



# Outcome and Economic Considerations of Service Integration

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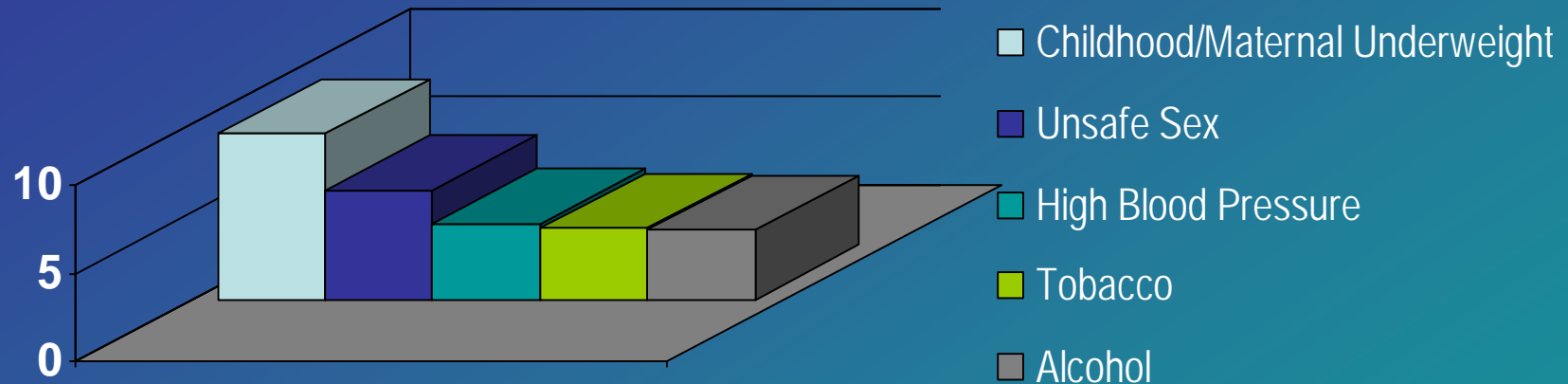
**Delivery Systems for Substance Abuse Treatment**  
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# Overview

- Alcohol and drug abuse are costly to society and related to mortality, morbidity, and social problems.
- Alcohol and drug problems cover the spectrum of moderate to severe problems. A specialty treatment system cannot serve all those who could benefit from services.
- Health and social service agencies have high prevalence of alcohol and drug problems.
- A cost-effective approach to treating alcohol and drug problems includes integrating services in health and social systems.

Alcohol and drugs are costly to society and related to mortality and morbidity

# Costs to Society: Rankings by Percent



## Global Burden of Disease - Potential Impact Fractions

“Substantial proportions of global disease burden are attributable to these major risks, to an extent greater than previously estimated. Developing countries suffer most or all of the burden due to many of the leading risks. Strategies that target these known risks can provide substantial and underestimated public health gains.”

Ezzati M, Lopez AD, Rodgers A, Vander Hoorn S, Murray CJ. (Comparative Risk Assessment Collaborating Group) Selected major risk factors and global and regional burden of disease. *Lancet*. 2002;360(9343):1347-60.

