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Attitudes of Housestaff toward a Prior-Authorization-Based Antibiotic Stewardship Program

Hospital-based antibiotic stewardship programs (ASP) are advocated as a way to optimize antibiotic use while minimizing the potential for negative consequences, such as the emergence of antibiotic resistance.[1] A prior-authorization (PA) strategy, requiring prescribers to obtain approval from a member of the ASP before restricted antibiotics are dispensed, is frequently employed.[2] Although concern has been raised that physicians may view PA-ASPs negatively, seeing them as overly time-consuming or infringing on their autonomy, there is little published research evaluating these concerns.[3-5] Lack of physician "buy-in" to an ASP may prevent it from being maximally effective.[6]

Our study was conducted at Hahnemann University Hospital, a 496-bed academic tertiary care hospital in Philadelphia with a long-standing PA-ASP. Between 8 AM and 10 PM, most antibiotics require authorization from an infectious-diseases fellow or a pharmacist before being dispensed. Antibiotics prescribed during off-hours require approval the following morning. The approval process involves the prescriber paging the ASP and providing the clinical information necessary for an ASP team member to assess the appropriateness of the antibiotic choice and dosing.

We distributed to housestaff an anonymous, 5-point Likert scale–based questionnaire consisting of 26 statements concerning the ASP. Surveys were distributed by a moderator who was not involved in the ASP.

The proportions of respondents in agreement with a statement ("agree" and "strongly agree" combined) were calculated and compared between interns and upper-year residents and between medical and surgical residents, with Fisher's exact test. Correlation between survey items was calculated by means of the Spearman rank-order test. Statistical calculations were performed with SPSS (v.18).

Of 285 housestaff, 116 (41%) completed the survey, of whom 32 (28%) were interns, 45 (39%) were surgical housestaff (8 in general surgery, 3 in cardiothoracic surgery, 14 in obstetrics/gynecology, 4 in oral and maxillofacial surgery, 7 in podiatry, 4 in ear/nose/throat, and 5 in orthopedics), and 66 (57%) were classified as in medicine specialties (51 in internal medicine, 10 in family medicine, and 5 in neurology). Four respondents (3%) did not report their training level, and 5 (4%) did not report their training program. Of the 116 respondents, a majority (71 [61.2%]; Table 1) believed that antibiotic resistance was a serious problem at their hospital, that the primary purpose of the ASP was to prevent the development of resistance (85 [73.3%]), and that having an antibiotic approval system helped to prevent the development of antibiotic resistance (75 [64.7%]). Sixty-nine (59.9%) agreed that overall, having the ASP was a good idea, compared to 20 (17.3%) who believed that it was not a good idea and 27 (23.3%) who were undecided. This belief correlated most strongly with believing that the ASP led to better care for individual patients ($r = 0.739$, $P < .001$), that it was educational ($r = 0.538$, $P < .001$) or helpful in choosing appropriate antibiotics ($r = 0.540$, $P < .001$), or that having the ASP helped to prevent antibiotic resistance ($r = 0.530$, $P < .001$). Although a majority believed that they received consistent recommendations (71 [61.2%]) and a timely response from the ASP (89 [76.7%]), half found being required to call for approval frustrating (58 [50.0%]). This belief correlated with feeling that the ASP wasted their time ($r = 0.559$, $P < .001$) or caused significant delays in receipt of antibiotics by individual patients ($r = 0.492$, $P < .001$). The majority of residents who were frustrated by the program still believed that antibiotic resistance was a significant problem (34/58 [58.6%]); however, they were less likely to believe that the ASP helped decrease antibiotic resistance (54.4% vs 77.2%,

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TABLE 1. Comparison of Responses to Survey Statements by Training Level and Type of Training Program

