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Effectiveness, Efficacy and Efficiency: the 3 E's of Prevention Planning

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The 3 E's of Comprehensive Prevention: *Effectiveness, Efficacy and Efficiency*

Lynne Gochenaur – National Health Promotion
Associates

Rob Lillis – Evalumetrics Research



Public Health Model

- ◆ Interactive
- ◆ Comprehensive
- ◆ Cuts across issues/problems/disciplines
- ◆ Epidemiology

Public Health Approach

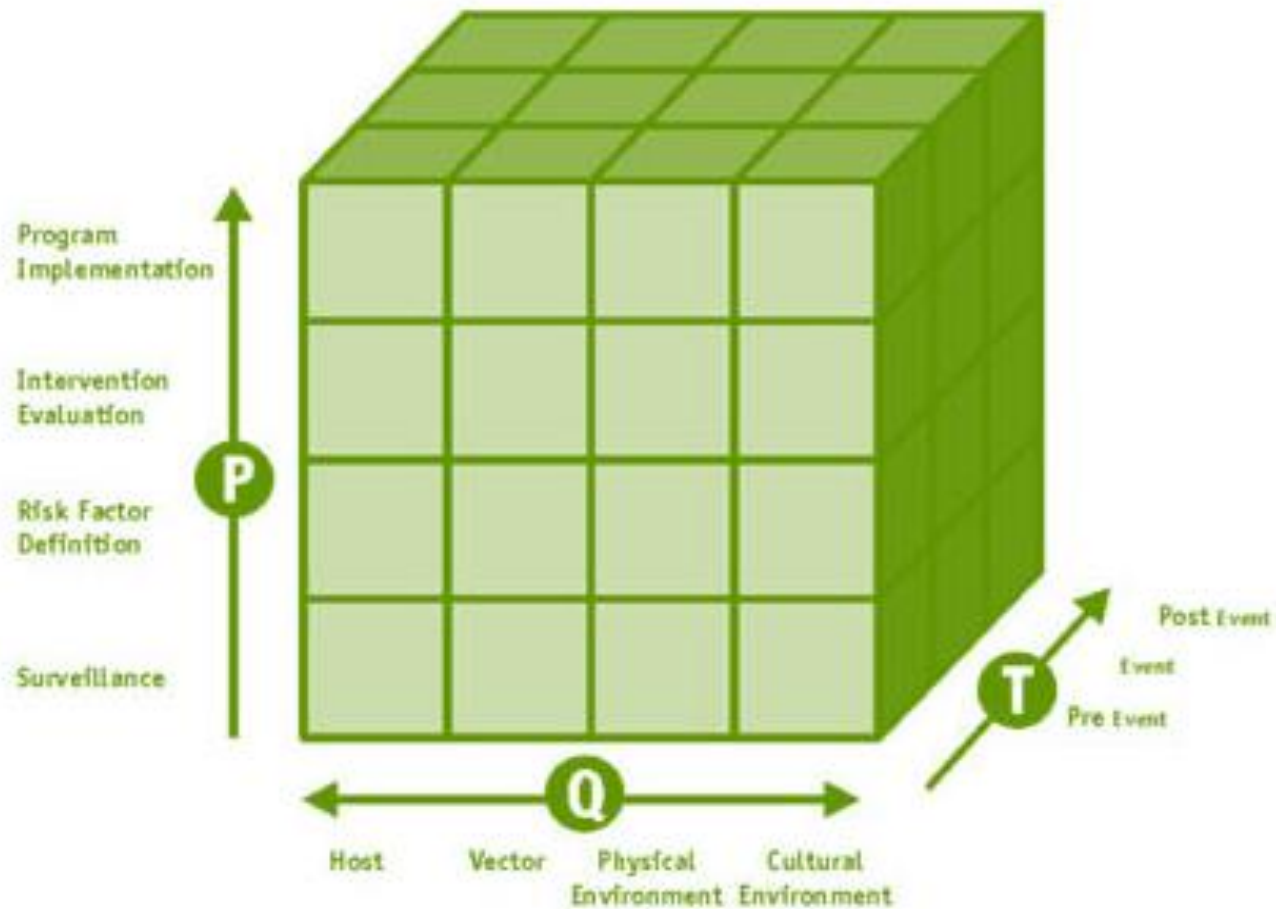


Unified Framework

Lett, Kobusingye and Sethi

Injury Control and Safety Promotion. 2002, Vol. 9, No. 3, pp. 199–205

figure 1(c)
Unified Model



Logic Model

- ◆ Problem (What?)
- ◆ Root Cause (Why?)
- ◆ Local Cause (Why here?)
- ◆ Action Plan

Logic Model

What? (Prevalence)

Why?

Root Causes
(Weighted factors)

Why Here?

