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Training and Professional Development Program

JUMP START STEWARDSHIP

Implementing Antimicrobial Stewardship in a Small, Rural Hospital

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Jump Start Stewardship: Implementing Antimicrobial Stewardship in a Small, Rural Hospital was prepared by Qualis Health for the EQuIP program. The EQuIP Program is a joint partnership between Qualis Health (the Washington and Idaho Quality Innovation Network-Quality Improvement Organization), Washington State Department of Health, Washington State Hospital Association (WSHA), and local chapters of the Association for Professionals in Infection Control (APIC).

ABOUT QUALIS HEALTH

Qualis Health is the CMS Quality Innovation Network-Quality Improvement Organization for Idaho and Washington. We bring Medicare beneficiaries, providers, and communities together to increase patient safety, make communities healthier, better coordinate post-hospital care, and improve clinical quality.

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March 2016

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Jumping In!

Welcome, and congratulations on taking the first step on your journey to antimicrobial stewardship (AMS) in your hospital.

Antimicrobial stewardship—a commitment to optimize antibiotic use to improve patient outcomes and save resources—is a key component of hospital quality improvement and patient safety. US Centers for Disease Control and Prevention (CDC), the Center for Medicare and Medicaid Services (CMS), the Washington State Department of Health, and Washington State Hospital Association recommend that all hospitals establish and maintain an antimicrobial stewardship program (ASP) to improve prescribing, reduce and prevent antibiotic resistant organisms and *Clostridium difficile* infections, promote better outcomes for patients, and save healthcare dollars. Stewardship requires leadership support, adequate resources, and a road map for getting started.

The purpose of this training day and workbook is to provide small hospitals with guidance, tools, consultation, and access to stewardship experts so each hospital can leave with a framework and strategic plan for implementing a feasible, small-scale stewardship program tailored to its own unique characteristics.

So sit back, listen, learn, ask questions, and share strategies with your colleagues and counterparts from other hospitals to get started on hospital stewardship!

Sincerely,

Your EQuIP Critical Access Hospitals Partners

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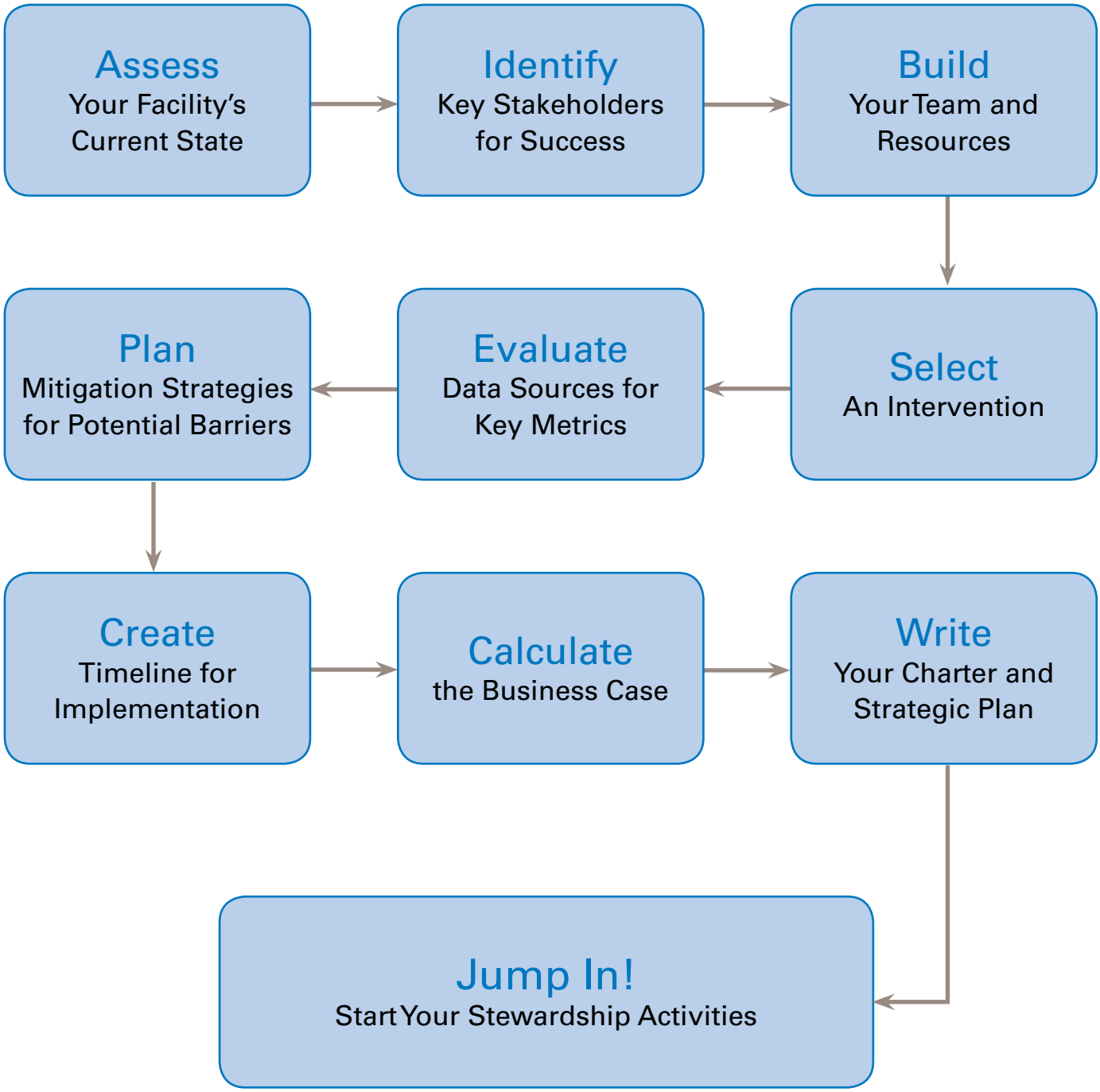
Training and Professional Development Program

Roadmap for Action



Assessing Current State

To understand which of the stewardship strategies will work best for your antimicrobial stewardship program (ASP), perform an assessment of your hospital's current state of readiness. A current state assessment allows you to assess the present activities, resources, and structures of your hospital relative to a desired state conducive to antimicrobial stewardship. This analysis should be performed in the planning stages of an ASP—prior to its implementation—and periodically thereafter to determine if you have made progress. The main goals of this review are to identify the activities already underway within your hospital, assess the resources available to an ASP, and to understand the antimicrobial use and scope or volume of resistance in your hospital (Joint Commission Resources, 2012).

The Current State Assessment is adapted for small hospitals from multiple, well-recognized sources including the CDC's Core Elements of Hospital Stewardship, the Greater New York Hospital Association's Antimicrobial Stewardship Toolkit, and the Joint Commission Resources Antimicrobial Stewardship Toolkit. The Current State Assessment includes the key elements and actions that facilitate optimal antibiotic prescribing and limit overuse and misuse of antibiotics in hospitals. For best results, work with multiple knowledgeable people in your hospital to determine the best, most realistic answers to the questions. The elements in the Assessment have been shown in studies to be useful in improving antibiotic use, though not all of the elements may be feasible in all hospitals (CDC, 2014).

Additionally, by fully completing the assessment, you will gain a better understanding of the following AMS-related issues in your hospital (Greater New York Hospital Association United Hospital Fund, 2011):

- Aggregate antibiotic use and patterns of use (pharmacy data)
- Rates of resistance in common pathogens (microbiology data)
- Common clinical infectious disease syndromes
- Antibiogram development and dissemination
- IT infrastructure (e.g., Computerized Physician Order Entry (CPOE), computer-based surveillance for antibiotic use).

Current State Assessment

To help you identify potential areas of focus for your antimicrobial stewardship program, please assess your facility's current state using this questionnaire adapted from the CDC's *Core Elements of Hospital Antibiotic Stewardship Programs (2014)* and the Greater New York Hospital Association's *Antimicrobial Stewardship Toolkit: Best Practices from the GNYHA/UHF Antimicrobial Stewardship Collaborative (2011)*. This pre-assessment is for your own use and reference during the workshop.

