Cost-effectiveness of interventions for reducing the burden of mental disorders and substance abuse (by World Bank region)

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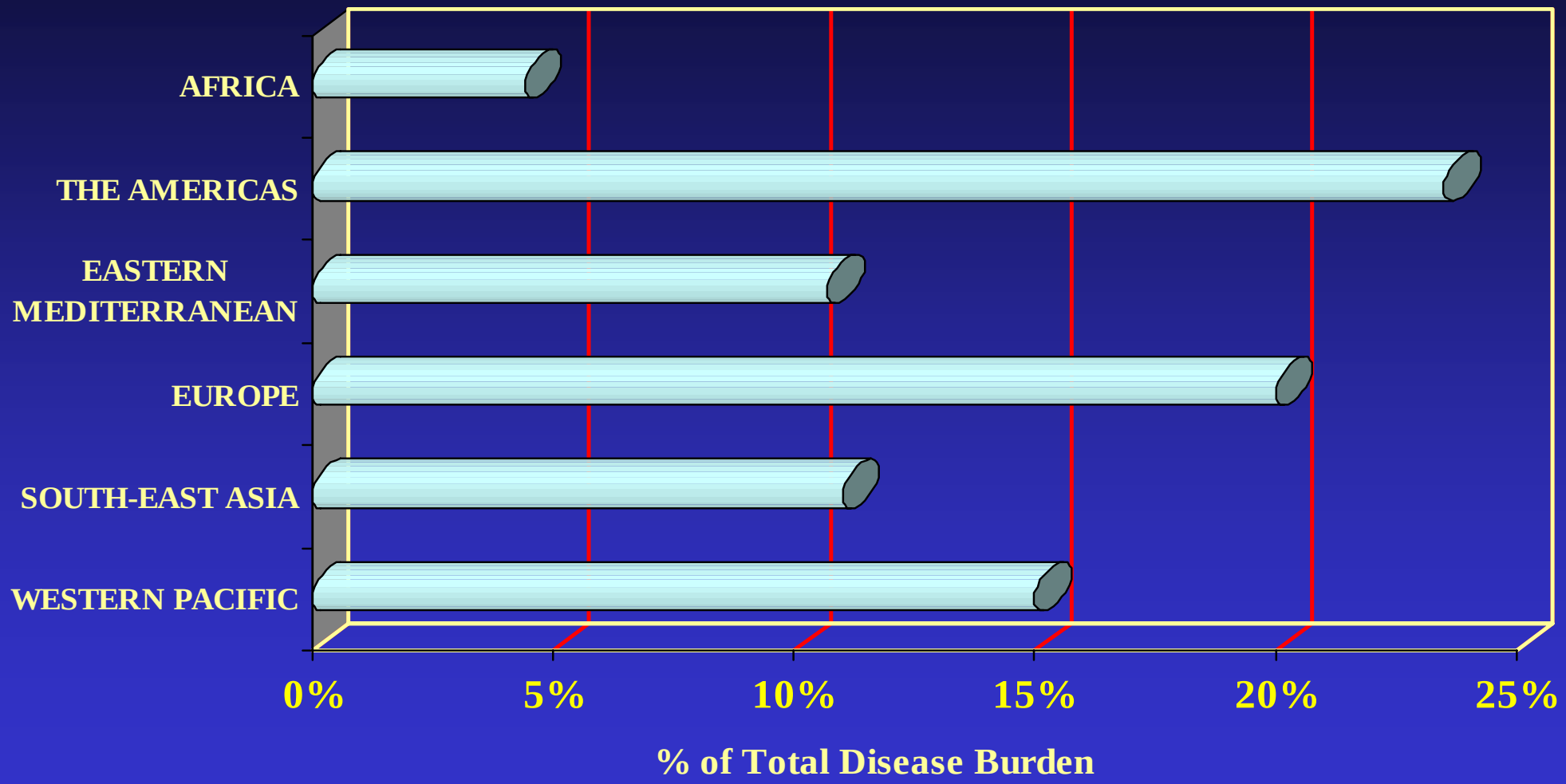
Disease Burden of Mental Disorders

(World Health Report, 2001)

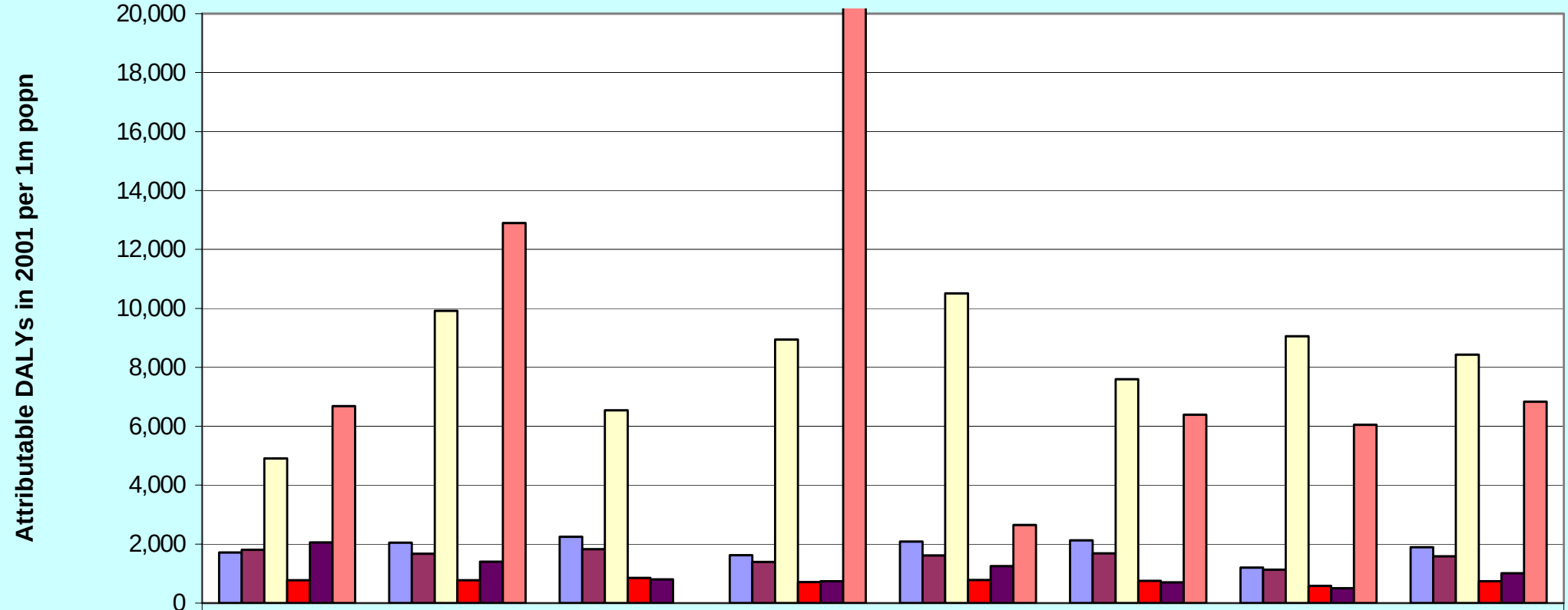


Disease Burden of Selected Mental Disorders, By Region, 2001

	DALYs Lost Annually per One Million Population			
Region	**Schizophrenia**	**Bipolar Disorder**	**Depression**	**Panic Disorder**
Sub-Saharan Africa	1,716	1,803	4,905	777
Latin America and the Caribbean	2,049	1,678	9,919	777
Middle East and North Africa	2,247	1,830	6,544	852
Europe and Central Asia	1,630	1,400	8,944	713
South Asia	2,087	1,612	10,507	779
East Asia and the Pacific	2,126	1,685	7,594	757
High-income countries	1,201	1,137	9,054	577
World	1,894	1,583	8,431	740