Local factors

Implementation

Evaluation

Underage
Drinking

Rewards for
Antisocial
Behavior

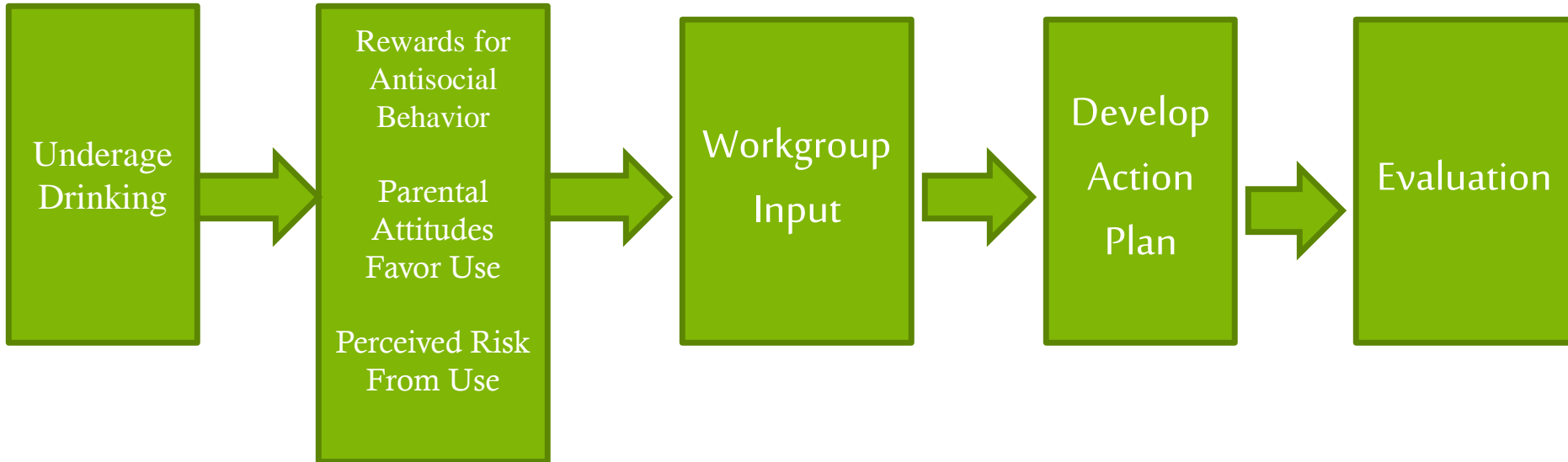
Parental
Attitudes
Favor Use

Perceived Risk
From Use

Workgroup
Input

Develop
Action
Plan

Evaluation



Predictors of Underage Drinking	Proportion at risk	Proportion who drank alcohol in the past 30 days.		Ratio
	2013	Not at Risk	At Risk	
Rewards for Antisocial Involvement (R23-PI)	12.4%	24.1%	56.6%	2.35
Friend Use Drugs (R21-PI)	11.2%	27.9%	60.4%	2.16
Sensation Seeking (R22-PI)	28.8%	24.7%	52.3%	2.12
Parental Attitudes Favorable to Drug Use (R10-F)	13.9%	28.7%	57.1%	1.99
Rewards for Prosocial Involvement (P7-S)	11.8%	29.1%	56.8%	1.95
Interaction With Antisocial Peers (R20-PI)	7.9%	31.0%	57.1%	1.84
Poor Discipline (R7-F)	10.0%	27.1%	49.4%	1.83
