



Improving Patient Care Through a Collaborative and Innovative Antimicrobial Stewardship Program

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Authors of this presentation have the following to disclose concerning possible financial or personal relationships with commercial entities that may have direct or indirect interest in the subject matter of this presentation:

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Introduction

Health-Care Facility

- Providence St. Vincent Medical Center
 - One of 8 hospitals in the Oregon Region of Providence Health Services
 - > 500-bed acute care tertiary medical center
 - includes 44 critical care beds/16 intensive care unit (ICU) beds
 - > 157,000 patient days/year; average length of stay 4 days
 - Pharmacy department: approximately 80 full time equivalents (fte)
 - equally split pharmacists/technicians

Background

- Widespread use of antimicrobial agents is an important public health issue
- Over 1/2 of all hospitalized patients receive antibiotics
- Up to 50% of antimicrobial use reported as inappropriate
- Inappropriate use contributes to increased
 - Patient morbidity and mortality
 - Adverse drug reactions
 - Emergence of multidrug-resistant organisms (MDRO)
 - Emergence of healthcare-associated infections (HAI)
 - Healthcare costs

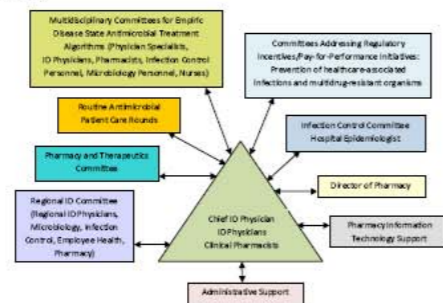
Purpose

- Describe more than a decade of experience and evolution of an antimicrobial stewardship program
- Antimicrobial Monitoring Service (AMS) was established in 1997 to promote appropriate, cost-effective antimicrobial use
- AMS incorporates
 - Traditional elements of antimicrobial stewardship
 - Innovative roles in regulatory initiatives driving collaborative efforts to improve antimicrobial use

Description of the Program

Structure

- Multifaceted, multidisciplinary approach
- Team members include
 - Infectious Disease (ID) physicians
 - Pharmacists
 - Infection Control personnel
 - Microbiology personnel
 - Physician specialists
 - Nurses



Description of the Program (continued)

Evolution

Intervention Strategies

	Approach	Examples/Comments
Phase I	Patient Rounds	Education, de-escalation, i.v. to p.o. conversion, dose optimization
	Links to Institutional Committees	Pharmacy and Therapeutics, Infection Control, Regional Infectious Diseases
	Guidelines for Target Antimicrobials and Agents for Treatment of Sepsis	Impipenem/cilastatin, linezolid, vancomycin, daptomycin, posaconazole, drotrecogin alfa
Phase II	Empiric Disease-state Treatment Algorithms for High-Risk Patients	Emergency Department: community-acquired pneumonia, cellulitis, cellulitis with abscess, uncomplicated urinary tract infection, uncomplicated pyelonephritis Intensive Care Unit: community-acquired pneumonia, nosocomial pneumonia, bacterial meningitis, intra-abdominal infection, cellulitis with sepsis, sepsis
	Restrictive Criteria for Target Antimicrobials	Tigecycline, ertapenem, duration of antibiotic post-operative prophylaxis
	Surgical Antibiotic Prophylaxis Protocol	Promote the right antibiotic, at the right time, for the right duration
	Regional Subcommittee for Prevention of HAI	Assist with educational efforts and compliance with Joint Commission National Patient Safety Goal #7
	Regional MDRO Committee	Plan to expand antimicrobial stewardship to Regional hospitals

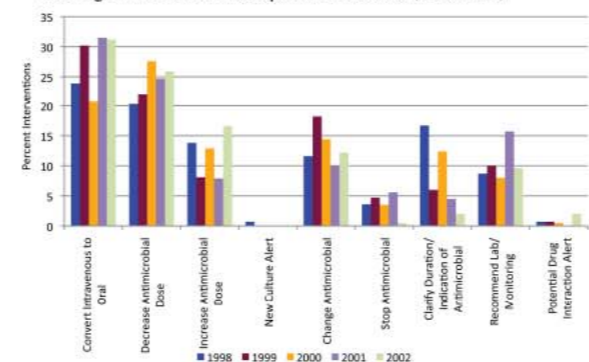
Adapting AMS Structure

Phase I: Initial AMS Structure	Phase II: Expanded AMS Structure
<ul style="list-style-type: none"> Decentralized pharmacists <ul style="list-style-type: none"> order entry, first dose distribution, clinical activities Written intervention notes, retrospective chart review to track intervention outcome 1/2 fte clinical pharmacist dedicated to Infectious Diseases 	<ul style="list-style-type: none"> Centralized pharmacy distribution Clinical pharmacists participating in daily AMS activities Implementation of computerized systems for standardized intervention documentation (Sentri 7™ and Quantifi™) Expanded involvement in pay-for-performance initiatives related to prevention of HAI