Source: *Disease Control Priorities in Developing Countries,* second edition, 2006, Table 31.1

Disease burden (DALYS per 1 million population)



	Sub-Saharan Africa	Latin America & Caribbean	Middle East & North Africa	Europe & Central Asia	South Asia	East Asia & Pacific	High-income	World
Schizophrenia	1,716	2,049	2,247	1,630	2,087	2,126	1,201	1,894
Bipolar disorder	1,803	1,678	1,830	1,400	1,612	1,685	1,137	1,583
Depression	4,905	9,919	6,544	8,944	10,507	7,594	9,054	8,431
Panic disorder	777	777	852	713	779	757	577	740
Epilepsy	2,056	1,402	801	741	1,254	704	499	1,011
Heavy alcohol use	6,685	12,894		20,241	2,652	6,391	6,048	6,834

Economic evidence for mental health policy
- objectives -

- Moving from *attributable* burden to *avertable* burden of mental and neurological disorders and substance abuse
- Estimating the efficacy and cost-effectiveness of key interventions in different settings
- Removing one (of many) barriers to a more appropriate public health response to current burden
- Informing resource planning and service development (policy)

Methods for sectoral cost-effectiveness analysis

- Evaluation of interventions relative to 'usual care' or ‘doing nothing’:
  - addresses *allocative* efficiency - what is the appropriate mix across disorders?
- Use of a common set of tools and methods
  - enhances comparability between diseases / transferability of findings
- Sectoral, population-level CEA
  - effectiveness: healthy years gained / DALYs averted
  - resource costs: patient + program level (international $)
- Results summarised in regional C-E databases
  - available for country-level adaptation / analysis

Estimation of population-level costs

- Summary measure = International Dollars (I$, 2000)
  - reflect differences in the relative price of health care inputs
  - unit costs estimated via a regression-based analysis of available databases
- Patient-level & program-level resource profiles / inputs:
  - PATIENT-LEVEL: hospital visits, primary care, drugs, tests etc.
  - PROGRAM-LEVEL: administration, media, legislation etc.
- Ingredients approach [separate specification of Quantities and Prices]
- Baseline costs discounted at 3%

Estimation of population-level effectiveness

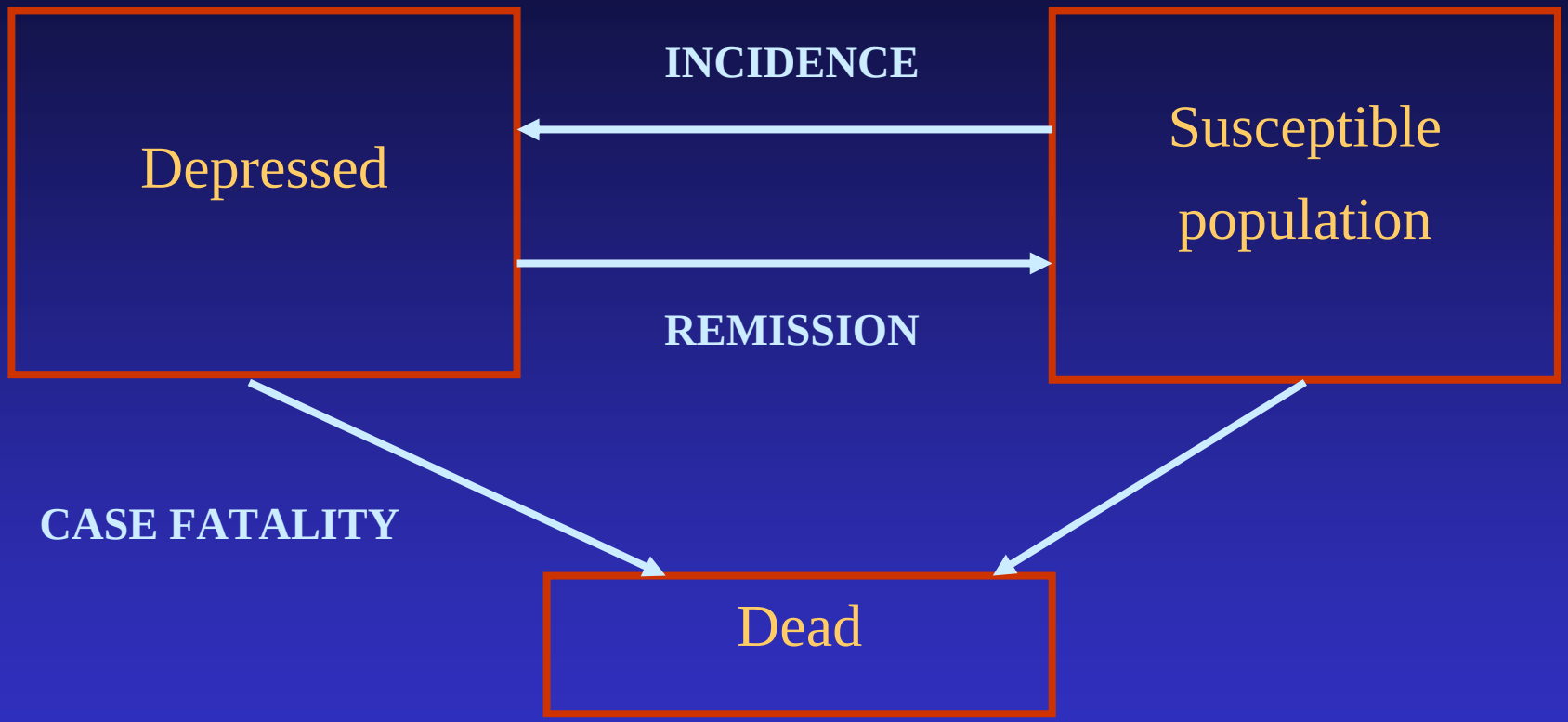
- Summary measure of population health = DALY
  - Mainly YLD [= Incidence * Duration * Disability weight]

- Effectiveness = DALYs averted by the intervention, relative to the situation of doing nothing (i.e. reduced burden)

- Effectiveness = Efficacy * (Coverage * Response * Adherence)

- Intervention implementation period: 10 years
- Age & gender-specific patterns / effects captured
- With and without discounting / age-weighting

Population-level disease model (PopMod)