Rebelliousness (R14-PI)	13.2%	27.2%	45.6%	1.68
Parental Attitudes Favorable to Antisocial Beh (R11-F)	6.1%	29.2%	48.1%	1.65
Perceived Availability of Drugs (R5-C)	11.7%	29.1%	47.4%	1.63
Favorable Attitudes Toward Antisocial Beh (R18-PI)	11.8%	27.7%	44.4%	1.60

Logic Model

What? (Prevalence)

Why?

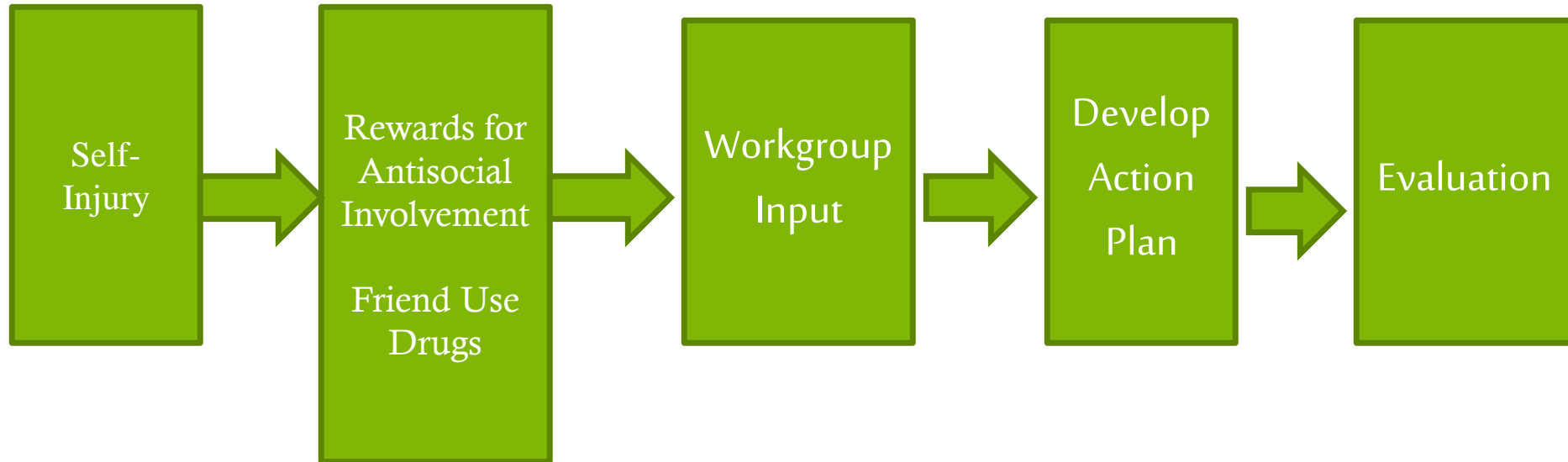
Root Causes
(Weighted factors)

Why Here?

Local factors

Implementation

Evaluation



Self-Injury	Proportion at risk	Proportion who drank alcohol in the past 30 days.		Ratio
	2013	Not at Risk	At Risk	
Rewards for Antisocial Involvement (R23-PI)	12.4%	24.1%	56.6%	2.35
Friend Use Drugs (R21-PI)	11.2%	27.9%	60.4%	2.16
Sensation Seeking (R22-PI)	28.8%	24.7%	52.3%	2.12
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Sample Community