Facility Profile

In 2015	Number
Beds	
Acute care admissions	
Acute care patient days	
Average daily inpatient census	
Emergency Room Encounters	

In 2015	Number
Surgeries performed	
Swing-bed admissions	
Swing-bed patient days	
Average number of prescribers	
Clinical pharmacists (Budgeted FTEs*)	

**FTE: Full-time equivalent (1 FTE = 40 hours per week)*

Multi-Drug Resistant Organisms (MDROS)

	In 2015
Clostridium difficile	
Number of hospital-onset *C. difficile* infections	
Number of community-onset *C. difficile* infections	
Methicillin-Resistant Staphylococcus aureus (MRSA)	
Total number of non-duplicate MRSA isolates	
Vancomycin-Resistant Enterococcus (VRE)	
Number of non-duplicate VRE isolates	
Extended-Spectrum Beta Lactamase Producing Bacteria (ESBLs)	
Total number of non-duplicate ESBL isolates	
Number of non-duplicate isolates of ESBL *Klebsiella pneumoniae*	
Number of non-duplicate isolates of ESBL *Klebsiella oxytoca*	
Number of non-duplicate isolates of ESBL *Escherichia coli*	
Number of non-duplicate isolates of ESBL *Pseudomonas aeruginosa*	
Number of non-duplicate isolates of ESBL *Proteus mirabilis*	
Number of non-duplicate isolates of carbapenem-resistant enterobacteriaceae	
Other MDROs of Concern	

Core Elements Of Antibiotic Stewardship

Core Elements	Responses and Notes
Leadership Support	
Does your facility have a formal, written statement from leadership supporting efforts to improve antibiotic use (antibiotic stewardship)?	☐ NO ☐ YES
Does your facility currently receive any budgeted financial support for antibiotic stewardship activities (e.g., support for salary, training, or IT resources)?	☐ NO ☐ YES
Expert and Accountable Resources	
Has your facility identified a physician who can (and wants to) serve as the leader of your antimicrobial stewardship program and be accountable for the program's outcomes?	☐ NO ☐ YES: _____
Does your facility have access to an infectious disease-trained physician who can provide consultation to the stewardship program?	☐ NO ☐ YES: _____
Does your facility have access to a clinical pharmacist who can provide day-to-day oversight of the stewardship program's activities?	☐ NO ☐ YES: _____
Does your facility have an in-house microbiology laboratory?	☐ NO *If no, where are microbiology services performed?* _____ ☐ YES
In your facility, what other resources are available to the stewardship program?	☐ Prescribers ☐ Pharmacist ☐ Infection Preventionist ☐ Epidemiologist ☐ Nurses ☐ Microbiologist ☐ Information Technologist ☐ Senior Hospital Leader ☐ Other: _____

Core Elements	Responses and Notes
Prescribing Policies	
Does your facility have a policy that requires prescribers to document in the medical record a dose, duration, and indication for all antibiotic prescriptions?	☐ NO ☐ YES *If yes, does your facility monitor adherence to this policy and provide feedback to prescribers?* ☐ NO ☐ YES
Does your facility have facility-specific treatment recommendations, based on national guidelines and local susceptibility, to assist with antibiotic selection for common clinical conditions (e.g., pathways)?	☐ NO ☐ YES *(Indicate the pathways you use)* ☐ Community-acquired pneumonia ☐ Urinary tract infection ☐ Skin and soft-tissue infections ☐ Surgical prophylaxis ☐ Empiric treatment of MRSA ☐ *C. difficile* infections ☐ Invasive blood stream infections ☐ Ventilator-associated pneumonia ☐ Other: _____ *Does your facility monitor adherence to the established guidelines and provide feedback to prescribers?* ☐ NO ☐ YES
Is there a formal procedure for all clinicians to review the appropriateness of all antibiotics 48 hours after the initial orders (e.g., antibiotic time out)?	☐ NO ☐ YES
Do specified antibiotic agents need to be approved by a physician or pharmacist prior to dispensing (i.e., pre-authorization) at your facility?	☐ NO ☐ YES
Does a physician or pharmacist review courses of therapy for specified antibiotic agents (i.e., prospective audit with feedback) at your facility?	☐ NO ☐ YES *If yes, which antibiotics are reviewed?* _____

Core Elements	Responses and Notes
In your facility, do pharmacists routinely:	
Implement automatic changes from intravenous to oral antibiotic therapy in appropriate situations?	☐ NO ☐ YES
Adjust doses in cases of organ dysfunction?	☐ NO ☐ YES
Adjust doses (pharmacokinetics/ pharmacodynamics) to optimize the treatment of organisms with reduced susceptibility?	☐ NO ☐ YES
Alert prescribers in situations where therapy might be unnecessarily duplicative?	☐ NO ☐ YES
Implement time-sensitive automatic stop orders for specified antibiotic prescriptions?	☐ NO ☐ YES
Monitoring Antibiotic Use	
Does your facility track and report antibiotic use?	☐ NO ☐ YES *If yes, how is use monitored?* ☐ By counts of days antibiotic(s) are administered to patients (Days of Therapy: DOT)? ☐ By number of grams of antibiotics used (Defined Daily Dose: DDD)? ☐ By direct expenditure for antibiotics over time (purchasing costs)? ☐ Other: _____
Do prescribers receive direct, personalized communication about how they can improve their antibiotic prescribing?	☐ NO ☐ YES *If yes, who provides the communication?* _____

Core Elements	Responses and Notes
Does your facility produce an antibiogram or other aggregated antibiotic susceptibility report?	☐ NO ☐ YES *If yes, how often is the report produced?* _____ *If yes, do prescribers know how to access and use the report to guide treatment?* ☐ NO ☐ YES
Are you currently utilizing computer-based surveillance for antibiotic use or health care–acquired infections (e.g. MedMined, TheraDoc)?	☐ NO ☐ YES *If yes, name of program:* _____
Education	
Does your facility provide education to clinicians and other relevant staff on improving antibiotic use?	☐ NO ☐ YES *If yes, how often is education provided?* _____ *Who provides education?* _____ *Who receives education?* _____

Infectious Clinical Syndrome Profile

To the best of your ability, complete the following table for the three most-often diagnosed infectious clinical syndromes in your hospital in the last year (e.g. community-acquired pneumonia, skin and soft tissue infection, urinary tract infection, etc.). One purpose of this profile is to help you understand variation in prescribing practices in your hospital. The chart allows you to capture 2 varying regimens, with combination therapy of 2 drugs each. Try to calculate the cost per day of each drug as prescribed, and approximate the portion of cases that fall into each regimen (e.g. 90% for Regimen 1; 10% for Regimen 2; if you have much variation [more than 2 prominent regimens], percentages may not sum to 100%).

Clinical Syndrome	Number of Cases	Average Length of Stay		Antimicrobial Regimen 1		Antimicrobial Regimen 2	
EXAMPLE Community-Acquired Pneumonia (non-ICU)	43	6.6 days	Drug Dose Frequency Duration Cost per Day	Moxifloxacin 400 mg, IV q 24 hours 5 days $131.50		Ceftriaxone 1 g, IV q 24 hours 7 days $28.80	Azithromycin 1 g, IV q 24 hours 7 days $31.56
			Percent of Cases	60%		30%	
			Drug Dose Frequency Duration Cost per Day				
			Percent of Cases				
			Drug Dose Frequency Duration Cost per Day				
			Percent of Cases				
			Drug Dose Frequency Duration Cost per Day				
			Percent of Cases				

Antibiotic-Use Profile

Please complete the table below for the most-often prescribed intravenous antibiotics in your facility. These data may be used during the workshop to help you target a drug for intervention and make the business-case for the intervention.

Antibiotic Class	Drug	Utilization in 2015	Cost of Utilization in 2015	Notes

NOTES

Identifying Key Stakeholders

Stewardship is a team sport! As such, you must know who is on your team, who is rooting for your team, and who may stand in the way of your success. These people are called *stakeholders*, and analyzing who your ASP stakeholders are, how important each one is to your success, and how to engage them constructively, is a critical first step on your ASP journey.