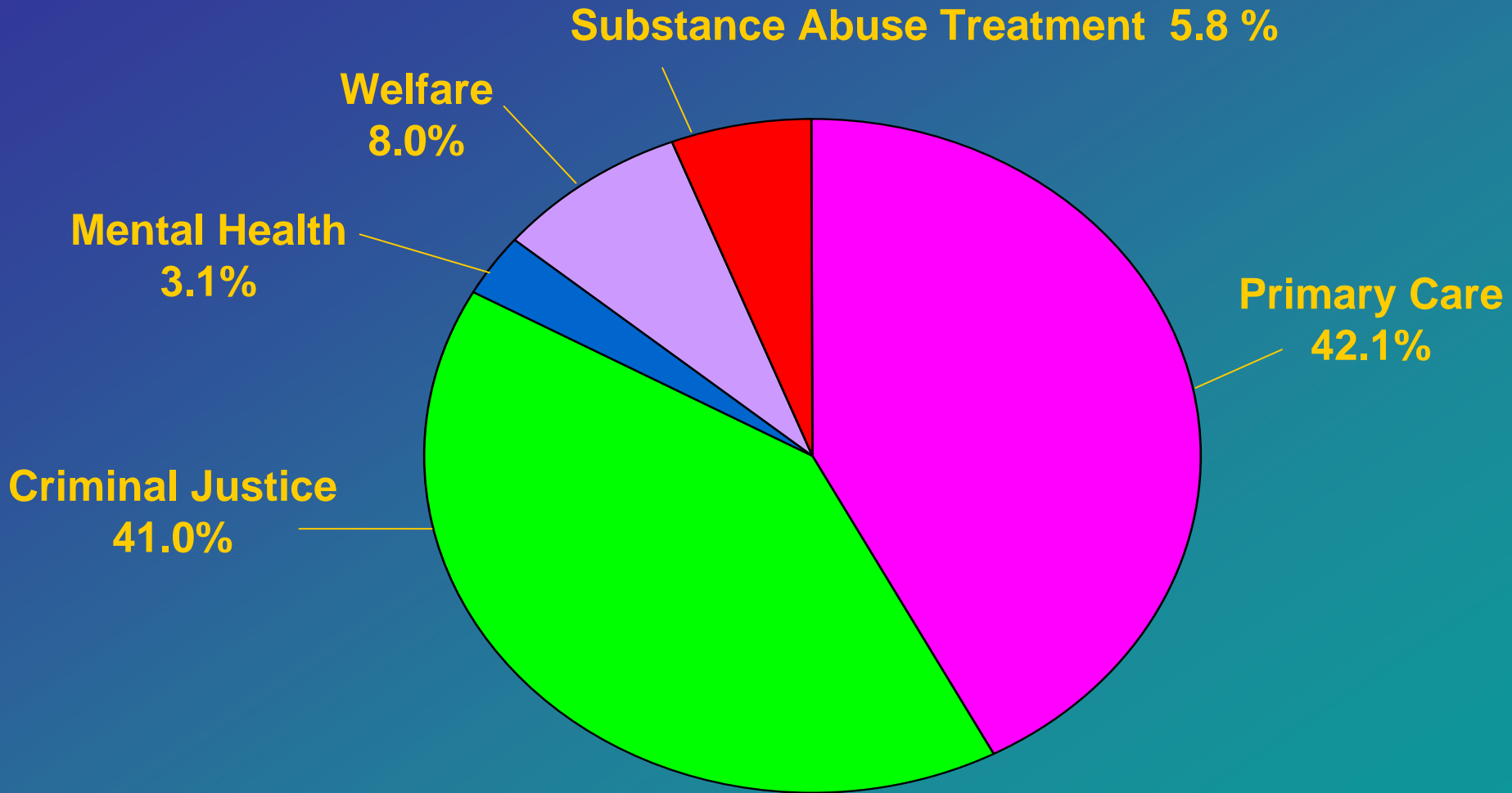
# Ten Leading Causes of Disability Adjusted Life Years (DALY's) for Men Aged 15-44 years, 1990 (World)

1. Road Traffic Accidents
2. Unipolar Major Depression
3. Alcohol Use
4. Violence
5. Tuberculosis
6. War
7. Self-Inflicted Injuries
8. Bipolar Disorder
9. Schizophrenia
10. Falls

Murray CJ, Lopez AD. The global burden of disease in 1990: final results and their sensitivity to alternative epidemiological perspectives, discount rates, age-weights and disability weights. In: Murray CJL, Lopez AD, eds. *The Global Burden Of Disease : A Comprehensive Assessment Of Mortality And Disability From Diseases, Injuries, And Risk Factors In 1990 And Projected To 2020*. Vol 1. Cambridge, MA: Harvard School of Public Health on behalf of the World Health Organization and the World Bank; 1996:247-93.

