CA, USA

Mr David Juriansz
Acting Coordinator of the Compass Strategy
ORYGEN Youth Health
Melbourne, Australia

Dr Eóin Killackey
Research Fellow
Department of Psychology
The University of Melbourne and ORYGEN Research
Centre
Melbourne, Australia

Professor Michiel Kompier
Work and Organizational Psychology
Radboud University Nijmegen
Nijmegen, The Netherlands

Professor Patrick McGorry
Director
ORYGEN Youth Health and ORYGEN Research Centre
Department of Psychiatry
The University of Melbourne
Melbourne, Australia

Dr Richard Mollica
Director of the Harvard Program in Refugee Trauma
Harvard Medical School
Boston MA, USA

Professor Ricardo Muñoz
University of California, San Francisco
Chief Psychologist
Department of Psychiatry
San Francisco General Hospital
San Francisco CA, USA

Dr Seggane Musisi
Senior Consultant Psychiatrist
Department of Psychiatry
Makerere Medical School, Mulago Hospital
Kampala, Uganda

Dr Vikram Patel
London School of Hygiene and Tropical Medicine and
Chair, Sangath Society
Goa, India

Professor Richard Price
Institute for Social Research and
Department of Psychology
University of Michigan
Ann Arbor MI, USA

Professor Beverly Raphael
Centre for Mental Health
New South Wales Department of Health
Sydney, Australia

Professor Irwin Sandler
Department of Psychology
Program for Prevention Research
Arizona State University
Tempe AZ, USA

Dr Tytti Solantaus
Mental Health Unit
STAKES
Helsinki, Finland

Dr Shona Sturgeon
Department of Social Development
School of Cape Town
Cape Town, South Africa

Ms Karin van Doesum
Prevention Team, RIAGG IJsselland, Deventer and
Prevention Research Centre on Mental Health
Promotion and Mental Disorder Prevention
Radboud University Nijmegen
Nijmegen, The Netherlands

Professor Danuta Wasserman
Department of Public Health
Karolinska Institute
Stockholm, Sweden

Professor Katherine Weare
School of Education
University of Southampton
Southampton, United Kingdom

Professor Mitchell Weiss
Department of Public Health and Epidemiology
Swiss Tropical Institute and
Department of Social and Preventive Medicine
University of Basel
Basel, Switzerland

Professor Roger Weissberg
Director CASEL
Department of Psychology
University of Illinois at Chicago
Chicago Ill, USA

Ms Annemarie Wright
Coordinator of the Compass Strategy
ORYGEN Youth Health
Melbourne, Australia

Key messages

Prevention of mental disorders is a public health priority

About 450 million people suffer from mental and behavioural disorders worldwide. One person in four will develop one or more of these disorders during their lifetime. Neuropsychiatric conditions account for 13% of the total Disability Adjusted Life Years (DALYs) lost due to all diseases and injuries in the world and are estimated to increase to 15% by the year 2020. Five of the ten leading causes of disability and premature death worldwide are psychiatric conditions. Mental disorders represent not only an immense psychological, social and economic burden to society, but also increase the risk of physical illnesses. Given the current limitations in effectiveness of treatment modalities for decreasing disability due to mental and behavioural disorders, the only sustainable method for reducing the burden caused by these disorders is prevention.

Mental disorders have multiple determinants; prevention needs to be a multipronged effort

Social, biological and neurological sciences have provided substantial insight into the role of risk and protective factors in the developmental pathways to mental disorders and poor mental health. Biological, psychological, social and societal risk and protective factors and their interactions have been identified across the lifespan from as early as fetal life. Many of these factors are malleable and therefore potential targets for prevention and promotion measures. High comorbidity among mental disorders and their interrelatedness with physical illnesses and social problems stress the need for integrated public health policies, targeting clusters of related problems, common determinants, early stages of multiproblem trajectories and populations at multiple risks.

Effective prevention can reduce the risk of mental disorders

There is a wide range of evidence-based preventive programmes and policies available for implementation. These have been found to reduce risk factors, strengthen protective factors and decrease psychiatric symptoms and disability and the onset of some mental disorders. They also improve positive mental health, contribute to better physical health and generate social and economic benefits. These multi-outcome interventions illustrate that prevention can be cost-effective. Research is beginning to show significant long-term outcomes.

Implementation should be guided by available evidence

For ethical reasons, and to make optimal use of the limited resources for prevention, priority should be given to preventive programmes and policies that show scientific evidence of their effectiveness. Building an evidence base is an incremental process. It should be culturally sensitive and use a wide range of research methods.

Successful programmes and policies should be made widely available

Making effective programmes and policies widely available would provide countries and communities with a spectrum of preventive tools to tackle mental disorders. It is therefore imperative to develop an accessible and integrated system of international and national databases to provide governmental and nongovernmental agencies with information on evidence-based programmes and policies, their outcomes and conditions for effective implementation.

Knowledge on evidence for effectiveness needs further expansion

Further efforts are needed to expand the spectrum of effective preventive interventions, to improve their effectiveness and cost-effectiveness in varied settings and to strengthen the evidence base. This requires a process of repeated evaluation of programmes and policies and their implementation. Knowledge of strategies, programme characteristics and other conditions that have a positive impact on effectiveness should be translated into guidelines for programme improvement. Such guidelines should be disseminated and implemented systematically.

Prevention needs to be sensitive to culture and to resources available across countries

Current opportunities for prevention of mental disorders and mental health promotion are unevenly distributed around the world. International initiatives are needed to reduce this gap and to support low income countries in developing prevention knowledge, expertise, policies and interventions that are responsive to their needs, culture, conditions and opportunities.

Population-based outcomes require human and financial investments

Population-based outcomes can only be expected when sufficient human and financial resources are invested. Financial support should be allocated to the implementation of evidence-based prevention programmes and policies and to the development of required infrastructures. In addition, investments in capacity building at the country level should be promoted, providing training and creating a workforce of informed professionals. Much of this investment will need to come from governments, as they have the ultimate responsibility for population health.

Effective prevention requires intersectoral linkages

Prevention of mental disorders and mental health promotion need to be an integral part of public health and health promotion policies at local and national levels. Prevention and promotion in mental health should be integrated within a public policy approach that encompasses horizontal action through different public sectors, such as the environment, housing, social welfare, employment, education, criminal justice and human rights. This will generate "win-win" situations across sectors, including a wide range of health, social and economic benefits.

Protecting human rights is a major strategy to prevent mental disorders

Adverse conditions such as child abuse, violence, war, discrimination, poverty and lack of access to education have a significant impact on the development of mental ill-health and the onset of mental disorders. Actions and policies that improve the protection of basic human rights represent a powerful preventive strategy for mental disorders.

Introduction: What is evidence-based prevention and promotion in mental health?

Prevention of mental disorders: a public health priority

Mental and behavioural disorders are not exclusive to any special group: they are found in people of all regions, all countries and all societies. About 450 million people suffer from mental disorders according to estimates given in WHO's *World Health Report 2001*. One person in four will develop one or more mental or behavioural disorders[1] during their lifetime (WHO, 2001b). Mental and behavioural disorders are present at any point in time in about 10% of the adult population worldwide. One fifth of teenagers under the age of 18 years suffer from developmental, emotional or behavioural problems, one in eight has a mental disorder; among disadvantaged children the rate is one in five. Mental and neurological disorders account for 13% of the total Disability Adjusted Life Years (DALYs)[2] lost due to all diseases and injuries in the world (WHO, 2004d). Five of the ten leading causes of disability worldwide are psychiatric conditions, including depression, alcohol use, schizophrenia and compulsive disorder (Murray & Lopez, 1996). Projections estimate that by the year 2020 neuropsychiatric conditions will account for 15% of disability worldwide, with unipolar depression alone accounting for 5.7% of DALYs.

The economic impact of mental disorders is wide-ranging, long-lasting and enormous. These disorders impose a range of costs on individuals, families and communities. In the United States of America, the annual total costs related to mental disorders have been reported as reaching 147 billion US dollars, more than the costs attributed to cancer, respiratory disease or AIDS (Institute of Medicine, 1989). Although estimates of direct costs in low income countries do not reach these levels because of the low availability and coverage of mental health care services, indirect costs arising from productivity loss account for a larger proportion of overall costs (WHO, 2001b). Moreover, low treatment costs (because of lack of treatment) may actually increase the indirect costs by increasing the duration of untreated disorders and their associated disability. Overall, the economic costs of mental ill-health are enormous and not readily measurable. In addition to health and social service costs, lost employment, reduced productivity, the impact on families and caregivers, the levels of crime and public safety and the negative impact of premature mortality, there are other hard-to-measure costs, such as the negative impact of stigma and discrimination or lost opportunity costs to individuals and families that have not been taken into account (WHO, 2001b; Hosman & Jané-Llopis, 1999).

To reduce the health, social and economic burdens of mental disorders it is essential that countries and regions pay greater attention to prevention and promotion in mental health at the level of policy formulation, legislation, decision-making and resource allocation within the overall health care system.

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[1] Including unipolar depressive disorders, bipolar affective disorder, schizophrenia, epilepsy, alcohol and selected drug use disorders, Alzheimer's and other dementias, post traumatic stress disorder, obsessive and compulsive disorder, panic disorder and primary insomnia.

[2] Disability Adjusted Life Years (DALYs), a methodology introduced in the Global Burden of Disease, accounts for the disability and chronicity caused by disorders (Murray & Lopez, 1996). The DALY is a measure of health gap, which combines information on disability and other non-fatal health outcomes and premature death. One DALY is one lost year of 'healthy life'.

Promotion of mental health and prevention of mental disorders

An initial difficulty faced by researchers and policy-makers in this field is related to the similarities and boundaries between the concepts of mental health and mental illness and between prevention and promotion. WHO defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO, 2001a, p.1). Hence, health includes mental, physical and social functioning, which are closely associated and interdependent. There is evidence that mental and physical illnesses may accompany, follow, or precede one another as well as evidence indicating that mental disorders increase the risk of physical illness and vice versa.

Mental health promotion

Mental health promotion often refers to positive mental health, considering mental health as a resource, as a value on its own and as a basic human right essential to social and economic development. Mental health promotion aims to impact on determinants of mental health so as to increase positive mental health, to reduce inequalities, to build social capital, to create health gain and to narrow the gap in health expectancy between countries and groups (Jakarta Declaration for Health Promotion, WHO, 1997). Mental health promotion interventions vary in scope and include strategies to promote the mental well-being of those who are not at risk, those who are at increased risk, and those who are suffering or recovering from mental health problems (box 1). Further information can be found in *Promoting Mental Health: Concepts, Emerging Evidence, Practice* (Herrman, Saxena & Moodie 2004; WHO 2004b).

Box 1: Defining mental health promotion

"Mental health promotion activities imply the creation of individual, social and environmental conditions that enable optimal psychological and psychophysiological development. Such initiatives involve individuals in the process of achieving positive mental health, enhancing quality of life and narrowing the gap in health expectancy between countries and groups. It is an enabling process, done by, with and for the people. Prevention of mental disorders can be considered one of the aims and outcomes of a broader mental health promotion strategy (Hosman & Jané-Llopis 1999)."

Mental disorder prevention

Mental ill-health refers to mental health problems, symptoms and disorders, including mental health strain and symptoms related to temporary or persistent distress. Preventive interventions work by focusing on reducing risk factors and enhancing protective factors associated with mental ill-health. Although there are definitional nuances in the field, mental disorder prevention is broadly understood as defined in box 2.

Box 2. Public health definition of mental disorder prevention

Mental disorder prevention aims at "reducing incidence, prevalence, recurrence of mental disorders, the time spent with symptoms, or the risk condition for a mental illness, preventing or delaying recurrences and also decreasing the impact of illness in the affected person, their families and the society" (Mrazek & Haggerty, 1994).

The approach to mental disorder prevention lies in the concept of public health, defined as "the process of mobilizing local, state, national and international resources to solve the major health problems affecting communities" (Detels et al., 2002). The Institute of Medicine Report (Mrazek & Haggerty, 1994) has proposed a framework of mental health intervention for mental disorders based on the classification of the prevention of physical illness (Gordon, 1983, 1987) and the classic public health distinctions between primary, secondary and tertiary prevention. Universal, selective and indicated preventive interventions are included within primary prevention in the public health classification (box 3). Secondary prevention seeks to lower the rate of established cases of the disorder or illness in the population (prevalence) through early detection and treatment of diagnosable diseases. Tertiary prevention includes interventions that reduce disability, enhance rehabilitation and prevent relapses and recurrences of the illness. *Prevention of Mental Disorders: Effective Interventions and Policy Options* focuses on primary prevention of mental disorders. It reviews universal, selective and indicated interventions and proposes effective strategies for policy-makers, government officials and practitioners to implement across countries and regions.

Box 3: Definitions of universal, selective and indicated prevention

Universal prevention is defined as those interventions that are targeted at the general public or to a whole population group that has not been identified on the basis of increased risk.

Selective prevention targets individuals or subgroups of the population whose risk of developing a mental disorder is significantly higher than average, as evidenced by biological, psychological or social risk factors.

Indicated prevention targets high-risk people who are identified as having minimal but detectable signs or symptoms foreshadowing mental disorder or biological markers indicating predisposition for mental disorder but who do not meet diagnostic criteria for disorder at that time. (Mrazek & Haggerty, 1994, pp. 22–24)

Interface between prevention and promotion in the field of mental health

The distinction between health promotion and prevention lies in their targeted outcomes. Mental health promotion aims to promote positive mental health by increasing psychological well-being, competence and resilience, and by creating supporting living conditions and environments. Mental disorder prevention has as its target the reduction of symptoms and ultimately of mental disorders. It uses mental health promotion strategies as one of the means to achieve these goals. Mental health promotion when aiming to enhance positive mental health in the community may also have the secondary outcome of decreasing the incidence of mental disorders. Positive mental health serves as a powerful protective factor against mental illness. However, mental disorders and positive mental health cannot be described as the different ends of a linear scale, but rather

as two overlapping and interrelated components of a single concept of mental health (Detels et al., 2002). Prevention and promotion elements are often present within the same programmes and strategies, involving similar activities and producing different but complementary outcomes. Since mental health promotion and mental disorder prevention both deal primarily with the enhancement of mental health and the influence of its antecedents, they should be understood as conceptually distinct but interrelated approaches.