So who are your ASP stakeholders? Stakeholders are individuals, teams, organizations, groups, or communities who can affect or be affected by the ASP. A stakeholder may be someone actively involved in the day-to-day operational ASP work (like your Pharmacist and Infection Preventionist), someone affected by the ASP's outcome (such as patients, or the community), or in a position to affect the ASP's success (your Chief Financial Officer or Chief Executive, and influential prescribers in your hospital). Stakeholders can be an internal part of the organization or external to your organization, like public health, regulators, or payers. It is important for ASP teams to be aware of the expectations of stakeholders. (Joint Commission Resources, 2012).

Key stakeholders are individuals who will have a fundamental impact on your ASP's performance, and who must be positively engaged for the program to be successful. Without the active support of your key stakeholders, your ASP will not achieve its goals or aim. Key ASP stakeholders typically include physicians and prescribers, patients, hospital leaders, and pharmacists. (Joint Commission Resources, 2012).

To help identify **key** stakeholders, consider the following questions:

- Does the stakeholder have a fundamental impact on your program's successful performance?
- Can you clearly identify what you want from the stakeholder?
- Can the program meet its goals without the stakeholder's support?

Once you have identified the key stakeholders in your program, consider how best to strategically engage those stakeholders for support and success.

Stakeholder Identification Worksheet

All Stakeholder Identification	Who? (Name or role)	How? (How will this stakeholder be affected?)	When? (Planning, Implementation, Ongoing, or Evaluation Phase)
Who is or may be affected by the program?	1. 2. 3. 4. 5. 6. 7. 8. 9. 10.	1. 2. 3. 4. 5. 6. 7. 8. 9. 10.	1. 2. 3. 4. 5. 6. 7. 8. 9. 10.
Who is involved in the program's operations?	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.
Who will benefit from the program?	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.	1. 2. 3. 4. 5.

Key Stakeholder Identification: Which of the identified stakeholders above do we need to engage in the following efforts?				
Increase Credibility of the ASP	Implement the Interventions Central to the ASP	Advocate for Organizational Changes to Embed ASP in the Culture	Fund or Authorize Implementation, Continuation, or Expansion of the ASP	Other ASP Needs

Key stakeholder engagement (What's in it for them?)			
	List the key stakeholders identified above	What activities or outcomes of the ASP matter most to this stakeholder	How can we address this stakeholder's needs?
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			

Building Your Stewardship Team and Resources

The ideal ASP team members, according to the IDSA/SHEA guidelines, consist of the following personnel, who are compensated for the time spent on ASP activities (Dellit, 2007):

- Infectious disease physician
- Clinical pharmacist with infectious disease training
- Clinical microbiologist
- Information system specialist
- Infection preventionist
- Hospital epidemiologist

However, for many small, rural, and critical access hospitals, this arrangement may not be feasible.

Therefore, to ensure your ASP is successful and efficient, plan thoughtfully and specifically for your facility's individual personnel, resources, and other strengths.

At a minimum, the ASP should be led by a knowledgeable (and influential) physician, and a clinical pharmacist. While both the pharmacist and physician are equally important to the ASP, they perform different duties. Because stewardship is considered a patient safety issue and medical staff function, the ASP physician should be the program leader, responsible for setting goals, monitoring the effectiveness of interventions, and serving as liaison to the hospital's medical staff. In contrast, the pharmacist, for example, performs the day-to-day data collection and review of antimicrobial use, and makes recommendations for therapy changes, as needed, for individual patients (Joint Commission Resources, 2012).

While a small hospital's ASP may include only a physician and clinical pharmacist, other staff will play supportive roles.

The support and collaboration of hospital administration, medical staff leadership, and local providers is also essential. It is impossible to sustain an ASP without a commitment from hospital leadership to support the program's activities. To be successful, stewardship duties should be included in the ASP team members' job descriptions and annual performance reviews. The hospital should also support and provide annual antimicrobial use and stewardship education for healthcare staff.

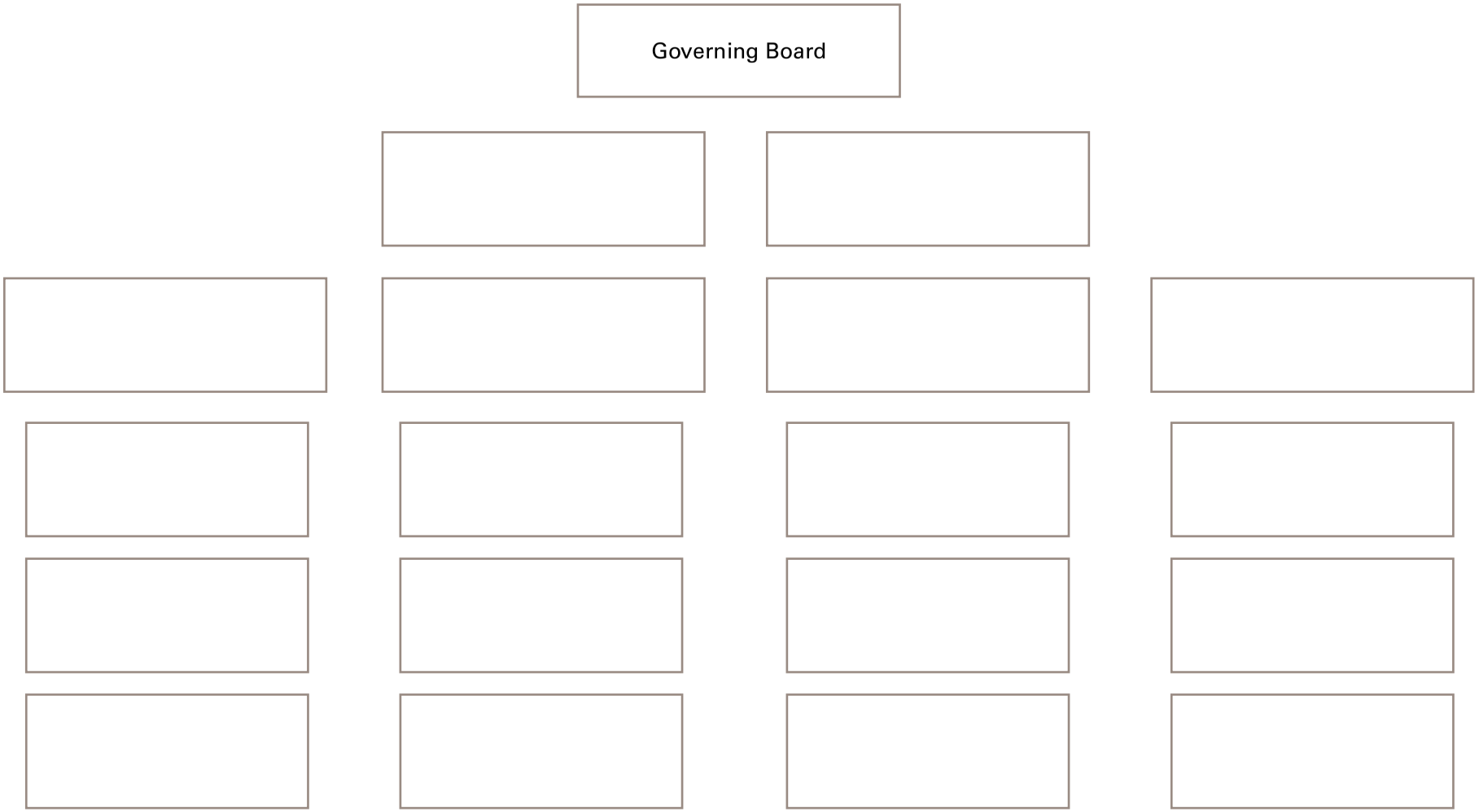
Team Identification Worksheet

Potential Team Member	What will be this person's role in ASP?	What are the anticipated ASP activities this person will be accountable for?	How many hours per week are anticipated for ASP activities for this person?	What needs of this person have to be met for him/her to serve effectively as a team member?
Physician				
Clinical Pharmacist				
Infection Preventionist				
Microbiologist				
Information Technologist				
Senior Leader				
Prescribing Provider				
Educator				
Other				
Other				

Committee Oversight

A key requirement for ASP success is regular and timely reporting of activities and progress towards goals. In the space below, sketch out the basic committee reporting structure that currently exists in your hospital. Use a blank page if needed to better represent your hospital's committee organization. Within the current structure, is there a committee that can serve as the ASP oversight team? If not, do you need to create a new committee specifically for ASP oversight? If so, how would the new committee report to the leadership and governing board of your hospital?