**Where is the overall burden of  
alcohol and drug problems  
across community agencies?**

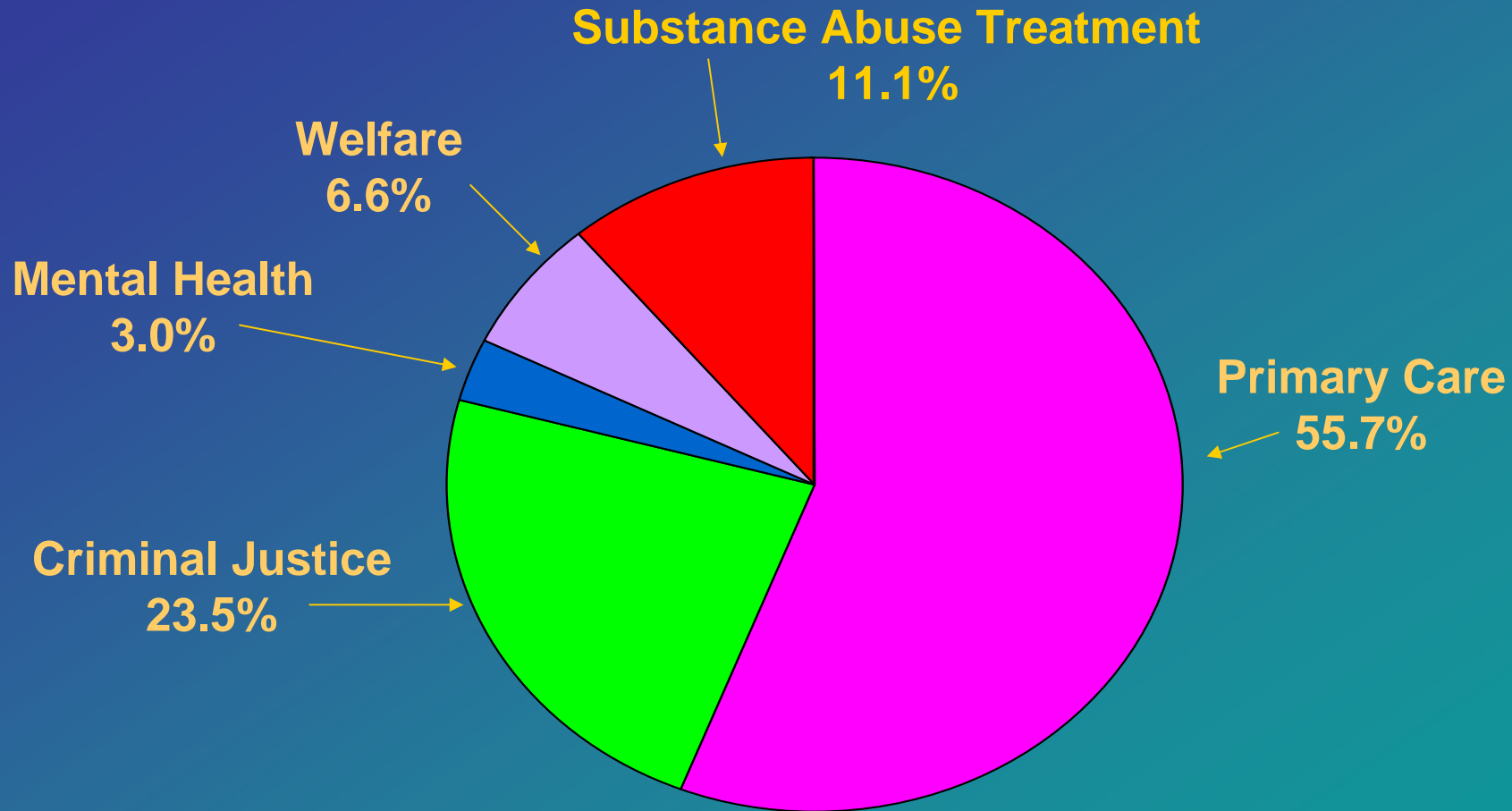
# Distribution of New Admissions<sup>1</sup> of Problem Drinkers<sup>2</sup> in Community Agency Systems



<sup>1</sup> Data weighed for design effects, non-response, and to a common fieldwork duration so that each agency system sample is shown to its size.

<sup>2</sup> Problem drinking rates over a base of problem drinkers across all agency systems.

