



# Antimicrobial Stewardship:

## Arizona Partnerships Working to Improve the Use of Antimicrobials in the Hospital and Community

### Part 2

**“Antibacterials – indeed, anti-infectives as a whole – are unique in that misuse of these agents can have a negative effect on society at large. Misuse of antibacterials has led to the development of bacterial resistance, whereas misuse of a cardiovascular drug harms only the one patient, not causing a societal consequence.”**

**- Glenn Tillotson; Clin Infect Dis. 2010;51:752**

**“...we hold closely the principles that antibiotics are a gift to us from prior generations and that we have a moral obligation to ensure that this global treasure is available for our children and future generations.”**

**- David Gilbert, et al (and the Infectious Diseases Society of America). Clin Infect Dis. 2010;51:754-5**

# A Note To Our Readers and Slide Presenters

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The objectives of the Subcommittee on Antimicrobial Stewardship Programs are directed at education, presentation, and identification of resources for clinicians to create toolkits of strategies that will assist clinicians with understanding, implementing, measuring, and maintaining antimicrobial stewardship programs.

The slide compendium was developed by the Subcommittee on Antimicrobial Stewardship Programs (ASP) of the Arizona Healthcare-Associated Infection (HAI) Advisory Committee in 2012-2013.

ASP is a multidisciplinary committee representing various healthcare disciplines working to define and provide guidance for establishing and maintaining an antimicrobial stewardship programs within acute care and long-term care institutions and in the community.

Their work was guided by the best available evidence at the time although the subject matter encompassed thousands of references. Accordingly, the Subcommittee selectively used examples from the published literature to provide guidance and evidenced-based criteria regarding antimicrobial stewardship. The slide compendium reflects consensus on criteria which the HAI Advisory Committee deems to represent prudent practice.

# Disclaimers

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All scientific and technical material included in the slide compendium applied rigorous scientific standards and peer review by the Subcommittee on Antimicrobial Stewardship Programs to ensure the accuracy and reliability of the data. The Subcommittee reviewed hundreds of published studies for the purposes of defining antimicrobial stewardship for Arizonan clinicians. The Arizona Department of Health Services (ADHS) and members of its subcommittees assume no responsibility for the opinions and interpretations of the data from published studies selected for inclusion in the slide compendium.

ADHS routinely seeks the input of highly qualified peer reviewers on the propriety, accuracy, completeness, and quality (including objectivity, utility, and integrity) of its materials. Although the specific application of peer review throughout the scientific process may vary, the overall goal is to obtain an objective evaluation of scientific information from its fellow scientists, consultants, and Committees.

Please credit ADHS for development of its slides and other tools. Please provide a link to the ADHS website when these material are used.

# Introduction to Slide Section

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Reasons to Optimize Antibiotic Use

Pathways to a Successful ASP

Antimicrobial Stewardship: Making the Case

ASPs: Nuts & Bolts

Antimicrobial Stewardship: Measuring Antibiotic Utilization

Antimicrobial Stewardship: Daily Activities

Antimicrobial Stewardship: Computerized & Clinical Decision Support Services

Microbiology: Cumulative Antibigram & Rapid Diagnostics

Antimicrobial Stewardship Projects: Initiation & Advanced

Antimicrobial Stewardship Barriers & Challenges: Structural & Functional

Antibiotic Use in the Community

Opportunities to Justify Continuing the ASP

Antimicrobial Stewardship: Perspectives to Consider

Summary

- **Preface:**

Defining antimicrobial stewardship is paramount in setting the stage for the stewardship program – it's goals and objectives. Basic structure and function is one of the earliest steps to developing an ASP by identifying the necessary team members, direction of the ASP, core strategies, and adaptability of functional models. The basic structure of the ASP should be established to provide direction but requires significant discussions with stakeholders and prescribers. These slides provide such a framework for such discussions.

- **Content:**

13 slides which can be presented within 30 minutes. Note that significant discussion time may be needed to elaborate on several valuable issues.

- **Suggestions for Presentation:**

Pharmacists and pharmacy directors, infectious disease physicians, and ASP champions compose the primary audience.