Consider the following: • *Committee Name* • *Meeting Frequency* • *General Purpose* • *Constituency*



Committee Oversight

Use the blank space below to sketch your hospital's own committee reporting structure.

Resource Needs Assessment

In addition to outlining the operational team members and reporting structure, consider other functional needs of your ASP as you get started in your first year of activities.

Resource	Needed	Frequency of Need	Description of Need	Potential Solutions	Estimated Cost
Education of team members	☐ YES ☐ NO	☐ Once ☐ Ongoing: _____ (monthly, annually)			
Facilities/office space for team	☐ YES ☐ NO	☐ Once ☐ Ongoing: _____ (monthly, annually)			
Information technology for ASP	☐ YES ☐ NO	☐ Once ☐ Ongoing: _____ (monthly, annually)			
Non-clinical time for team meetings	☐ YES ☐ NO	☐ Once ☐ Ongoing: _____ (monthly, annually)			
Printing/copying	☐ YES ☐ NO	☐ Once ☐ Ongoing: _____ (monthly, annually)			
Supplies	☐ YES ☐ NO	☐ Once ☐ Ongoing: _____ (monthly, annually)			
Graphic design/ branding	☐ YES ☐ NO	☐ Once ☐ Ongoing: _____ (monthly, annually)			
	☐ YES ☐ NO	☐ Once ☐ Ongoing: _____ (monthly, annually)			
	☐ YES ☐ NO	☐ Once ☐ Ongoing: _____ (monthly, annually)			

Adapted from ERASE *C. difficile* 1L Tool Assessing Resource Needs (Agency for Healthcare Research and Quality (AHRQ), 2012)

Selecting Interventions and Targets for Implementation

According to the Institute for Healthcare Improvement and CDC's Antibiotic Stewardship Driver Diagram and Change Package (2012), there are four main strategic drivers of stewardship: Leadership and Culture Change; Timely and Appropriate Initiation of Antimicrobial Therapy; Appropriate Administration and De-escalation of Therapy; and Data Monitoring, Transparency, and Stewardship. Within these primary drivers, many effective strategies and tactics may be implemented by small hospitals to improve stewardship.

Using data from the Current State Assessment, Stakeholder Analysis, and knowledge of your hospital's resources and culture, select specific targets and interventions that are most appropriate to your individual facility.

Additionally, the following key factors should be considered when selecting antimicrobial stewardship program (ASP) interventions: (Joint Commission Resources, 2012)

The program does not need to be implemented in its "final version."

Impact
Your ASP should focus its efforts on initiatives likely to have a positive impact on the quality, safety, and/or cost of patient care.

Political Expediency
Hospitals are political organizations, so keep in mind the internal socio-political consequences of interventions selected. Look for win-win initiatives—those that achieve the goals of the ASP as well as the goals of others who are involved in patient care.

Resources Required
Choose interventions that are feasible with the resources available to you. If a lack of resources is the only deterrent to implementing an important, impactful, and otherwise easy intervention, use these facts to try to obtain the necessary resources.

Ease of Implementation
Some activities are easier to implement than others, regardless of the hospital. Consider whether the potential benefits of the intervention are worth the effort. Your ASP may start out small and expand as resources and ASP acceptance increase.

Drivers of Optimal Antimicrobial Use

According to the Antibiotic Stewardship Driver Diagram and Change Package (Institute for Healthcare Improvement (IHI) and Centers for Disease Control and Prevention (CDC), 2012), the following drivers produce optimal, judicious antimicrobial use. This framework may be used to identify one or more interventions consistent with primary or secondary drivers. Over time, adding activities, interventions and actions addressing each of the drivers will make your ASP more robust and effective.

Primary Drivers	Secondary Drivers	Key Change Concepts
Leadership and Culture Change	Promote a culture of optimal antibiotic use within the facility	Engage administrative and clinical leadership to champion stewardship effort
Timely and Appropriate Initiation of Antibiotics	Promptly identify patients who require antibiotics	Develop a standardized process to identify patients who require antibiotics
	Obtain cultures prior to starting antibiotics	Create standardized protocols for ordering and obtaining cultures and other diagnostic tests prior to initiating antibiotics
	Do not give antibiotics with overlapping activity or combinations not supported by evidence or guidelines	Develop a way to inform clinicians about unnecessary combinations of antibiotics, including "double coverage"
	Determine and verify antibiotic allergies and tailor therapy accordingly	Choose antibiotic based on patient allergies
	Consider local antibiotic susceptibility patterns in selecting therapy	Develop a standardized process for antibiotic selection
	Start treatment promptly	Develop processes that support prompt treatment of patients requiring antibiotics Ensure antibiotics are readily available
	Specify expected duration of therapy based on evidence and national and hospital guidelines	Incorporate evidence-based guidelines for duration of antibiotics into standard protocols and/or computerized decision support

Primary Drivers	Secondary Drivers	Key Change Concepts
Appropriate Administration and De-escalation of Therapy	Make antibiotics and start dates visible at point of care and in electronic health records, as applicable	Ensure a clear history of patient antibiotic use is obtained and available
	Give antibiotics at the right dose and interval	Establish a process for delivery customized to the antibiotics and the patient
	Stop or de-escalate therapy promptly based on the culture and sensitivity results	Establish process for prompt notification of culture and antibiotic susceptibility results Stop or de-escalate antibiotic based on culture results
	Reconcile and adjust antibiotics, at all transitions and changes in patient's condition	Look for all opportunities to stop or change (de-escalate or broaden) antibiotic therapy when patient's condition changes and/or when changing levels of care
	Monitor for toxicity reliably and adjust agent and dose promptly	Ensure appropriate monitoring and adjustment of agent
Data Monitoring, Transparency, and Stewardship	Monitor, offer feedback, and make visible data regarding antibiotic utilization, antibiotic resistance, adverse drug events, *C. difficile,* cost, and adherence to the organization's recommended culturing and prescribing practices	Establish real-time monitoring and measurement systems
	Develop and make available expertise in antibiotic use	Cultivate local expertise among staff Develop a process for antibiotic formulary management
	Ensure expertise is available to clinicians at the point of care	Create processes to ensure availability of expertise

Assessment of ASP Interventions

The following ASP interventions are recommended by the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America in their Guidelines for Developing an Institutional Program to Enhance Antimicrobial Stewardship (Dellit, 2007). Each has advantages and disadvantages as listed below (Joint Commission Resources, 2012). Consider which of the interventions might be right for your hospital or ways you might modify or adapt one or more of the interventions to better fit your hospital's needs.