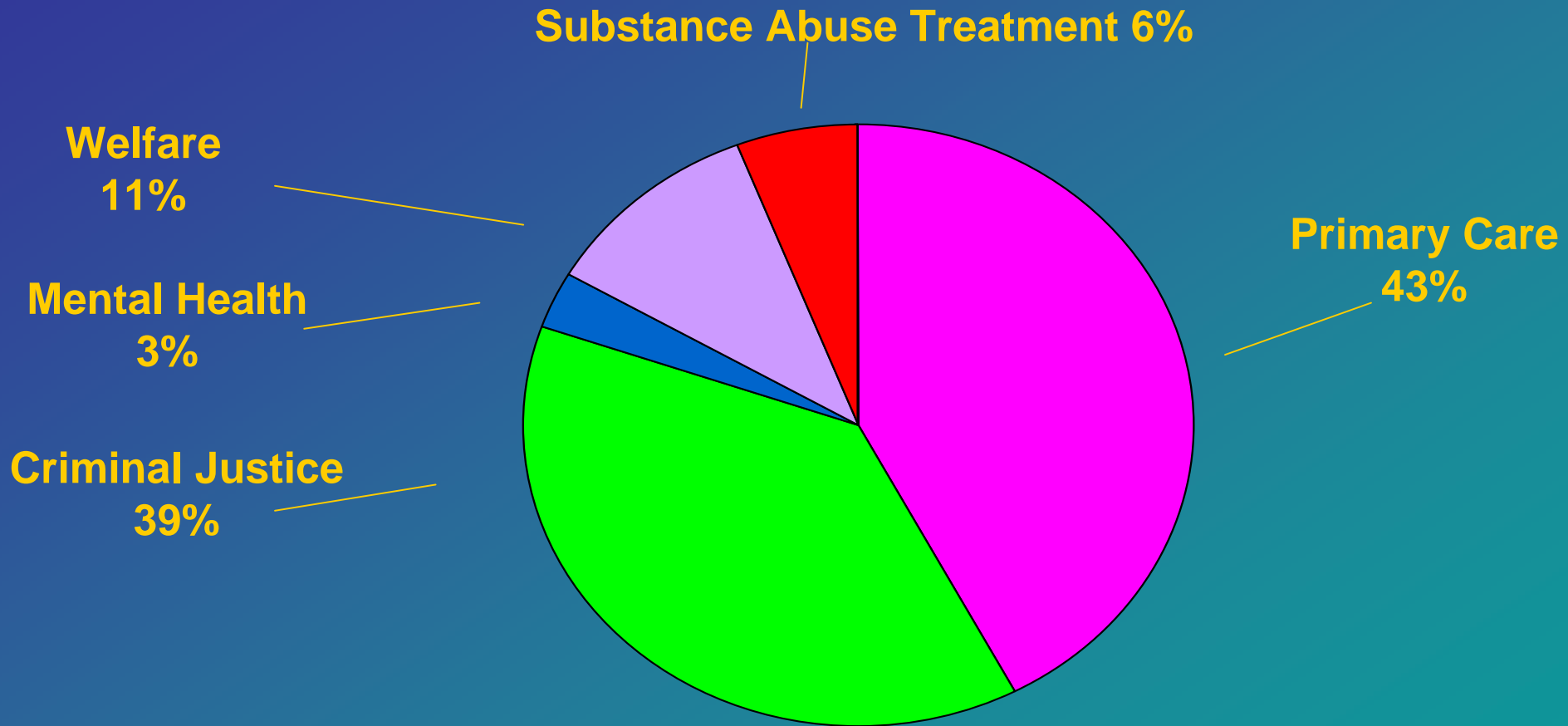
# Distribution of New Admissions<sup>1</sup> of Alcohol Dependent<sup>2</sup> Individuals in Community Agency Systems



<sup>1</sup> Data weighed for design effects, non-response, and to a common fieldwork duration so that each agency system sample is shown to its size.

<sup>2</sup> Dependence rates over a base of those meeting DSM-III-R criteria across all agency systems.

# Distribution of New Admissions<sup>1</sup> of Weekly Drug Users<sup>2</sup> in Community Agency Systems



<sup>1</sup> Data weighed for design effects, non-response, and to a common fieldwork duration so that each agency system sample is shown to its size.

<sup>2</sup> Weekly drug use rates over a base of weekly drug users across all agency systems.

# Reaching the Spectrum of Alcohol and Drug Problems

Specialty treatment cannot address the entire problem.

It is likely to be most cost-effective to place the major effort of alcohol and drug services in those institutions where individuals with those problems are naturally found.

# **Substance Abuse is Related to Costly Medical and Psychiatric Problems**

# Substance Use and HIV Risk in Cape Town, South Africa Primary Care Patients

In younger primary care patients (aged 18-24), substance abuse increased the probability of HIV risk behaviors fourfold.

