

Issues and Priorities in Program Science

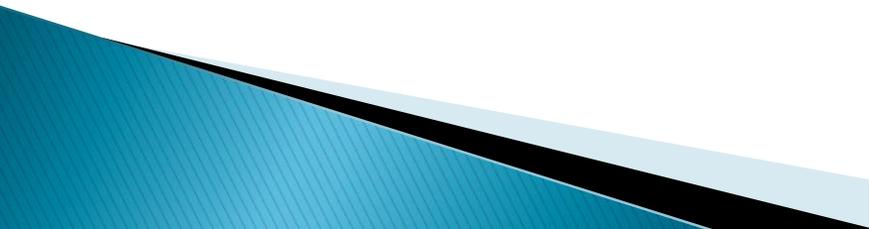
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A (slightly) deranged program implementer

Why the Concept of Program Science Is A Step Forward

- Promises to bring science and program closer together for the benefit of each
 - Promise of better integration across scientific disciplines
 - Views program components as a system
 - Includes policy, structural, social marketing, in addition to bio-medical interventions
 - Identifies population level effects of a package of interventions, not just one intervention at a time
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More Things to Like About Program Science

- ▶ Recognizes that the cost of an intervention is relevant
 - ▶ Recognizes that both efficacy and efficiency are important
 - ▶ Recognizes that just adding more tools won't get the job done any faster or better
 - ▶ Recognizes that program implementation is a series of trade-offs... “biggest bang for the buck”
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Questions Posed to Panelists

- ▶ Identify Top Issues/Priorities for Program Science
 - ▶ Why these are the most important priorities
 - ▶ Initial Steps to start dealing with these priorities
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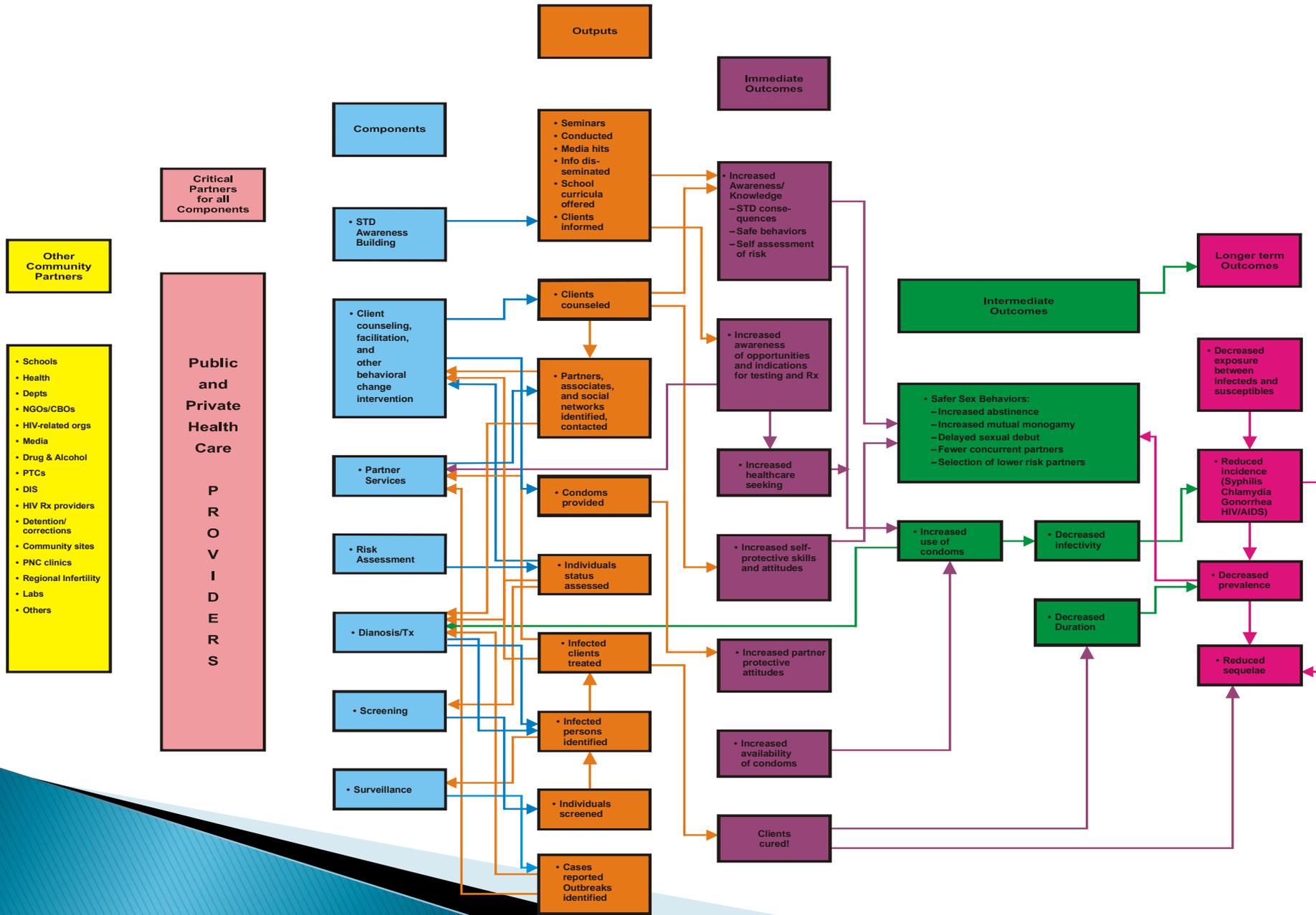
Top Issues and Priorities for Program Science