- **Comments:**

It is important to identify the “right reasons” for creating an ASP. Share ideas and identify institutional needs during meetings with medical departments, nursing, microbiology, epidemiology, and pharmacy. Everyone will have something to contribute and gain.

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**PATHWAYS TO A  
SUCCESSFUL  
ANTIMICROBIAL  
STEWARDSHIP PROGRAM**

# **Antimicrobial Stewardship: A Definition**

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**Processes designed to optimize the appropriate use of antimicrobials by ensuring that every patient receives...**

**...an antibiotic only when one is needed, with**

**The right agent**

**The right dose**

**The right route**

**For the right duration ...**

**... in order to optimize clinical outcomes and minimize unintended consequences of antimicrobial use**

# Why Does Antimicrobial Stewardship Matter?

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- 200-300 million antibiotic courses are prescribed annually
  - 45% are for outpatient use
- 25-40% of hospitalized patients receive antibiotics
  - At least 30% are unnecessary or sub-optimal
  - 5% of hospitalized patients experience an adverse drug reaction directly related to antibiotic use
- More than \$1.1 billion is spent annually on unnecessary adult antibiotic prescriptions for upper respiratory tract infections
  - 50-80% of outpatient antibiotic use is inappropriate
- Antibiotics are unlike any other drug – use of the agent in one patient can compromise efficacy in another

# Antibiotic Stewardship: Why Do It?

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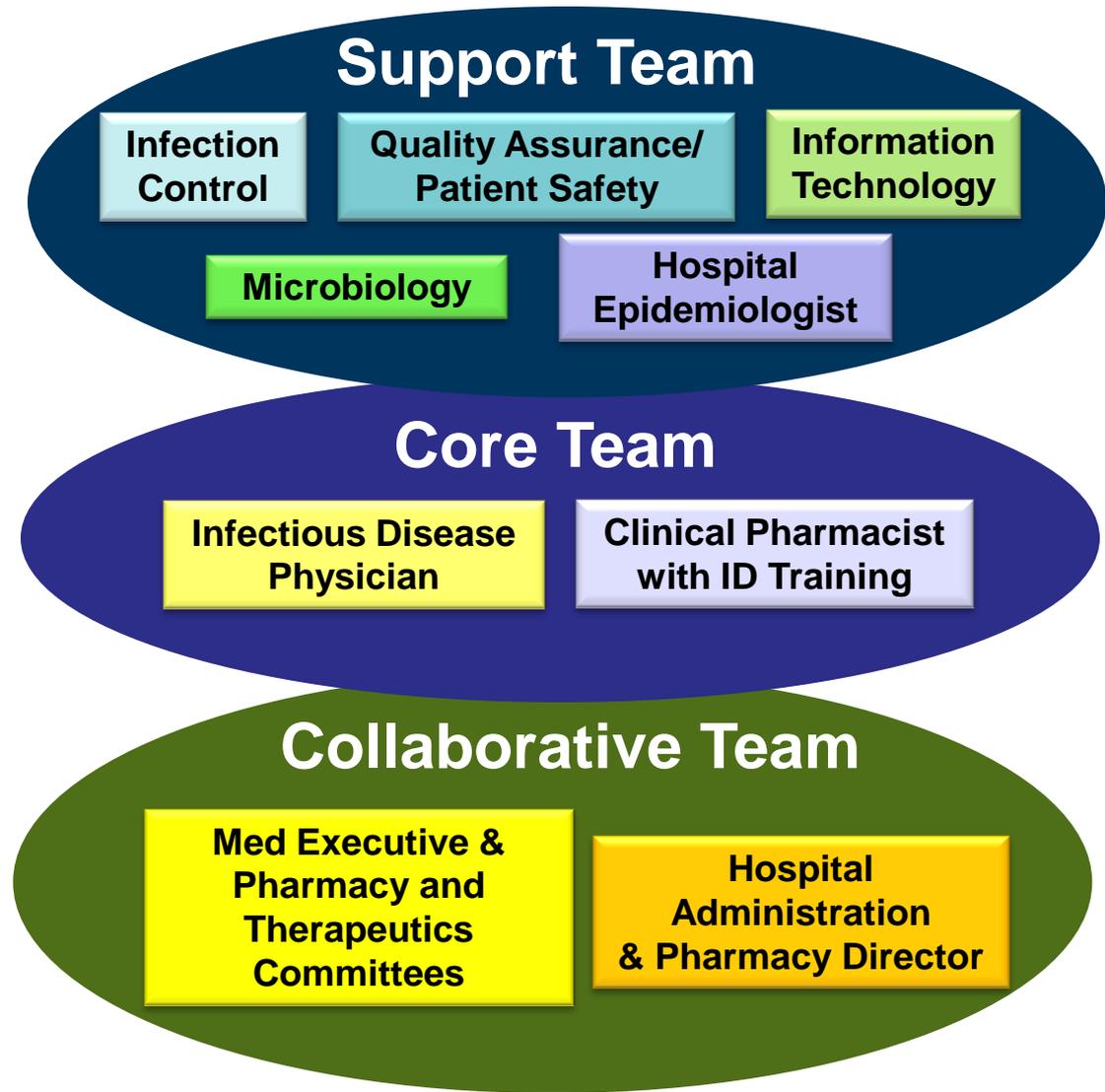
## The Wrong Reasons ..... The Right Answers (Examples)