Ward CL, Mertens JR, Flisher AJ, Bresick GL, Sterling SA, Distiller GB, & Weisner CM (in press) Substance abuse and HIV risk behaviours in Cape Town primary health care service users. *S Afr Psychiatry Rev.*

# Substance Abuse Patients vs Matched Health Plan Members without Substance Abuse Problems: ICD-9 Medical Conditions\*

	SA Patients (N=747)	Matched Members (N=3,690)
<b>Injury and Overdoses</b>	<b>25.6%</b>	<b>12.5%</b>
<b>Lower Back Pain</b>	<b>11.2%</b>	<b>5.8%</b>
<b>Headache</b>	<b>9.6%</b>	<b>3.8%</b>
<b>Hypertension</b>	<b>7.2%</b>	<b>3.4%</b>
<b>Asthma</b>	<b>6.8%</b>	<b>2.6%</b>
<b>Acid-related Disorders</b>	<b>4.3%</b>	<b>2.1%</b>
<b>Arthritis</b>	<b>3.9%</b>	<b>1.3%</b>

\*all  $p < .001$

Mertens JR, Lu Y, Parthasarathy S, Moore C, Weisner CM. (2003). Medical and psychiatric conditions of alcohol and drug treatment patients in an HMO: Comparison to matched controls. *Arch Int Med* 163:2511-17

# Substance Abuse Patients and Matched Health Plan Members without Substance Abuse Conditions: ICD-9 Psychiatric Conditions \*

	SA Patients (N=747)	Matched Members (N=3,690)
Depressive Disorders	28.5%	2.7%
Anxiety Disorders	17.1%	2.2%
Psychoses	6.7%	0.4%

\*all p<.001

Mertens JR, Lu Y, Parthasarathy S, Moore C, Weisner CM. Medical and psychiatric conditions of alcohol and drug treatment patients in an HMO: comparison with matched controls. *Arch Int Med.* 2003;163(20):2511-17.



# Problem Drinkers and Drug Users in Primary Care

- Prevalence of 10% for either alcohol or drug problems
- Problem drinkers had higher prevalence of several common medical conditions, including:
  - Injury
  - Hypertension
  - Asthma, emphysema, COPD
  - Pneumonia
  - Depression, Anxiety, and Major Psychoses
- Higher health care costs

Mertens JM, Weisner C, Ray GT, Fireman B, Walsh K. Hazardous drinkers and drug users in HMO primary care: prevalence, medical conditions, and costs. *Alcohol Clin Exp Res*. 2005;29(6):989-98.

# HIV Risk Behaviors among Adolescents in Substance Abuse Treatment

- Rate of at least 1 reported HIV risk behavior was 47%.
  - Girls who used narcotic analgesics (painkillers) without prescription at least once during the previous 6 months were 5 times more likely to engage in multiple HIV risk behaviors.
  - Boys who drank 5 or more drinks in a day at least once during the past 6 months were 4 times more likely than other patients to engage in multiple HIV risk behaviors.

Ammon L, Sterling S, Mertens J, Weisner C. Adolescents in private chemical dependency programs: who are most at risk for HIV? *J Subst Abuse Treat.* 2005;29(1):39-45.



# Medical Conditions of Adolescents (age 12-18) in Substance Abuse Treatment vs. Matched Health Plan Controls

**Higher prevalence of medical conditions\*, including:**

- Asthma
- Injury
- Sleep disorders
- Pain conditions (abdominal pain, muscle pain, and headaches)
- STDs
- Benign conditions of the uterus
- Dermatology conditions
- Gastroenteritis

\*All  $p < .05$

Mertens J, Flisher A, Sterling S, Weisner C. Medical conditions in adolescent alcohol and drug treatment patients in a private health plan: comparison with matched controls. Research Society on Alcoholism, Santa Barbara, CA, 2005.

# Psychiatric Conditions of Adolescents in Substance Abuse Treatment & Matched Controls\*

	<b>SA Patients</b>	<b>Controls</b>
Depression	36.3%	4.2%
Anxiety Disorder	16.3%	2.3%
ADHD	17.2%	3.0%
Conduct Disorder	19.3%	1.2%
Conduct Disorder (w/ODD)	27.3%	2.3%
Any Psychiatric Diagnosis	55.5%	9.0%

\* All  $p < .001$

Sterling S, Weisner C. Chemical dependency and psychiatric services for adolescents in private managed care: Implications for outcomes. *Alcohol Clin Exper Res*. 2005;25(5):801-9.

# Outcomes of Integrated Services

Adolescents and adults treated in facilities with co-located services had greater odds of being abstinent at 6 months compared to those treated in facilities with separated services.