The Many “C’s”

Complexity

- Of the Health Care system
 - STI/HIV programs operate within a larger health system
 - But they are a system unto themselves

STD Prevention System



Complexity

- Of the Health Care system
 - STI/HIV programs operate within a larger health system
 - But they are a system unto themselves
 - Of defining communities
 - By risk group?, by geography?, by demographics?
 - Of combining intervention packages for populations rather than by organism
 - Of choosing from among the existing tools
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Internet

Social Marketing

Core Group/Repeaters

Screening

Structural Interventions

Community Interventions

Expedited Partner Treatment

Group Sessions

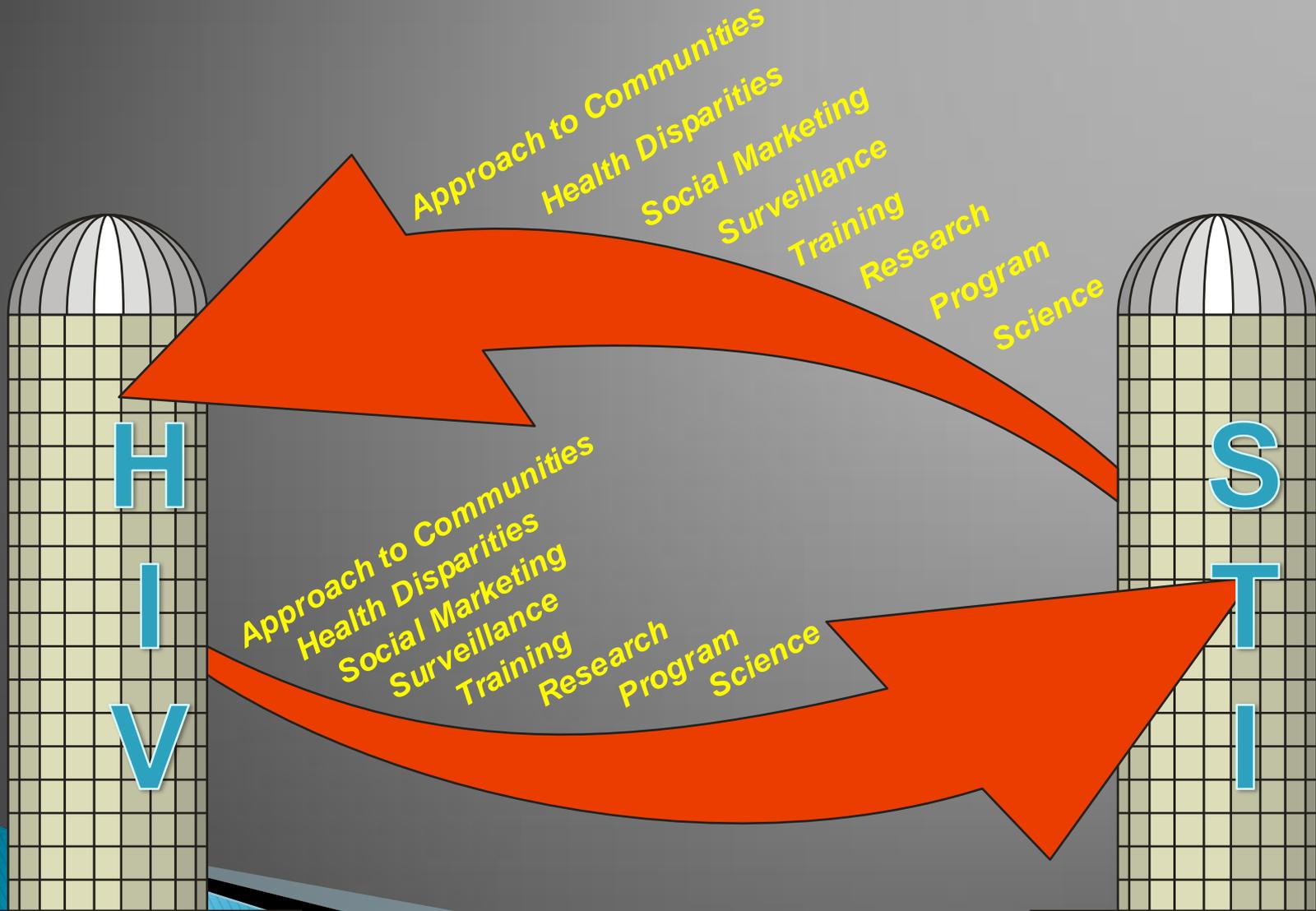
Condoms

Partner Notification

Competition and Coordination

- ▶ Competing points of view, priorities, and biases based on disciplinary background
 - ▶ Competition for resources
 - ▶ Coordination and integration of health messaging, education, communications, and funding across disease lines
 - ▶ Integration of the best science across silos
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“Silo” Approach To Science and Programs