- ◆ Rural County
- ◆ High Poverty Rate
- ◆ 11 school districts
 - ◆ Approximately 500 students/grade level countywide
- ◆ Certified Prevention Provider Agency (CBO)
- ◆ DFC Coalition
- ◆ LST provided in 6 schools
- ◆ Sample data are for 12th grade students

Individual Example - LST

- ◆ Universal strategy utilized in schools and community-based settings
- ◆ Research-validated substance abuse and violence prevention program
- ◆ Promotes healthy alternatives to risky behavior
- ◆ Provides enhancement of cognitive and behavioral skills
- ◆ The LST program produced a \$50 benefit for every \$1 invested

Environmental Example - Deterrence

- ◆ Perception that if one were to choose to engage in illegal (risk) it would result in:
 - ◆ Certain apprehension
 - ◆ Swift processing
 - ◆ Severe consequences
- ◆ Strategies include:
 - ◆ Actual enforcement (Compliance Checks/DWI)
 - ◆ Media to support perception of enforcement

Effectiveness

Effectiveness is the change in health status that can be attributed to an intervention.

Evaluation is determining what happened after an intervention that would not have happened without the intervention.

Effectiveness

Individual (LST)

Effect	Effect	Relation to Underage Drinking	Effect Size	Number at Risk
Direct (Primary)		(Ratio)		
Root Causes	Rewards for Antisocial Behavior	2.35	72.9%	130
	Parental Attitudes Favor Use	1.99	59.3%	106
	Perceived Risk of Use	1.52	57.9%	103

Effectiveness

Individual (LST)

	Effect	Effect Size	Number of Events Prevented	Societal Cost/Event /Year	Saving (Benefit)/Year
Indirect (Secondary)					
Risk Behavior	Prevent Onset				
Underage Drinking		41.7%	68	\$1,731	\$116,936
Cigarettes		12.6%	76	\$1,500	\$113,886
Marijuana		62.6%	50	\$1,500	\$74,898
Other Drugs		52.5%	21	\$1,500	\$31,293
Sub-Total Benefit (Savings)					\$337,013

Effectiveness

Individual (LST)

Collateral (Tertiary)						
Related risk behavior	Root Cause (Risk Factor)	Relationship to Problem Behaviors	Effect Size	Number of Events Prevented	Societal Cost/Event/Year	Saving (Benefit)/Year
Bullying	Bullying - Lack Belief in Moral Order	3.55	43.0%	100	\$1,500	\$150,000
Suicide	Suicide Ideation - Favorable Attitude toward Drug Use	3.5	72.3%	50	\$1,500	\$75,000
Cutting/ Self Injury	Self-Injury - Opportunities for Pro-social involvement	2.3	36.6%	85	\$5,000	\$425,000
Sub-Total Benefit (Savings)						\$650,000

Effectiveness

Environmental (Deterrence)

Effect	Effect	Relation to Underage Drinking	Effect Size	Number at Risk
Direct (Primary)		(Ratio)		
Root Causes	Belief in Moral Order	2.35	27.2%	48
	Parental Attitudes Favor Use	1.99	n/a	n/a
	Perceived Risk of Use	1.52	n/a	n/a

Effectiveness

Environmental (Deterrence)

	Effect	Effect Size	Number of Events Prevented	Societal Cost/Event	Saving (Benefit)
Indirect (Secondary)					
Risk Behavior					
Underage Drinking	Prevent Onset	38.1%	62	\$1,731	\$106,841
Cigarettes	n/a	n/a	n/a	n/a	n/a
Marijuana	n/a	n/a	n/a	n/a	n/a
Other Drugs	n/a	n/a	n/a	n/a	n/a
Sub-total Benefits (Savings)					\$106,841

Effectiveness

Environmental (Deterrence)

Collateral (Tertiary)	Effect	Effect Size	Number of Events Prevented	Societal Cost/Event	Saving (Benefit)
Related risk behavior					
Bullying	Bullying - Lack Belief in Moral Order	n/a	n/a	n/a	n/a
Suicide	Suicide Ideation - Favorable Attitude toward Drug Use	n/a	n/a	n/a	n/a
Cutting/ Self Injury	Self-Injury - Opportunities for Pro-social involvement	n/a	n/a	n/a	n/a
Sub-total Benefits (Savings)					n/a