(OR: 1.61, p.03; OR: 1.90, p. 01, respectively)

Sterling S, Weisner C. Chemical dependency and psychiatric services for adolescents in private managed care: Implications for outcomes. *Alcohol Clin Exper Res.* 2005;25(5):801-9.

Weisner C, Mertens J, Parthasarathy S, Moore C. Integrating primary medical care with addiction treatment: A randomized controlled trial. *Jama.* 2001;286(14):1715-23.

# Five Year Outcomes of Health & Social Service Interventions: Insured & Non-insured Problem Drinkers

- Drinking addressed in medical & mental health settings predicted lower alcohol consumption among problem drinkers over 5 years
- Treatment is episodic – ongoing contact with healthcare important

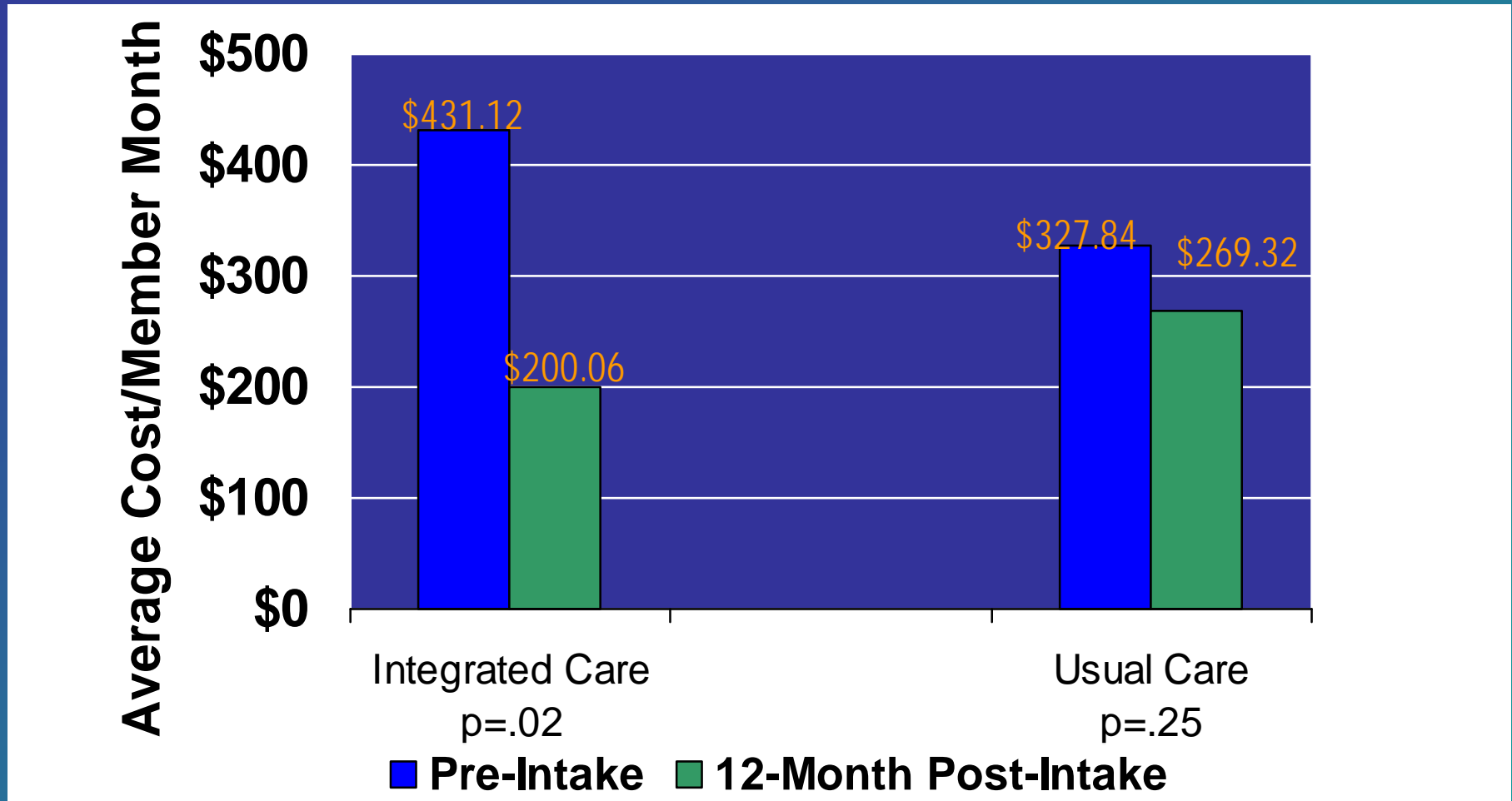
Weisner C, Matzger H, Delucchi K. The role of community services and informal support on five-year drinking trajectories of alcohol dependent and problem drinkers. *J Stud Alcohol*. 2003;64(6):862-73.

