Antimicrobial Stewardship Program (ASP) Survey, 2015, Arizona

Overview

Antimicrobial stewardship programs (ASPs) at Arizona hospitals have been expanding since 2011. Highlights and areas of growth have been identified from this 2015 survey of infectious diseases physicians.

Highlights

Between 2011 and 2015:

- Antimicrobial stewardship-based recommendations increased.
- Antibiotic prescriptions have been controlled more stringently.
- Recommendations provided by hospital ASP teams increased substantially in 5 of 7 categories.
- The number and diversity of stakeholders in ASPs increased.

Challenges

- Insufficient education to prescribers about antimicrobial resistance and antibiograms
- Less antibiotic monitoring through ASPs
- Intravenous to oral conversion frequently recommended, but infrequently practiced

Introduction

Antimicrobial Stewardship Programs (ASPs) ensure patient safety through encouraging judicious use of antimicrobials, including avoiding such agents when they are not clinically indicated or when infection has resolved. The main objectives of ASPs are that every patient receives an antimicrobial agent only when one is needed, and that the right agent is used at the right dose, by the right route, and for the right duration.

Multi-drug resistant organisms (MDROs), such as MRSA (methicillin-resistant *Staphylococcus aureus*) and VRE (vancomycin-resistant *Enterococcus spp*), and emerging pathogens including *Clostridium difficile* and carbapenem-resistant Enterobacteriaceae (CRE), have become serious public health concerns and are impacted by antimicrobial use.[1] Antibiotic resistance causes more than 2 million illnesses and at least 23,000 deaths each year in the U.S.[2] Fueling this threat is unnecessary antibiotic prescriptions; between 2007 and 2014, unnecessary or inappropriate antibiotics were prescribed 20-50% of the time at hospitals in the U.S.[3] Reducing unnecessary antibiotic use and preventing infections could save 37,000 lives over the next 5 years nationally.[2]

The Arizona Healthcare-Associated Infections (HAI) Advisory Committee, in collaboration with the HAI Program at the Arizona Department of Health Services (ADHS), has identified the need to describe Arizona's ASPs, list the activities they are performing, and identify gaps and needs. This effort was led by our Antimicrobial Stewardship Subcommittee which is comprised of infectious disease (ID) physicians, pharmacists, and other subject matter experts who encourage and embrace prudent antibiotic use at their facilities.[4]

Methods

The Arizona ASP survey was based on an ASP survey administered by the Minnesota Department of Health. Questions targeted attitudes and practices regarding ASPs and antimicrobial resistance at hospitals in Arizona.

In 2011, the original survey was sent to Arizona pharmacists through an email listserv. On March 7, 2015, an expanded version of the 2011 survey was administered to 36 ID physicians at the Arizona Infectious Diseases Society (ARIDS) conference.

1. Huttner A, Harbarth S, Carlet J, et al. Antimicrobial resistance: a global view from the 2013 World Healthcare-Associated Infections Forum. Antimicrobial resistance and infection control. Nov 18 2013;2(1):31.
2. CDC. Making Health Care Safer. Retrieved August 25, 2015, from http://www.cdc.gov/vitalsigns/stop-spread/index.html
3. CDC. Core elements of hospital antibiotic stewardship programs (2015, May 7). Retrieved August 13, 2015, from http://www.cdc.gov/getsmart/healthcare/implementation/core-elements.html
4. ADHS Antimicrobial stewardship (n.d.). Retrieved August 13, 2015, from http://www.azdhs.gov/phs/oids/hai/advisory-committee/documents/antimicrobial-stewardship/ASP-AZ-part2.pdf

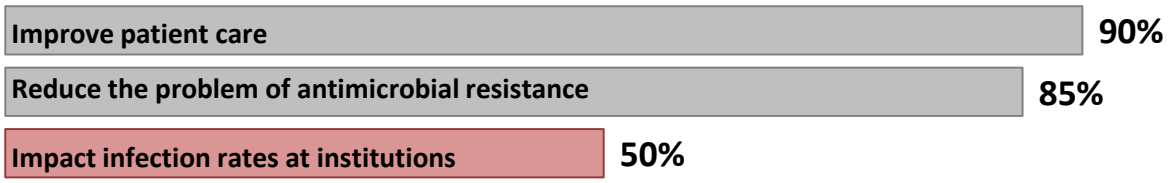
Results

Antimicrobial stewardship programs (ASPs) were reported at 90% of surveyed hospitals in 2015 (N=20) and 69% in 2011 (N=54). In order to continue receiving support from administrators for ASPs, ID physicians were especially interested in various HAI data, indicating ID physicians may use such data to track and justify their respective ASPs. The types of requested data include the following:

