

Antimicrobial Stewardship Programs (ASP) in Minnesota Hospitals

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Abstract

Background: Antimicrobial resistance is a major public health threat. Antimicrobial stewardship programs (ASP) aim to limit resistant infections, improve patient safety, and reduce healthcare costs. We assessed ASP in MN hospitals. **Methods:** An electronic survey was sent to infection preventionists (IP) in February 2013. Hospitals were categorized as critical access (CAH; < 25 beds) or other acute care hospital. **Results:** 50% (66/133) responded: 36/76 (47%) CAH; 30/57 (53%) others. 19% (7/36) CAH and 70% (21/30) others reported an ASP. Of responding hospitals, 100% (7/7) with > 400 beds; 100% (4/4) with 200-399 beds; and 55% (11/20) with 26-199 beds had an ASP. Of hospitals with no ASP, 87% (33/38) indicated interest in one; reasons for not having one were lack of resources (37%), clinician support (24%), or administrative support (11%); and time constraints/competing priorities. Identified needs included protocols and order sets; educational materials for physicians, nurses, pharmacists, and patients. Of hospitals with ASPs, 61% (17/28) targeted specific antimicrobials; 25% (7/28) targeted specific pathogens; 32% (9/28) targeted syndromes. 39% (11/28; all non-CAH) with ASP had evaluated their ASP through antimicrobial utilization, antibiograms, provider feedback, and/or infection rates. ASP committees varied: 89% (25/28) included a pharmacist, 71% (20/28) a physician, 61% (17/28) an IP, and 39% (11/28) a microbiologist. 56% (14/25) of pharmacists, 70% (14/20) of physicians, 53% of IPs and 36% of microbiologists were compensated for time spent on ASP. **Conclusions:** Despite guidelines issued 15 years ago, not all MN hospitals have ASP, especially smaller ones. Lack of resources and clinician support were common explanations, although almost all indicated an interest in ASP. Among hospitals with ASP, some but not all had developed methods to evaluate their ASP. ASP generally included a pharmacist, physician and often IP, but not all programs compensated staff. In response to the needs of hospitals, a MN ASP steering group has been working on protocols and tools for establishing ASP, including attention to small hospitals, and suggestions for evaluation and improvement for facilities that already have ASP.

Background

- Antimicrobial resistance is a major public health threat
- Antimicrobial stewardship was labeled as one of the top healthcare messages for health-care workers and consumers in 2010
- Antimicrobial stewardship programs (ASP) aim to limit resistant infections, improve patient safety, and reduce healthcare costs.

Objective

- To assess ASP in Minnesota (MN) hospitals

Methods

- An electronic survey was sent to infection preventionists (IP) in MN hospitals in February 2013
- Hospitals were categorized as critical access hospital (CAH; < 26 beds) or other hospital (inpatient prospective payment system, Veterans Affairs, pediatric)

Results

- 50% (66/133) of MN hospitals responded: 36/76 (47%) CAH; 30/57 (53%) other hospitals
- 42% of responders reported having ASP: 19% (7/36) CAH and 70% (21/30) other hospitals (Table 1)
- Among respondents, ASP were more frequently reported in larger hospitals: 100% (7/7) with > 400 beds; 100% (4/4) with 200-399 beds; and 55% (11/20) with 26-199 beds had an ASP (Table 1)

Table 1. Characteristics of Hospitals that Reported Having ASP

	Critical Access Hospitals (n=7)	Other Hospitals (n=21)	Total (n=28)
Bed size			
<26	6	0	6
26-49	1	1	2
50-99	0	5	5
100-199	0	4	4
200-399	0	4	4
>400	0	7	7
Affiliated with teaching hospital/medical school	1 (14%)	7 (33%)	8 (29%)
Pharmacist (in house)	7 (100%)	21 (100%)	28 (100%)
ID pharmacist (in house or consultant)	0 (0%)	11 (52%)	11 (39%)
ID physician (in house or consultant)	0 (0%)	17 (81%)	17 (61%)
Enrolled in NHSN	2 (29%)	19 (90%)	21 (75%)
Uses infection surveillance software	2 (29%)	14 (67%)	16 (57%)
Antimicrobials documented via eMAR/bar coding	6 (86%)	21 (100%)	27 (96%)

eMAR: electronic medication administration record ID: Infectious diseases NHSN: National Healthcare Safety Network

Figure 1. Responses to Question: "What does your ASP target?"