# Cost Impact

# Cost Impact

- Costs of treatment patients are 4 times higher than others prior to treatment
- Costs for those who improve after treatment become similar to others over time

# Integrated Medical and Substance Abuse Treatment for those with Substance Abuse-Related Medical Conditions: Medical Costs



Parthasarathy S, Mertens J, Moore C, Weisner C. Utilization and cost impact of integrating substance abuse treatment and primary care. *Med Care*. 2003;41(3):357-67.

# Randomized Trial in Primary Care: Four-Session Intervention

- Intervention group had fewer drinking days, fewer heavy drinking episodes ( $p < .001$  for both)
- Intervention group had fewer days of hospitalization ( $p = .05$ ) and ER visits ( $p = .08$ )
  - Effect was maintained over 2 years (although was lessened over time)
- Benefit cost analysis: \$43,000 reduction in future medical costs for every \$10,000 invested (larger if include societal benefits)

Fleming MF, Mundt MP, French MT, Manwell LB, Stauffacher EA, Barry KL. Brief physician advice for problem drinkers: long-term efficacy and benefit-cost analysis. *Alcohol Clin Exp Res*. 2002;26(1):36-43.

# Brief Motivational Randomized Study of Intervention for Drug Use in Outpatient Clinics

## 1 session & telephone booster

Intervention group more likely to be abstinent (at 6 months):

- Cocaine alone (OR = 1.51, p=.05)
- Heroin alone (OR = 1.51, p=.045)
- Both drugs (OR = 1.57, p=.05)

Bernstein J, Bernstein E, Tassiopoulos K, Heeren T, Levenson S, Hingson R. Brief motivational intervention at a clinic visit reduces cocaine and heroin use. *Drug Alcohol Depend.* 2005;77(1):49-59.

# Emergency Room Studies

Screening and interventions for trauma patients:

27% of injured adults are candidates for a brief intervention: Benefit in reduced health costs was \$3.81 for every \$1 spent (\$1.82 billion potential savings/year if all US trauma patients who screened positive were provided interventions).

Gentilello LM, Ebel BE, Wickizer TM, Salkever DS, Rivara FP. Alcohol interventions for trauma patients treated in emergency departments and hospitals: a cost benefit analysis. *Ann Surg.* 2005;241(4):541-50.

# Costs of Screening and Brief Intervention in Primary Care: Practitioner vs. Specialist Model

- Appraisal/screening costs were low and the same across models (< \$ .50 for each)
- Brief intervention: \$2.59 by Specialists and \$3.43 by Practitioners
- Cost differences due to less costly specialist salaries
- Cost of practitioner vs specialist approach may differ by type of setting

Zarkin GA, Bray JW, Davis KL, Babor TF, Higgins-Biddle JC. The costs of screening and brief intervention for risky alcohol use. *J Stud Alcohol*. Nov 2003;64(6):849-857.