Intervention	Advantages	Disadvantages	Notes
Prospective audit with intervention and feedback	• Proven in clinical studies to reduce and modify use of antibiotics, improve selected clinical outcomes, and decrease antimicrobial expenditures (Joint Commission Resources, 2012)	• Resource intense • Requires team member training and experience in antimicrobial therapy • Voluntary adherence by clinicians to intervention	• Requires intervention for patients already on antimicrobials • Requires ongoing review, intervention/feedback by an infectious disease physician or a clinical pharmacist with infectious disease training
Formulary restriction and pre-authorization	• Proven in clinical studies to reduce and modify use of antibiotics, improve selected clinical outcomes, and decrease antimicrobial expenditures (Joint Commission Resources, 2012) • When used with infection control interventions, effective in controlling *C. difficile* (Dellit, 2007)	• Potentially delays start of treatment • Time intensive • Perceived loss of prescriber autonomy (Joint Commission Resources, 2012) • Requires on-call infectious disease physician or other trained professional to approve use	• Requires identifying specific antimicrobial agents to be restricted • Can help control costs • Requires monitoring overall trends in antimicrobial use to assess and respond to shifts in use (Dellit, 2007)
Education	• Reaches a large number of prescribers in a short period of time (Joint Commission Resources, 2012) • Effective for communicating the need and rationale for subsequent stewardship interventions (Joint Commission Resources, 2012; Dellit, 2007)	• Marginally effective in changing prescriber practices when used alone (Dellit, 2007) • Has not demonstrated a sustained impact when used alone (Dellit, 2007) • There is rapid loss of knowledge when used alone (Joint Commission Resources, 2012)	• Can be incorporated into other meetings • Can provide consistent messaging across the organization

Intervention	Advantages	Disadvantages	Notes
Guidelines and Clinical Pathways	• Can improve antimicrobial utilization (Dellit, 2007) • Reduces variation in prescribing practices (Joint Commission Resources, 2012) • Evidence-based (Dellit, 2007) • Assists with adherence to regulatory and third-party payer stipulations (Joint Commission Resources, 2012)	• Often not utilized unless combined with other stewardship strategies or elements (Joint Commission Resources, 2012)	• Acceptance by clinicians is better when local data are used and guideline is adapted to specific hospital (Joint Commission Resources, 2012)
Streamlining or de-escalation of therapy	• More effectively targets the causative pathogen thereby reducing antimicrobial exposure • Reduces costs associated with inappropriate treatment • Can eliminate redundant combination therapy		• Requires culture results • Requires monitoring use of initial, broad-spectrum empiric therapy for opportunities for more targeted treatment
Parenteral to oral conversion ("IV to PO")	• May allow for discontinuing venous access (improved patient comfort and mobility, decreased risk for phlebitis) (Joint Commission Resources, 2012) • Cost savings (Joint Commission Resources, 2012; Dellit, 2007) • Decreased lengths of stay (Dellit, 2007)	• Belief that IV therapy justifies continued hospitalization for third-party payers (myth) (Joint Commission Resources, 2012) • May help facilitate discharges during surges in capacity (Dellit, 2007)	• Individual patient must be a good candidate for oral alternative (nutrition status, bio-availability of drug)

Feasibility of ASP Interventions Worksheet

Selection of specific interventions to implement should be tailored to areas (populations, units, drugs) with the most opportunity for improvement in your hospital. Consider several potentially-feasible interventions targeted to such areas, then assess which might be the most supported by clinical staff using the worksheet below.

Score each factor on a scale from 0 to 5 relative to conditions specific to your hospital. Sum each row across the columns for the score.

Interventions with the highest scores should be considered for selection. We've added lines for you to add your own proposed interventions.

Intervention	Positive Clinical Impact 0 = None 5 = High	Positive Financial Impact 0 = None 5 = High	Political Expediency 0 = Impossible 5 = Win/Win	Resource Requirements 0 = Impossible 5 = None	Ease of Implementation 0 = Impossible 5 = Easy	Score
Prospective audit with intervention and feedback						
Formulary restriction and pre-authorization						
Education						
Guidelines and Clinical Pathways						
Streamlining or de-escalation of therapy						
Parenteral to oral conversion ("IV to PO")						

Making Your Intervention(s) Specific

Now that you have considered the drivers of stewardship, and brainstormed interventions that may be feasible in your hospital, commit to one or more specific interventions to try.

Primary Driver	Secondary Driver	Intervention	Targeted Drug	Targeted Population	Aim
Which primary driver will your intervention leverage?	Which secondary driver will your intervention leverage?	What change will you make?	What drugs or classes of drugs will your intervention apply to?	What unit, population, clinical syndrome, or other segment will your intervention apply to?	What do you predict will happen if you successfully implement your intervention? "30% reduction in inappropriate use of carbapenems in patients with community-acquired pneumonia."

Measuring Effectiveness: Data Sources and Key Metrics

Assessing quality improvement depends on collecting appropriate data and tracking key metrics that attempt to measure the processes and outcomes associated with your ASP's interventions. To know the impact of your ASP, you must identify, in advance, what your baseline is and what changes you expect to see.

We know that about 30–50% of antibiotic use (AU) is either unnecessary or inappropriate, and that AU is closely linked to bacterial resistance and *Clostridium difficile* infections (CDI). AU, certain resistant phenotypes, and CDI are commonly tracked within hospital stewardship programs as key outcome metrics.

Facilities with electronic health records and data mining software may be able to write queries to count days of therapy (DOT) or daily defined dose (DDD) by antibiotic class and by patient location or hospital wide. Therefore you may be able to access DOT administered in the hospital or in a specific unit for a defined time period (such as per month or per quarter), and this information can be monitored and compared over time. Hospitals without electronic capabilities may need to focus on a smaller scale, for example, tracking a few high profile antibiotics by counting days of therapy by hand for one hospital service, location, or clinical syndrome.

Make sure…

- ☐ The hospital population whose metrics are being monitored is subject to the ASP intervention.
- ☐ That your intervention was adequately implemented
- ☐ Regular (monthly or quarterly) reports go to ASP team and at least annual reports to leadership or quality committee.
- ☐ To choose appropriate timeframes for comparison of before and after intervention.

For resistance and CDI data, your lab will be the primary source of information. It may be possible to query the microbiology database for cases on a monthly or quarterly basis or, in hospitals with low volumes of resistant organisms, to tally these cases by hand. Either way, you will want to know the number of non duplicate isolates and calculate a rate (non duplicate isolates/1000 patient days) for comparison as the census fluctuates. The high-profile resistant organisms to track will depend on your facility's unique circumstances and which organisms are a determined to be a problem for you, such as methicillin-resistant Staphylococcus aureus (MRSA), extended-spectrum beta-lactamases (ESBL), or carbapenem-resistant enterobacteriaceae (CRE). As a baseline, refer to your Current State Assessment completed prior to the workshop.

Make sure your selected metric closely relates to your intervention. For example, if your intervention is limited to targeting a specific drug in one hospital service, your metric should also be limited to numerator and denominator data from the same service line and drug. The goal is to monitor a population that is likely to be affected by the intervention. If you implement a change in one unit, but monitor AU, CDI and resistance hospital-wide, any change from the intervention may be obscured.

Another important step is to assess how completely your intervention is implemented. For example, if your intervention is to require documentation of dose, duration and indication for every prescribed antimicrobial at the time of order, you should monitor adherence to such a requirement. If your results show low rates of adherence, you may need to investigate the cause of the low rate: Do prescribers know they are required by policy to document the dose, duration and indication? Is there an issue in the electronic medical record preventing prescribers from documenting the information? Do prescribers simply forget to document the information and need a flag or reminder? If your intervention is not adequately implemented, you may need to devote increased resources to implementation before evaluating outcome metrics.

Collecting data for both process and outcome metrics can be resource intense. Consider what automated sources of data you have, such as reports from administrative databases and electronic health records. You might also consider developing a systematic sampling method to reduce some of the burden of manual data collection.

Seasonal fluctuations may account for some changes over time, such as *C. difficile* incidence and AU related to community-acquired pneumonia in winter and early spring. Therefore, you may need to plan to collect and assess data over a longer period of time to compare like-time periods (February this year to February next year, for example).

As every action has a reaction, it is also important to identify and measure the unintended consequences of your ASP's interventions. These metrics are known as balancing measures. For example, as you target one antibiotic for reduction, an increase in other antibiotics may result ("squeezing the balloon"). A balancing measure, therefore, may be to monitor overall utilization of all antibiotics to understand the impact of your ASP.

Finally, report interventions and metrics at least quarterly to ASP team and oversight committee, and to hospital leadership or quality committee at least annually. Adjustments to the intervention are based on what you learn from your metrics.