- To save money or because my CFO thought it would be a good idea.
- Because we (Administration) can't control the physicians' prescribing but we think Pharmacy can.
- I enter a lot of orders for antibiotics.
- There just seems to be a lot of antibiotic overuse.
- Antibiotic resistance is bad.
- In my experience these antibiotics work just fine.

- To improve the quality of care in our institution.
- To create a multi-disciplinary program that will encourage appropriate antimicrobial use in our institution.
- Antibiotic utilization has increased by 17% in the last year, and our goal is to reduce this number to 5% growth for FY11
- Based on a review of 100 general medicine and surgical patients who received  $\geq 3$  antibiotics, only 30% of patients had therapy de-escalated after culture and susceptibility reports were returned, so our goal is to improve this to 60% by year-end.

# Developing an Antimicrobial Stewardship Program: The Core Team and Supporting Stakeholders

- Develop a culture change which embraces prudent antibiotic use
- Identify and gain solid commitment from members of the ASP
- Administrative support is essential
- ASP operates under auspices of the CMO and QA/Safety
- A commanding Chief Medical Officer, Medical Executive Committee, and Pharmacy and Therapeutics Committee enhance the success of an ASP
- Patient safety is linked to antibiotic resistance – make them believe it



# Successful ASPs Need Effective Partnering With Many Other Clinicians

Microbiology & Laboratory	Nursing	Infection Prevention	Medical Staff
Rapid testing and notification; MRSA v. MSSA BSI	IV-to-PO transition therapies	Review CDI and MDRO cases for antibiotic use	CPOE educational screens
Procalcitonin results	Identification of “true” allergy	NPSG 7.0’s for MDRO	Antibiotic plans in chart
Blood culture contamination	Education and support for prolonged infusions	HAIs treated optimally	Evidence-based treatment guidelines
Antibiogram development & education	Rapid initiation of empiric antibiotics	Maintenance of sterile injectables	Therapeutic interchange
Empiric antibiotic prescribing guidelines	Reminders to physicians: “did he/she see the C&S report?”	Cleaning of equipment and rooms known to facilitate transmission of pathogens	Restricted or non-formulary antibiotics
Selective reporting rules on AST	SCIP guidelines; time to antibiotic administration	Differentiate colonization from infection	Optimize clinical and economic outcomes