Developing the evidence for successful programmes and policies

The need for evidence

Evidence-based medicine and evidence-based prevention stimulate the use of the best available knowledge from systematic research in decision-making for clinical and public health practice. Paraphrasing Sackett's original definition of evidence-based medicine (Sackett et al., 1996), evidence-based prevention and health promotion is the conscientious, explicit and judicious use of current best evidence to make decisions about interventions for individuals, communities and populations that facilitate the currently best possible outcomes in reducing the incidence of diseases and in enabling people to increase control over and to improve their health (Hosman & Jané-Llopis, 2005). Societal pressure for more accountability for spending public money in preventive measures to reduce the burden of mental ill-health calls for solid evidence of the public benefits and cost-effectiveness of such interventions to warrant the sustainability of governmental and public support. This becomes especially important when governmental and nongovernmental agencies have to decide on large-scale dissemination and implementation of new preventive measures.

This report presents the current evidence of effective prevention of mental disorders to stimulate its use in policy and practice and to promote new investments in prevention. The significant progress in prevention research over recent decades has changed scepticism about the possibility of preventing mental disorders. Scientific knowledge has increased about the role of malleable risk and protective factors in the development of mental and behavioural disorders across the lifespan. Many studies have shown that preventive interventions can be successful in reducing risk factors and strengthening protective factors, and are beginning to show reductions in the onset and recurrence of serious mental health problems and mental disorders in populations at risk.

Standards of evidence

The call for evidence-based prevention and health promotion has triggered an international debate between researchers, practitioners, health promotion advocates and policy-makers on the quality standards of evidence. Solid scientific evidence and standards for evidence are needed to avoid invalid conclusions on outcomes of intervention trials (internal validity) or on expected outcomes of such interventions when implemented in different sites, settings and cultures (external validity). In the interest of the targeted populations evidence should meet the highest possible standards.

In evidence-based medicine, the randomized controlled trial (RCT) is widely accepted as the "gold standard" and as the best strategy to reduce the risk of invalid conclusions from research. Nevertheless, in prevention and health promotion research the RCT has limitations. The design is

specifically appropriate for studying causal influences at an individual level using interventions in a highly controlled context. However, many preventive and health promotion interventions address whole classes, schools, companies, communities or even populations. Some studies have used randomization of school classes and even whole schools; however, such designs are difficult to realize and require long-standing relationships between researchers and communities. Therefore, other research designs, such as quasi-experimental studies and time-series designs, should also be considered as valuable strategies for developing useful evidence in this area. These research strategies have been used successfully, for example, to evaluate the impact of national legislation and policy measures to reduce the use of alcohol, tobacco and illicit drugs. In certain situations, qualitative studies are also necessary to develop insight into the facilitating factors and barriers to developing and implementing effective programmes and policies. This report is therefore based on conclusions from studies using different types of controlled research designs, including evidence from RCTs, when available, as well as the conclusions of studies using quasi-experimental and qualitative research methods.

For a growing number of programmes positive outcomes have been found across multiple trials. To increase the robustness of the findings presented in this report, priority needs to be given to replication studies across communities and countries. Such studies are needed to understand what role variation in cultural and economic conditions plays when similar interventions are implemented in new settings. They also help to identify which adaptations are needed in such settings to maintain outcomes found earlier. Most of the current prevention research has been implemented in developed countries, especially in the USA. This Summary Report and the Full Report on which it is based (Hosman, Jané-Llopis & Saxena, 2005) aims to facilitate the accessibility and use of evidence-based interventions and prevention knowledge worldwide. Principles of what works can be applied in different situations. This is especially relevant for low income countries that are lacking resources for prevention research while needing to address enormous public mental health problems. To facilitate prevention development and decision-making, such countries need to be supported in interpreting the feasibility of available prevention programmes and in developing over time their own evidence-based programmes.

In face of the growing availability of evidence-based prevention programmes and the international trend to adopt "best practices" across countries and communities, questions arise about the level (standard) of evidence that needs to be available in order to decide about their adoption, reimplementation or large-scale implementation. It is difficult to provide general rules for such decisions that are valid across countries while new sites and variations in cultural and economic conditions may challenge earlier developed evidence. In general, it is recommended that the internal and external validity of the available evidence be considered in each case in order to decide an implementation is justified or should only be experimental in nature guided by new outcome studies.

Building the evidence-base for prevention is an incremental process and different evidence standards apply to the different types of decisions that have to be made.

Part I: Evidence-based risk and protective factors

The concept of risk and protective factors

Mental disorder prevention targets those determinants that have a causal influence, predisposing to the onset of mental disorders. *Risk factors* are associated with an increased probability of onset, greater severity and longer duration of major health problems. *Protective factors* refer to conditions that improve people's resistance to risk factors and disorders. They have been defined as those factors that modify, ameliorate or alter a person's response to some environmental hazard that predisposes to a maladaptive outcome (Rutter, 1985). Mostly, individual protective factors are identical to features of positive mental health, such as self-esteem, emotional resilience, positive thinking, problem-solving and social skills, stress management skills and feelings of mastery. For this reason, preventive interventions aiming to strengthen protective factors overlap largely with mental health promotion.

There is strong evidence on risk and protective factors and their links to the development of mental disorders (e.g. Coie et al., 1993; Ingram & Price, 2000). Both risk and protective factors can be individual, family-related, social, economic and environmental in nature. Mostly it is the cumulative effect of the presence of multiple risk factors, the lack of protective factors and the interplay of risk and protective situations that predisposes individuals to move from a mentally healthy condition to increased vulnerability, then to a mental problem and finally to a full-blown disorder.

Interventions to prevent mental ill-health aim to counteract risk factors and reinforce protective factors along the lifespan in order to disrupt those processes that contribute to human mental dysfunction. The more influence individual factors have on the development of mental disorders and mental health the greater the preventive effect that can be expected when they are addressed successfully.

It is imperative that determinants addressed in preventive interventions are malleable and encompass disease-specific as well as more generic risk and protective factors. *Generic risk and protective factors* are those that are common to several mental health problems and disorders. Interventions that successfully address such generic factors may generate a broad spectrum of preventive effects. For example, poverty and child abuse are common to depression, anxiety and substance abuse. Interventions that successfully address poverty and child abuse can be expected to have an impact on all three of these disorders. *Disease-specific risk and preventive factors* are those that are mainly related to the development of a particular disorder. For example, negative thinking is specifically related to depression, and major depression is specifically related to suicide.

There are also interrelationships between mental and physical health. For example, cardiovascular disease can lead to depression and vice versa. Mental and physical health can also be related through common risk factors, such as poor housing leading to both poor mental and poor physical health. Major understanding is needed of the relations between different mental disorders, between mental health and physical health, and on the developmental pathways of generic and disease-specific risk factors leading to mental ill-health.

Sufficient evidence-based knowledge is already available on risk and protective factors to warrant governmental and nongovernmental investments in the development, dissemination and implementation of evidence-based programmes and policies. Those interventions that address risk and protective factors with a large impact or that are common to a range of related problems, including social and economic problems, will be most cost-effective and attractive to policy-makers and other stakeholders.

Policy-makers and programme designers need to take into account that a specific mental disorder can be the outcome of quite different causal trajectories operating for diverse populations at risk. Therefore, effective public health policies should encompass multiple preventive interventions addressing multiple causal trajectories for the relevant populations at risk.

Social, environmental and economic determinants

Major socioeconomic and environmental determinants for mental health are related to macro-issues such as poverty, war and inequity. For example, poor people often live without the basic freedoms of security, action and choice that the better-off take for granted. They often lack adequate food, shelter, education and health, deprivations that keep them from leading the kind of life that everyone values (World Bank, 2000). Populations living in poor socioeconomic circumstances are at increased risk of poor mental health, depression and lower subjective well-being (Patel & Jané-Llopis, 2005). Other macro-factors such as urbanisation, war and displacement, racial discrimination and economic instability have been linked to increased levels of psychiatric symptomatology and psychiatric morbidity. For instance, war and war-related traumas cause post-traumatic stress disorders (PTSD), depression, anxiety and alcohol-related disorders (Musisi, Mollica & Weiss, 2005). In addition, such traumas can create psychiatric vulnerabilities in the offspring of traumatized and depressed parents.

Box 4 depicts a range of evidence-based social, environmental and economic determinants of mental health that are discussed further in *Prevention of Mental Disorders: Effective Interventions and Policy Options* (Hosman, Jané-Llopis & Saxena, 2005).

Box 4: Social, environmental and economic determinants of mental health

Risk factors	*Protective factors*
Access to drugs and alcohol	Empowerment
Displacement	Ethnic minorities integration
Isolation and alienation	Positive interpersonal interactions
Lack of education, transport, housing	Social participation
Neighbourhood disorganisation	Social responsibility and tolerance
Peer rejection	Social services
Poor social circumstances	Social support and community networks
Poor nutrition	
Poverty	
Racial injustice and discrimination	
Social disadvantage	
Urbanisation	
Violence and delinquency	
War	
Work stress	
Unemployment	

Individual and family-related determinants

Individual and family-related risk and protective factors can be biological, emotional, cognitive, behavioural, interpersonal or related to the family context. They may have their strongest impact on mental health at sensitive periods along the lifespan, and even have impact across generations. For example, child abuse and parental mental illness during infancy and early childhood can lead to depression and anxiety later in life as well in next generations, while secure attachment and family social support can reduce such risks (Hoefnagels, 2005; Beardslee, Solantaus & van Doesum, 2005). Maternal risk behaviour during pregnancy and aversive events early in life can cause neuropsychological vulnerabilities (Brown & Sturgeon, 2005). Marital discord can precede conduct problems in children, depression among women and alcohol-related problems in both parents (e.g. Sandler, Ayers & Dawson-McClure, 2005; Dyer & Halford, 1998).

Elderly people who are physically ill may suffer from a range of subsequent risk factors and problems, such as chronic insomnia, alcohol problems, elder abuse, personal loss and bereavement. Other risk factors are closely related to individual histories of problem behaviours and disorders, such as earlier depressive episodes. Anxiety disorders increase the risk of depression, while depression increases the risk of later cardiovascular disease. Sometimes such causal trajectories can include a succession of attention deficit and hyperactivity disorder (ADHD) in early childhood, problem behaviour in late childhood, conduct disorders during adolescence, and alcohol-related problems and depression during adulthood. These are just some examples of the risk and protective factors that play a role within individuals and families. Box 5 depicts the main evidence-based factors that have been found to be related to the onset of mental disorders.

Policy-makers and practitioners should be provided with knowledge of evidence-based and malleable determinants of mental health and their links to mental ill-health. There is strong evidence that these individual, family, social, economic and environmental determinants of mental health have led not only to a range of mental health problems and disorders but also to associated physical health problems. These include, for example, skull fractures, head injuries, cardiovascular disease, cancer and cirrhosis of the liver. The following sections of this publication present evidence of how mental health problems and psychiatric morbidity can be tackled by addressing generic risk and protective factors through preventive interventions and mental health promotion.

Box 5: Risk and protective factors for mental disorders

Risk factors	*Protective factors*
Academic failure and scholastic demoralization	Ability to cope with stress
Attention deficits	Ability to face adversity
Caring for chronically ill or dementia patients	Adaptability
Child abuse and neglect	Autonomy
Chronic insomnia	Early cognitive stimulation
Chronic pain	Exercise
Communication deviance	Feelings of security
Early pregnancies	Feelings of mastery and control
Elder abuse	Good parenting
Emotional immaturity and dyscontrol	Literacy
Excessive substance use	Positive attachment and early bonding
Exposure to aggression, violence and trauma	Positive parent–child interaction
Family conflict or family disorganization	Problem-solving skills
Loneliness	Pro-social behaviour
Low birth weight	Self-esteem
Low social class	Skills for life
Medical illness	Social and conflict management skills
Neurochemical imbalance	Socioemotional growth
Parental mental illness	Stress management
Parental substance abuse	Social support of family and friends
Perinatal complications	
Personal loss – bereavement	
Poor work skills and habits	
Reading disabilities	
Sensory disabilities or organic handicaps	
Social incompetence	
Stressful life events	
Substance use during pregnancy	

Part II: Macro-strategies to reduce risk and improve quality of life

Changes in legislation, policy formulation and resource allocation can provide countries and regions with substantial improvements in mental health of the population. In addition to decreasing the risk of mental disorders and improving mental health, such legislative changes have also been proven to positively impact on the health, social and economic development of societies. This section reviews some major macro-preventive strategies that have been shown to improve mental health and reduce the risks for mental disorders (Patel & Jané-Llopis, 2005; Musisi, Molica & Weiss, 2005; Anderson et al., 2005).

Improving nutrition

There is strong evidence that improving nutrition and development in socioeconomically disadvantaged children can lead to healthy cognitive development, improved educational outcomes and reduced risk for mental ill-health, especially for those at risk or who are living in impoverished communities. The most effective intervention models are those that include complementary feeding, growth monitoring and promotion. These models combine nutritional interventions (such as food supplementation) with counselling and psychosocial care (e.g. warmth, attentive listening) (WHO, 1999). Growth charts (which plot the weight of the child against the expected weight) have also been suggested to be cost-effective (WHO, 2002c). In addition, iodine plays a key role in preventing mental and physical retardation and impairment in learning ability (WHO, 2002c). Iodine supplementation programmes which iodize salt or water ensure that children obtain adequate levels of iodine. Global efforts such as those supported by UNICEF have led to 70% of the world's households using iodized salt. This protects 91 million newborns from iodine deficiency (UNICEF, 2002) and indirectly prevents related mental and physical health problems.

Improving housing

Poor housing has been used as an indicator of poverty and targeted to improve public health and reduce inequalities in health. A recent systematic review on the health effects of housing improvement suggests a promising impact on physical and mental health outcomes. This includes improvements in self-reported physical and mental health and less mental health strain, as well as broader positive social impacts on factors such as perceptions of safety, crime and social and community participation (Thomson, Petticrew & Morrison, 2001).