Data Sources and Metrics Worksheet

Consider how you will monitor and evaluate your hospital's progress toward goals. Can the data be efficiently and reliably collected and analyzed over time? Do the selected metrics reflect your stewardship program's activities and interventions?

Intervention	Metric Indicate If Process, Outcome Or Balancing Metric	Numerator	Numerator Data Source *Include Person Accountable For Providing Data*	Denominator	Denominator Data Source ***Include Person Accountable For Providing Data***	Time Period	Reported To	Frequency	Goal

Identifying and Mitigating Barriers to Success

Culture and resources are critically important to the success of implementing ASP strategies, but these components can also be the biggest barriers to hospitals getting started. Identifying potential barriers early and building mitigation strategies into the ASP plan are important activities for the future success of your ASP.

Challenges faced by an ASP are many and may include lack of C-Suite support, insurmountable upfront costs, inadequate IT or laboratory resources, physician push-back related to monitoring and restriction of antibiotic use, lack of access to infectious disease-trained pharmacist and/or physician, lack of physician champions, competing initiatives for hospital leaders and oversight committee, and fizzling of enthusiasm for sustaining momentum for ASP development and maturation.

Funding and Resources

In a survey by the Infectious Diseases Society of America (IDSA) and Emerging Infections Network (EIN), lack of funding was cited as a key barrier for ASPs (Johannsson, 2011). For example, investing in dedicated personnel time is potentially the biggest step hospital leadership can take to build a solid foundation and sustainability for the program, but doing so appears to add substantial costs. A potential mitigation strategy to address this barrier includes making sure your hospital executive is aware of the potential value of your ASP. To justify the investment, communicate a clear vision of your program, including the anticipated benefits of reducing costs associated with overuse or misuse of antimicrobials, reducing lengths of stay, and reducing costs associated with adverse drug events such as toxicity and resistant infections.

Communication and Relationships

In addition to resources, culture is an important key to successful stewardship programs. Productive relationships between the ASP team, upper leadership, prescribers, and staff are essesntial.

For example, a common misunderstanding is that the goal of an ASP is to stop clinicians from using antimicrobials. A mitigation strategy might be to help clinicians view stewardship activities as efforts to optimize use of antimicrobials to improve patient care rather than efforts to curtail physician autonomy. Transparent, ongoing communication with medical staff is essential to address common misconceptions about your ASP.

Therefore, understanding the role communication, behavior, and conflict management have on the success of a new program is important.

SWOT Analysis

SWOT (Strengths/Weaknesses/Opportunities/Threats) analysis is a tool developed in the 1960s to help organizations develop strategic plans for implementing new businesses, projects, and other ventures with potential risk. To help you plan for your ASP's success, brainstorm about the following unique characteristics of your hospital and ASP team.

STRENGTHS	WEAKNESSES
What do we do well?	Where can we improve?
OPPORTUNITIES	**THREATS**
What is occurring in our "external" environment that may create opportunity?	What is occurring in our "external" environment that we should prepare for? What unintended consequences of our ASP's actions may occur?

Barriers and Mitigation Plan

Using the SWOT analysis on the previous page, list below three or four of the most likely and/or serious barriers/threats/weaknesses identified. Using your identified strengths and opportunities in the SWOT, and other strategies, list potential ways you can proactively mitigate the barriers to improve your ASP's success.

Potential Barrier to Success	Mitigation Strategy

Planning Your Interventions and Creating Timelines for Success

Don Berwick, former executive director of the Institute for Healthcare Improvement (IHI), and—briefly—head of the Centers for Medicare and Medicaid Services (CMS) famously said, "Some is not a number. Soon is not a time." Berwick's point, of course, is that a project that lives interminably in the "planning" phase will never produce change, cannot move an organization towards improvement, and ultimately, drains time, money, and energy from those involved in the project.

> "Some is not a number. Soon is not a time."

Therefore, to jump-start a small scale project, setting realistic goals and committing to a timeline for specific events or milestones are ways to set expectations for actions and evaluate progress. The following worksheet is one tool for communicating the expectations and status of a project.

Consider one of the interventions selected for your ASP, outline the steps, actions, events, or activities required to implement the intervention, and graph the timeline required for each step. Don't get too far into the weeds; try to keep the number of steps to 10 or less.

The worksheet also allows you to assign human resources to each step of implementation and to record the goals and tangible deliverables associated with the selected intervention.

Remember this is a planning tool. Consider the sequence of each step for the timeline. Does one step depend on completion of another step? Can more than one step occur simultaneously? Are the human resource needs well-balanced across the team, or if steps depend on just a few people, is the timeline and sequence of events appropriate with regard to workload and available resources?

Once you have completed the project plan for your first intervention, use a new, blank tool to develop a plan for implementing your second intervention.

Making Your Timeline and Plan Visible

Antimicrobial Stewardship Implementation Plan

Intervention: IV to PO Conversion

Primary Driver

- [ ] Ensure timely and appropriate initiation of antibiotics
- [X] Ensure appropriate administration and de-escalation of antibiotics
- [ ] Monitor data, improve transparency, embed stewardship

Owner: Dr. Mike Adams

Target Implementation Date: June 27, 20

DO — *List the major tasks for implementing the selected intervention*	Weeks 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	A = Primary accountable person, B = Secondary accountable person: Mike Adams, MD	Cheryl Barnes, RPh	Tom Harris, MD, CMO	Van Nguyen, IT/HER	Carol James, MD, P&T Chair
1. Develop draft IV:PO policy	X	X		X																							B	A			
2. Seek policy approval from P&T			X				X																				A	B			B
3. Communicate goals and benefits to leadership			X																								A	B	B		
4. Establish method of finding candidate patients for conversion	X	X	X	X	X	X																						A		B	
5. Educate/communicate changes and expectations to prescribers								X	X																		A	B	B		
6. Implement daily review and feedback										X	X	X	X	X	X												B	A			
7. Evaluate effectiveness of intervention											X	X	X	X	X	X	X				X				X		A	B			
8. Report metrics																		X				X				X					
9.																															
10.																															
Date Month/Day	Mar 21	Mar 28	Apr 4	Apr 11	Apr 18	Apr 25	May 2	May 9	May 16	May 23	May 30	Jun 6	Jun 13	Jun 20	Jun 27	Jul 4	Jul 11	Jul 18	Jul 25	Aug 1	Aug 8	Aug 15	Aug 22	Aug 29	Sep 5	Sept 12					

TRACK *(Metrics to measure effectiveness of intervention)*

	BASELINE	YEAR 1 GOAL
# of conversions/# of recommendations for conversion	--	50%
Pre/post days of IV therapy (targeted drugs)	375 per 1000 pt days	-20%

DELIVER *(Tangible products of implementation)*

- IV-to-PO Conversion Policy
- Daily Electronic Report of IV-to-PO Candidates

Accountable Personnel

Making the Business Case for Your Stewardship Program

As stated previously, it's virtually impossible to implement and sustain an ASP without a commitment from hospital leadership indicating their support for the program and for monitoring antimicrobial use. So how do you convince your C-suite to fund and support even a small-scale ASP, which may include paying for a physician champion, changing the role of pharmacists, informing prescribers that their orders may be monitored, and devoting other resources to the effort?

Start small, and show them the money!

Although the primary goals of an ASP are improvements in patient-related outcomes, your ASP can also result in substantial cost-savings (or cost-avoidance) for your hospital. Although there is currently no validated method of documenting the savings generated by an ASP, the following worksheets and methods may assist in making a "business case" for an ASP (Greater New York Hospital Association United Hospital Fund, 2011).

Calculation of anticipated savings may be based on current use and practices and estimates of the impact of proposed interventions. Such calculations may be useful in gaining support for your proposed ASP. Some examples to consider based on specific interventions:

Calculating Cost Savings

ASP Interventions

- Conversion of IV to PO Therapy
- Restriction of High-Cost Antibiotics
- Reduction in Overall Use

Estimating Cost Avoidance

Improved Patient Outcomes

- Decreased length of stay
- Decreased incidence of *C. difficile*
- Decreased antibiotic resistance
- Decreased incidence of toxicity

The positive financial impact of some of your ASP's outcomes may not be calculable at this time. However, don't overlook these important consequences when making your business case. For example, being a recognized leader in antimicrobial stewardship in your community may not directly translate into cost savings or cost avoidance, but may improve your hospital's reputation.