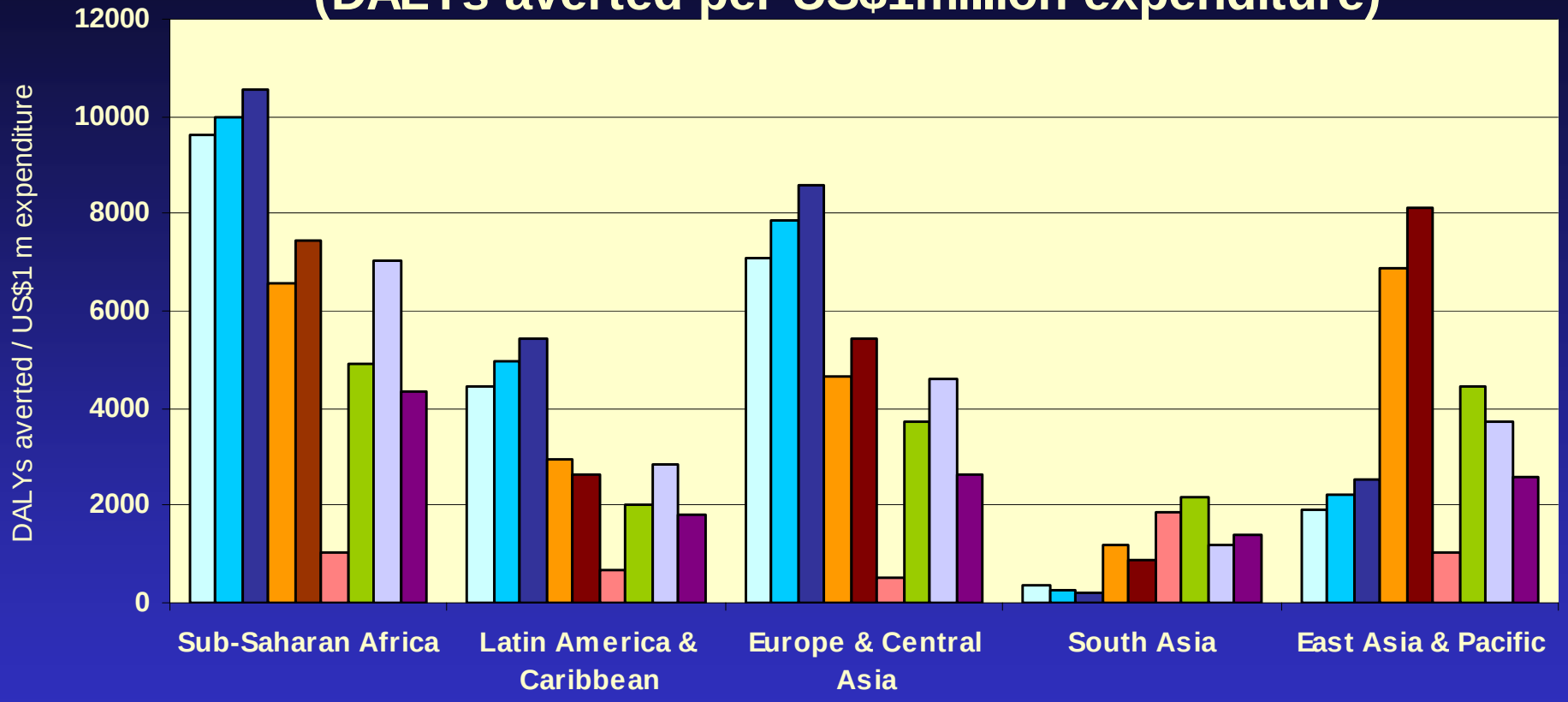


Calculates total disability-adjusted life years over a defined period

Major mental disorders and interventions covered in DCP II

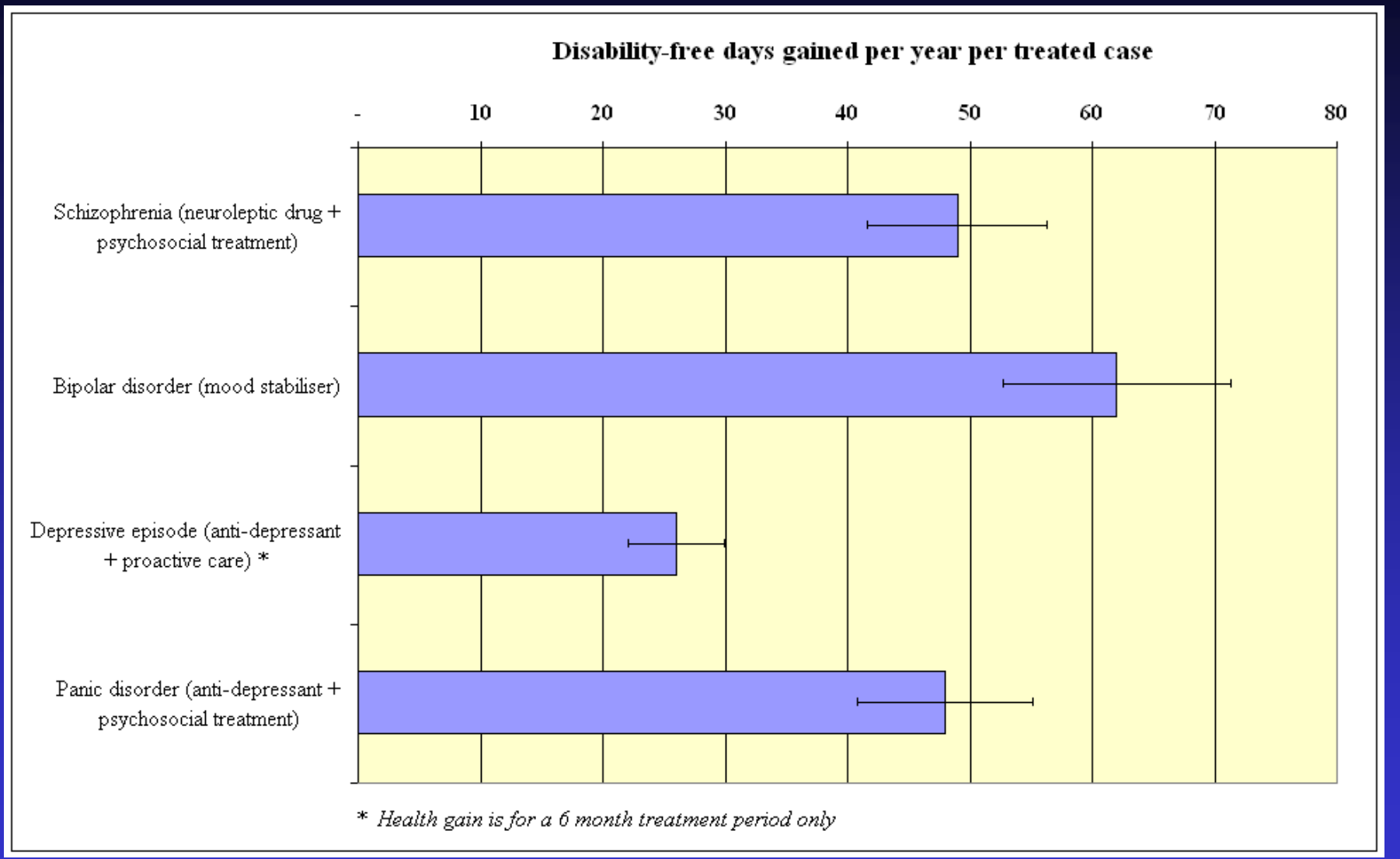
Condition	Interventions	Model effect(s)
Schizophrenia	Older & newer anti-psychotic drugs; family therapy; case management	Reduced disability
Bipolar affective disorder	Lithium & valproic acid, with and without psychosocial intervention	Reduced disability & episode duration
Panic disorder	Anxiolytic drugs (benzodiazepines); Older & newer anti-depressant drugs; CBT; collaborative proactive care	Reduced disability Reduced disability & duration
Depressive episode	Older & newer anti-depressant drugs; Brief psychotherapy; Collaborative proactive care	Reduced duration, disability & recurrence
Heavy alcohol use (risk factor)	Brief physician advice; Taxation; Advertising bans; Random breath-testing	Reduced duration Reduced incidence Reduced mortality
Epilepsy (idiopathic)	Older and newer anti-epileptic drugs	Reduced disability & duration

Population-level cost-effectiveness
(DALYs averted per US$1million expenditure)

