

Antimicrobial Resistance Awareness & Strategies Among ID Physicians & Pharmacists

October 2022 | Prepared for:



SEPSIS
ALLIANCE

Funding for this survey was provided through a grant from PhRMA.



Research Objectives

The **main objective** of this research is to get a better **understanding of Antimicrobial Resistance (AMR) awareness** among Infectious Disease Physicians and Pharmacists, including:

- Primary **challenges** related to AMR
- **Opportunities** for improving AMR
- **Strategies** employed to deal with AMR
- Availability of **Antimicrobial Stewardship Programs**(ASPs) in hospitals and compliance with CDC Core Elements of ASPs
- **Legislation** designed to help ASPs
- Availability of **sepsis teams/programs**



Methodology: How we approached this research...



Who?

n=81 Infectious Disease Physicians
n=75 Pharmacists/Clinical Pharmacists

- Have practiced medicine for at least 1 year
 - Practice at a hospital
 - n=82 practice in small/medium hospitals (<500 beds)
 - n=70 practice in large hospitals (500+ beds)
- (n=4 were not sure of hospital size)



What?

10-minute online quantitative survey



Where?

U.S.



When?

Fielding:
September 13-26, 2022



Radius is a full-service marketing research company founded in 1960. Headquartered in NYC, Radius has offices throughout the US and Globally. Radius focuses on understanding the critical points of a brand's growth journey to help drive long term success. The Brand Growth Navigator is their strategic approach to prioritizing the critical business-building issues to tackle, from identifying compelling innovations to creating relevant customer segmentations. Their 60+ years of global brand-building expertise has encompassed partnerships with Fortune 500 leaders as well as emerging and start-up brands in more than 60 countries.

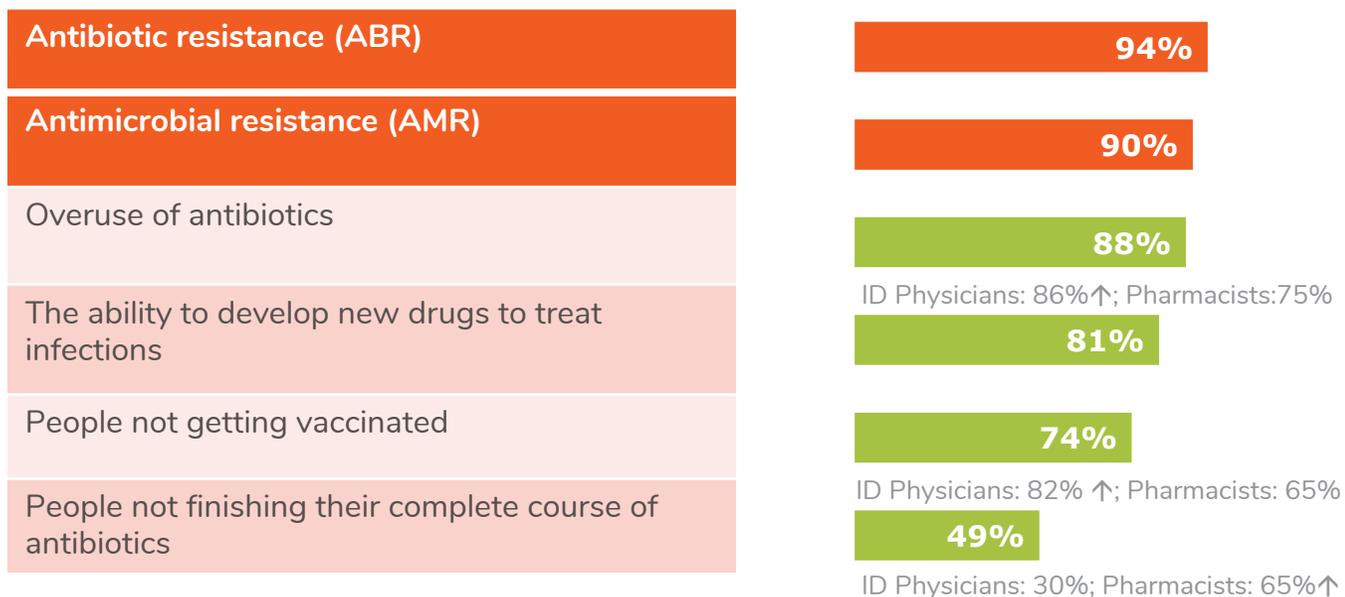
What we learned...