Improving access to education

Low literacy and low levels of education are major social problems in many countries, particularly in south Asia and sub-Saharan Africa, and tend to be more common in women. Lack of education severely limits the ability of individuals to access economic entitlements. While there have been impressive gains in improving literacy levels in most countries through better educational programmes targeting children, there is much less effort directed to today's adult illiterates. It is expected that programmes aimed at improving literacy, in particular targeting adults, may have tangible benefits in reducing psychological strain and promoting mental health. Ethnographic research in India, for example, has noted that literacy programmes have significant consequences beyond the acquisition of specific skills (Cohen, 2002). By bringing women together in new social forms that provided them with information about and ideas from wider worlds, the classes were

potential catalysts for social change. By participating in campaigns as volunteer teachers, impoverished literate women and girls gained a sense of pride, self-worth and purpose. The positive mental health impact was mediated through a number of pathways, including acquisition of numeracy skills which reduced the risk of being cheated, greater confidence in expressing one's rights and a reduction of barriers to accessing opportunities. All of these outcomes have been associated with protection against mental ill-health and reducing the risks for mental disorders.

Evidence also indicates the success of initiatives using subsidies to close gender gaps in education (World Bank, 2000). For example, in the first evaluation of a school stipend established in Bangladesh in 1982, the enrolment of girls in secondary school rose from 27% to 44% over five years, more than twice the national average (Bellew & King, 1993). Evaluation studies in Pakistan have illustrated that improved physical access to school, subsidized costs and culturally appropriate design can sharply increase girls' enrolments in education (World Bank, 2000). Better education increases female cognitive, emotional and intellectual competencies and job prospects, and might reduce social inequity and risks of certain mental disorders such as depression.

Reducing economic insecurity

In many developing countries indebtedness to loan sharks is a consistent source of stress and worry that can lead to symptoms of depression, mental disorders and suicide. Nongovernmental organizations such as BRAC in Bangladesh have developed programmes for poverty alleviation targeting credit facilities, gender equity, basic health care, nutrition, education and human rights issues. Provision of loans from such sources may reduce the risk of mental illness by removing a key cause of stress: the threat posed by the informal moneylender. An evaluation of the BRAC poverty alleviation programmes, which reach out to millions of the poorest people in Bangladesh, indicates that psychological well-being is better in women who are BRAC members than women who are not (Chowdhury & Bhuiya, 2001).

Strengthening community networks

Many community interventions have focused on developing empowering processes and building a sense of ownership and social responsibility within community members. An example of such an intervention is the Communities that Care (CTC) Programme, which has been implemented successfully in several hundred communities in the USA and is currently being adopted and replicated in The Netherlands, England, Scotland, Wales and Australia. The CTC prevention operating system is a field-tested strategy for activating communities to implement community violence and aggression prevention systems (Hawkins, Catalano & Arthur, 2002). The strategy helps communities use local data on risk and protective factors to identify risks and develop actions. These include interventions that operate simultaneously at multiple ecological levels: the community (e.g. mobilization, media, policy change), the school (changing school management structures or teaching practices), the family (e.g. parent training strategies) and the individual (e.g. social competence strategies) (Developmental Research and Programs, 1997). The CTC strategy supports communities in selecting and implementing existing evidence-based programmes that fit the risk profile of their community. To date the CTC system has only been evaluated in the USA, with pre–post designs and comparisons with baseline data involving about 40 communities in each field test. These evaluations have indicated improvements in youth outcomes. Examples include decreases in school problems (30% decrease), weapons charges (65%), burglary (45%), drug offences (29%) and assault charges (27%).

Reducing the harm from addictive substances

Taxation, reduced availability and bans on advertising

Effective regulatory interventions for addictive substances that can be implemented at international, national, regional and local levels include taxation, restrictions on availability and total bans on all forms of direct and indirect advertising (Anderson et al., 2005). By reducing the harm from addictive substances these policy interventions can lead to the prevention of substance use disorders.

Price is one of the largest determinants of alcohol and tobacco use. A tax increase that raises tobacco prices by 10% reduces both the prevalence and consumption of tobacco products by about 5% in high income countries and 8% in low and middle income countries. Similarly for alcohol, a 10% increase in price can reduce the long-term consumption of alcohol by about 7% in high income countries and, although there are very limited data, by about 10% in low income countries (Anderson et al., 2005). In addition, increases in alcohol taxes reduce the incidence and prevalence of alcohol-related liver disease, traffic accidents and other intentional and unintentional injuries, such as family violence and the negative mental health impacts due to alcohol consumption.

Laws that increase the minimum legal drinking age reduce alcohol sales and problems among young drinkers. Reductions in the hours and days of sale and numbers of alcohol outlets and restrictions on access to alcohol are associated with reductions in both alcohol use and alcohol-related problems. Restrictions on smoking in public places and private workplaces can reduce both smoking prevalence (by 4–6%) and average daily cigarette consumption among smokers (by 10%) (Fichtenberg & Glantz, 2002).

A comprehensive set of tobacco advertising bans can reduce tobacco consumption by over 6%, while a limited set of advertising bans will have little or no effect (Saffer, 2000). Countries with a ban on spirits advertising had 16% lower alcohol consumption and 10% lower motor vehicle fatalities than countries with no such ban (Saffer & Dave, 2002).

Reduced smoking and use of other substances during pregnancy

There is strong evidence for the negative impact of alcohol, tobacco and drug use during pregnancy on the likelihood of premature deliveries, low birth weight, perinatal mortality and long-term neurological and cognitive–emotional development problems (e.g. lower intelligence, ADHD, conduct problems, poorer school achievements) (Brown & Sturgeon, 2005). Being born prematurely and low birth weight are known risk factors for adverse mental health outcomes and psychiatric disorders. In general, substance abuse by the mother is also associated with the offspring becoming dependent on substances during adolescence and young adulthood. Educational programmes to stimulate pregnant women to abstain from substance use can have long-term mental health benefits. For example, a 15-minute behavioural intervention for pregnant smokers showed a 6% increase in cessation. The babies of mothers who quit were 200 grams heavier at birth; cutting down smoking increased birth weight by half this amount (Windsor et al., 1993).

Part III: Reducing stressors and enhancing resilience

Promoting a healthy start in life

Ample evidence exists that early intervention programmes are a powerful prevention strategy. The most successful programmes addressing risk and protective factors early in life are targeted at child populations at risk, especially from families with low income and education levels (Brown & Sturgeon, 2005). They include home-based interventions during pregnancy and infancy, efforts to reduce smoking during pregnancy, parent management training and preschool programmes.

Home-based interventions

Evidence from home visiting interventions during pregnancy and early infancy, addressing factors such as maternal smoking, poor social support, parental skills and early child–parent interactions, has shown health, social and economic outcomes of great public health significance (Brown & Sturgeon, 2005). These include improvement of mental health both in the mothers and the newborns, less use of health services and long-term reductions in problem behaviours after 15 years. Evidence also shows that such interventions can be cost-effective, especially when long-term outcomes are taken into account.

The Prenatal and Infancy Home Visiting Programme (Olds, 1997, 2002) is an effective example of such a programme (see box 6 for details).

Box 6: The Prenatal and Infancy Home Visiting Programme

This programme represents the most successful example of an evidence-based home visiting programme. The programme included a two-year period of home visits by trained nurses focused on impoverished adolescents pregnant for the first time. RCTs showed benefits for the newborns in reducing low birth weight (increase of up to 400 grams), a 75% reduction in preterm delivery, more than a two-fold reduction in emergency visits and a significant reduction in child abuse among unmarried teens. Over the next four years there was less punishment used by the mothers, the mothers increased employment by 82%, postponed their second child by more than 12 months and their children yielded higher IQ scores. By age 15 there were fewer reports of maltreatment, children were 56% less likely to have problems with alcohol or drugs and reported 56% fewer arrests, 81% fewer convictions and a 63% reduction in the number of sexual partners. Families were better off financially and the reduced government's costs for such families more than compensated for the programme's cost. (Olds, 1997, 2002; Olds et al., 1997; Olds et al., 1998.)

This intervention has been replicated in two other communities within the USA with comparable success and has recently been adopted by some European countries. Nurses were most effective with mothers who had the highest levels of psychiatric symptoms and distress; such families often benefited from specific programmes that could address their multiple needs. Not all home visiting programmes with nurses and social workers have been found to be effective, however (Villar et al., 1992). This stresses the need to identify what the active ingredients are in effective programmes, and what impedes effectiveness. For instance, in the Prenatal and Infancy Home Visiting Programme, nurse home visitors were found to produce better outcomes than paraprofessionals. However, this is not always the case; using community resources can also be an efficient strategy. For example, home visiting programmes can be especially useful in low income populations and

countries because of illiteracy or constraints on access to health care or information. Developing countries have no alternative but to train lay community family support workers and have considerable expertise in doing so. Provided sufficient training is available, these interventions can be delivered. Further outcome research is needed in this area.

Preschool educational and parenting interventions

Community programmes for at-risk families with young children have produced a range of positive results (Brown & Sturgeon, 2005). These include universal preschool programmes such as family reading programmes, health screening clinics, organized recreation and television programmes that teach elementary reading skills and socioemotional values.

Selective early interventions targeted at children of minority and impoverished families to enhance their cognitive functioning and speech and language skills have found improved cognitive development, better achievement and school completion and fewer conduct problems and arrests. The High/Scope Perry Preschool Project, for example, found benefits up to ages 19 and 27 on lifetime arrests (40% reduction) and a seven-fold economic return on the government's investment in the programme (Schweinhart et al., 1993; Schweinhart & Weikart, 1997).

Low birth weight is a proven risk factor for cognitive and behavioural deficits, failure to thrive, cognitive problems later in life, academic impairment and school problems and increases the risk of behavioural and psychiatric disorders. Home-based interventions in combination with preschool programmes, such as the Infant Health and Development Programme targeted at low-birth-weight infants or the children of mentally retarded mothers during infancy up to age three, have repeatedly been found to be effective in preventing a significant drop in IQ across the first four to five years, including levels of mental retardation (e.g. Blair, Ramey & Hardin, 1995; Blair & Ramey, 1997). Reports from mothers point also at a reduction in behaviour problems. Day-care programmes for children at risk have shown similar positive results including a large drop in grade failure during elementary school (e.g. Ramey, Yeates & Short, 1984).

Parent management training programmes have also shown significant preventive effects. For instance, Webster-Stratton's "The Incredible Years" programme provides a behaviourally-based intervention that increases positive interactions and reduces coercive interaction cycles between the child and the parent, improves the child's problem-solving behaviour and social functioning, and reduces conduct problems at home and school. The programme uses videotape modelling methods and includes modules for parents, school teachers and children (Webster-Stratton & Reid, 2003; Webster-Stratton, Reid & Hammond, 2001). Another effective example is the Australian Triple P Positive Parenting Programme (Sanders, Turner & Markie-Dadds, 2002). This intervention represents a new generation of multilevel parent management programmes that include universal, selective and indicated strategies. In a controlled follow-up study, parents who viewed a series of videotapes on parenting, reflecting an "infotainment"-style television programme, reported a significant reduction in disruptive behaviours and an increase in parenting confidence (Sanders, Montgomery & Brechman-Toussaint, 2000).

Reducing child abuse and neglect

Numerous activities have been implemented to prevent or stop the occurrence or re-occurrence of child abuse. Only two types of proactive strategies have proven some efficacy: home visiting

programmes for high-risk mothers to prevent child physical abuse and neglect and self-defence programmes for school-aged children to prevent child sexual abuse (Hoefnagels, 2005).

Home-based interventions

Home visiting programmes have been found successful in reducing risk factors for child maltreatment. The Prenatal and Infancy Home Visiting Programme (see box 6 earlier) has provided evidence from randomised controlled research of reductions in physical child abuse. During the first two years of the programme, unmarried teen mothers in the prevention condition showed a drop of 80% of cases of verified child abuse or neglect; over a 15-year period, a drop of 46% was found among the whole sample of mothers at risk who participated in the programme (Olds et al., 1997). These results show prevention of child abuse can be successfully addressed in a programme that targets common risk factors and multiple outcomes.

Self-defence strategies

The main objective of self-defence programmes is to provide children with knowledge and skills so that they will be able to prevent their own victimisation. These school-based programmes are widely implemented in the USA in various grades in primary schools. Well-controlled trials have repeatedly shown that children who have participated in such programmes do better in terms of knowledge and skills than do comparable children who have not been exposed to such programmes (Rispens, Aleman & Goudena, 1997). However, no evidence is available yet that shows whether there have been any reductions in the rate of child abuse as a result of self-defence programmes.

Coping with parental mental illness

Children of parents with mental illness or substance use disorders represent one of the populations at highest risk for psychiatric problems. For instance, children of depressed parents have a risk of around 50% of developing a depressive disorder before age 20 (Beardslee et al., 1988). There is convincing evidence that the transgenerational transfer of mental disorders, especially depression and anxiety disorders, is the result of interactions between genetic, biological, psychological and social risk factors from as early as pregnancy and infancy (van Doesum, Hosman & Riksen-Walraven, in press). Over the last 15 years researchers and practitioners from the USA, Europe and Australia have developed a range of interventions aimed to prevent transgenerational transfer by addressing risk and protective factors in the children and their families. Issues addressed include the family's knowledge about the illness, psychosocial resilience in children, parent–child and family interactions, stigma and social network support. Some interventions are targeted at early parent–child interaction, others use a whole family approach during childhood and early adolescence or focus on the children at risk themselves.

Controlled outcome studies on such programmes are still scarce, although some show promising outcomes (Beardslee, Solantaus & van Doesum, 2005). These include studies on home visiting programmes during the first year after birth focusing on improving early parent–infant interaction, school-based screening and early intervention programmes among indicated children with increased anxiety symptoms and anxious parents (see section V.3) and a cognitive-oriented group programme for adolescent children of depressed parents with an elevated level of depressive symptoms but no disorder. For instance, a randomised trial on a cognitive-oriented group pro-

gramme found a prevalence of new and recurrent depression of 25% in the control group compared with only 8% in the intervention group in the first year of the intervention, and respectively a rate of 31% compared with 21% at the second year follow-up (Clarke et al., 2001). This replicated the findings from an earlier controlled study (Clarke et al., 1995).