Intravenous to Oral (IV to PO) Conversion Cost Savings Worksheet

Conversion therapy has several advantages. Studies have demonstrated that oral therapy can be as effective as parenterally administered antimicrobials in the treatment of infections ranging from mild to moderate to severe. Oral antimicrobials are easier to administer than IV preparations, require less time to prepare, and often improve patient comfort, mobility, and independence, while reducing adverse outcomes such as line infections and phlebitis, all of which can result in a shorter hospital stay. Additionally, oral antimicrobials are often less expensive than parenteral agents (Wetzstein, 2000).

IV Dose (mg)	IV Frequency ("every x hours")	Cost per IV Dose	IV Doses per Day	IV Cost per Day	Total IV Days of Therapy in 2015	PO Dose (mg)	PO Frequency ("every x hours")	PO Cost per Dose	PO Doses per Day	PO Cost per Day	Cost Difference per Day (IV:PO)	Target Conversion Days	Potential Cost Savings per Year
A	B	C	D (24/B)	E (C x D)	F	G	H	I	J	K (I x J)	L (E – K)	M (% x F)	N (L x M)
Antibiotic: Levofloxacin						Antibiotic: Levofloxacin						25%	
500	24	$39.60	1	$39.60	175	500	24	$8.10	1	$8.10	$31.50	44	$1,386.00
Antibiotic:						Antibiotic:						%	
Antibiotic:						Antibiotic:						%	
Antibiotic:						Antibiotic:						%	
Antibiotic:						Antibiotic:						%	
Antibiotic:						Antibiotic:						%	
Antibiotic:						Antibiotic:						%	

Anticipated Annual Cost Savings	**Sum:**	

Estimating Savings from Restricting High-Cost Antimicrobials

Clinical practice guidelines for common clinical syndromes can help providers make effective and economical choices regarding antimicrobial prescribing. Other interventions, such as formulary restriction and prior authorization, which result in decreased use of high-cost antimicrobials with preferential use of similarly effective but less expensive agents can lead to substantial savings. These high-cost antimicrobials include many antifungal agents, new agents for treating resistant gram-positive organisms (e.g., daptomycin), and some broad-spectrum antimicrobials. Assessments of historical data regarding the appropriateness of using these agents can allow for estimates of the cost savings that would be anticipated with the introduction of an ASP. Actual cost savings can be calculated following the introduction of the intervention(s) (Greater New York Hospital Association United Hospital Fund, 2011).

Use the Current State Assessment or other data to perform the following steps:

1. Identify the most common clinical infectious syndromes treated in your facility. This group may include such conditions as community acquired pneumonia, urinary tract infection, fever, sepsis, cellulitis, and bacterial meningitis, among others.

2. Review 12 months of hospital admissions for each diagnosis, and identify the range of antibiotics used, as well as typical routes and durations.

3. Identify the most appropriate treatment regime, including medication(s), route, frequency, and duration, and calculate the anticipated cost per day.

4. Identify one of the more expensive regimes including medication(s), route, frequency, and duration, and calculate the cost per day.

5. Subtract 3 from 4 to get an estimate of potential cost savings per day from guiding providers towards appropriate prescribing. (A)

6. Determine the usual duration of inpatient hospitalization for this condition (B), the total number of such admissions per year (C), and the proportion of such admissions in which the high cost antibiotics are used (D).

7. Multiply the number in 5 (A=cost savings per day) by the numbers in 6: number of days of an average inpatient treatment course for this condition (B), number of such hospitalizations per year (C), by the proportion of such admissions in which the high cost antibiotics are used (D).

8. This is your estimated cost savings per year if prescribers choosing the high cost antibiotic regime were guided to use equally effective but more economical antibiotics.

9. Repeat these steps for each of the common infectious conditions you have identified.

Reduction in Overall Use of Antimicrobials Worksheet

Some ASPs have reported substantial reductions in facility-wide use of antimicrobial agents. The amount of antibiotics used over time (including periods before and after introduction of the ASP) can be monitored. This monitoring may include all antimicrobial agents or a select group of antimicrobial agents, such as the most commonly used, broad-spectrum agents. There are some difficulties, however, in calculating and comparing the costs of or expenditures for antimicrobial agents over time. For example, costs of an individual agent may change over time for a variety of reasons (e.g., a medication becomes available in a generic form, a manufacturer "bundles" multiple drugs together in a contract resulting in increased or decreased costs of some of these or other drugs). Thus, antibiotic expenditures may not be directly correlated with the amount of antibiotic used. (Greater New York Hospital Association United Hospital Fund, 2011).

Track antibiotics by class, measuring days of therapy, defined daily dose, or total costs per patient day. To get a more accurate measurement of actual use, if possible, measure antibiotics administered rather than antibiotics ordered or purchased. Since antibiotic utilization may fluctuate seasonally, it is most accurate to compare use by month, or by quarter, from year to year to identify trends. For example, as an ASP program is being set up, begin to identify where you can access utilization data for about 6-12 months. This may be for one ward or unit or facility-wide. Plot antibiotic use over time on a bar graph. After an intervention is implemented, continue to measure use. When able, look at the changes that occur after the intervention starts, but particularly comparing use in a particular month or quarter from one year to the next. Since it is common that as one antibiotic is restricted, another may be used in its place (this is called "squeezing the balloon"), it is important to look at use of all classes of antibiotics.

For each class of antibiotic, calculate the days of therapy (DOT), defined daily dose (DDD), or pharmacy costs each month.

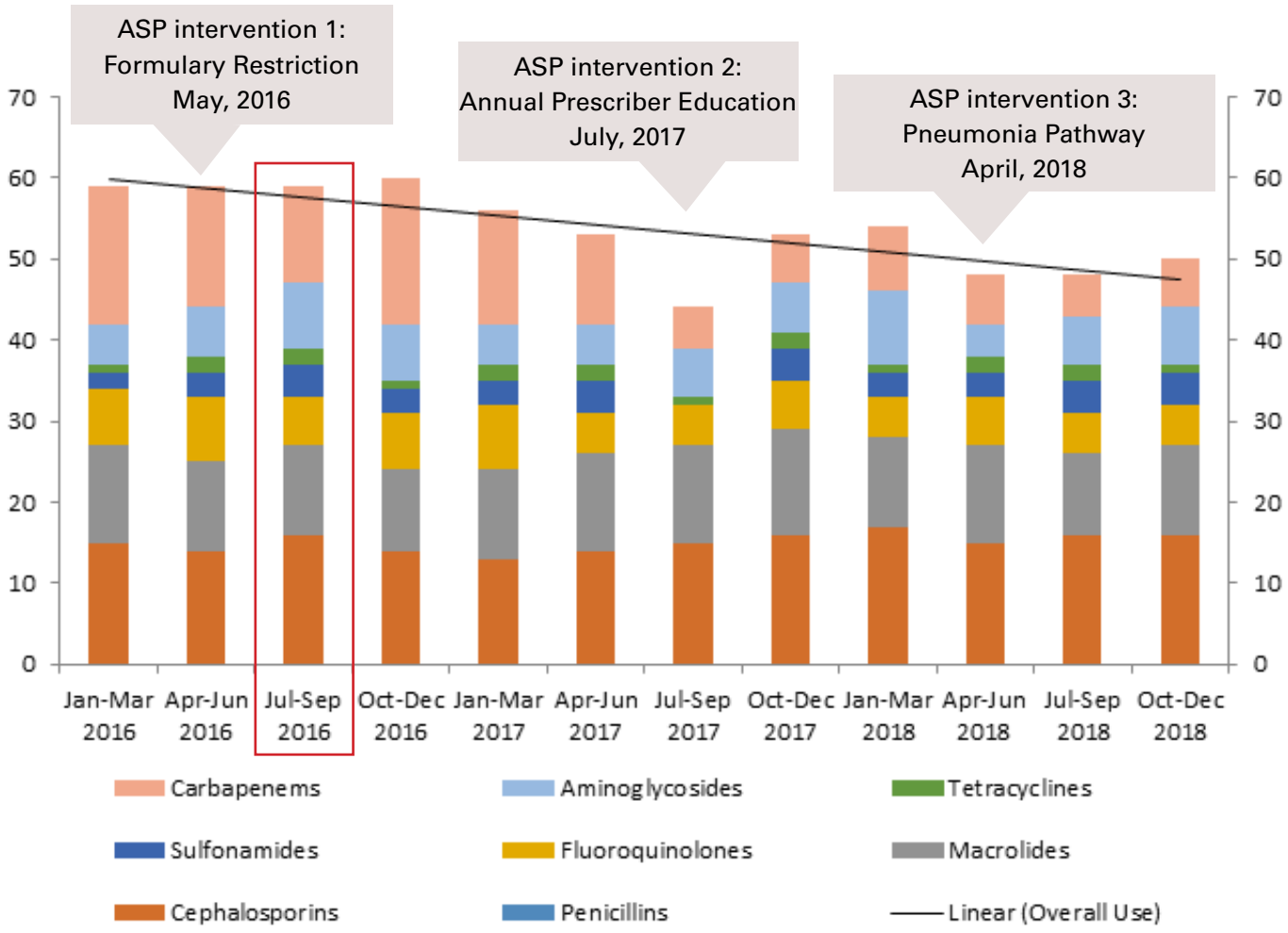
Antibiotic Class	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
Penicillins													
Cephalosporins													
Macrolides													
Fluoroquinolones													
Sulfonamides													
Tetracyclines													
Aminoglycosides													
Carbapenems													
Vancomycin													