Experience with the Program

Phase I

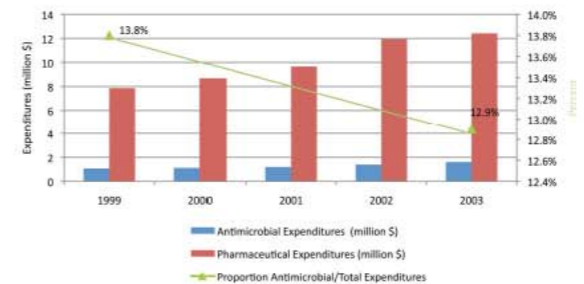
- Prospective Audit/Patient Rounds: 783 interventions over 5 years (1998–2002)
- Average intervention acceptance rate 77% (73%–80%)



Experience with the Program (continued)

Pharmaceutical Expenditures

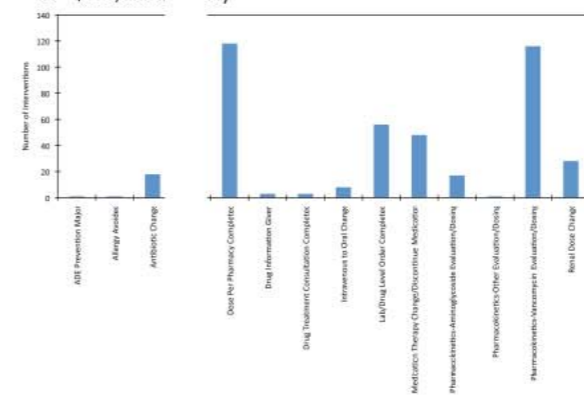
- Despite multiple drivers for increased antimicrobial costs over time, antimicrobial expenditures declined as a proportion of total pharmaceutical expenditures



- Drivers for increased antimicrobial expenditures
 - Increased complexity and severity of patient illness
 - Antimicrobial resistance
 - Cost of antimicrobial agents for treatment of resistant organisms compared with agents for treatment of susceptible organisms

Phase II

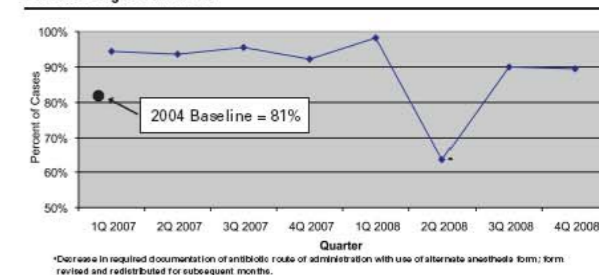
- 437 Interventive cost avoidance opportunities identified, resulting in \$51,395 combined direct cost savings and \$109,831 combined indirect cost savings and cost avoidance (8/31/09)
- Extrapolated cost avoidance of ~\$300,000 annually



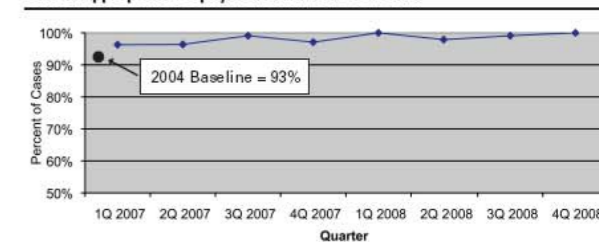
- Pay-for-performance opportunities identified
 - An adult Surgical Care Improvement Project (SCIP) initiative pertaining to HAI offered to promote antimicrobial use

Antibiotic Protocol was developed to reduce antimicrobial use with Surgical Care Improvement Project (SCIP) measures

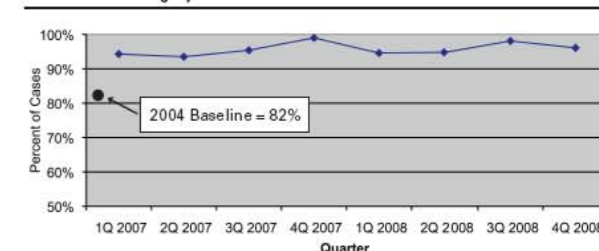
SCIP 1: Prophylactic Antibiotic Received Within 1 hour Prior to Surgical Incision



SCIP 2: Appropriate Prophylactic Antibiotic Selection



SCIP 3: Prophylactic Antibiotics Discontinued Within 24 Hours After Surgery End Time



- Current rates of compliance translate annually into an estimated additional
 - 2200 cases receiving timely antibiotic prophylaxis
 - 1800 cases receiving appropriate antimicrobial selection
 - 3600 cases receiving timely discontinuation of perioperative antibiotic prophylaxis

Discussion/Conclusion

- Antimicrobial stewardship presents opportunities for pharmacists to be actively involved in multidisciplinary efforts to impact patient care through improving antimicrobial use
- Antimicrobial stewardship is an evolving practice in a rapidly changing healthcare environment
- Involvement of bedside practitioners, standardized intervention documentation, and participation in initiatives pertaining to HAI expanded the impact of the AMS
- The AMS described in this report reflects a multifaceted approach, incorporating both traditional antimicrobial stewardship interventions and innovative roles developed in response to a changing regulatory environment and evolving patient needs