Enhancing resilience and reducing risk behaviour in schools

Despite variation in the amount of time that children spend in schools, they are the primary institution for socialization in many societies. For this reason, and because of the convenience of conducting interventions in a setting where young people spend much of their time, schools have become one of the most important settings for health promotion and preventive interventions among children and youth.

There is ample evidence that school-based programmes in elementary, middle and high schools can influence positive mental health and reduce risk factors and emotional and behavioural problems through social–emotional learning and ecological interventions (see review by Domitrovitch et al., 2005). Some interventions target the whole school in an integrated approach across years, while other interventions target only one part of the school (e.g. children in a given grade) or a specific group of students identified to be at risk. Mostly these school-based programmes are universal in nature and have targeted successfully a range of generic risk and protective factors. Outcomes have included academic improvement, increased problem-solving skills and social competence as well as reductions in internalising and externalising problems such as depressive symptoms, anxiety, bullying, substance use and aggressive and delinquent behaviour.

General skill building programmes

Universal skill building programmes in elementary or middle school, such as the I Can Problem Solve programme (Shure, 1997; Shure & Spivack, 1988), can significantly improve cognitive problem-solving abilities and reduce inhibition and impulsivity. The Improving Social Awareness – Social Problem-Solving (ISA-SPS) Programme led to improvements in coping with stressors related to middle school transition along with significant reductions in problem behaviour at six-year follow-up (Bruene-Butler et al., 1997). The Promoting Alternative THinking Strategies (PATHS) Programme is another example of a programme that across several RCTs has demonstrated improvement in emotion knowledge and problem-solving skills and reductions of internalising and externalising problems (Conduct Problems Prevention Research Group, 1999; Greenberg & Kusche, 1998). School-based skill building programmes that are geared for middle and high school students often serve as both mental ill-health and substance abuse prevention programmes, particularly when problem-solving is geared towards addressing these issues.

Changing the school ecology

Ecologically-focused preventive interventions attempt to address contextual variables in the child's home or school as a means to improve their emotional and behavioural functioning and to prevent or reduce symptoms or other negative outcomes. As reviewed in the Full Report (Domitrovich et al., 2005), such outcomes are successfully produced by programmes that restructure the school environment (e.g. School Transitional Environment Project: Felner et al., 1993), influence the classroom climate (e.g. Good Behavior Game: Kellam et al., 1994) or the whole

school climate (e.g. Norwegian Bullying Prevention Programme: Olweus, 1989). For instance, across several RCTs in the USA and The Netherlands, The Good Behavior Game, a universal programme that promotes positive behaviour and rule compliance in the classroom through reinforcement, showed significant reductions in aggressive behaviour up to five years after the intervention in those boys with moderate to high aggressive behaviour at baseline (Kellam et al., 1994; van Lier, 2002).

Multicomponent programmes

Prevention programmes that take an holistic school approach and focus simultaneously on different levels, such as changing the school ecology as well as improving individual skills in the students and involving parents, are more effective than those that intervene on solely one level. Examples of such effective multicomponent programmes include the Linking the Interests of Families and Teachers (LIFT) Programme, which demonstrated reductions in student aggression, particularly for those most at risk (Reid et al., 1999), and the developmentally sequenced multicomponent Seattle Social Development Project, which led to significantly stronger attachment to school, improvement in self-reported achievement and less school misbehaviour (e.g. Hawkins, von Cleve & Catalano, 1991).

Dealing with family disruption

Adolescents with divorced parents exhibit higher levels of teen pregnancy, early marriage, school drop out, delinquent behaviour, substance use and externalizing and internalizing problems; reduced academic and social competence; and a higher risk of unhappy relationships, divorce and premature mortality. Parental death is related to higher symptoms of anxiety and depression, including clinical depression, more school and behaviour problems and lower academic success.

Two formats have been used for interventions with children of divorced parents: child-focused programmes and parent-focused programmes (see review by Sandler, Ayers & Dawson-McClure, 2005). Effective school-based programmes for these children (e.g. Children's Support Group, Children of Divorce Intervention Programme) teach specific cognitive-behavioural coping skills (i.e. anger control, problem-solving, communication) and foster the identification and expression of emotions. In addition, the group format provides social support and reduces isolation and stigmatisation. Controlled studies have demonstrated that participant children (ages 8 to 12 years) show less depressive symptomatology and behaviour problems at one-year follow up (Wolchik et al., 1993; Wolchik et al., 2000). Parent-focused programmes targeted at parenting skills and dealing with emotions successfully improved mother–child relationship quality and effective discipline and reduced internalising and externalising problems in the children. One six-year randomized follow-up study revealed a range of longitudinal effects, including a significant reduction in mental disorders, as a result of a programme that addressed both mothers and children (Wolchik et al., 2002). At follow-up, 11% of the adolescents in the experimental group had a one-year prevalence of diagnosed mental disorders, compared with 23.5% in the control group. In addition, fewer externalising problems were found in those adolescents with higher initial mental health problems.

While many interventions have been developed to address the needs of parentally bereaved children, few have been tested in well-controlled experimental trials (Sandler, Ayers & Dawson-

McClure, 2005). A multiple group approach with separate groups held simultaneously for children, adolescents and surviving caregivers has found promising outcomes (Sandler et al., 2003). The groups were successful in promoting factors that have been associated with better mental health outcomes for bereaved children, including positive parent–child relations, coping, caregiver mental health, discipline and sharing of feelings. In both the child-focused and parent-focused programmes, effects were stronger for those children who were more at risk, that is, those already showing symptoms at the start of the programme.

Intervening at the workplace

Work represents two major sources of stressors that can contribute to poor mental health: work stress and unemployment. Such stressors can increase the incidence of depression, anxiety, burn-out, alcohol-related problems, cardiovascular illness and suicidal behaviour.

Work stress

To reduce work stress, interventions may be directed at either increasing the coping capacity of the employee or at reducing stressors in the work environment. Three types of strategies address work conditions: task and technical interventions (e.g. job enrichment, ergonomic improvements, reduction of noise, lowering the workload), improving role clarity and social relationships (e.g. communication, conflict resolution) and interventions addressing multiple changes directed both at work and employees. Notwithstanding the existence of national and international legislation with respect to the psychosocial work environment that puts the emphasis on risk assessment and risk management, most programmes aim at reducing the cognitive appraisal of stressors and their subsequent effects, rather than at the reduction or elimination of the stressors themselves (see review by Price & Kompier, 2005).

Stress management programmes have been found to be effective in preventing adverse mental health outcomes. Studies suggest that interventions targeted at task and technical changes offer promising opportunities for the improvement of mental health. The Caregiver Support Programme is a successful example of a programme that effectively increases the ability of teams of caregivers to mobilize socially supportive team behaviour and problem-solving techniques (box 7). There is growing evidence to support the notion that work-focused interventions have the potential to benefit both the employee and the company. This is the case when interventions combine thorough risk assessment of both task and social work environment, education on ways to deal with stress and a careful approach to implementation.

Box 7: The Caregiver Support Programme: A work stress intervention to increase employee coping resources and enhance mental health

The Caregiver Support Programme was designed to increase social support and participation in work-related decision-making for caregiver teams in health and mental health care facilities. The programme involved six training sessions four to five hours long. With groups of approximately 10 home managers and 10 direct care staff, sessions were focused on (1) understanding and strengthening existing helping networks within the organizations, (2) increasing worker participation in decision-making and using participatory decision-making, (3) teaching supervisors and direct care workers to develop and lead training activities in their home site and (4) techniques for maintaining these new skills over the long-term. To ensure effective delivery, social learning principles were employed to produce a strong sense of mastery for accomplishments and to inoculate workers against setbacks.

The programme was evaluated in a large-scale randomised trial. Results indicated that it increased the amount of supportive feedback on the job, strengthened participant perceptions of their abilities to handle disagreements and overload at work, and enhanced the work team climate. The programme also enhanced mental health and job satisfaction of those who attended at least five of the six training sessions. The Caregiver Support Programme also had positive effects on the mental health of those employees most at risk for leaving their jobs. (Heaney, Price & Rafferty, 1995a, 1995b)

Job loss and unemployment

The most well-known universal interventions in response to job loss and unemployment tend to be legal policies governing unemployment insurance and welfare assistance or policies associated with improving job security. Their availability varies dramatically across different parts of the world. A variety of workplace policies are available to reduce the risk of job loss and unemployment, including job sharing, job security policies, cutbacks on pay and reduced hours. No empirical evidence is available on their potential to protect the mental health of employees, although their power to reduce stress related to unemployment is quite obvious.

A number of intervention programmes have been developed and tested for effectiveness in helping unemployed workers return to paid employment, such as the Job Club and the JOBS Programme (see review by Price & Kompier, 2005). These low-complexity and low-cost programmes combine basic instruction on job search skills with enhancing motivation, skills in coping with setbacks and social support among job searchers. The JOBS programme has been tested and replicated in large-scale randomised trials in the USA (Caplan et al., 1989; Price, van Ryn & Vinokur, 1992; Vinokur et al., 2000) and Finland (Vuori et al., 2002). It has been shown to have positive effects on rates of re-employment, the quality and pay of jobs obtained and increases in job search self-efficacy and mastery and to reduce depression and distress. The JOBS Programme has also been successfully disseminated in the People's Republic of China and Ireland.

Supporting refugees

Substantial recent evidence points to the perniciously deleterious effects of war trauma on the mental health of affected individuals, families and communities in many regions of the world (Musisi, Mollica & Weiss, 2005). These effects may span generations with significant negative impacts on the public health and socioeconomic development of affected societies. Considerable human suffering and psychiatric disability exists in exiled refugees, massively traumatised communities who stayed behind in their countries of war, physically or sexually tortured war victims and combat veterans. Most commonly this involves PTSD, depression and anxiety, which are frequently associated with comorbid disorders such as substance abuse, personality changes, dissociations and even psychotic decompensation and suicidal behaviour. In addition, ample evidence points at the transgenerational effects of such severe traumas. Wars have a severe impact on the post-war societies and their capacity to cope with the social, health and mental health consequences. Wars break down health infrastructures, lead to loss of social capital and cause epidemics resulting in a major problem of orphans. These post-war consequences represent additional major risk factors for psychiatric morbidity and weaken the preventive resources of a country.

The most desirable and effective preventive approach is successful efforts to prevent war and trauma-evoking behaviours and events through international peacekeeping efforts, advocacy and commitment to human rights. Preventive efforts to reduce the onset of mental disorders in post-conflict societies should focus primarily at early interventions after trauma, preventing the negative consequences of war (e.g. epidemics, problems with family reconciliation), rebuilding the country's physical and mental health services and social infrastructures, mental health education, restoring human rights, and offering emotional, social and economic support to refugees (Musisi, Mollica & Weiss, 2005). Apart from interventions to prevent PTSD (see section V.3), very few of these strategies have been evaluated in rigorous outcome studies. The support of international agencies is essential to implement these macro-preventive strategies and to develop the evidence needed to make them effective and feasible.

Ageing mentally healthy

Different types of universal, selective and indicated interventions have been successful in improving the mental health of elder populations (Jané-Llopis et al., 2005). Exercise interventions and improving social support through befriending are examples of universal strategies. Promising preventive interventions for selective and indicated elder populations include the use of patient education methods among chronically ill elderly and their caregivers, early screening, interventions in primary care and programmes using life review techniques. In addition, recent studies have pointed at the relevance of preventing craniocerebral traumas, high systolic blood pressure and high cholesterol levels in order to reduce the risk of dementia.

Exercise interventions

Recent cross-sectional studies and controlled trials have suggested that exercise, such as aerobic classes and t'ai chi, provides both physical and psychological benefits in elder populations (e.g. Li et al., 2001). These benefits include greater life satisfaction, positive mood states and mental well-being, reductions in psychological distress and depressive symptoms, lower blood pressure

and fewer falls. Taiwan offers an example of a culture where physical exercise, specifically t'ai chi, is widely practiced by elders.

Enhancing social support

Some studies suggest the positive effects of friendship on the well-being of older people, especially older women. Befriending is a widely used strategy to increase social support and to reduce loneliness and depression among the elderly. So far only one quasi-experimental outcome study is available confirming that befriending programmes for older women can significantly reduce loneliness and increase the making of new friends (Stevens & van Tilburg, 2000). Replication studies are urgently needed.

Early screening and intervention in primary care

Limited evidence exists suggesting that early geriatric screening and case management can result in a range of beneficial and cost-effective outcomes, including mental health benefits. For instance, an early case management programme for at-risk community-dwelling elders, which included in-home geriatric assessment, regular contacts and a range of social services (e.g. homemaking, personal care, emergency alert response system) led to decreases in depression and increased mastery and life satisfaction (Shapiro & Taylor, 2002). Significant decreases in institutionalization (2.5% versus 16.9%) and death (2.5% versus 6.1%) were found for those who received the intervention across the one and a half year study period.

Depression and suicide prevention

Although depression is common among the elderly, almost no controlled studies exist on depression prevention and suicide prevention for this group. Some evidence is available pointing at improved social relationships and fewer depressive symptoms among participants of a programme involving widows supporting other widows. Preliminary evidence is also suggesting that life review meetings and reminiscence therapy might reduce the risk of depression in the elderly, especially among nursing home residents (e.g. Haight, Michel & Hendrix, 1998). There are some indications that a telephone helpline and emergency response service might cause a significant drop in suicides (De Leo, Dello Buono & Dwyer, 2002).

Chronic medical conditions

Another significant high-risk group in elder populations, especially for the development of depression, are those who suffer from chronic or stressful physical conditions, such as hearing loss, mobility impairment, arthritis or other chronic illnesses. Only a few examples of hard evaluation of effective interventions exist in this area. Patient education techniques teaching about the prognosis and management strategies to deal with chronic conditions (e.g. chronic pain) have shown short-term beneficial effects on psychological status such as reductions in depressive symptoms (Riemsma et al., 2002). Indications exist that providing hearing aids to elderly people with hearing loss might lead to better social, emotional and cognitive functioning and reductions in depression (Mulrow et al., 1990).