- Reduction in *Clostridium difficile* and other pathogens associated with HAIs
- Improvement of patient outcomes (e.g. reduced patient mortality, reduced length of stay)
- Reduction in re-admissions

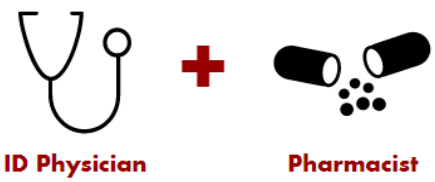
Monetary compensation has also been identified as an integral part of a successful ASP program: 75% of ID physicians report receiving compensation as ASP physician champions.

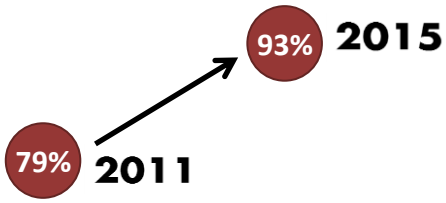
50% of ID physicians feel that ASPs impact infection rates at their institution.



More ASPs report having a core team consisting of at least an ID physician and pharmacist.

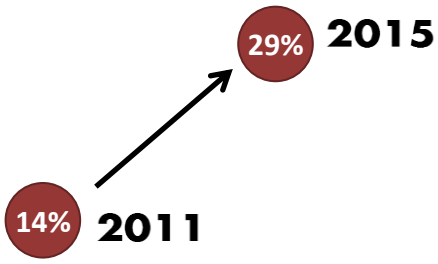
This complies with the new ASP model guidance for a successful ASP program.





More ASPs report having a robust* team consisting of a diverse group of professionals.

Still, less than a third of ASPs report having a robust* team in 2015.



*A robust team consists of an ID physician, pharmacist, and 4 or 5 more staff.

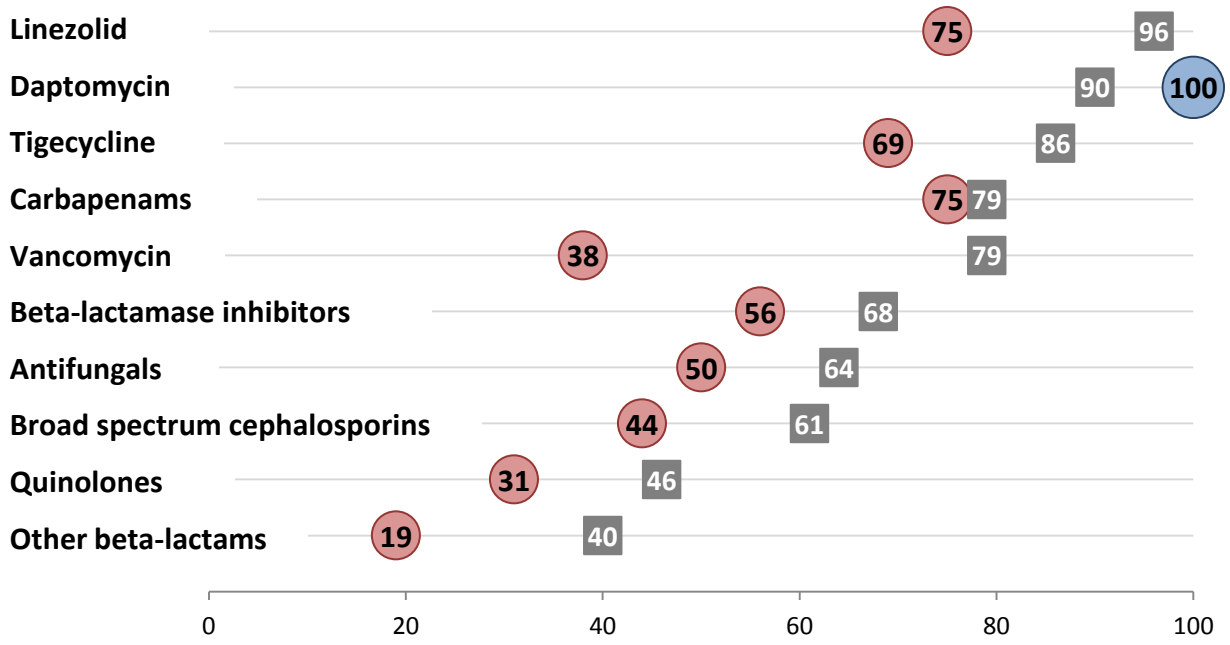
More ASP best practices were recommended by ASPs in 2015.