Monitoring Overall Use of Antimicrobials

Here is an example of one way to measure overall antibiotic use, while monitoring "squeezing the balloon" phenomenon. Over time, the graph shows a reduction in overall days of therapy per 1000 patient days, indicating a potential reduction in overall costs.

However, note in the Jul–Sep 2016 bar (highlighted in red) the decrease in carbapenems with an increase in cephalosporins and aminoglycosides, resulting in no change in overall antibiotic utilization compared to previous months ("squeezing the balloon").

Days of Antibiotic Therapy per 1000 Patient Days



Business Case Calculations

Using a very simple worksheet, calculate the estimated business case for your ASP.

	Anticipated Costs	Anticipated Savings	Balance
Human Resources			
Physician Leader Anticipated hours per week: _____ x Hourly salary: _____ x 52 weeks			
Clinical Pharmacist Anticipated hours per week: _____ x Hourly salary: _____ x 52 weeks			
Other ASP Member Anticipated hours per week: _____ x Hourly salary: _____ x 52 weeks			
Other ASP Member Anticipated hours per week: _____ x Hourly salary: _____ x 52 weeks			
Non-Human Resources			
Supplies			
Space			
Training			
IT support			
Annual education			
Other			
Asp Interventions			
Anticipated savings from intervention 1			
Anticipated savings from intervention 2			
Anticipated savings from intervention 3			
Sum:			

Putting It All Together: Project Charter and Strategic Plan

Now that you've selected one or more interventions, considered how you will measure your success, and outlined the critical steps required to implement one or more of your interventions, the final step is to create a basic ASP charter and strategic plan.

The ASP Charter is a document used to facilitate communication about your new ASP to hospital leaders, staff, and prescribers. The charter states, in writing, your hospital's commitment to work toward achieving the ASP's aim of promoting optimal, judicious use of antimicrobials. Additionally, the charter provides readers with background information and purpose of the ASP, a summary of the business case and anticipated financial impact of the ASP, the activities and interventions the ASP will undertake, the composition and reporting structure of the ASP team, and the ASP's goals, metrics, and milestones.

The example that follows is a simple, fill-in-the-blank template you may use to create an ASP charter and strategic plan. Some sample language has been included for you, but you are welcome to tailor or customize the information to reflect your hospital's unique ASP structure, activities, and goals.

After completing the ASP charter, present your ASP to your hospital's executive and medical leadership for input and feedback. The tools and worksheets you have completed to this point may be used to provide more details of your plan. A critical step in developing an ASP is getting your hospital leaders—especially those with the power to provide financial resources to support your ASP—to agree to your plan and sign the charter as a symbol of their commitment to achieving the ASP aim.

Once you have your leader's support, get started working your plan—adjusting as needed to achieve your goals, milestones, and aim.

Congratulations! You have jump-started a feasible, small-scale ASP.

In time, build on the success of your first, small-scale ASP by expanding the focus of the interventions, adding new interventions, and building more capacity into your team. Done thoughtfully, within a few years, you will have a comprehensive, robust antimicrobial stewardship program to be proud of.

Antimicrobial Stewardship Program (ASP) Charter and Strategic Plan

Hospital Name_____

Program Start Date		**Proposed Date For Program Evaluation And Charter Update**	

Background and Purpose	Antibiotic resistance is a significant and progressively worsening problem at healthcare facilities around the world. This fact, combined with the lack of new antimicrobial agents in the drug development pipeline, indicates that optimized, judicious antimicrobial management is necessary to preserve the antibiotics currently available. Such management has been shown to improve patient outcomes significantly by optimizing dosing for individual patients, reducing toxicity, reducing potential development of resistant infections, and decreasing medication costs, while potentially preserving the therapeutic effectiveness of antimicrobials for populations. Therefore, our hospital commits to implementing a stewardship program to improve appropriate and judicious use of antibiotics. This charter provides an initial framework for our strategic approach to this aim and establishes accountability for the ASP's activities and outcomes.
ASP Aim and Summary of Business Case	Our ASP aims to achieve safe, effective, and efficient patient care, while reducing adverse effects of inappropriate antimicrobial use—including resistant infections and escalated drug costs—and improving satisfaction of our key stakeholders. The anticipated financial impact of the ASP in its first year is a [cost | savings] of $_____, after accounting for human and non-human resources required for effective implementation of the program. In addition to the financial impact, the program expects the following results: 1. 2. 3.
Guiding Principles and Strategies	The ASP's strategic, guiding principles for achieving our aim include: 1. Promoting a culture of optimal antibiotic use through dedicated hospital and ASP leadership and positive culture change 2. Ensuring timely and appropriate initiation of antibiotics for recipients of care 3. Ensuring appropriate administration and de-escalation of therapy for recipients of care 4. Monitoring data for ASP effectiveness, ASP evaluation, and ASP-associated patient outcomes 5. Promoting a culture of transparency, reporting, and open communication

ASP ACTIVITIES	To achieve the ASP aim, the following specific actions, activity, or interventions will be implemented. Additional interventions may be implemented, in time, as quantitative and qualitative data support such changes.	**Implementation Target Date**
	1. Annual prescriber and staff education about the need for stewardship and effective interventions for optimizing antimicrobial use	
	2.	
	3.	

ASP Team Members	Name	Key Responsibilities	Dedicated ASP Hours Per Week
Physician Lead			
Pharmacist			
Infection Preventionist			
Hospital Leader			

Oversight Committee	Reporting Frequency	ASP Executive Sponsor

ASP Milestones	Description	Target Date

Communication Plan	Frequency	Responsible Lead/ Team Member	Topic
ASP Team Meetings			Operations and daily management issues
Oversight Committee			Approvals, progress on goals

Metrics/Measures	Type Of Measure (Process, Outcome Or Balancing)	Frequency	Goals	Other Data Tracked Or Monitored

Approval	Name	Title/Role/ Function	Date	Signature
Author				
Approved		Hospital Executive		

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This material was prepared by Qualis Health, the Medicare Quality Innovation Network - Quality Improvement Organization (QIN-QIO) for Idaho and Washington, under contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services. The contents presented do not necessarily reflect CMS policy. WA-C1-QH-2227-03-16

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