Caregivers of chronically ill and indigent elderly

Caregivers of chronically ill and indigent elderly are at increased risk of suffering from high levels of stress and incidence of depression. Outcomes across a large range of controlled intervention studies on psycho-educational interventions for family caregivers of older adults have shown significant improvements in caregiver burden, depression, subjective well-being and perceived caregiver satisfaction (Sorensen, Pinquart & Duberstein, 2002). Psycho-educational interventions include providing information on the care receiver's disease and available resources and services, and training to respond effectively to disease-specific problems. Such interventions make use of lectures, group sessions and written materials.

Prevention of dementia

Several approaches have been considered for the primary prevention of dementia or the delay of its onset, such as reducing exposure to environmental neurotoxins (e.g. aluminium), reducing risk in vulnerable groups showing prodromal signs of dementing process, pharmacological protective measures (e.g. non-steroidal anti-inflammatory drugs, estrogen replacement, anti-oxidants, vitamin E) and genetic counselling (Jané-Llopis et al., 2005). All these strategies show some promise, although have no conclusive evidence to be proposed as preventive measures yet. Two strategies seem to have shown stronger evidence of their link to prevention or delay of onset of dementia. The first is the prevention of craniocerebral traumas earlier in life through highway speed limits, use of crash helmets and seat-belts, and drink-drive and vehicle licensing laws (Cooper, 2002). Secondly, vascular disease is an evidence-based risk factor for dementia. A double-blind European study suggests that reductions of high systolic blood pressure through antihypertensive therapy in elderly at risk can reduce the onset of dementia by over 50% (Forette et al., 1998, 2002). There also exist indications that reduction of cholesterol, for example through statin therapy, may prevent or delay the onset of dementia.

Part IV: Preventing mental disorders

This part summarizes the progress that has been made over the last decades in the development of evidence-based programmes to reduce the risk of mental disorders. Effective programmes and policies are discussed for universal, selective and indicated prevention of conduct disorders (Eddy, 2005), depression (Jané-Llopis, Muñoz & Patel, 2005), anxiety disorders (Hosman, Dadds & Raphael, 2005), eating disorders (Hosman, 2005), substance use related disorders (Anderson, Biglan & Holder, 2005), psychotic disorders (Killackey et al., 2005) and suicide (Hosman, Wasserman & Bertelotte, 2005).

Conduct disorders, aggression and violence

Estimates of the prevalence of conduct disorders in youth vary between 2 and 10%. Such disorders are more likely in boys than in girls. Conduct disorders tend to co-occur with a variety of other serious problems such as academic failure and underachievement, adult problems in intimate relationships and work performance, substance use and abuse, anxiety disorders and depression. The social and economic costs of conduct disorder and aggressive and violent behaviour are high. These include costs of treatment, justice and the criminal system, social services, academic failure, and the emotional and economic costs for victims and families. Economists have estimated the average yearly costs of a child diagnosed with conduct disorder to be 25 806 US dollars.

Malleable risk factors include maternal smoking during pregnancy, behavioural impulsivity, inept parenting, parental antisocial behaviour and substance use, child abuse, early aggressive behaviour and conduct problems, early substance use, deviant peer relationships, low popularity among peers and impoverished and socially disorganized neighbourhoods with high levels of crime.

The most successful preventive interventions to reduce the risk of aggressive behaviour and conduct disorders focus on improving the social competence and prosocial behaviour of children, parents, peers and teachers. These interventions are developed in tandem with a consensus developmental model for conduct problems with its emphasis on social interaction between children, caregivers and peers. New intervention attempts inform the model, and new cross-sectional and longitudinal research findings inform innovative intervention attempts.

Universal interventions

Universal interventions that have been found to successfully impact on conduct problems are all school-based, and include classroom behaviour management, enhancing child social skills and multimodal strategies including the involvement of parents. Box 8 offers some examples of such evidence-based programmes.

Classroom behaviour management programmes attempt to help children better meet the social demands of the classroom through the overt encouragement of desired behaviours and the discouragement of undesired behaviours. Effective programmes have resulted in decreased student conduct problems (e.g. decreased disruptive behaviour, decreased aggression) and better relationships among students and between students and teachers.

Child social skills programmes attempt to provide children with cognitive skills that may help them cope better with difficult social situations. Commonly, skills related to listening, empathy, interpersonal problem-solving and conflict and anger management are taught, usually within

the classroom context. These programmes have been found to positively impact on cognitions related to problem-solving and reduce impulsive behaviours, at least for up to one year following intervention. Children and teachers report decreased conduct problems.

Multimodal interventions tend to either include multiple interventions within the school setting or multiple interventions across settings, such as combining a school-based child social skill intervention with parent management training. Multimodal programmes are intended to simultaneously provide children and their caregivers with the skills needed to effectively encourage the development of prosocial behaviour patterns. These interventions have showed lower rates of aggression in the playground and decreases in a variety of conduct problems, including bullying, theft, vandalism, self-reported conduct problems and first arrests.

Box 8: Examples of evidence-based programmes that reduce conduct problems and aggressive behaviour

	Strategy	**Examples of effective interventions**
Universal	Behaviour management	*Good Behaviour Game (GBG)* (Kellam et al., 1994)
	Child social skills interventions	*I Can Problem Solve* (Shure, 1997; Shure & Spivack, 1988) *Promoting Alternative THinking Strategies* (PATHS) (Greenberg et al., 1995)
	Multimodal school programmes	*Bullying Prevention Programme* (Olweus, 1989) *Child Development Project (CDP)* (Battistich et al., 1996) *Seattle Social Development Project (SDP)* (Hawkins, von Cleve & Catalano, 1991; Hawkins et al., 1999) *Linking the Interests of Families and Teachers Programme (LIFT)* (Reid et al., 1999)
Selective	Prenatal/early childhood programmes	*Nurse Family Partnership* (Olds et al., 1998; Olds, 1997) *Incredible Years Programme* (Webster-Stratton, 1990; Webster-Stratton & Reid, 2003)
	School or community-based programmes	*Adolescent Transitions Programme* (Dishion & Andrews, 1995)
Indicated	School multimodal programmes for children at risk	*First Step* (Walker et al., 1998) *Montreal Prevention Project* (Tremblay et al., 1995) *Fast Track* (Conduct Problems Prevention Research Group, 2002)

Selective interventions

Selective interventions designed for a variety of settings have been found to be effective in preventing conduct problems, including prenatal and/or early childhood programmes and school or community-based programmes. Prenatal and/or early childhood programmes usually attempt to improve the skills of parents to nurture, support and teach their children's prosocial behaviour patterns and/or to develop the social skills of children (e.g. Olds et al., 1997; see also sections IV.1 and IV.2). These programmes have shown a decrease in risk factors for conduct disorders, such as maternal smoking during pregnancy and child abuse and neglect, and decreases in child conduct problems during adolescence, including reductions in violence and police arrests. School or community-based programmes for selective child populations at risk have successfully targeted child social and problem-solving skills and/or parent management skills, resulting in a decrease in negative parent–child interactions and teacher ratings of conduct problems at school.

Indicated interventions

Indicated interventions to prevent conduct disorder focus on children who have been identified by teachers and/or parents as clearly displaying significant conduct problems. Such programmes have shown decreases in conduct problem displays through several middle school years as reported by teachers and the children themselves. An effective example that includes universal, selective and indicated components is Fast Track (Conduct Problems Prevention Research Group, 2002). In this programme children are identified in kindergarten. Throughout their school years, the children participate in a wide variety of interventions, including social and problem-solving skills training (i.e. PATHS), play sessions with prosocial peer partners and academic tutoring. Parents participate in parent management training groups and parents and children participate in planned skill training activities. Families also receive regular home visits and case management assistance. Results of a randomised trial after the first three years of intervention have indicated that children in the Fast Track programme displayed lower levels of conduct problems as rated by both teachers and parents.

Depression and depressive symptomatology

Depression represents one of the most prevalent psychiatric disorders, affecting around 340 million people worldwide. In 2002 unipolar depression accounted for 4.5% of all DALYs (WHO, 2004d). It is the leading cause of disability in the European region. Unipolar depression is expected to become the second-ranked cause of disease burden in 2020, accounting for 5.7% of DALYs, just behind ischaemic heart disease. This means that unipolar depression alone will account for one third of all worldwide disability caused by neuropsychiatric conditions, and thus becomes the most important mental disorder to tackle. The onset of depression and its recurrence is influenced by a wide range of malleable risk and protective factors at different stages of the lifespan from as early as infancy. These include biological, psychological, family, social and societal factors which are unevenly distributed in the population and concentrated in a wide range of populations at risk. Both depression-specific risk factors (e.g. parental depression, depressogenic cognitions) and generic risk factors (e.g. inadequate parenting, child abuse and neglect, stressful life events, bullying) and protective factors (e.g. sense of mastery, self-esteem, self-efficacy, stress resistance, social support) have been identified. As a consequence, effective community approaches to prevent

depression in the population should comprise multiple actions including universal, selective and indicated interventions. On average, controlled studies show a significant but small effect of 11% reduction in depressive symptomatology after intervention, with a large variation in effect size between programmes (Jané-Llopis et al., 2003). A few studies have found a significant reduction in the onset of depressive disorders.

Universal interventions

Strengthening protective factors among populations has been found to reduce depressive symptomatology. Examples include school-based programmes targeting cognitive, problem-solving and social skills of children and adolescents (see IV.4) and exercise programmes for the elderly (see IV.8). Some of these school programmes (e.g. The Resourceful Adolescent Programme) found reductions in high depressive symptom levels of 50% or more one year after the intervention (Shochet et al., 2001). One controlled study on the outcomes of a universal early home-based family counselling programme in Finland found reductions in internalising problems 10–15 years later during adolescence and early adulthood (Aronen & Kurkela, 1996).

Some evidence-based interventions address proven risk and protective factors for the onset of depression. These include successful interventions to reduce child abuse and neglect (see IV.2) and bullying (see V.1).

Selective interventions

Parenting interventions for parents of children with conduct problems aimed at improving parental psychosocial well-being by information provision and by training in behavioural childrearing strategies have repeatedly, although not consistently, shown reductions in parental depressive symptoms of around 30% along with improvements in children's outcomes. In addition, several selective interventions targeted at coping with major life events have shown significant and long-term reductions of high levels of depressive symptoms, such as programmes for children with parental death or divorce (see IV.4), those exposed to unemployment (see IV.6) and chronically ill elderly (see IV.8). Further, blocking the transgenerational transfer of depression and related problems through interventions for infants, adolescents and families of depressed parents seems to be a promising strategy (see IV.3).

Significant reductions in incidence of depression may be expected among refugees and those exposed to war traumas or living in post-conflict communities when adequate social and economic support is provided. Even greater reductions could be expected if such conflicts and traumas could be prevented and human rights were respected (see IV.7). The same would apply to the general population if measures to reduce economic instability and poverty were applied across countries and regions. Yet no scientific evidence is available on the benefits of such actions for specifically reducing depression.

Indicated interventions

Programmes for those with elevated levels of depressive symptoms but no depressive disorder have shown significant effects in reducing high levels of depressive symptoms and preventing depressive episodes. Such programmes mainly use a group format to educate people at risk in

positive thinking, challenge negative thinking styles and improve problem-solving skills. These programmes have been offered to indicated groups of primary care patients, adolescents and some other indicated groups. Only in the case of adolescents have randomised studies found evidence for reductions in depressive episodes, with drops in onset and recurrence of 40-70% in the first year after the intervention (Clarke et al., 1995, 2001).

New projects are currently investigating the possibility of reaching larger populations at risk through use of written self-help materials, mass media and the Internet. Further, some studies point to the potential of additional exposure to light therapy as a preventive strategy for winter depression in people with subsyndromal depressive symptoms (e.g. Avery et al., 2001)

The finding that anxiety disorders frequently precede the onset of depression points to the potential of evidence-based anxiety prevention programmes, especially for indicated children and adolescents, as an indirect strategy to reduce the risk of depression (see V.3). At least one controlled study confirmed that such a child-oriented anxiety programme resulted in a significant reduction of depressive symptoms uniquely in those children with a high level of anxiety before the start of the intervention (Lowry-Webster, Barrett & Dadds, 2001). Box 9 shows examples of other effective indicated preventions for depressive episodes.

In summary, many prevention programmes implemented across the lifespan have provided evidence on the reduction of elevated levels of depressive symptoms. The few that have been evaluated for their impact on preventing the onset of clinical depressive episodes have proven effective. A focus on reducing or preventing depressive symptoms is important because high levels of depressive symptoms have been found to increase the risk for major depressive episodes. In addition, symptoms are related to reduced productivity, ability to care for one's family, energy levels, ability to feel pleasure and general life satisfaction and mental well-being.

Box 9: Prevention of depression in children and adolescents at risk

Coping with Stress Course (Clarke et al., 2001)	*Coping with Stress Course* (Clarke et al., 1995)
Targeted at the children of psychiatric parents who have subclinical depressive symptoms or with a past episode of major depression.	Targeted at high school adolescent students with depressive symptoms.
During 15 group sessions cognitive therapy methods were used to identify and challenge negative thinking patterns and to generate more realistic and positive counter-thoughts.	During 15 group sessions cognitive therapy methods were used to identify and challenge negative thinking patterns and to generate more realistic and positive counter-thoughts.
A randomised control study showed a lower incidence of depression in the experimental group (9.3%) than in the control group (28.8%) at 14-month follow-up.	A randomised control study showed a lower incidence of first depressive episodes after one year in the experimental group (14.5%) than in the control group (25.7%).

Anxiety disorders

Anxiety disorders, like depression, are among the most prevalent psychiatric disorders in spite of cultural variations in rates. They comprise a wide range of different disorders of which generalized anxiety disorders, social phobia and PTSD have been a focus of primary prevention so far. The annual cost of anxiety disorders in the USA was estimated for 1990 to be approximately 64 billion US dollars (in 1998 dollars). Most anxiety disorders first appear during childhood and adolescence which makes these age groups an important target for primary prevention. Among children, anxiety disorders represent the most common form of psychopathology with annual prevalence rates ranging from 5.7 to 17.7%, mostly above 10% (Costello & Angold, 1995). Evidence shows that a high proportion of children do not grow out of their anxiety disorders during adolescence and adulthood (Majcher & Pollack, 1996).