Capitalizing on Changes in the Health Care System

- ▶ In the U.S., the biggest gains in STI/HIV prevention are to be made in the private sector
- ▶ If the PPACA proceeds as planned, 32 million additional people will be insured
 - One-half through Medicaid/CHIP programs
 - One-half through insurance exchanges
 - Dependent coverage through age 26
- ▶ These changes must be considered when designing intervention packages

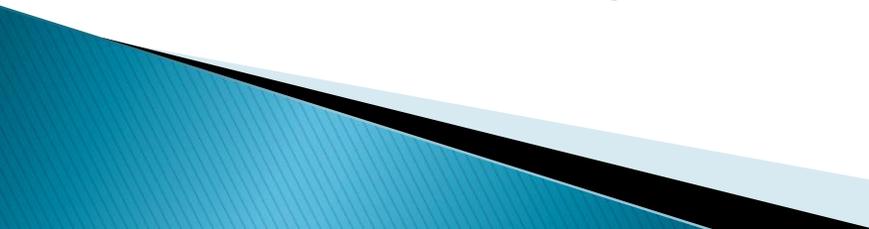
Health Care System Changes

- ▶ Significant expansion of primary care networks
- ▶ Many STI and HIV services will be covered by insurance, but many will not
- ▶ Public health's role will change
 - More policy, quality assurance
 - Less clinical
- ▶ Intervention packages need to be geared for primary care setting

Capacity, Constraints, Consensus

- ▶ Capacity of Public Health Infrastructure
 - ▶ Capacity to influence primary care, private sector
 - Evidence-based guidelines
 - ▶ Capacity to work across disciplines to answer cross-cutting questions
 - ▶ Constraints on funding
 - ▶ Constraints of the traditional scientific process
 - ▶ Consensus of scientists and programs
 - inexperience with systems thinking and management of programs
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Where to Start?

- Develop consensus to move forward
 - Develop end point(s) – goal
 - Is it a community? Geographic location?
 - Form a core group of interdisciplinary scientists and program leaders
 - Recruit talent from schools that teach systems science
 - Identify willing programs, communities to develop key research questions, gather data
 - Identify inputs, and first use modeling to determine most effective strategies to address chosen “target”
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Resource Allocation Modeling

- Resource Allocation—the process of distributing resources among competing programs, priorities, populations, or regions
- Healthcare resource allocation decisions may rely on a combination of—
 - Last year's allocation (historical spending patterns) or some other allocation
 - Influential players (communities, advocacy groups, NGOs, press/media, government, ...)
 - Input data (surveillance, prevalence, incidence, ...)
 - Program efficacy, best practice guidelines
 - Target setting
 - Priority setting
 - *Formal resource allocation modeling*

Modeling the Optimal Allocation of Prevention Funds

The allocation problem can be defined using two components that interact

- 1- Epidemic model—determines the epidemic outcome given a defined allocation
- 2- Optimization model—generates different allocation scenarios, which feed into the epidemic model; stops when the best outcome is reached

Required Data Needed

1. Budget

- Current allocation breakdown
- Current budget
- Additional funds)

2. Subpopulation level data

- Total size of subpopulation (denominators)
- Number of positives (numerator)
- % unaware

3. Rates of movement in and out of each subpopulation

- Entry into susceptible
- Exit rate from susceptible and undiagnosed
- Exit rate from diagnosed + (death and disease)

4. Transmission

- Mixing %
- Incidence by subpopulation
- Effective contact rate for diagnosed and undiagnosed

5. Intervention cost and outcome

- Interventions by target level
- Cost of testing by target level and subpopulation
- Background testing level
- Cost of testing by target level and subpopulation
- Testing yield
- Cost of behavior change by target level and subpopulation
- Effect of behavior change intervention by target level and subpopulation

6. Constraints

- Max reach (%) by intervention category by subpopulation
- Min reach (%) or investment (\$) by intervention category by subpopulation
- Max/Min \$ or % for higher levels than subpopulation?

The Important Thing is...

- ▶ To Start
 - ▶ To Carefully Plan Approach
 - ▶ To develop the knowledge base and experience with Systems Science
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And Remember

In the Words of a famous “C”

- ▶ Real knowledge is to know the extent of one's ignorance....Confucius