However, optimizing antibiotic dosages and converting from IVs to PO antibiotics were less frequently recommended in 2015.

ASP recommendation	2011	2015	Percent change
Changing duration of therapy	55%	81%	↑ 27%
Changing therapy empirically	30%	44%	↑ 13%
Eliminate redundant therapy	82%	94%	↑ 12%
Changing therapy on basis of C&S results	85%	94%	↑ 8%
Discontinue therapy with infection resolution	61%	69%	↑ 8%
Optimize antibiotic dosage	82%	81%	↓ -1%
Convert IV to PO antibiotic	85%	81%	↓ -4%

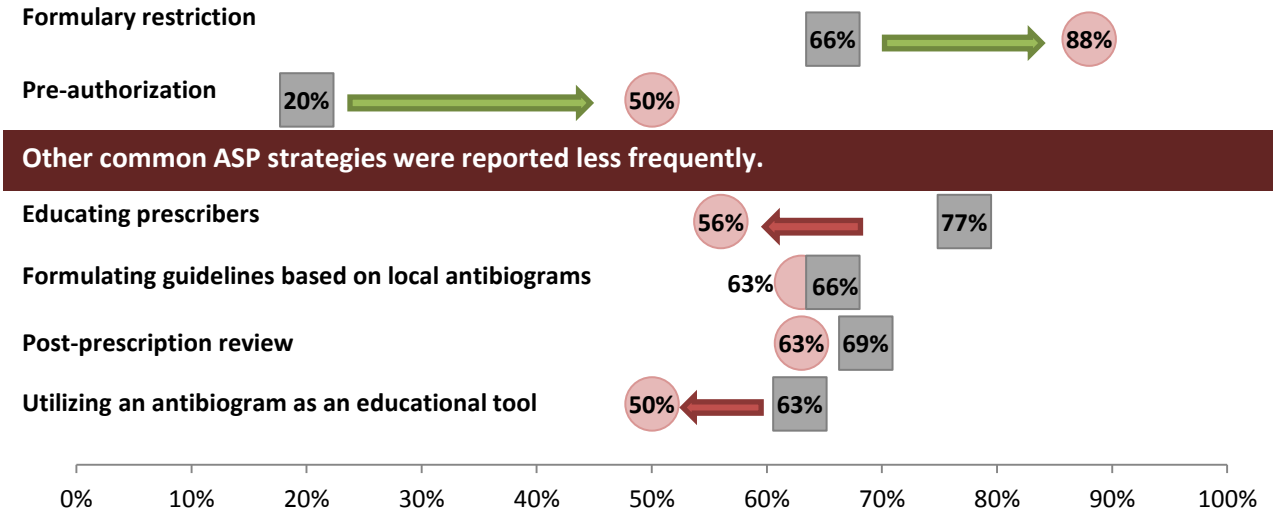
35% of ID physicians felt that their hospitals commonly switch from intravenous antibiotics (IV) to an oral equivalent (PO) by the third day following hospital admission even though ASPs commonly recommend this practice.

ASP antibiotic monitoring decreased from 2011 to 2015 for all antibiotics except Daptomycin.



90% of surveyed Arizona ID physicians reported that **more education on antimicrobial prescribing is needed,** especially the relationship between overuse and selection of multi-drug resistant organisms (MDROs). 50% of ID physicians agree that hospitals provide adequate education regarding MDROs, while 15% stated they were not sure and 35% feel that hospitals do not provide adequate staff education.