# Who Can Direct the Antibiotic Stewardship Program?

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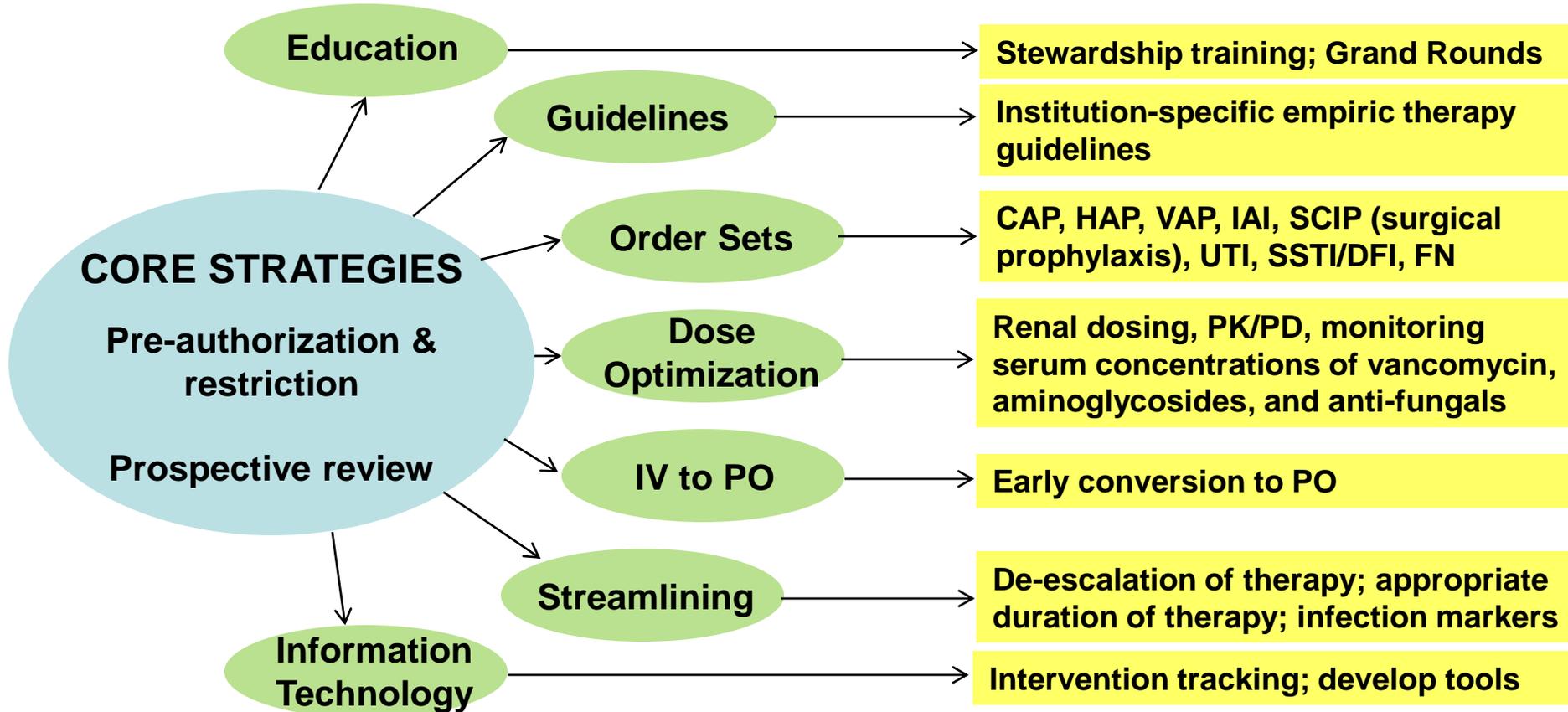
- Small institutions may not have ID-trained physicians and pharmacists, and many may not have ID physicians with adequate time to contribute to an ASP program
- Basic requirements of a “potential champion” for the ASP:
  - Interest in stewardship, patient safety, and performance improvement
  - Basic knowledge of antibiotics
  - Dedicated time and commitment
  - Activities are scalable to both time commitments and comfort levels
- Alternatives to ID-trained physicians:
  - Consider hospitalist, microbiology director, or intensivist
- Alternatives to ID-trained pharmacist
  - Pharmacist with advanced training (critical care, etc)

# Core Strategies Include a Large Number of Tactics

Dellit TH, et al. Clin Infect Dis. 2007;44:159-77

**Definition:** Judicious use of antimicrobials in order to improve patients outcomes, control resistance and decrease healthcare expense