Statement	Proportion (%) of respondents who answered "agree" or "strongly agree"						
		Training level			Training program		
	All respondents	Interns	Upper-year residents	*P*	Medicine	Surgery	*P*
Overall, I think having an antibiotic approval program is a good idea	69/116 (59.5)	20/32 (62.5)	48/80 (60.0)	.834	44/66 (66.7)	23/45 (51.1)	.10
Antibiotic resistance at my hospital is a serious problem	71/116 (61.2)	19/32 (59.4)	48/80 (60.0)	1.0	41/66 (62.1)	25/45 (55.6)	.557
The primary purpose of the antibiotic approval program is to decrease antibiotic resistance in the hospital	85/116 (73.3)	20/32 (62.5)	62/80 (77.5)	.155	47/66 (71.2)	34/45 (75.6)	.668
The primary purpose of the antibiotic approval program is to reduce the amount of money the hospital spends on antibiotics	40/116 (34.5)	9/31 (29.0)	30/80 (37.5)	.508	21/65 (32.3)	18/45 (40.0)	.425
Being required to call for antibiotic approval causes significant delays in patients receiving their antibiotics	65/116 (56.0)	15/32 (46.9)	47/80 (58.8)	.296	39/66 (59.1)	23/45 (51.1)	.441
Having to call for approval makes the team think more carefully about choosing an antibiotic	56/116 (48.3)	14/32 (43.8)	40/80 (50.0)	.676	31/66 (47.0)	22/45 (48.9)	.849
When I page for antibiotic approval I usually get a response in a reasonable amount of time	89/116 (76.7)	23/32 (71.9)	64/80 (80.0)	.451	52/66 (78.8)	34/45 (75.6)	.818
The recommendations I get from the antibiotic approval program are consistent	71/116 (61.2)	18/32 (56.3)	52/80 (65.0)	.397	44/66 (66.7)	25/45 (55.6)	.319
Individual patient care is improved by having an antibiotic approval program	64/116 (55.2)	18/32 (56.3)	45/80 (56.3)	1.0	39/66 (59.1)	23/45 (51.1)	.441
I find having to call for antibiotic approval frustrating	58/116 (50.0)	16/32 (50.0)	40/80 (50.0)	1.0	32/66 (48.5)	23/45 (51.1)	.848
As a resident I feel I have significant influence on what antibiotic my team chooses	74/116 (63.8)	17/32 (53.1)	55/80 (68.8)	.132	43/66 (65.2)	28/65 (62.2)	.841
The team attending is usually dictating what antibiotic to use; as a resident I don't have much input	33/116 (28.4)	10/32 (31.3)	21/80 (26.3)	.643	17/66 (25.8)	14/45 (31.1)	.667
I have to answer too many questions when I call for antibiotic approval	26/116 (22.4)	5/32 (15.6)	20/79 (25.3)		16/65 (24.6)	9/45 (20.0)	.648
The antibiotic approval program limits clinicians' autonomy in choosing antibiotics	**48/116 (41.4)**	**6/32 (18.8)**	**39/80 (48.8)**	**.005**	23/66 (34.8)	22/45 (48.9)	.139
I find the antibiotic approval process educational	38/116 (32.8)	12/32 (37.5)	25/80 (31.3)	.657	23/66 (34.8)	13/45 (28.9)	.542
Having to call for antibiotic approval is a waste of my time	29/116 (25.0)	6/32 (18.8)	22/78 (28.2)	.345	13/65 (20.0)	15/45 (33.3)	.114
Because of the antibiotic approval program I am forced to choose antibiotics I feel are inappropriate	7/116 (6.0)	3/32 (9.4)	4/80 (5.0)	.405	2/66 (3.0)	5/45 (11.1)	.117
If there was no antibiotic approval program our team would likely consult ID more frequently	25/116 (21.6)	4/32 (12.5)	20/80 (25.0)	.203	17/66 (25.8)	7/45 (15.6)	.245
I sometimes make up clinical information in order to get the antibiotic I want when I call for antibiotic approval	11/116 (9.5)	2/31 (6.5)	8/80 (10)	.723	8/66 (12.1)	2/44 (4.5)	.310
Having an antibiotic approval program helps me provide better care for my patients	51/116 (44.0)	16/32 (50.0)	34/80 (42.5)	.531	33/66 (50.0)	16/45 (35.6)	.132
I find the antibiotic approval program helpful in assisting me in deciding on an appropriate choice of antibiotic	66/116 (56.9)	20/32 (62.5)	45/80 (56.3)	.672	**47/66 (71.2)**	**17/45 (37.8)**	**.001**
I find the antibiotic approval program helpful in assisting me in dosing antibiotics appropriately	77/116 (66.4)	23/32 (71.9)	50/80 (62.5)	.237	**50/66 (75.8)**	**22/45 (48.9)**	**.005**
The clinician who is seeing the patient is in a more appropriate position to pick the correct antibiotics than someone on the phone who has never seen the patient	56/116 (48.3)	15/32 (46.9)	39/79 (49.4)	.837	31/66 (47.0)	23/45 (52.3)	.697
Having an antibiotic approval system helps to prevent the development of antibiotic resistance in the hospital	75/116 (64.7)	19/32 (59.4)	54/78 (69.2)	.376	**47/64 (73.4)**	**25/45 (55.6)**	**.05**

NOTE. ID, infectious diseases (fellow). Boldface entries denote statistically significant ($P \leq .05$) differences between compared groups.

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$P = .017$). Forty-eight (41.4%) felt that the program limited their autonomy. This view was significantly more common among upper-year residents than among interns (48.8% vs 18.8%, $P = .005$). Eleven (9.5%) admitted that they would make up clinical information in order to get the antibiotic they wanted. Respondents who found the ASP frustrating were more than 10 times as likely to admit to making up clinical information (17.5% vs 1.7%, $P = .004$). Only one-third of all respondents (38 [32.8%]) found the process educational, with no significant difference between upper- and first-year residents (31.3% vs 37.5%, $P = .657$; Table 1).

Our findings that the majority of housestaff believe that having an ASP is a good idea, that antibiotic resistance is a serious problem, and that having a PA-ASP helps to prevent resistance are encouraging, and they confirm previously published data.[5,7] However, our findings differ from those data in that we found a significant degree of frustration, which appeared to stem from the time commitment required to interact with the ASP and perceived delays in antibiotic administration. PA-based ASPs generally require less staffing than other methods, such as a "back-end" prospective-audit system,[1] potentially requiring more time commitment from the prescriber, which our findings suggest may result in increased user frustration. Although each call to the ASP has potential educational value beyond the individual recommendations for that particular call, our results indicate that housestaff did not perceive the interaction as educational.[8] However, we did not assess whether housestaff knowledge of antibiotic usage improved as a result of interactions with the ASP. We suspect that the program may have more educational value than the housestaff recognize.

It is important to note that our study has several limitations. We used a self-designed survey instrument that has not been validated in other studies. Housestaff who chose not to participate may have had opinions significantly different from those of responders, potentially introducing unmeasured bias. Because this was a single-center study, it is possible that the opinions measured in our study were unique to our particular ASP and as such may not be generalizable to other PA-ASPs.

We find it encouraging that the majority of housestaff understood the rationale for and the value of a PA-ASP. We believe that the knowledge of the basis for negative perceptions of a PA-ASP gained in this study will be useful in informing interventions to maximize the effectiveness of PA-ASPs in the future.

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