Determining Effectiveness Activity

- ◆ In groups – list the major types of effects (benefits) of your assigned project.
 - ◆ Primary or direct benefits
 - ◆ Secondary benefits
 - ◆ Tertiary or collateral

Effectiveness

Build a Garage

1=Minimal - 5=Wonderful

Effect	Benefit (Effect) Type Measure, e.g. \$, "units of fun"	Benefit (Effect)Size
Direct (Primary)		
Protect Car	\$	

Efficacy

Efficacy is the ability and practicality (cost) of implementing an intervention in a real world setting.

Cost is defined as the total resources.

e.g. price (\$), effort, opportunities lost, political costs, legal & ethical considerations

Efficacy Individual (LST)

	Units	# of Units		
Direct Costs				
Human Resources (Time)				
School personel	Hours	180	\$35	\$6,300.00
CBO Staff	Hours	180	\$15	\$2,700.00
Materials				
Teacher Materials	\$	18	\$125	\$2,250.00
Student Materials	\$	18	\$40	\$720.00
Lost Opportunity				
School personnel	\$	180	\$35	\$6,300.00
CBO Staff	\$	180	\$15	\$2,700.00
Total Cost (Actual)				\$8,370
Total Cost (If School)				\$15,570

Efficacy

Individual (LST)

1=minimal - 5=deal breaker

Political Considerations		
Lost Opportunity	Units of Effort	3
Common Core	Units of Effort	4
APPR	Units of Effort	3
Denial	Units of Effort	3
Legal Consideration		
Consent	Units of Effort	1
Ethical Considerations		
Denial	Units of Effort	4
Evil Immoral	Units of Effort	2
Total Units of Efforts		20

Efficacy

Environmental (Deterrence)

	Units	# of Units	Price/Unit	Cost
Direct Costs				
Human Resources (Time)				
Coalition Members	Hours	150	\$35	\$5,250
CBO Staff	Hours	120	\$15	\$1,800
Compliance Checks				
Police/SLA	Hours	100	\$35	\$3,500
Media				
Broadcast time	\$	50	\$125	\$6,250
Print Materials	\$	1000	\$1	\$1,000
Total Cost				\$17,800

Efficacy

Environmental (Deterrence)

1=minimal - 5=deal breaker

Political Considerations		
Public support for enforcement	Units of Effort	2
Denial	Units of Effort	4
Legal Consideration		
Change law/policy	Units of Effort	3
Lost business	Units of Effort	3
Ethical Considerations		
Entrapment	Units of Effort	3
Total Units of Efforts		15

Determining Efficacy Activity

- ◆ In groups – list the major types of efficacy (costs) of you assigned project.
- ◆ Direct Costs
 - ◆ Human Resources (Time)
 - ◆ Materials
 - ◆ Lost Opportunity
- ◆ Political Considerations

Efficacy

Build a Garage

1=minimal - 5=deal breaker

Units

of Units (1-5)

Direct Costs

Contractor(s)

\$

Your time

\$

Lost Opportunity

Political

Considerations

Spousal Support

Efficiency

Efficiency is the ratio of the total cost of implementation to the value of the effects or benefits.

What Did You Come Up With?

- ◆ Give your numbers.

Efficiency of Strategies

	LST	Deterrence	
Benefits	\$650,000	\$106,841	
Cost	\$8,370	\$17,800	
Cost/Benefit (Efficiency)	77.66	6.00	
Relative Efficiency of LST vs Deterrence			12.94

What Have You Learned Dorothy?

- ◆ Spend your prevention resources where they do the most good.
- ◆ Be truly data driven.
- ◆ Evaluate from a cost-benefit model.
- ◆ Think outside the box...silo...funding tube.
- ◆ Public Health model!