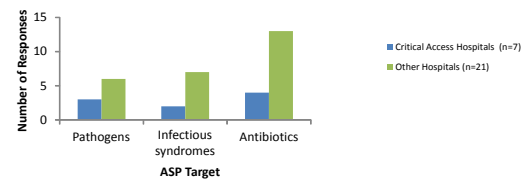


Figure 2. Responses to Question: "Does your ASP target specific antibiotics?"

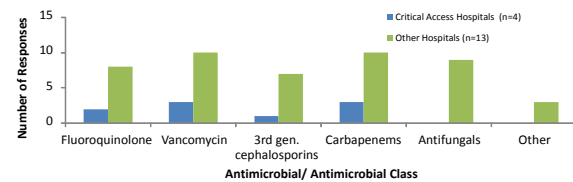


Table 2. Responses to Question: "Have you analyzed the effectiveness of your ASP?"

	Critical Access Hospitals (n=7)	Other Hospitals (n=21)	Total (n=28)
Yes	0	11 (52%)	11 (39%)

If yes, what measures are utilized to assess your ASP?	Other Hospitals (n=11)
Cost of antimicrobials	10
Antimicrobial utilization	9
Antibiogram	9
Rates of specific infections	6
Provider feedback	4
Length of hospital stay	2

Table 3. Survey Responses for ASP Strategies

	Critical Access Hospitals (n=7)	Other Hospitals (n=21)	Total (n=28)
Monitor resistance patterns (e.g. microbiology audit and/or antibiogram)	7	18	25
Protocols or algorithms developed by the hospital	6	18	24
Pharmacist and/or prescriber education	6	17	23
Process to monitor antimicrobial prescribing practices (e.g. antimicrobial use audits)	5	18	23
Process to assess antibiotic costs	3	19	22
Electronic antimicrobial order forms	5	17	22
Process to assess antibiotic appropriateness	6	15	21
Process to review individual cases with feedback to clinicians	6	12	18
Electronic medical record prompts	1	9	10
Formulary restriction and pre-authorization	1	8	9
Patient education	3	5	8
Antimicrobial cycling	0	0	0

Figure 3. Responses to Question: "Does Your ASP Membership Include...?"

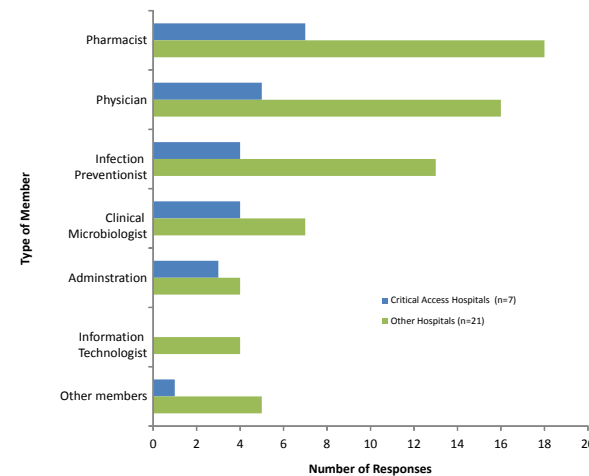


Table 4. Responses to Question: "Are ASP Team members compensated for their time dedicated to ASP duties?"