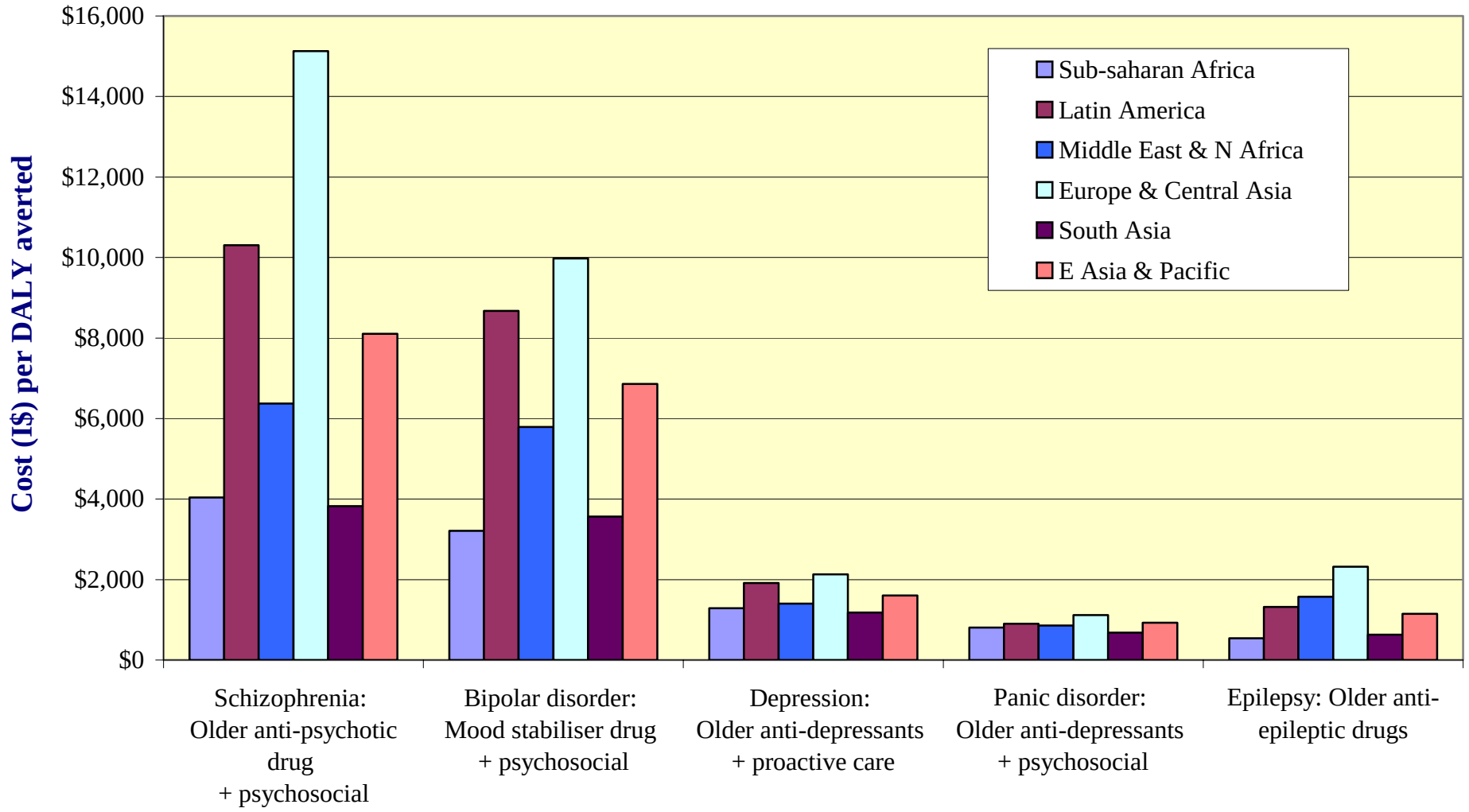


Source: Disease Control Priorities in Developing Countries, 2nd edition, 2006. From table 47.7

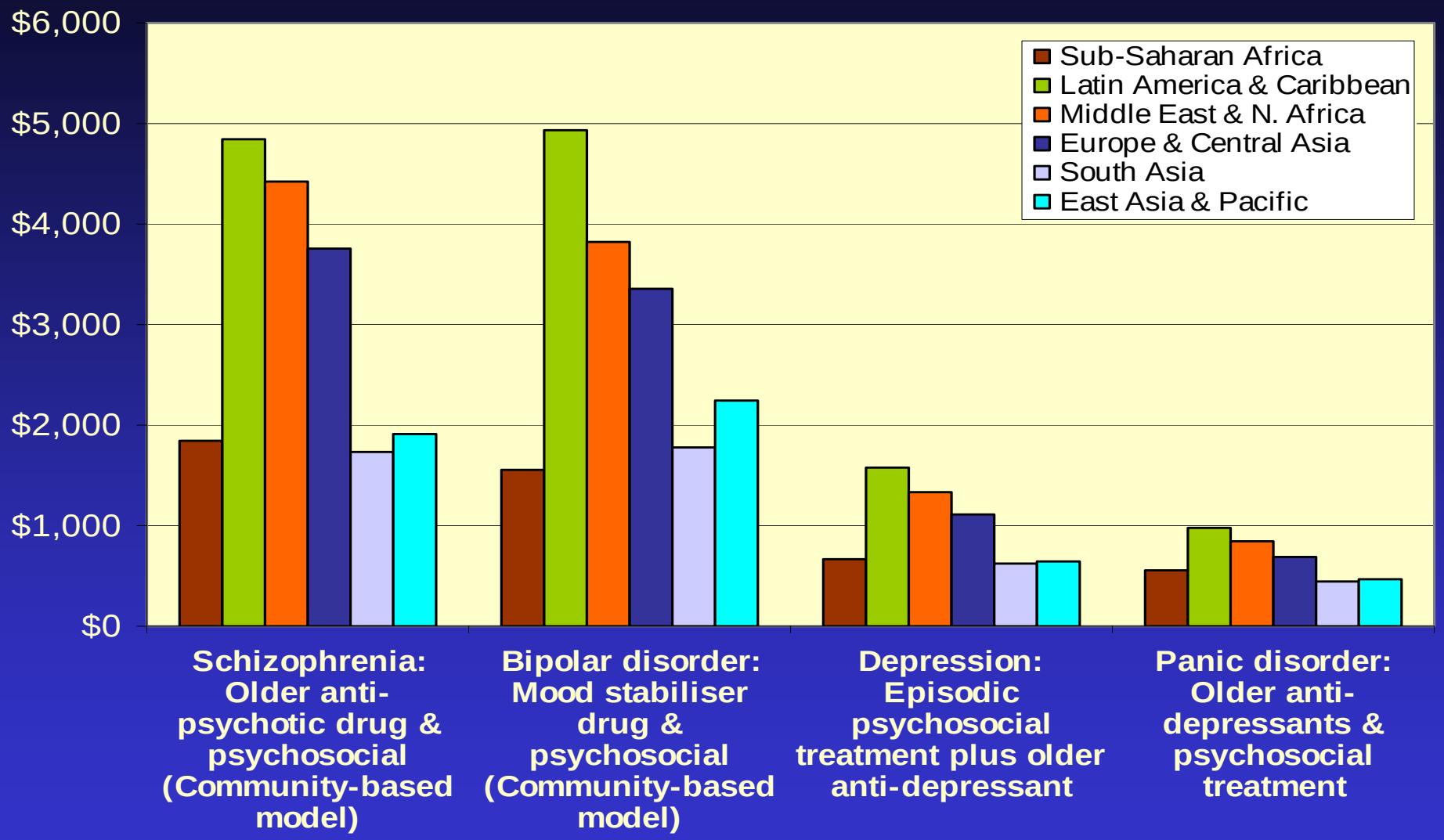
Avertable burden of mental disorders



Cost-effectiveness (cost per DALY averted)



Cost-effectiveness (US$ per DALY averted)