Examples of populations at risk include children of anxious parents; victims of child abuse, accidents, violence, war, disasters or other traumas; refugees; and professionals at risk of being robbed or treating trauma victims. Malleable anxiety-specific or generic risk and protective factors for anxiety disorders include traumatizing events, learning processes during childhood (e.g. modelling and over-control by overanxious parents), feelings of lack of control, and low self-efficacy, coping strategies and social support. Early adverse life events create a neurobiological vulnerability that predispose to affective and anxiety disorders in adulthood through long-lived alterations in neurological stress response systems.

Evidence-based preventive measures vary in type of targeted population, targeted anxiety disorder, type of risk or protective factors addressed, timing (i.e. anticipatory or reactive to traumatic event) and intervention method used.

Reducing traumatising events or exposure

Millions of people around the world are exposed to preventable traumatising events such as child abuse, violence, sexual assault, war and torture. Reduction of traumatic events can be the result of effective safety measures in traffic, workplaces and neighbourhoods, safety legislation and gun control. Effective school-based programmes that reduce aggressive and delinquent behaviour and bullying may contribute to such a reduction (see IV.5 and V.1). The same applies for effective programmes to reduce child abuse (see IV.2). As discussed in section IV.7, national and international preventive actions to prevent war, war traumas and violations of human rights can be expected to contribute significantly to the reduction of trauma-induced anxiety disorders when implemented successfully. Duration of exposure to traumatising events is an evidence-based determinant of the risk of psychiatric reactions in response to such events. Both exposure prevention and reduction of its duration can be realized by public measures such as preventing exposure to traumatising sites during disasters and enhancing early detection and intervention in cases of violence or abuse. No evidence is yet available on the actual preventive impact of such measures.

Enhancing emotional resilience and anticipatory education

Another major strategy that has proven to be effective focuses on strengthening the emotional resilience and cognitive skills needed to avoid the development of anxiety disorders. A promising prevention of anxiety programme for children from 7 to 16 years of age is the Australian FRIENDS programme, widely used in schools, health centres and hospitals. Based on an effective treat-

ment programme for anxiety disorders, it has been translated into a prevention format and is available in universal, selective and indicated prevention versions. FRIENDS is a cognitive-behavioural programme of 10 sessions that teaches children skills to cope with anxiety more effectively and builds emotional resilience, problem-solving abilities and self-confidence. A controlled trial showed that the programme offered to children with pre-intervention elevated levels of anxiety symptoms reduced the first onset of a diagnosable anxiety disorder from 54% in the control group to 16% in the prevention condition in the six months following the intervention (Dadds et al., 1997). Controlled studies have also shown that when the programme was offered to universal school populations and to selected groups of children and adolescents at risk it resulted in a significant drop in anxiety symptoms (e.g. Lowry-Webster, Barrett & Dadds, 2001). FRIENDS is also implemented in Sweden, The Netherlands and the USA.

Hardly any evidence is available on the effectiveness of anticipatory education on the prevention of anxiety disorders in those who will be exposed to potentially traumatic events, such as firefighters, rescue teams, police officers and bank personnel.

Post-trauma interventions

Critical incident stress debriefing (CISD) has become a widely used intervention after a traumatic event such as a shooting incident or disaster. In general, debriefing involves some form of emotional processing and ventilation by encouraging recollection and reworking of the trauma within 24 to 72 hours after the event. The common conclusion from several controlled studies is that CISD does not prevent the onset of PTSD or other psychiatric disorders, although victims generally find the intervention helpful in their process of recovering (Litz et al., 2002; Arendt & Elklit, 2001). Indeed, psychological debriefing can retraumatize victims and can increase the risk of PTSD. More promising results have been found with the use of cognitive–behavioural therapy as an early intervention method to prevent PTSD. This method comprises education about trauma reactions, relaxation training, imaginal exposure to traumatic memories, cognitive restructuring of fear-related beliefs and in vivo exposure to avoided situations. Several controlled studies have shown that five weekly sessions of one and a half hours can lower the six months incidence of PTSD from 67% to around 15% (Bryant et al., 1998; Bryant et al., 1999).

Indicated interventions

In addition to the FRIENDS programme that has been successfully applied to children with elevated levels of anxiety symptoms, some preliminary evidence from a controlled study suggests that the onset of panic disorders can be reduced through a short-term cognitive workshop for those who have experienced a first panic attack. During the 6-month follow-up period, 2% of those involved in the workshop developed a panic disorder in comparison to 14% of the control group (Gardenswartz & Craske, 2001).

Eating disorders

Anorexia nervosa occurs in 0.5–1% and bulimia nervosa in 0.9–4.1% of the female adolescent and young adult population, while an additional 5–13% suffer from partial syndrome eating disorders (American Psychiatric Association, 2000; Kurthet al., 1995; Shisslak, Crago & Estes, 1995; Keel, Leon & Fulkerson, 2001*)*. There has been an apparent increase in eating disorders over the last 50 years

(e.g. Lucas et al., 1991). These figures are mainly based on studies in developed countries and may not apply to low income countries, especially when suffering from food shortage or famine. Anorexia nervosa is the third most common chronic condition among adolescent girls in the USA, after obesity and asthma. Of adolescent girls, 5–15 % are using unhealthy dieting control methods such as self-induced vomiting, laxatives and diuretics (Phelps & Wilczenski, 1993). The onset of anorexia nervosa starts mostly between 14 and 18 years, while for bulimia onset is around the time of transition from adolescence to early adulthood. Although the incidence and prevalence of eating disorders is low, the outcomes of eating disorders are serious. Approximately 25–33% of patients with anorexia or bulimia nervosa develop a chronic disorder. Eating disorders show high levels of comorbidity with substance abuse disorders, depression and anxiety disorders.

Eating disorders occur mainly in adolescent and adult females, especially in female athletes, ballet students, fashion models and culinary students. Although a vast body of research on the etiology of eating disorders exists, many studies show major methodological limitations such as lacking a prospective design and control groups. Taking these limitations into account, there is emerging a likely picture of risk and protective factors in the development of eating disorders. Unhealthy dieting, excessive weight/shape concerns and body dissatisfaction are identified as important disorder-specific attitudinal and behavioural factors, as well as family and social influences, such as modelling behaviour of friends and society's glamorizing of thinness through mass media and low media literacy. Generic risk factors have also been identified such as insecure attachment, physical and sexual abuse, bullying, low self-esteem, and difficulties in coping with affective stress and conflict.

Universal, selective and indicated interventions

To reduce unhealthy dieting and eating disorders, preventive interventions are targeted at elementary, middle and high school students (universal prevention), at professional schools with specific populations at risk such as ballet dancers, athletes, fashion models and cookery students (selective prevention), or at adolescent girls and young female adults who are showing unhealthy dieting behaviour at subclinical levels (indicated prevention) (Pratt & Woolfenden, 2003).

The first generation of traditional educational programmes, published before 1995, were focused at improving knowledge about eating problems and dieting behaviour and at changing related attitudes. In general, they showed an increase in knowledge but were not successful in changing disturbed attitudes and behaviours in universal populations of female adolescents. Recently, several controlled studies have evaluated the outcomes of a new generation of multidimensional programmes integrating traditional health education approaches in a broader mental health promotion strategy and found better outcomes. In some studies preventive effects have been found for eating related attitudes, internalisation or acceptance of societal ideals of appearance, feelings of ineffectiveness, body dissatisfaction and dieting behaviour. For instance, an Australian study on an interactive programme targeting self-esteem in young adolescents in addition to eating attitudes and behaviour showed that even 12 months after the programme participants showed improved body satisfaction, more positive self-esteem and social acceptance and a lower drive for thinness (O'Dea & Abraham, 2000). Adolescents at high risk showed an increase in body weight while control at-risk students showed a decrease.

Some preliminary findings from two RCTs suggest that an interactive Internet-based intervention was successful in reaching young females at risk and was effective in changing personal risk fac-

tors for eating disorders, such shape and dieting concerns, a drive for thinness and disordered eating (Winzelberg et al., 2000; Zabinski et al., 2001).

A recent Cochrane Review revealed empirical support for the efficacy of interventions involving media literacy and advocacy resulting in less internalisation or acceptance of societal ideals of female appearance, but not for interventions directly addressing adolescent abnormal eating attitudes and behaviours (Pratt & Woolfenden, 2003)

Overall, these studies show mixed results and do not allow firm conclusions on the effectiveness of eating disorder prevention programmes yet. Moreover, no study has found any evidence for reduced onset of eating disorders as a result of such interventions. More research is needed on risk factors and on factors that can differentiate between successful and unsuccessful programmes and predict who would benefit from what kind of programmes.

Substance related disorders

The prevention of mental and behavioural disorders due to psychoactive substance use includes the prevention of acute intoxication, harmful use and dependence. The term "psychoactive substances" encompasses tobacco, alcohol and illicit drugs (e.g. opioids, cannabinoids and cocaine) as well as psychoactive prescription drugs and solvents. Globally, tobacco as a risk factor causes 4.1% of the total burden of disability (WHO, 2002c). In the 21st century, it is estimated that tobacco will be the cause of one billion deaths worldwide, with three quarters of these deaths occurring in low income countries. Worldwide, about two billion people consume alcoholic beverages and over 75 million are diagnosed with alcohol use disorders (WHO, 2004a). Alcohol as a risk factor causes 4.0% of the total burden of disability (WHO, 2002c). Alcohol consumption is the leading risk factor for disease burden in low mortality low income countries (WHO, 2002c). In high income countries, some 10–30% of drinking occasions include consumption of at least 60 g of alcohol (six drinks), a measure of intoxication; 25% of men and 10% of women consume alcohol at levels hazardous and harmful to their health; and the prevalence of alcohol dependence ranges from 3–5%. Apart from the direct effects of intoxication and dependence resulting in alcohol use disorders, alcohol is estimated to cause about 20–30% of each of the following worldwide: oesophageal cancer, liver cancer, cirrhosis of the liver, homicide, epilepsy and motor vehicle accidents. In the late 1990s it was estimated that 4.2% of the global population aged 15 and over used illicit drugs, causing 0.8% of the total burden of disability (WHO, 2002c).

Universal interventions

Effective regulatory interventions for addictive substances which can be implemented at international, national, regional and local jurisdictional levels include taxation, restrictions on availability and total bans on all forms of direct and indirect advertising. These policy interventions, by reducing the harm from addictive substances, have led to the prevention of substance use disorders (see III.6). Other effective preventive policy measures have included media interventions, comprehensive community interventions and, to a lesser extent, school-based interventions.

Media interventions

There is continuing accumulation of evidence on the health consequences of tobacco, and the lags in consumers' responses to this information. It has been estimated that every 10% increase in media campaign expenditure has reduced cigarette sales by 0.5% (Kenkel & Chen, 2000). This points to the need to disseminate information in high, middle and low income countries.

When applied to alcohol, education and persuasion strategies usually deal with drinking less, the hazards of driving under the influence of alcohol and related topics. Despite their good intentions, public service announcements are considered an ineffective antidote to the high-quality pro-drinking messages that appear much more frequently as paid advertisements in the mass media. Mass media interventions that use a universal strategy have had a limited impact on alcohol use and alcohol-related problems (Babor et al., 2003).

Comprehensive community interventions

Community interventions have been widely used to encourage smoking cessation. Although some community-wide programmes show success, for most the effects are small and certainly less than predicted given the effort and cost expended (Cummings, 2000). However, even a modest effect on smoking behaviour can translate into a large public health impact if implemented countrywide.

Community mobilization has been used to raise awareness of problems associated with on-premises drinking, develop specific solutions to problems and pressure bar owners to recognize that they have a responsibility to the community in terms of bar-related issues such as noise level and patron behaviour. Evaluation suggests that community mobilization can be successful at reducing aggression and other problems related to drinking in licensed premises. For example, a comprehensive locally designed intervention under the Saving Lives Project, including media campaigns, business information programmes, speeding and drunk driving awareness days, speed watch telephone hotlines, police training, high school peer-led education, college prevention programmes and other activities, led to a 25% decline in fatal crashes, a 47% reduction in the number of fatally injured drivers who were positive for alcohol, a 5% decline in visible crash injuries and an 8% decline in crash injuries affecting those aged 16–25 years (Hingson et al., 1996).

School-based prevention programmes

The goal of most school-based education programmes is to change the adolescent's smoking, drinking and drug-taking beliefs, attitudes and behaviours, or to modify factors such as general social skills and self-esteem that are assumed to underlie adolescent smoking, drinking and drug-taking.

Earlier school programmes based on informational approaches and teaching students about the effects and dangers of drug use have been found to increase knowledge and change attitudes towards alcohol, tobacco and drug use, but actual substance use has remained largely unaffected (Kenkel & Chen, 2000; Babor et al., 2003). When school-based interventions have used the most recent normative education and resistance-skill training innovations, they have generally produced preventive effects but these seem to be short-lived unless accompanied by ongoing booster sessions.

Some programmes, such as Project Northland or the Midwestern Prevention Project, have included individual-level education and family or community-level interventions, leading to increased

success. The Midwestern Prevention Project, for example, was implemented in 50 public schools in 15 communities in Kansas (USA) and a replication undertaken in 57 schools and 11 communities in another state. The intervention consisted of five components: a 10 to 13-session school-based programme with five booster sessions, a mass media programme, a parent education and organization programme, training of community leaders and local policy changes initiated by the community organization. Differences in self-reported prevalence of monthly drinking between programme and comparison schools were significant after one year, although did not differ after three years. Effects on monthly intoxication were significant until the end of high school (Johnson et al., 1990).

Although school-based interventions have proven effective in improving knowledge and attitudes towards addictive substances there is still little evidence available in relation to the actual prevention of substance use disorders. The evidence suggests the effects of the interventions increase when other preventive policy measures are implemented as reported in previous sections.