ID Physicians and Pharmacists see both Antibiotic resistance (ABR) and antimicrobial resistance (AMR) and factors contributing to AMR as major problems

AMR awareness and factors contributing to AMR

ABR and AMR are seen as major problems...

(Among total ID Physicians and Pharmacists)



Base Total Physicians/Pharmacists n=156; Infectious Disease Physicians n=81; Pharmacists n=75.

↑ Indicates a significant difference between ID Physicians and Pharmacists at the 90% confidence level.

Data by ID Physicians and Pharmacists is only show if significantly different.

Hospitals have implemented measures focused on managing AMR, including having pharmacists in the ER and having ASPs. They follow the CDC Core Elements and 2 in 3 usually accept ASP recommendations.

Key measures taken at facilities to address AMR

Have Pharmacists in ER

(Among total ID Physicians and Pharmacists)



of facilities have **pharmacists in the ER** with **71%** having **permanent** pharmacists and **19%** having pharmacists available to **consult**



65% of pharmacists in the ER are actively involved in **antibiotic decision making**

(in facilities with pharmacists in the ER)

Have Antimicrobial Stewardship Programs (ASP)

(Among total ID Physicians and Pharmacists)



of facilities have an **ASP** in place



91% of facilities are **in compliance with the CDC Core Elements** of Hospital Antimicrobial Stewardship Programs



68% of facilities accept ASP recommendations most of the time. However, just **51%** accept ASP education most of the time.

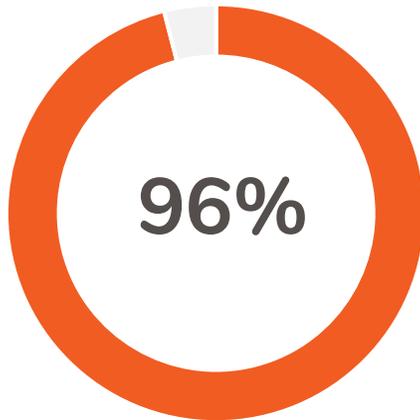
Base Total Physicians/Pharmacists n=156; Facilities with pharmacists in ER n=139

ID Physicians and Pharmacists assume responsibility for resolving AMR. As part of this, they participate in facilities' measures to improve AMR.

ID Physicians' and Pharmacists' efforts to resolve AMR

ID Physicians and Pharmacists take responsibility for resolving AMR

(%Very/Somewhat responsible among total ID Physicians and Pharmacists)



Of ID Physicians and Pharmacists say **they themselves** are **responsible for solving AMR**

And, they participate in efforts to improve AMR

(Among total ID Physicians and Pharmacists)

>90%

of ID Physicians and Pharmacists have received **AMR training**

However,

61%

report their facilities are **under-utilizing ID Physicians and Pharmacists** on patient antibiotic care

ID Physicians: 69% ↑; Pharmacists: 52%

54%

are **involved** in efforts to **improve hospital-acquired sepsis**

ID Physicians: 54%; Pharmacists: 80%↑

43%

are **part of sepsis teams**

ID Physicians: 35%; Pharmacists: 52%↑

Base Total Physicians/Pharmacists n=156; Infectious Disease Physicians n=81; Pharmacists n=75.

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Data by ID Physicians and Pharmacists is only show if significantly different.

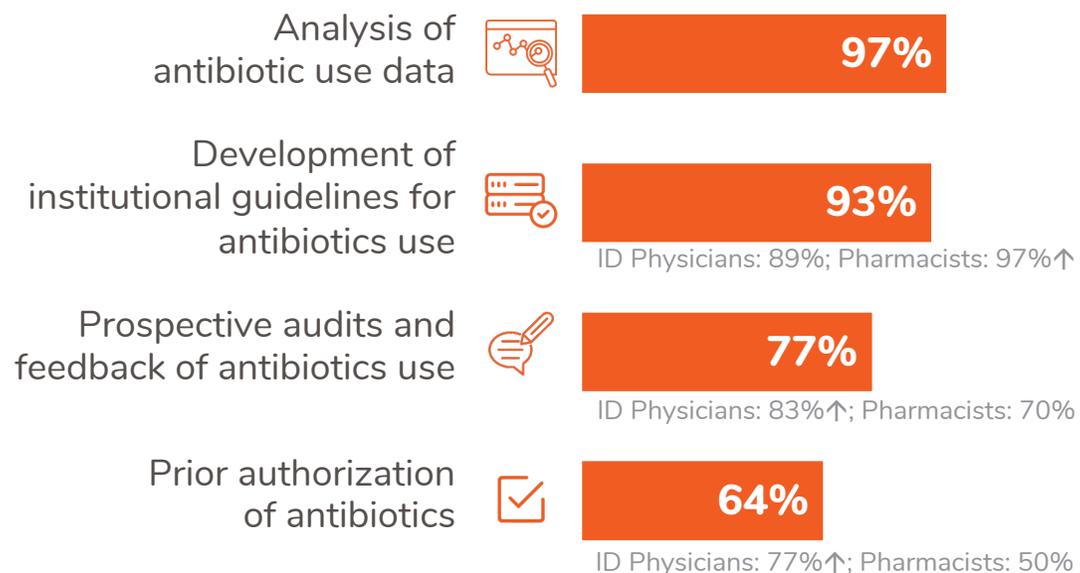
ASPs use a variety of methods to combat overuse of antibiotics. Decreasing the inappropriate use of antibiotics will be a major means to do this.