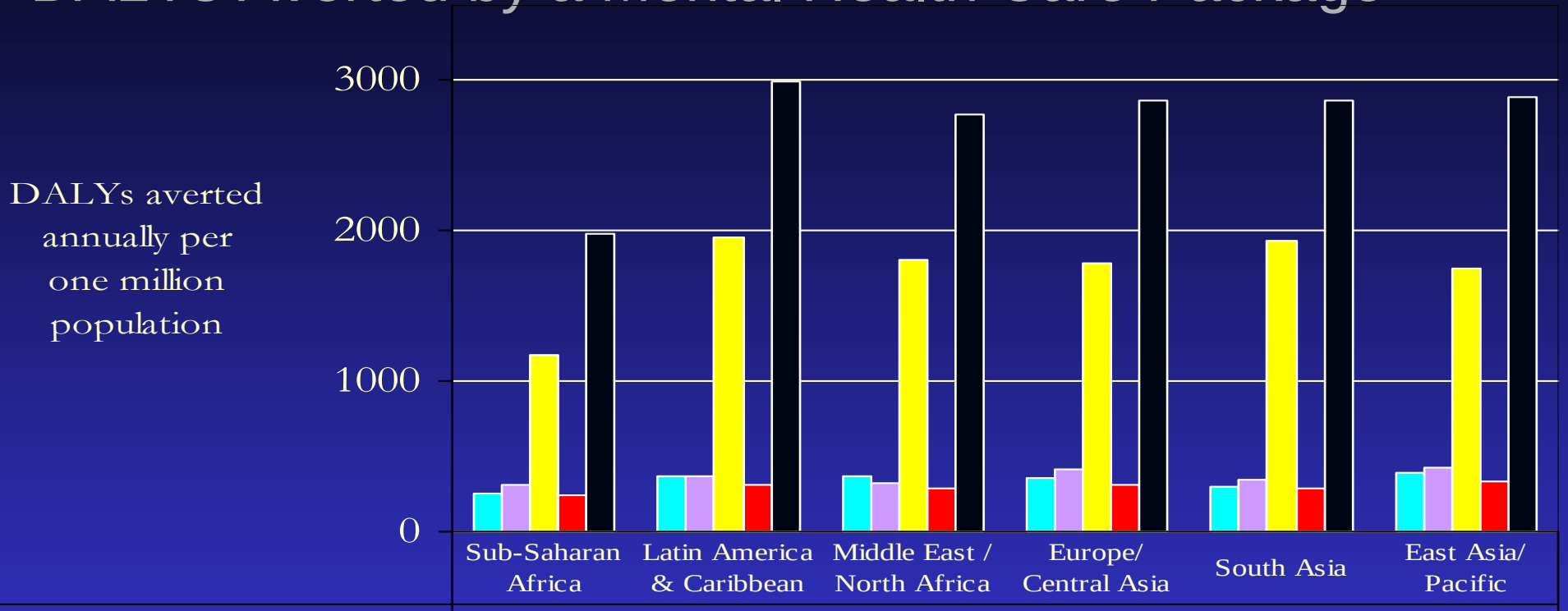


Source: Disease Control Priorities in Developing Countries, 2nd edition, 2006. From tables 31.3-31.6

Characteristics of an evidence-based neuropsychiatric intervention package

- **Selection of one efficient intervention for each condition**
- **Implementation of a community-based outpatient service model for severe mental disorders, primary care treatment for other conditions**
- **Combined pharmacological-psychosocial treatments where such approaches are more cost-effective than drug treatment alone**
- **Reliance on older psychotropic drugs (neuroleptics for schizophrenia, lithium for bipolar disorder, TCAs for depression and panic disorder and phenobarbitone for epilepsy)**

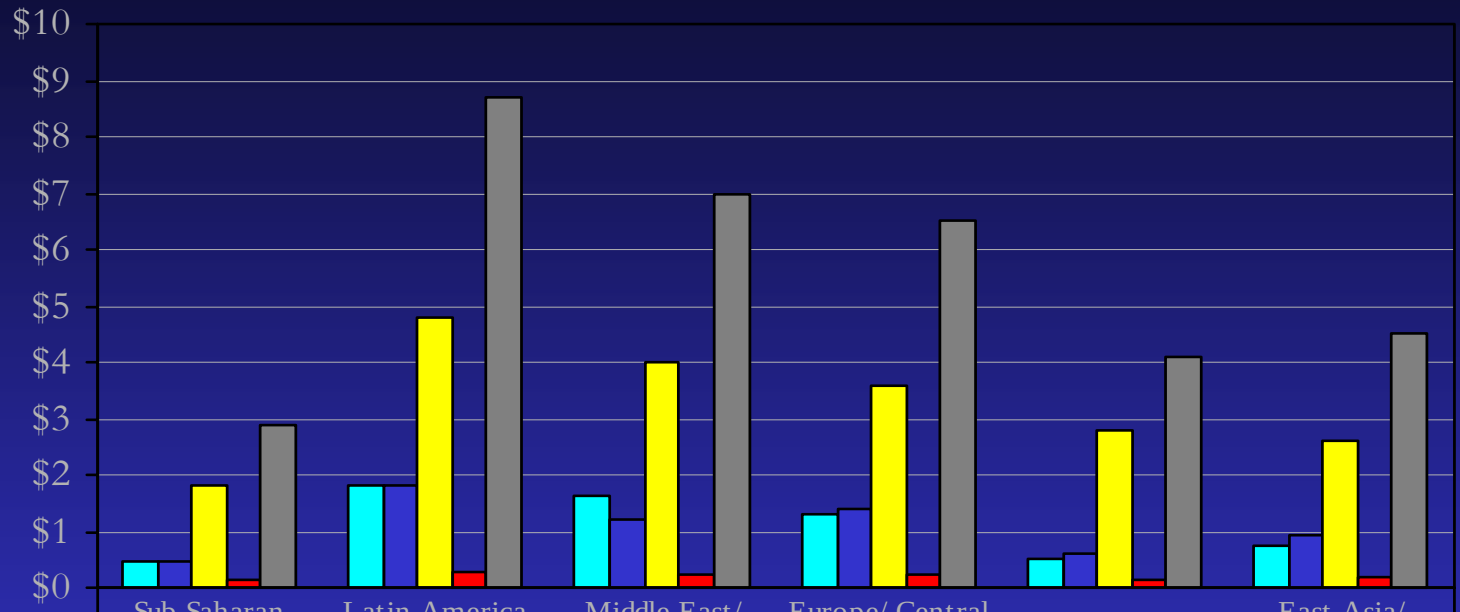
DALYs Averted by a Mental Health Care Package



	Sub-Saharan Africa	Latin America & Caribbean	Middle East / North Africa	Europe/ Central Asia	South Asia	East Asia/ Pacific
Schizophrenia: older antipsychotic drugs + psychosocial Tx	254	373	364	353	300	392
Bipolar disorder: older mood-stabilizing drugs + psychosocial Tx	312	365	322	413	346	422
Depression: proactive care with newer antidepressant drugs	1,174	1,953	1,806	1,789	1,937	1,747
Panic disorder: newer antidepressant drugs	245	307	287	307	284	330
Total effect	1,985	2,998	2,779	2,862	2,867	2,891

Source: Disease Control Priorities in Developing Countries, second edition, 2006, Table 31.7