	Critical Access Hospitals (n=7)	Other Hospitals (n=21)	Total (n=28)
Team Member	No. (%)	No. (%)	No. (%)
Pharmacist	4/7 (57%)	10/21 (48%)	14/28 (50%)
Physician	3/5 (60%)	12/16 (75%)	15/21 (71%)
Infection Preventionist	4/4 (100%)	5/13 (38%)	9/17 (53%)
Clinical Microbiologist	3/4 (75%)	1/7 (14%)	4/11 (36%)
Administration	2/3 (67%)	2/4 (50%)	4/7 (57%)
Information Technologist	---	0/4 (0%)	0/4 (0%)
Other	1/1 (100%)	2/5 (40%)	3/6 (50%)

	Critical Access Hospitals (n=6)	Other Hospitals (n=18)	Total (n=24)
To assist with antimicrobial selection	6	15	21
To assist with antimicrobial dosing	5	15	20
To assist with switching IV to PO	4	15	19
To assist with duration of administration	2	8	10
To assist with streamlining or de-escalation of therapy	2	5	7
To assist with scheduled antibiotic switch	0	3	3
To assist with scheduled antibiotic cycling	1	0	1

	Critical Access Hospitals (n=5)	Other Hospitals (n=18)	Total (n=23)
Prescriptions are reviewed and corrected as they are ordered in real time	3	5	8
Prescriptions are reviewed and corrected retrospectively	1	6	7
Prescriptions are reviewed and corrected in real time and retrospectively	1	6	7

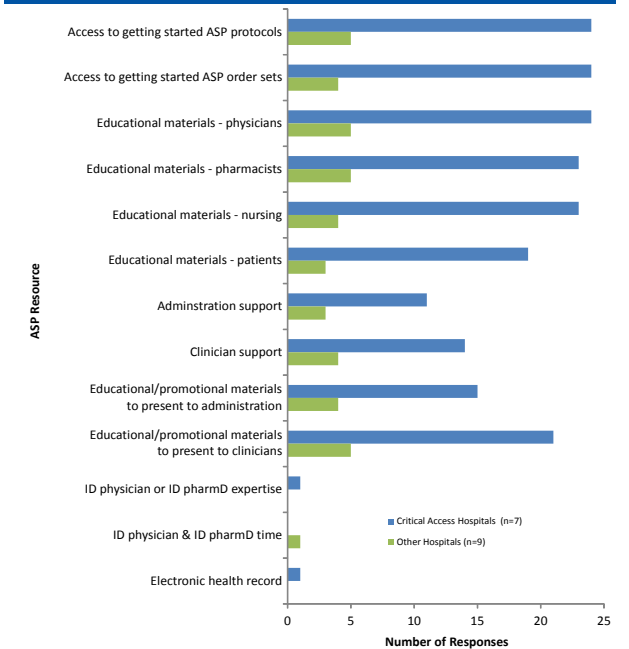
	Critical Access Hospitals (n=5)	Other Hospitals (n=17)	Total (n=22)
Prescriptions are reviewed and corrected as they are ordered in real time	3	5	8
Prescriptions are reviewed and corrected retrospectively	1	6	7
Prescriptions are reviewed and corrected in real time and retrospectively	1	6	7

- 87% (33/38) of hospitals without ASP indicated interest in starting an ASP (Figure 4)

Table 5. Responses to Question: "Why doesn't your hospital have an ASP in place?"

	Critical Access Hospitals (n=29)	Other Hospitals (n=9)	Total (n=38)
Lack of resources	12	2	14
ASP implementation in process or planning phase	7	5	12
Lack of clinician support	8	1	9
Lack of support from administration	3	1	4
Time constraints/competing priorities	4	0	4
Hospital has no ability to implement	1	0	1
Not necessary in my hospital	0	1	1
No response	1	0	1
Not interested	0	0	0
Never heard of an ASP	0	0	0

Figure 4. Responses to Question: "What would be helpful for starting an ASP at your hospital?"



Conclusions

- Despite guidelines issued 15 years ago, not all MN hospitals have ASP, especially CAH.
- Lack of resources and clinician support were common explanations for no ASP, although almost all indicated an interest in ASP.
- Among hospitals with ASP, some but not all had developed methods to evaluate their ASP.
- ASP generally included a pharmacist, physician and often IP, but not all programs compensated staff.
- In response to the needs of hospitals, a MN ASP Steering Group has been developing protocols and tools for establishing ASP, including attention to the unique needs of small hospitals, and suggestions for evaluation and improvement for facilities that already have ASP. Minnesota Guide to a Comprehensive Antimicrobial Stewardship Program: www.health.state.mn.us/divs/idepc/dtopics/antibioticresistance/

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