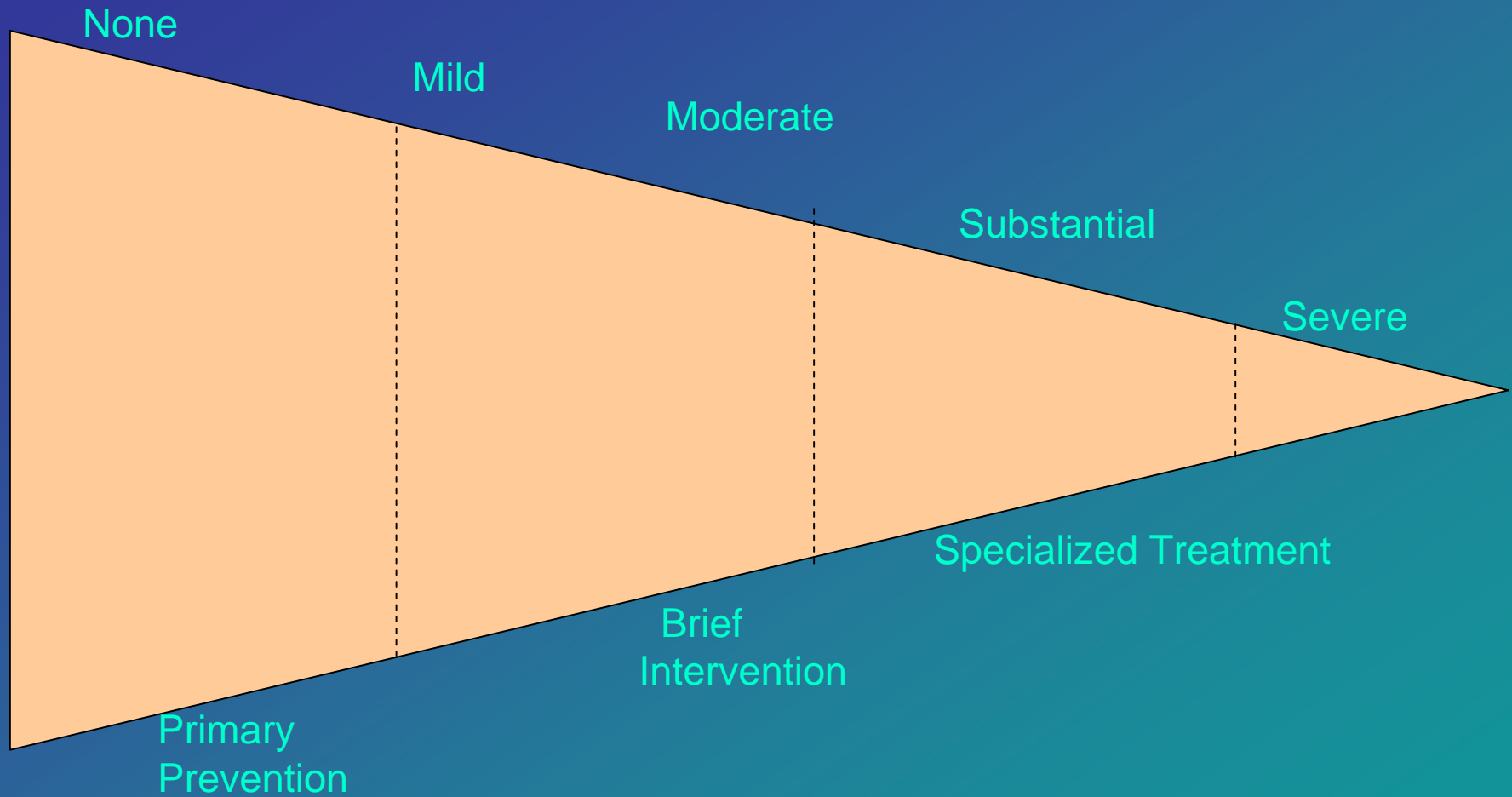
# Interventions in Schools

School-based interventions are one of the most cost-effective approaches to health and social development. (World Bank Development report, 1993)

- Important age group for prevention and early case-finding
  - High rates of smoking and substance use across countries
  - Most adults began use in teenage years or earlier
  
- Trends of increase in use by youth

Flisher AJ, Brawn A, Mukoma W. Intervening through the school system. In: Miller WR, Weisner CM, eds. *Changing Substance Abuse Through Health and Social Systems*. New York: Plenum; 2002:171-82.

World Health Organization, Investing in health. World development report. Oxford: Oxford University Press; 1993.



## Distribution of Alcohol Problems

Institute of Medicine. *Broadening the Base of Treatment for Alcohol Problems*. Washington, DC: National Academy Press; 1990.

# Cost and Efficiency Considerations for Reaching the Majority of Individuals with Alcohol and Drug Problems

- Services within existing health and social agencies
  - Out-stationing substance abuse counselors
  - Practitioners indigenous to those systems (e.g., physicians, nurses, social workers)
- Centralized resource
  - Training, consultation, liaison, and model services
  - Identify target institutions and survey sample agency caseloads
  - Evaluation

# Summary and Implications

- Integrated treatment can be effective
  - Outcomes comparable to treatment for many other health problems
- Cost-effectiveness of service integration
- Development of outcome and cost data
  - Screening
  - Interventions
  - Follow-up (disease management)

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