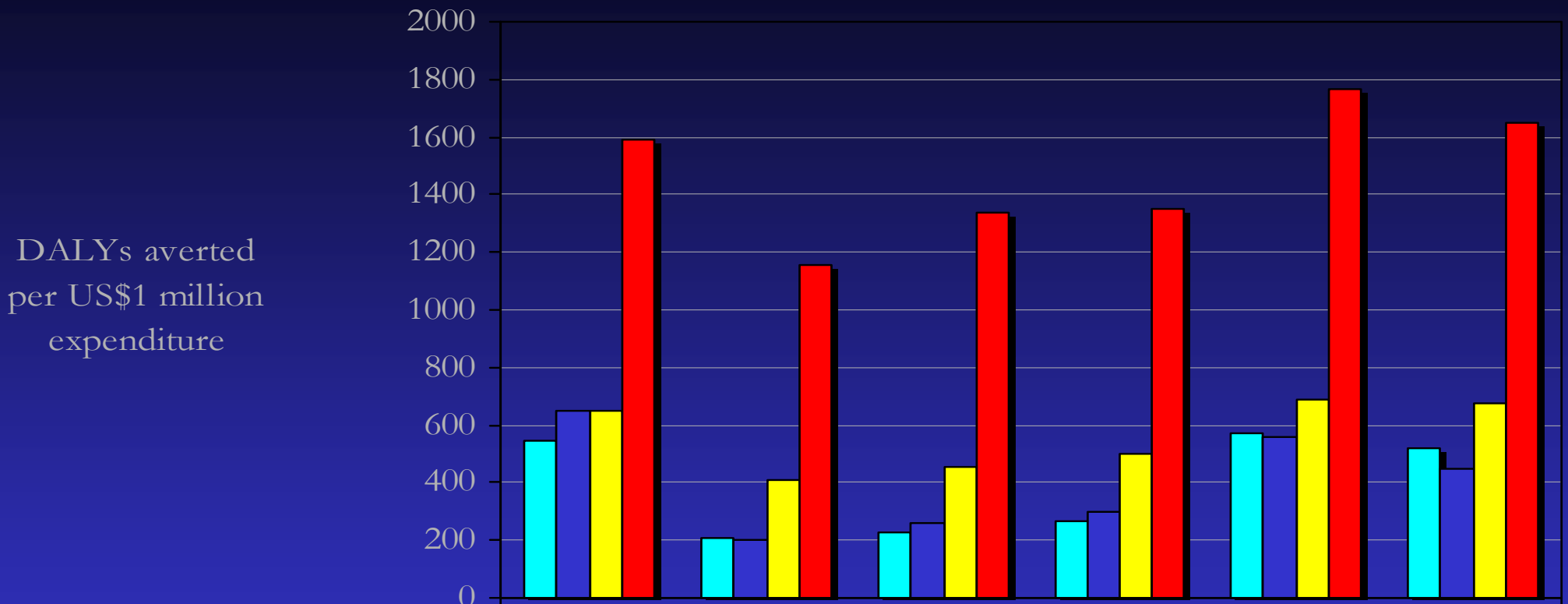
Costs of a Mental Health Care Package by Region



	Sub-Saharan Africa	Latin America & Caribbean	Middle East/ North Africa	Europe/ Central Asia	South Asia	East Asia/ Pacific
Schizophrenia: older antipsychotic drugs + psychosocial Tx	0.47	1.81	1.61	1.32	0.52	0.75
Bipolar disorder: older mood-stabilizing drugs + psychosocial Tx	0.48	1.80	1.23	1.39	0.62	0.95
Depression: proactive care with newer antidepressant drugs	1.8	4.80	3.99	3.56	2.81	2.59
Panic disorder: newer antidepressant drugs	0.15	0.27	0.21	0.23	0.16	0.20
Total cost of interventions	2.9	8.70	7.00	6.50	4.10	4.50

Source: Disease Control Priorities in Developing Countries, second edition, 2006, Table 31.7

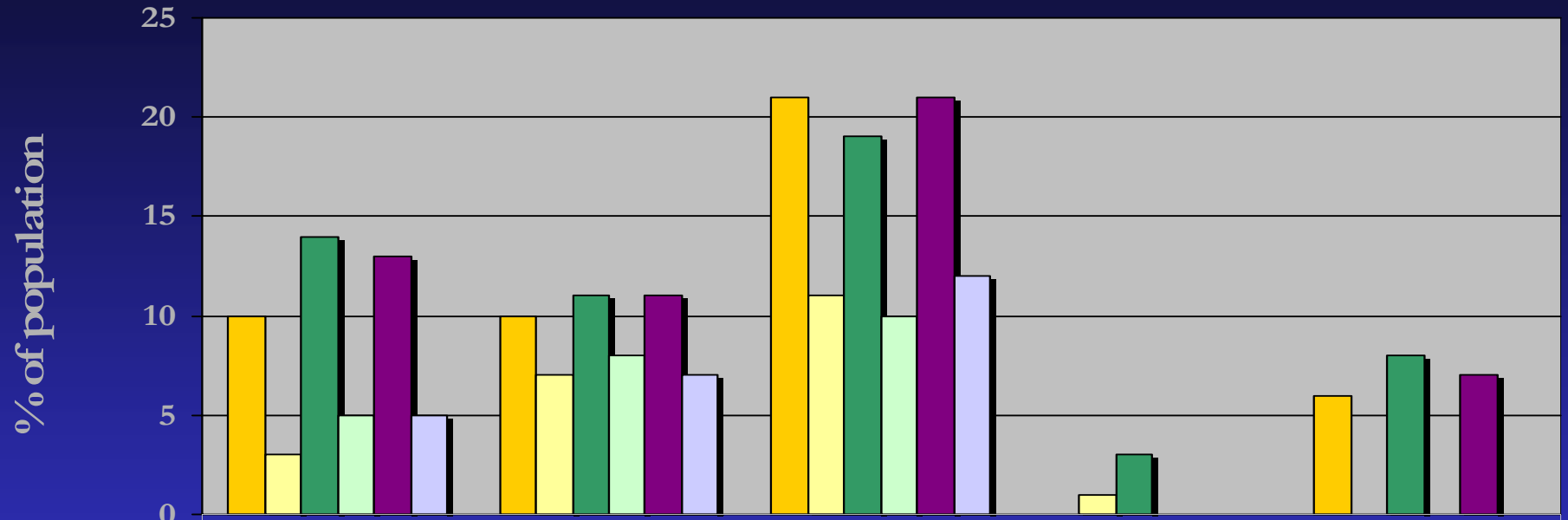
Cost-effectiveness of a Mental Health Care Package



	Sub-Saharan Africa	Latin America/ Caribbean	Middle East/ North Africa	Europe/ Central Asia	South Asia	East Asia/ Pacific
Schizophrenia: older antipsychotic drugs + psychosocial Tx	544	206	226	267	574	522
Bipolar disorder: older mood-stabilizing drugs + psychosocial Tx	647	203	262	298	560	446
Depression: proactive care with newer antidepressant drugs	652	407	452	502	690	675
Panic disorder: newer antidepressant drugs	1,588	1,155	1,339	1,350	1,765	1,649

Source: Disease Control Priorities in Developing Countries, second edition, 2006, Table 31.7