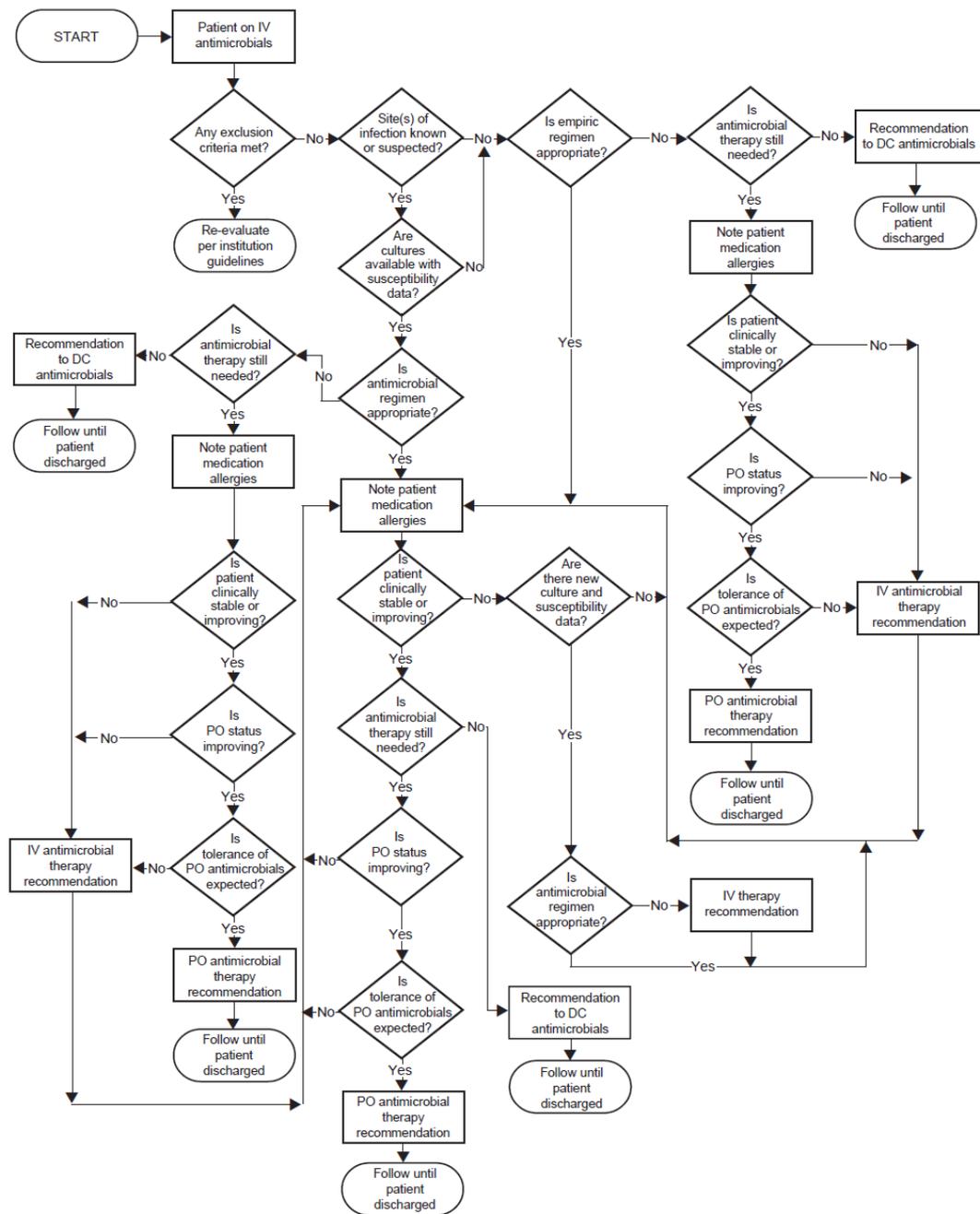
**Achieved through:**



# The “Old Model”

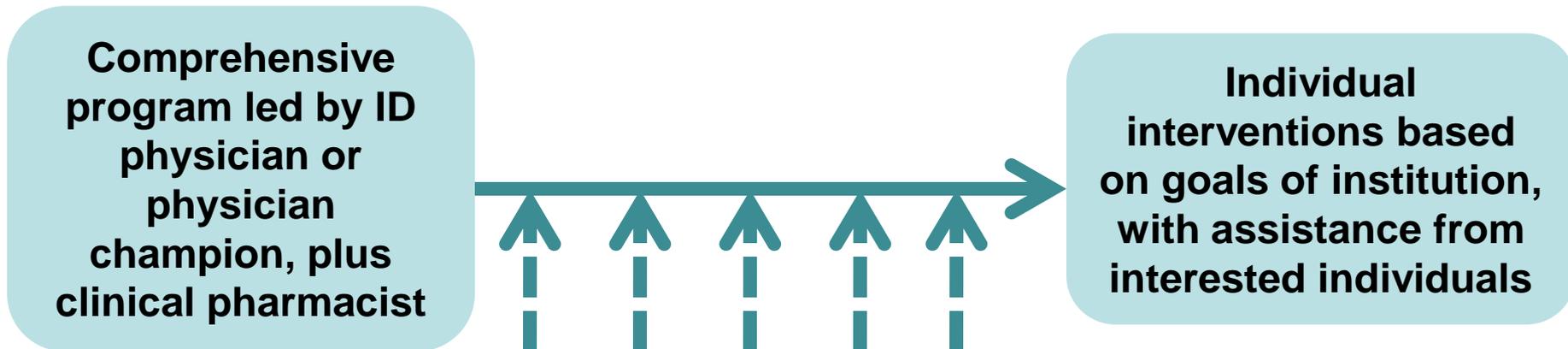
Flow diagrams assist in labor and time-motion studies, but may be too complex or resource-intensive for current healthcare systems

**Recommendation:**  
Stay basic and have well-defined objectives to direct the ASP activities



# The New ASP Model: Adaptable to All Institutional Settings

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## Simple initial strategies:

- Simple audit (review of orders) of specific drugs
- Pharmacy order entry system (e.g. antibiotic indication)
- Develop evidenced-based guidelines for 3-4 agents (see IDSA guidelines)
- Educate medical staff (2-minute “elevator speech”)
- All pharmacists can apply guidelines and approve drugs
- Post-prescription review on days 2-3 with physician champion
- IV-to-PO conversion is a good demonstration project
- SCIP guidelines and other performance outcomes and measures

**Function Trumps Structure**

# How Can I Justify My ASP Pharmacist FTEs? Program at a Small Community Hospital

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- **120-bed community hospital studied in 2000**
- Antibiotic support team (AST) – ID physician, clinical pharmacist, members of infection control and microbiology
  - ID MD devoted 8-12 hours per week on AST
- Concurrent chart review 3 days per week targeting patients receiving multiple, prolonged, or high-cost antimicrobial therapy
- Results:
  - 488 recommendations; 69% accepted
  - Antibiotic costs reduced 19%, \$18.21/pt-day to \$14.77/pt-day
  - Total estimated savings of \$177,000 in 2000, only one year later after ASP inception and implementation

**Yes...Function Trumps Structure !**

# Assess Your Needs To Implement a Successful Antimicrobial Stewardship Program



“Is it only me?”	“They don’t understand!”	What are the problems? Cost, resistance, too many broad-spectrum agents, etc?	Goals & objectives	Review goals & objectives of program	Go slow
Identify MD and Pharmacy champions	“The docs will never go for this”	Disease management issues	Benchmarks?	What are the clear deliverables?	Focus on low-hanging fruit
Stakeholders?	Moral support	Lack of evidenced-based practice?	Formal business model	Financial support?	Document interventions & roadblocks
Adjust resources to depth of problems	Personal relationships	Behaviors of prescribers	ASP physician role and compensation	Receptiveness to change; “what if I do this?”	Identify the true best performers
Who are the ‘mole-whackers’?			Consequences of not addressing the problems		Advertise services of ASP
Technology					Continue to build support