Selective and indicated interventions

Brief interventions are highly effective as well as cost-effective for smoking cessation and reducing hazardous and harmful alcohol consumption. Brief advice from a general practitioner routinely given to all patients who smoke leads to about 40% attempting to stop and about 5% stopping for at least six months (a strong predictor of permanent success) (Lancaster & Stead, 2004). Adding nicotine replacement therapy increases the success rate to 10% (Silagy et al., 2004). In high income countries, the cost per DALY prevented using brief advice and nicotine replacement therapy is estimated at 2200 International dollars (WHO, 2004c). In low and middle income countries, the cost per DALY prevented is estimated between 30 and 700 International dollars (Ranson et al., 2000). The numbers of patients needed to treat for hazardous and harmful alcohol consumption to get one person stopping are typically 8–10 (Moyer et al., 2002; Ballesteros et al., 2004). In high income countries, the cost per DALY prevented using brief advice in primary care settings is estimated at 2300 International dollars (WHO, 2004c). Further evidence related to smoking and the use of other substances during pregnancy is discussed in section III.6. Further information on prevention of psychoactive substance use can be found in WHO, 2002b.

Psychotic disorders

The onset of psychotic illness represents potential personal disaster in the life-course of an individual. The psychotic illnesses, which include not only schizophrenia and schizoaffective disorder but also the affective and atypical psychoses, typically have far-reaching consequences for multiple domains of the lives of those who experience them. Psychotic illnesses have a peak onset in late adolescence–early adulthood (Kaplan, Sadock & Grebb, 1994). Schizophrenia is the most frequently encountered psychotic illness. The lifetime prevalence of schizophrenia is approximately 1% and the point prevalence is around 0.5%. In the Global Burden of Disease 2000 study it was found that schizophrenia accounted for 2.8% of the years lost to death (YLD) and 1.1% of the DALYs (Murray et al., 2001). There are also major economic costs associated with schizophrenia. This is because of its high prevalence relative to its low incidence. The World Health Report 2001 (WHO, 2001b) reported estimates of the direct expenditure for schizophrenia in the USA in 1991 of 19 billion US dollars. In 2001, the direct expenditure on schizophrenia in Australia, which spends at the low end of the spectrum for developed countries, was 661 million Australian dollars

(1.2% of national health expenditure) or 18 000 Australian dollars per person with schizophrenia; indirect and transfer costs added a further 1.2 billion Australian dollars (SANE Australia, 2002).

Schizophrenia is a disorder with variable phenotypic expression and a poorly understood complex etiology involving a major genetic contribution as well as environmental factors interacting with the genetic susceptibility (Jablensky & Kalaydjieva, 2003; van Os & McGuffin, 2003). The genetic vulnerability is complex and is now regarded as involving a variable combination of multiple genes of small effect. Environmental risk factors are also necessary and some may operate to create a neurodevelopmental vulnerability state. Such contributory risk factors include obstetric complications, childhood trauma, migration, the quality of the rearing environment, socioeconomic disadvantage and urban birth (Jablensky et al., 2000).

Biological theories of risk include the viral hypothesis which suggests that exposure to viral agents in the second trimester of pregnancy has an effect on neurodevelopment which eventually leads to experiencing a psychotic illness (Frangou & Murray, 2000). There are also studies which suggest that pregnancy and birth complications are contributory causes of schizophrenia (Geddes & Lawrie, 1995; McNeil, 1995; Warner, 2001). Related to the social causation hypothesis is the finding that people in urban areas are more likely to develop a psychotic illness than people living in rural areas (Torrey, Bowler & Clark, 1997; van Os & McGuffin, 2003). Use of illicit drugs, particularly cannabis, is a strong putative causal risk factor for the development of psychosis.

While universal prevention is not yet possible in psychosis in the way that it is in some physical disorders through immunisation or through targeting risk factors, various complementary strategies are being used to encourage the earlier seeking of help by those at risk and to develop better ways to identify those at risk and explore innovative interventions. Two examples of such early intervention strategies are noted below.

Mental health literacy and help-seeking at onset of disorder

Given the high prevalence of mental health problems in young people, the fact that the 12–26 year age range represents the peak period for onset of mental disorders across the lifespan (Moon, Meyer & Grau, 1999; Patton, 1996) and evidence that early detection and treatment of depression and psychosis improves outcomes (Kupfer, Frank & Perel, 1989; Loebel et al., 1992), population-based, indicated prevention and early intervention strategies may provide valuable opportunities to minimize the considerable burden of these disorders.

A multimedia campaign to increase mental health literacy was an integral component of the Scandinavian Early Treatment and Identification of Psychosis Study (TIPS), an early detection research project targeting first-episode psychosis (Johannessen et al., 2001). TIPS compared a geographically-based service sector which had undergone dual implementation of early detection teams and major public health information campaigns with two service sectors utilizing existing detection and referral systems (Larsen et al., 2001). Delays into treatment were reduced in the early detection sector by 90% and the public education media campaign was shown to be effective in enhancing mental health literacy and promoting early help-seeking. Treatment delays in first episodes are a known risk factor for the onset of subsequent episodes.

A second generation project, the Compass Strategy, is an evidence-based community awareness campaign that builds on the TIPS and Delay studies (see Killackey et al., 2005). The Compass Strategy is a targeted community awareness campaign promoting early help-seeking for mental

health problems in young people. Compass aims to develop and implement an effective community awareness campaign; improve the mental health literacy of young people, their families and other relevant community members; increase rates of help-seeking and reduce delays into treatment of young people aged 12–25 years experiencing a first onset of mood disorder or psychosis. The design of Compass is guided by the Precede-Proceed Model for Health Promotion (Green & Kreuter, 1999) and has three core elements: community consultation mechanisms, campaign modules and an extensive evaluation structure. A multilayered management and advisory structure provides strategic direction in accordance with participatory planning principles. It has been implemented in Australia since 2001 and is being systematically evaluated.

Pre-psychotic intervention in schizophrenia and related disorders

The model for detecting individuals who are putatively experiencing a prodrome that underpins this new wave of studies is a significant departure from earlier endeavours at identifying high-risk cohorts. Traditional approaches for high-risk cohorts focused on individuals with a family history of psychotic disorder (usually schizophrenia) during early childhood and monitored them over time, sometimes for up to 35 years. This approach has several weaknesses, including a low predictive value and a high level of false positives.

The development of an ultra-high-risk (close-in) strategy to identify populations with a higher rate of transition to psychosis, a lower false positive rate and shorter follow-up period than the traditional genetic studies has been central to progress in very early preventive interventions for psychosis. Bell proposed that "multiple-gate screening" and "close-in" follow up of cohorts selected as being at risk of developing a psychosis would minimise false positive rates (Bell, 1992). These ideas were first translated into practice in Melbourne, Australia in 1994 at the PACE Clinic (Young et al., 1995). This approach has now been adopted in a number of other clinical research programmes across the world (Cornblatt, 2002; Miller et al., 2002; Morrison et al., 2002). At the PACE clinic an RCT has shown clear evidence that it is possible to delay the onset of first episode psychosis with a combination of low dose atypical antipsychotic medication and cognitive therapy (McGorry et al., 2002). This study is in the process of replication and extension both within PACE and in a number of international centres.

Suicide

According to WHO estimates, in 2001 approximately 849 000 people died from suicide worldwide (WHO, 2002a). In 2020, approximately 1.2 million suicides are estimated (Murray and Lopez, 1996) and 10–20 times more people than this will attempt suicide. In most European countries the annual number of suicides is larger than the annual number of deaths by traffic accidents and in 2001 the worldwide number of suicide deaths overtook the number of deaths by violence (500 000) and war (230 000) (WHO 2002c). Suicide rates and trends show a large variation across countries. For instance, annual suicide rates of 48.0 to 79.3 per 100 000 males have been found in many east and middle European countries, while low rates of less than 4 per 100 000 males have been found in Islamic countries and many Latin-American countries (Bertolote, 2001). Suicide rates increase with age, although several studies have shown recently an alarming increase in rates of suicidal behaviour among young people aged 15 to 25 years (Apter, 2001).

The most important evidence-based risk factors for suicide are psychiatric disorders (mostly depression and schizophrenia), past or recent social stressors (e.g. childhood adversities, sexual or physical abuse, unemployment, social isolation, serious economic problems), suicide in the family or among friends or peers, low access to psychological help and access to means for committing suicide.

Although the history of planned attempts to reduce the community rate of suicides covers a number of decades, the availability of evidence on its outcomes is still meagre. Many studies are just descriptive in nature and the opportunity to find significant effects in controlled studies is hampered by the low incidence of suicides and the ethical barriers to the use of RCTs.

To date the most effective strategies to prevent suicides include the prescription of antidepressant drugs to patients suffering from depression and the reduction of access to the means to commit suicide. For suicide prevention among youngsters, a multicomponent school-based approach is recommended.

Hotlines and crisis centres

These represent one of the earliest systematic strategies to prevent suicides. Outcome studies over recent decades have not provided convincing evidence that such hotlines and centres have any impact on suicide rates. Some results suggest a positive effect, however. For example, in Veneto, Italy a telephone helpline for the elderly was combined with a home visiting service. In a quasi-experimental study over a period of 11 years, a 71% drop in suicides was observed among the 18 641 elderly service users compared with a comparable population group (De Leo, Dello Buono & Dwyer, 2002).

School-based programmes

Suicide education in school settings has failed to show any impact on suicide behaviours. There are even indications that such education may increase the number of students who consider suicide as a possible solution to their problems. Systematic direct screening of adolescents, using evidence-based suicide predictors, is considered an effective public health strategy to address adolescent suicide, however. One school-based programme is the Suicide Prevention and School Crisis Management Programme implemented in a public school district in Florida in the USA, covering around 330 000 children and adolescents at elementary, middle and senior high schools. This comprehensive programme encompasses the implementation of a suicide prevention school policy, teacher training and consultation, education to parents, stress management and life skills curriculum for students and the establishment of a crisis team in each school. In a five-year longitudinal study, a 63% reduction was found in the annual number of suicides among students and a 64% reduction in suicide attempts (Zenere & Lazarus, 1997).

Early intervention in primary care and prescription of psychoactive drugs

Some studies suggest that the training of general practitioners in recognizing and treating depression in primary care can improve the quantity and quality of early depression treatment. One nonrandomized Swedish study found that such training may reduce the number of inpatients days for depression among primary care patients and the number of suicides (Rutz, von Knorring & Walinder, 1992). These effects were temporary, however, pointing at the need for

booster sessions and replications of such a training programme. A Dutch study suggests that positive effects for the patients were mainly in those with a recent onset of depression.

A large range of RCTs have found evidence for a very significant reduction of suicides as result of prescribing antidepressive drugs such as paroxitine (average 82% reduction: Montgomery et al., 1995) and lithium maintenance therapy (72% reduction: Tondo, Jamison & Baldessarini, 1997).

Reducing access to the means to commit suicide

The type of suicide prevention that has shown the clearest and most dramatic results is related to reducing access to the means to commit suicide (Leenars, 2001). Strategies include detoxification of domestic gas and car exhaust, safety measures on high buildings and bridges, control of availability of sedatives and pain-killers and restricted access to pesticides. WHO (1998b) has proposed the reduction of access to means of suicide as an essential strategic component of its "human–ecological" model for suicide prevention.

Part V: The way forward

The evidence presented in this report shows that it is possible to prevent mental disorders and reduce the risk of mental ill-health. Over the last three decades a wide range of evidence-based programmes and policies has been developed that successfully reduce risk factors and strengthen protective factors. They cover the full range of primary prevention, that is, they address universal populations and selective and indicated populations at risk. Reductions in the onset of some disorders have been found as a result of primary prevention programmes. To target the full range of risk and protective factors for mental disorders, and to generate preventive effects in whole populations, the spectrum of effective interventions needs to be further extended over the coming decades.

The science and systematic reflections on current and past prevention practices have generated insight into the steps and conditions needed to develop effective prevention of mental disorders and poor mental health worldwide. These are outlined below.

To facilitate effective implementation of these steps within and across countries, it is imperative that the required conditions are met, locally, nationally and internationally. These include national policies, partnerships between relevant stakeholders, capacity building and training to develop expertise, research supporting the development and implementation of effective programmes and policies, resources and infrastructures that facilitate policy-making, programme development, provision of preventive services and others. In many countries such conditions are still not developed or are poorly implemented.

Steps to be taken

Needs assessment and programme development

Address community needs and evidence-based risk and protective factors

- Prevention policies need to be based on systematic assessments of public mental health needs.
- To be effective, programmes need to address evidence-based biological, psychological and social risk and protective factors and their interactions over the lifespan.
- To enlarge the impact of preventive interventions on the mental health of whole populations, interventions that have the capacity to have a large reach in such populations need to be developed.

Base prevention programmes on principles of effectiveness

Although to date many effective prevention programmes exist, their effectiveness and cost-effectiveness need to be further improved. The long history of research and development in prevention has generated insight into strategies and conditions needed to develop effective prevention programmes and policies and to avoid failures. For instance, more effectiveness can be expected from programmes that combine or coordinate multiple interventions addressing similar preventive targets, that are tailored to the needs of target populations and specific segments within them, that are timed at developmental periods sensitive to change, that make use of evidence-based principles of behaviour change and that have a large reach in populations at risk.

- Programme developers and providers need to be guided by available knowledge on programme characteristics and other evidence-based principles and conditions that can increase effectiveness and cost-effectiveness.

Address multiple outcomes in mental and physical health and social domains

Available evidence-based prevention programmes have also been found to improve positive mental health, to contribute to better physical health and to generate social and economic benefits. Such multi-outcome interventions illustrate that prevention can be cost-effective. One of the main problems in prevention science and policy is the compartmentalized approach to mental, social, educational, behavioural and legal problems. Many problems are related or share common risk factors that can be addressed simultaneously. The accumulation of multiple proximal outcomes across domains of functioning can bring about more efficient strategies than collections of programmes with fragmented outcomes. Accumulation of outcomes across health and social domains will offer the most convincing arguments for multiple stakeholders to invest in prevention at national and local levels.

- Programmes should address multiple outcomes, that is, they should have the potential to reduce the risk of multiple mental health problems and disorders, to improve simultaneously both mental and physical health and to generate social and economic benefits.

Dissemination and adoption

Support global information exchange

There is a growing practice of disseminating and adopting best practice and model programmes and policies across countries and communities. Such sharing will facilitate optimal use of the scarce resources of individual countries and communities for prevention and prevention research. History shows that the development of effective preventive interventions requires long-term investments in risk factor research, programme development, evaluation research and programme improvements and in exploring feasible infrastructures for their implementation. By sharing this work across countries and communities, the prevention field will develop more rapidly and each country and community will be provided with a wider range of preventive tools to tackle the epidemic of mental disorders and its related problems.