The availability of rapid and improved diagnostics, in turn, are opportunities that can contribute to this decrease.

Measures to combat overuse of antibiotics in order to improve AMR

ASPs analyze and implement guidelines of antibiotic use

(Among total ID Physicians and Pharmacists/hospitals have ASP)

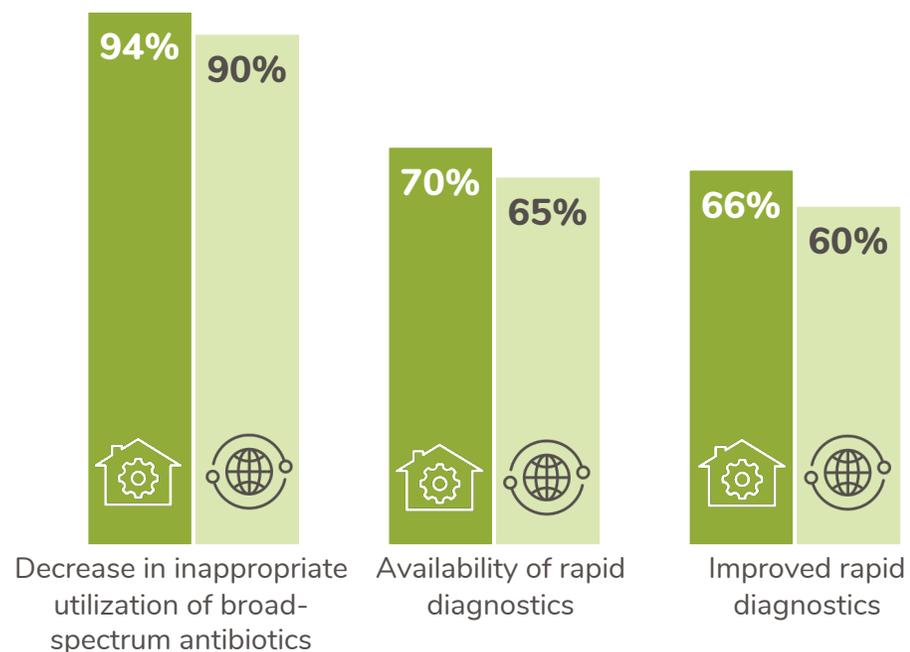


Base Hospitals have an ASP: Total n=148; Infectious Disease Physicians n=78; Pharmacists n=70
 significant difference between ID Physicians and Pharmacists at the 90% confidence level.
 Data by ID Physicians and Pharmacists is only show if significantly different.

Leading opportunities to improve AMR

(% total ID Physicians and Pharmacists selecting opportunities to improve AMR)

■ Facility ■ Nationwide



Base Total n=156

The availability of new drugs to treat infections poses another problem related to AMR. High cost is a barrier in the development of new antimicrobials, and awareness of the PASTEUR Act is limited.

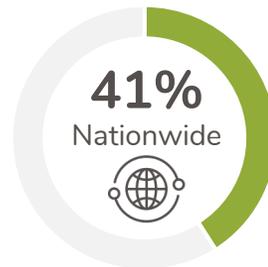
Opportunities and barriers related to the ability to develop new drugs to treat infections

The availability of new antimicrobials offers an opportunity to combat AMR

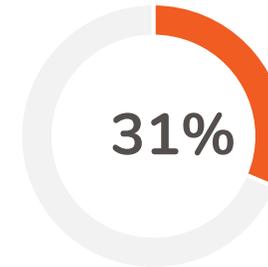
(% Total ID Physicians and Pharmacists indicating this is an opportunity)



ID Physicians: 16%; Pharmacists: 37%↑



Cost and lack of familiarity with the PASTEUR Act are barriers to developing new antimicrobials



indicate **the cost justification of resources** allocated to new high-cost antibiotics is a **barrier** to use new antimicrobials

ID Physicians: 25%; Pharmacists: 39%↑

Base Total Physicians/Pharmacists n=156; Infectious Disease Physicians n=81; Pharmacists n=75.