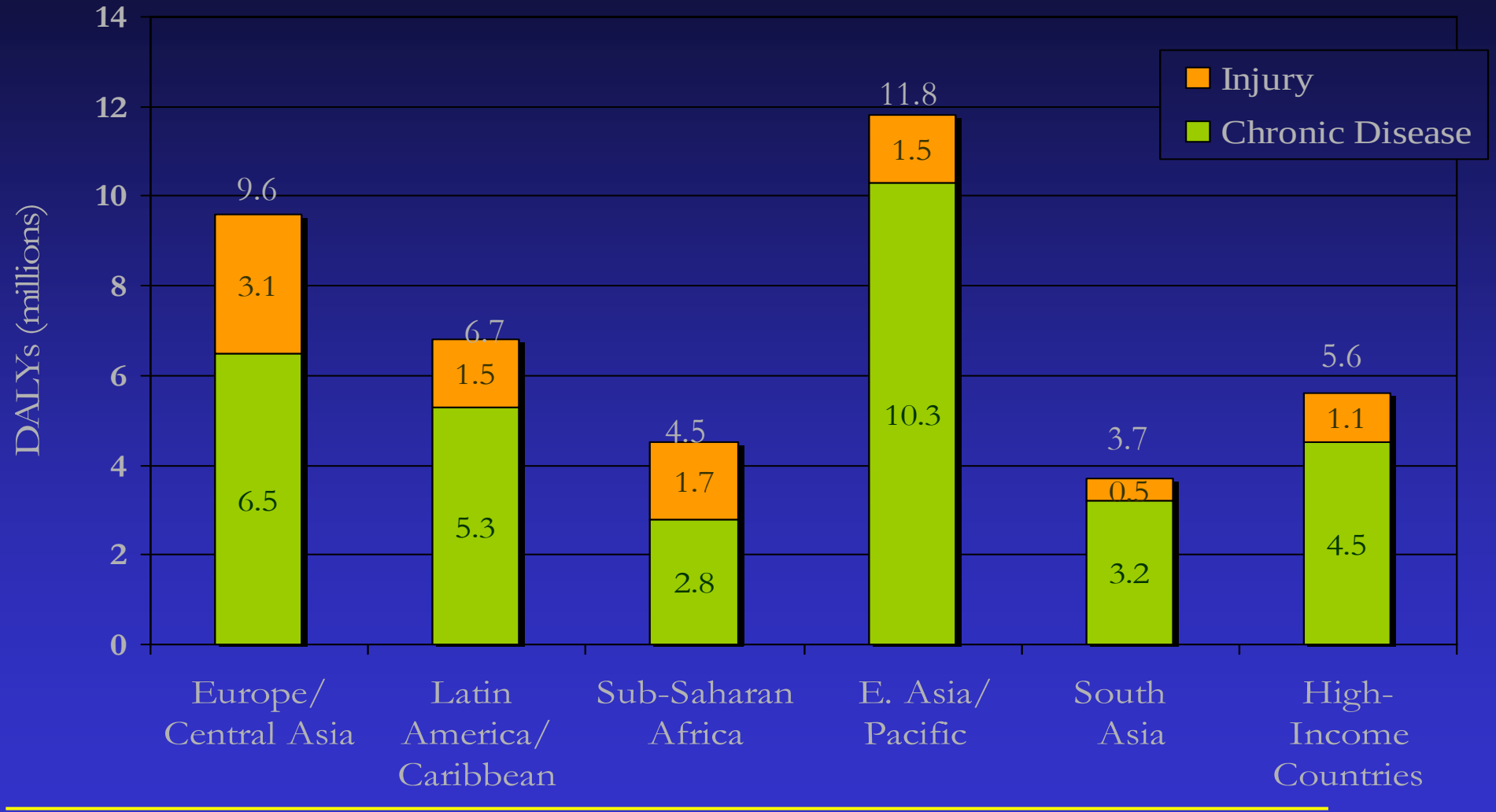
Prevalence of High-Risk Drinking by Gender and Age, 2000



	Sub-Saharan Africa	Latin America/ Caribbean	Europe/ Central Asia	South Asia	East Asia/ Pacific
Men 15-29 yrs	10	10	21	<1	6
Women 15-29 yrs	3	7	11	1	<1
Men 30-44 yrs	14	11	19	3	8
Women 30-44 yrs	5	8	10	<1	<1
Men 45-59 yrs	13	11	21	<1	7
Women 45-59 yrs	5	7	12	<1	<1

Note: Numbers rounded.
Source: Disease Control Priorities in Developing Countries, second edition, 2006, Table 47.1

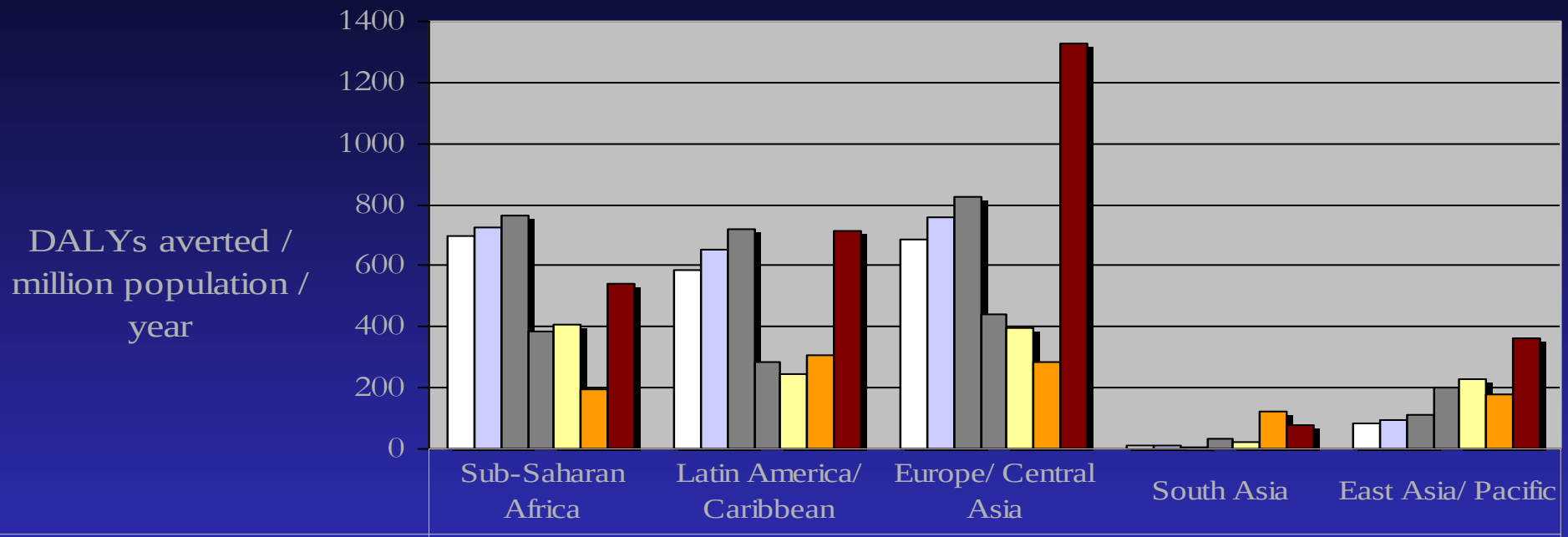
DALYs Lost Due to High-Risk Drinking by Disease Category, 2001



Note: Numbers are rounded.

Source: *Disease Control Priorities in Developing Countries,* second edition, 2006, Table 47.3