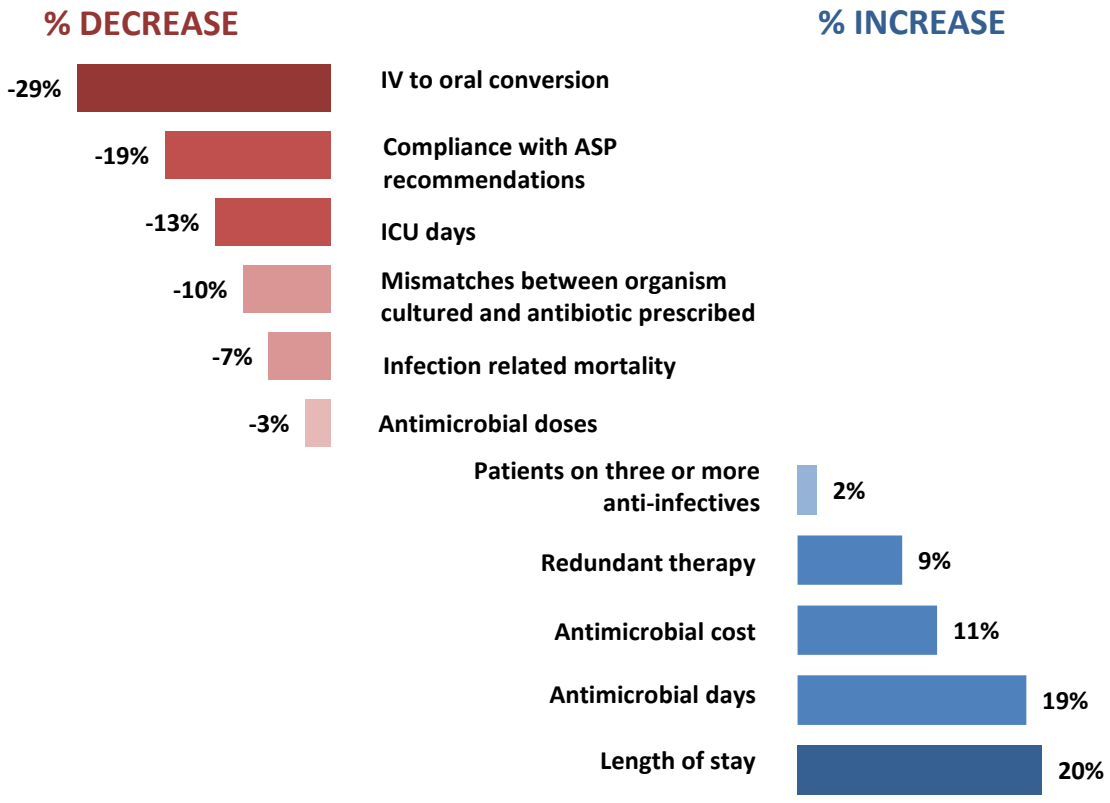
Two common ASP primary strategies increased from ■ 2011 to ● 2015: formulary restriction and pre-authorization.



Other common ASP strategies were reported less frequently.

Some important endpoints (activities and outcomes) for ASPs were monitored less frequently in 2015 compared to 2011.

This includes IV to oral conversion, compliance with ASP recommendations, and mismatches between organism cultured and antibiotic prescribed.



Education on Antimicrobial Use

ID physicians identified the following top antimicrobial education gaps for non-ID physicians:

- Use of rapid diagnostics to guide antimicrobial therapy
- Evidence based treatment guidelines
- Differentiate colonization from infection
- Laboratory testing recommendations (general)
- Therapeutic interchange (substitution of a non-preferred drug by a pharmacist with a preferred drug that is a therapeutic alternative or equivalent, with the endorsing provider's permission)
- Antibiogram development

Limitations

- 20 ID physicians took the survey in 2015 (56% participation rate).
- Comparison of 2011 vs. 2015 data might reflect differences in survey respondents, namely comparing responses between pharmacists and physicians.

Conclusion

Survey instruments can provide insight into barriers and unmet needs within antimicrobial stewardship programs. While it is important to identify sample differences between 2011 and 2015 (i.e. different set of clinician type), this ASP survey reveals issues in need of attention in Arizona.

While the percent of institutions with active ASPs has increased to 90% and interventions have overall increased, only half of respondents are confident that ASPs impact HAI infection rates despite an increase in interventions. As diversity of these teams have expanded, ASP monitoring of specific antimicrobials has largely decreased, which has been accompanied by a decrease in other ASP activities, most notably IV to oral conversion. This may not signal a collapse of ASPs, as previous program activities may have become incorporated into other processes, such as EMR alerts, multidisciplinary educational venues, ongoing campaigns, and implementation of pathways which help guide appropriate antibiotic use. Whether or not ASP activity has truly increased, decreased, or been refocused requires further investigation.
Future considerations can focus on areas that infectious diseases specialists feel are lacking within their institutions as these could pose as educational opportunities for the stewardship team. Especially important deficits include differentiating colonization from infection, incorporation of guidelines into clinical practice, and antibiogram development and interpretation.

Importantly, antimicrobial days of therapy and length of stay have witnessed increased attention likely as a result of waning hospital reimbursement and implementation of computer decision support systems. There are many studies which link these two outcomes–increased antibiotic exposure and length of stay are associated with higher rates of HAIs caused by multidrug-resistant pathogens. Penalties are mounting from Medicare and commercial insurers.

Next steps

- Review findings with Arizona's HAI Advisory Committee and ASP subcommittee
- Distribute summary results to stakeholders and the public
- Develop resources and guidance
- Analyze and provide HAI data to ID physicians in order to continue receiving support from administrators for ASPs
- Discuss education objectives for consideration of future program development