- To increase the impact of available evidence-based prevention programmes and policies, it is imperative to enhance their dissemination and adoption worldwide in order to facilitate their large-scale implementation.

Develop dissemination systems nationally and globally

To facilitate the dissemination, adoption and implementation of effective programmes and policies worldwide, it is essential to improve access to evidence-based interventions, both internationally and nationally. Some countries and regions have begun to develop Internet database systems to facilitate access to such programmes. Much will be gained when such systems become standardized and compatible worldwide. To increase the likelihood of adoption of evidence-based programmes and policies, these systems need to be attuned to the needs of policy-makers, service providers and practitioners in high, middle and low income countries.

- An accessible and integrated system of international and national databases needs to be developed to provide governmental and nongovernmental agencies with information on evidence-based programmes and policies, conditions for successful implementation, pro-

gramme outcomes, cost-effectiveness and related research. Information and materials should be translated into national languages to make them accessible to practitioners, policy-makers and local advocates.

- To obtain the involvement and investments of governmental and nongovernmental organizations and key people across different sectors (e.g. health, education, work, industry, justice), and to elicit the interest of target populations, databases need to provide information on the multiple outcomes and cost-effectiveness of prevention programmes that meet their interests, including benefits beyond mental health benefits.

Adaptation and tailoring

Develop cultural adaptation of programmes guided by principles of effectiveness

In spite of available evidence on the effectiveness of prevention programmes and policies in mental health, current knowledge is still almost exclusively based on intervention trials in affluent countries, mostly the USA, Canada, Australia and northern European countries. Less is known about their potential feasibility and effectiveness for low and middle income countries. Recent research with cross-cultural implementations and indigenous-developed practices and policies begin to inform us about the role of cultural factors in the development and implementation of preventive interventions. More knowledge is needed on what works in which cultural and economic context. Such knowledge can guide adaptations of evidence-based programmes when implemented in new contexts and the development of new and effective indigenous programmes.

- Cultural adaptation and tailoring needs to be undertaken by service providers, especially when evidence-based programmes are adopted from other countries or cultures, or when they are implemented in communities and target populations that differ from the ones in which they were originally developed and tested.
- Although culturally modified, adaptations should be guided by principles of effective intervention and implementation. Information on characteristics that are essential to effectiveness should be developed and disseminated.

Use tailoring strategies to enhance efficacy

Adaptations might not only be needed when evidence-based programmes are adopted across countries, but also when exchanged between communities within a country or when applied to new populations at risk. Tailoring programmes to the culture and needs of local settings and different segments of the target population is essential. A balance is needed between programme fidelity and reinventions driven by assessments of local needs and opportunities and knowledge of principles of effective prevention.

- Effectiveness of new or adopted programmes can be increased by applying tailoring strategies that are responsive to the needs and cultural characteristics of subpopulations.
- More insight needs to be developed into the transferability, opportunities for adaptation and reinvention of evidence-based programmes and policies across countries and cultures. Evaluation efforts and international collaboration should provide learning opportunities that generate new knowledge on such processes.

Implementation

The impact of evidence-based programmes and policies on the mental health of communities and populations is dependent on their careful selection and the quality and scale of their implementation.

Support large-scale implementation of evidence-based programmes and policies

Successful implementation has been demonstrated in several studies. However, most of the reported preventive effects have only been studied in efficacy trials tested in experimental contexts that might not reflect the processes or situations in daily community practice.

- In making choices about what to implement, policy-makers and practitioners should take into account what has been proven effective and where possible choose from a range of evidence-based strategies and interventions .
- To improve effective large-scale implementation, researchers and practitioners need to develop a set of standards to determine when a programme is ready to go to such a scale. Such standards should be sensitive to regional, national and local differences regarding cultural norms, available resources, expertise and facilities for research.

Ensure high quality of implementation

High implementation quality is crucial to the effectiveness of prevention programmes and to ensure the replication of evidence-based outcomes in new sites. One of the key elements of high-quality implementation is implementation fidelity. This requires that programmes and policies are implemented as indicated. Implementation fidelity can be supported by access to programme documentation, continuous training of programme providers and supervision of programme implementation.

- Practitioners and programme implementers are urged to ensure a high quality of programme implementation and to make use of tools to improve and ensure programme implementation with fidelity, such as manuals for programme provision, guidelines for effective implementation, training and supervision.
- Researchers, practitioners and policy-makers should address any existing shortcomings in examining and reporting implementation processes to identify opportunities for improvement.

Evaluation and monitoring

Develop and implement systems for quality assessment and improvement

Outcome studies have showed a need for further improvement in the efficacy, effectiveness and cost-effectiveness of prevention programmes. To improve effectiveness it is necessary to create learning systems to inform policy-makers, providers, practitioners and consumers on the current level of effectiveness and opportunities for its further improvement.

- Implementation by programme providers should be guided by feedback from implementation monitoring and quality assessment measures, qualitative and controlled outcome studies and community monitoring systems, using mental health, health and social indicators.

Include long-term follow-ups

Long-term follow-up evaluations will improve the knowledge on programme effects and will lead to clearer and more convincing advocacy messages to influence the support for prevention and promotion interventions. They should guide decisions about when and for how long interventions should take place.

- Researchers should include long-term follow-ups in their outcome studies to give sufficient time for interventions to show effect and to provide an accurate estimation of the duration of effects.

Ensuring sustainability

Establish or build upon policies and resources that facilitate sustainable implementation

The impact of evidence-based programmes on the mental health of populations depends on the duration of their implementation. The effectiveness of programmes is frequently limited by barriers to their sustainability. It is crucial that preventive interventions can promote and build on indigenous resources in order to maximize their local impact over time.

- To generate mental and public health benefits over a longer period of time, it is crucial to develop communities' accountability to support sustainable strategies within health agencies.
- To enhance sustainable implementation, governmental authorities and providers should select programmes and policies that can build on existing infrastructures and resources. Mental health promotion and prevention components should be structurally integrated with existing effective health promotion programmes and social policies in schools, workplaces and communities.

Conditions needed

Policy

Develop a national policy for mental disorder prevention and mental health promotion within the context of public health and public policy

To further the development and implementation of evidence-based programmes and policies, the necessary steps and conditions need to be guided by comprehensive prevention policies at local, national and regional levels. The relationships between physical and mental health denote the crucial need to integrate prevention and mental health promotion within a broader comprehensive public health framework.

- Governmental agencies are urged to develop national and regional policies on prevention of mental disorders and mental health promotion as part of public health policy and in balance with treatment and maintenance practices for existing mental disorders.
- Prevention policies, along with mental health promotion, should be population-oriented and embrace different settings. This includes actions such as promoting a healthy start of life through supportive services for young parents; offering early school-based interventions for healthy development; stimulating protective mental health and family-friendly policies at the workplace; providing increased personnel, resources and prevention training throughout the health services; and creating accessible childcare services and support systems in the community, especially for high-risk populations.
- Mental disorder prevention and mental health promotion should be integrated within a public policy approach that encompasses horizontal action through different public sectors, such as the environment, housing, social welfare, labour and employment, education, criminal justice and human rights protection.
- Prevention policies should address the conditions that are needed to make the development, dissemination and sustainable implementation of evidence-based prevention programmes possible.

Invest in prevention within primary and secondary health care

Primary health care and mental health care providers and hospitals are in a strategic position to integrate evidence-based programmes for the prevention of mental disorders and promotion of mental health in their services.

- Supportive policies that include prevention of mental disorders and mental health promotion in primary and secondary health care are needed, along with increased resources and training.
- High levels of comorbidity among psychiatric disorders, and the high interrelatedness between mental and physical health and social problems call for integrated prevention strategies within primary and secondary health care. Such strategies should focus on common risk and protective factors and prioritise mental health interventions that have been found to lead to outcomes for a number of different problems.

Capacity building and training

To develop a successful prevention practice in a country a combination of capacities is needed at national and local level. These include capacities for policy-making, programme development and adaptation, research, provision of preventive services, organizational restructuring, advocacy and recruitment of resources for prevention in mental health. New training opportunities must respond to the needs for expertise in all roles and tasks to be undertaken.

Develop training programmes for prevention and promotion in mental health

- Each country should take initiatives to develop capacity and expertise at national and local levels for evidence-based prevention of mental disorders and promotion of mental health.
- Training components for mental disorder prevention and mental health promotion should be embedded in existing training initiatives that target health promotion, public health, primary health care, mental health care and their related disciplines.

Develop international collaborations to promote training initiatives

Current opportunities for training in prevention of mental disorders and mental health promotion are unevenly distributed around the world. International initiatives are needed to support countries that still are lacking capacity and expertise in this field.

- International training initiatives should be undertaken in collaboration with international organizations that already have the capacity for and experience of such initiatives, especially in middle and low income countries.

Research and advocacy

Expand the capacity for prevention research

Over the last two decades, the multidisciplinary field of prevention science has developed at a rapid pace. Contributions from social, biological and neurological sciences have created substantial insight into the role of risk and protective factors in the developmental pathways to mental disorders. Evidence has been identified for biological, psychological, social and societal factors and their interactions along the different stages of the lifespan from as early as pregnancy and infancy. Prevention scientists have evaluated the outcomes of numerous prevention programmes and policies to provide the evidence-base for decision-making on their implementation and further improvement. This has increased the opportunities for successful advocacy for prevention.

Researchers have studied the complex processes and conditions that contribute or create barriers to changes in individual behaviour and the social environments that are needed to generate preventive effects. Recognition of this major progress and wide spectrum of evidence-based outcomes should not go without the awareness that the evidence-base is still small and needs to be expanded.

- To strengthen the knowledge-base for prevention and to expand the range of effective programmes, the capacity for prevention research and international research collaboration needs to be expanded. This should include the development of an international network of collaborating prevention research centres that is responsive to the mental health needs of low, middle and high income countries.

Set priorities for the prevention research agenda

- To expand the knowledge-base for effective prevention across countries and cultures, special attention of researchers is needed for:
  - multisite studies and replication studies to expand knowledge on the robustness and cultural sensitivity of the outcomes of programmes and policies;
  - longitudinal studies to test the long-term impact of early preventive interventions;
  - the development of preventive programmes that reach a larger proportion of populations at risk;
  - research on the implications of the interrelatedness of many mental, physical and social health problems for effective preventive programmes and policies;
  - cost-effectiveness studies to identify the most efficient strategies and the value of prevention programmes and policies beyond their mental health benefits; and
  - studies identifying effect moderators and evidence-based guidelines to improve effectiveness of programmes and policies and their implementation.

Enhance common views on standards of evidence, sensitive to context and culture

The call for evidence-based prevention and health promotion has triggered an international debate between researchers, practitioners and prevention and health promotion advocates and policy-makers on the quality standards of evidence. Conflicting views exists on such standards. It is difficult to provide general rules that are valid across countries and implementation situations.

- Common views need to be developed across stakeholders and international organizations on standards of evidence that are sensitive to cultural and economic contexts and that are related to the type of decision that has to be made.

Facilitate collaboration and partnerships between research, policy and practice

The promotion of collaborative alliances would result in science and practice working together in designing, implementing and evaluating prevention programmes and increasing knowledge of effectiveness. These symbiotic relationships are likely to lead to an increase in the quality of implemented interventions and policies.

- Sustainable partnerships for implementation and evaluation of new or existing interventions should be stimulated between research, policy and practice.

Resources and infrastructures

To implement the steps and conditions needed to prevent mental disorders, it is imperative to develop adequate resources and infrastructures at local, national and international level that make efficient use of existing opportunities.

Develop a resourced infrastructure that promotes sustainable programmes and policies

- Governments should stimulate and develop national and local infrastructures that support mental health promotion and prevention of mental disorders and that work in collaboration within other public health and public policy platforms.
- Governments and health insurance companies should allocate appropriate resources for the dissemination and implementation of available evidence-based programmes and policies within communities and nationally.
- Increased resources should be allocated to:
  - supporting capacity building across multiple sectors with assigned responsibilities;
  - funding training and education related to the promotion and prevention of mental health;
  - funding programme implementation in partnership with evaluation research; and
  - stimulating at local and national level the development of a coordinated body of the different parties that are involved in mental health promotion and prevention programming and policy.

Organize and coordinate action in each country

Coordinated action is required across organizations and sectors to make effective and cost-effective prevention possible.

- Governments should enhance national coordination of initiatives, practices and professionals working on development, dissemination, implementation and evaluation of preventive actions and mental health promotion to facilitate effectiveness and a more efficient use of resources.
- This coordination should become embedded within a national strategy for effective intersectoral collaboration between the public health, health promotion, primary health and mental health care sectors and collaboration with other public sectors that could benefit from effective prevention programmes and policies, such as education, labour and justice.

Develop sustainable and effective collaboration between international governmental and nongovernmental organizations

Successful reduction in the onset of mental disorders and promotion of mental health worldwide can only be achieved when relevant international organizations combine their efforts, fields of expertise and strengths and coordinate their actions and policies.

- Organisation and coordination at the national level should be embedded in effective collaboration and partnerships between international governmental and nongovernmental organizations involved in the development, dissemination and implementation of effective prevention programmes and policies.

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Prevention of Mental Disorders

Prevention of Mental Disorders: Effective Interventions and Policy Options **summarizes international evidence-based programmes and policies for preventing mental and behavioural disorders.**
The following key messages are drawn:

1. **Prevention of mental disorders is a public health priority.**
2. **Mental disorders have multiple determinants; prevention needs to be a multipronged effort.**
3. **Effective prevention can reduce the risk of mental disorders.**
4. **Implementation should be guided by available evidence.**
5. **Successful programmes and policies should be made widely available.**
6. **Knowledge on evidence for effectiveness needs further expansion.**
7. **Prevention needs to be sensitive to culture and to resources available across countries.**
8. **Population-based outcomes require human and financial investments.**
9. **Effective prevention requires intersectoral linkages.**
10. **Protecting human rights is a major strategy to prevent mental disorders.**

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