Estimated Impact of Interventions to Reduce High-Risk Drinking

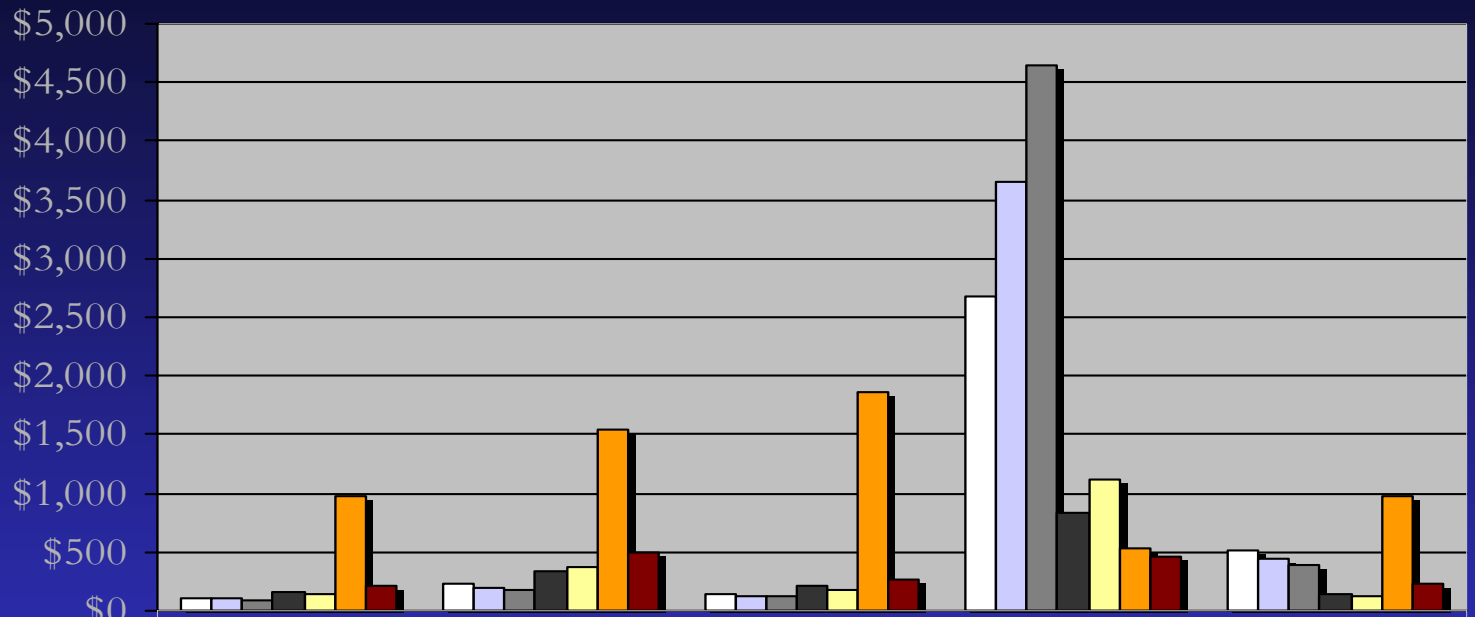


	Sub-Saharan Africa	Latin America/ Caribbean	Europe/ Central Asia	South Asia	East Asia/ Pacific
Excise tax (current situation)*	697	586	685	13	83
Excise tax (25% increase)*	724	654	756	10	96
Excise tax (50% increase)*	764	719	828	8	109
Reduced access to retail outlets*	386	287	441	32	203
Comprehensive advertising ban*	406	243	395	20	226
Random breath testing of drivers**	197	307	284	125	181
Brief advice to heavy drinkers by primary care physician***	539	713	1,328	80	362

Notes: Coverage (modeled percentage of all high-risk drinkers exposed to the intervention): *95%, **80%, ***50%.

Source: Disease Control Priorities in Developing Countries, second edition, 2006, Table 47.6

Estimated Cost-effectiveness of Interventions to Reduce High-Risk Drinking



	Sub-Saharan Africa	Latin America/ Caribbean	Europe/ Central Asia	South Asia	East Asia/ Pacific
Excise tax (current situation)*	$104	$225	$141	$2,671	$516
Excise tax (25% increase)*	$100	$202	$127	$3,654	$447
Excise tax (50% increase)*	$95	$184	$116	$4,641	$394
Reduced access to retail outlets*	$152	$340	$216	$827	$146
Comprehensive advertising ban*	$134	$380	$185	$1,123	$123
Random breath testing of drivers**	$973	$1,542	$1,856	$531	$984
Brief advice to heavy drinkers by primary care physician***	$204	$502	$270	$462	$224

Note: Coverage (modeled percentage of all high-risk drinkers exposed to the intervention): *95%, **80%, ***50%.

Source: Disease Control Priorities in Developing Countries, second edition, 2006, Table 47.7

Issues in the generation of a global economic evidence base using sectoral CEA

Strengths

- Locates broad position of MH in a sectoral CE framework (parity)
- Methodological consistency, standardised tools
- Data sources available on web-site, ability to adapt to local contexts

Limitations

- Regional level of analysis
  - hides variation within regions
- Extrapolation of efficacy data to different health contexts / systems
- Time costs of patients & families (travel, informal care) not estimated

National level CEA of mental health programs

- Contextualisation process:
  - demography: scale down to (sub-)national population size
  - epidemiology: substitute available epidemiological survey data
  - effectiveness: revise intervention efficacy / coverage / adherence
  - resource costs: input new utilisation profiles and unit prices

➔ new evidence: identify (in)efficient strategies

➔ essential packages: assess efficient ***mix*** of MH interventions

» current versus alternative budgetary constraints

» service capacity constraints (e.g. training, personnel, facilities)

» equity considerations (e.g. human rights)

» other policy priorities (e.g. poverty alleviation)

In summary: treating and preventing mental disorders in low and middle income countries

- Low-cost medication is efficacious and cost-effective in the treatment of common mental disorders

- Psychological intervention (cognitive behaviour and interpersonal therapies) are feasible, acceptable and effective for the treatment of common mental disorders

- Stepped care and collaborative models provide a framework for integrating drug and psychological treatments and improves adherence

• Antipsychotic drugs are efficacious for the treatment of psychotic disorders; their benefit is considerably enhanced through psychosocial treatments, particularly community based family focused interventions

• Community based rehabilitation provides a low-cost, integrative framework for the long-term care of children and adults with chronic mental illness

• Brief interventions are effective for the management of hazardous alcohol use; pharmacological and psychosocial interventions are of modest benefit for persons with alcohol dependence. Policies aimed to reduce consumption such as increasing taxes and other control strategies reduce the population burden of alcohol abuse.

- Targeting vulnerable populations, such as undernourished children living in poverty, with nutritional and psychosocial interventions helps prevent developmental delays and behavioural problems in childhood and adolescence

- There is an emerging consensus for social and mental health interventions during and after emergencies, and some evidence from trials for the efficacy of selected mental health interventions implemented some time after the acute emergency

Other reasons for public investment in mental health

- Externalities
- Catastrophic costs
- Mental disorders disproportionately affect the poor
- Private demand is inadequate
- Insurance markets fail (stigma and adverse selection)

Political imperatives for action

- High suicide rates
- High levels of substance abuse
- Public scandals surrounding institutions and from people with untreated severe mental illness
- Population with psychological trauma from conflict and natural disasters

Country examples of mental health reform

Table 2 Costs and effects of an efficient intervention package for neuropsychiatric conditions in Nigeria

Condition	Intervention	Coverage	Effectiveness (DALYs averted per year)		Total cost per year (millions)				Cost per treated case per year	Cost per DALY averted
					Patient	*Programme*	*Training*	*Total*		
Schizophrenia	Older anti-psychotic drug + psychosocial treatment (community-based model)	70%	9,256	Naira	1,598	141	62	**1,802**	9,204	194,630
				USD	*15.2*	*1.3*	*0.6*	*17.2*	*88*	*1,854*
Depression	Older (tricyclic) anti-depressant drug in primary care	40%	69,608	Naira	4,192	88	42	**4,322**	3,769	62,095
				USD	*39.9*	*0.8*	*0.4*	*41.2*	*36*	*591*
Epilepsy	Older anti-epileptic drug in primary care	50%	105,946	Naira	985	88	40	**1,113**	2,868	10,507
				USD	*9.4*	*0.8*	*0.4*	*10.6*	*27*	*100*
Hazardous alcohol use	Roadside breath-testing of motor vehicle drivers	80%	109,490	Naira	0	972	0	**972**	-	8,873
				USD	*0.0*	*9.3*	*0.0*	*9.3*	-	*85*
									Cost per capita	
Total package			294,300	Naira	6,776	1,288	144	8,209	71	27,892
				USD	*65*	*12*	*1.4*	*78*	*0.68*	*266*

Country examples of mental health reform

ECA and LAC – reducing reliance on mental hospitals and development of community mental health services

e.g. Brazil 1995 – 2005

- 41% reduction in mental hospital beds
- nine fold increase in community mental health services

Country examples of mental health programs

- Rural China and India – rehabilitative interventions for schizophrenia
- Africa – training primary care workers (e.g. nurses) to diagnose and treat
- South East Asia – non government organizations undertaking advocacy, counselling and family support
- Indonesia and Sri Lanka – psychosocial interventions post Tsunami

Mental health as part of other health programs

- Maternal health and infant welfare
- Immunization programs
- Gender based violence programs
- Chronic disease management