↑ Indicates a significant difference between ID Physicians and Pharmacists at the 90% confidence level.

Data by ID Physicians and Pharmacists is only show if significantly different.



The **PASTEUR Act** was written to create incentives to develop new antimicrobials



are very/somewhat familiar with the PASTEUR Act

(Among total ID Physicians and Pharmacists)

Currently, very few facilities provide patient education related to AMR. This is seen as a barrier to resolving AMR. Therefore, increasing patient education offers an opportunity to improve AMR.

Patient education as an opportunity to resolve AMR

Current patient education levels are lacking

(Among total ID Physicians and Pharmacists)



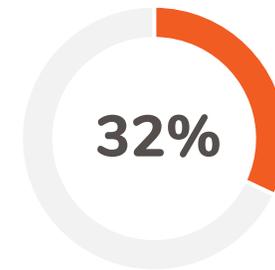
Of facilities currently provide **patient education**

ID Physicians: 6%; Pharmacists: 15%↑

Base Total Physicians/Pharmacists n=156; Infectious Disease Physicians n=81; Pharmacists n=75.
↑ Indicates a significant difference between ID Physicians and Pharmacists at the 90% confidence level.
Data by ID Physicians and Pharmacists is only show if significantly different.

This poses a barrier to resolving AMR

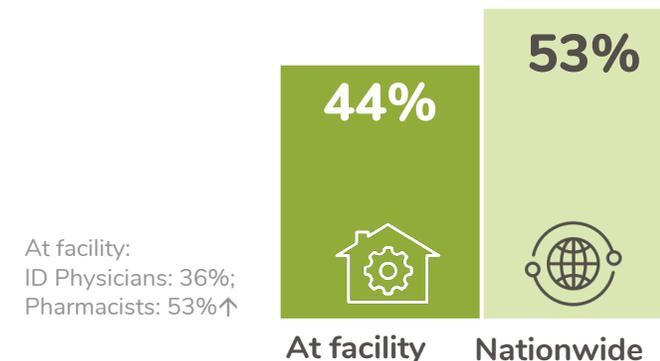
(Among total ID Physicians and Pharmacists)



Consider **limited patient education** to be a **barrier** to resolving AMR

Increased patient education offers an opportunity to improve AMR

(% Total ID Physicians and Pharmacists indicating this is an opportunity)



While ID Physicians and Pharmacists generally agree on the main issues surrounding AMR, there are some nuances

While we also looked at differences by hospital size, we see a high level of consistency regardless of size.

	Stronger among ID Physicians	Stronger among Pharmacists
Major issues related to AMR		
The ability to develop new drugs to treat infections	✓	
People not getting vaccinated	✓	
People not finishing their complete course of antibiotics		✓
Participation in AMR efforts		
Involved in efforts to improve hospital-acquired sepsis		✓
Part of hospital's sepsis team		✓
Perceived barriers to solving AMR		
Under-utilization of ID Physicians and Pharmacists	✓	
Cost justification of resources allocated to new high-cost antibiotics		✓
Strategies used by ASP		
Development of institutional guidelines for antibiotics use		✓
Prospective audits and feedback of antibiotics use	✓	
Prior authorization of antibiotics	✓	
Opportunities related to AMR		
Availability of rapid diagnostics	✓	
Increased patient education		✓
Increased availability of new antimicrobials		✓

Base Total Physicians/Pharmacists n=156; Infectious Disease Physicians n=81; Pharmacists n=75.

✓ Indicates a significant difference of one group over the other at the 90% confidence level

What we learned: Measures to Improve AMR



Hospitals use a variety of systems in order to address AMR:

- They have **Antimicrobial Stewardship Programs (ASPs)** in place to help them develop strategies for improving Antimicrobial resistance
- **Compliance with the CDC Core Elements** of Hospital Antimicrobial Stewardship Programs (ASP) is high
- Many hospitals also have **sepsis teams**

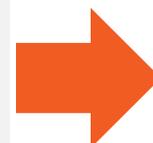


There is **room for improvement** when it comes to **accepting ASP recommendations** and especially **ASP education**



ID Physicians and Pharmacists alike recognize **AMR is a major problem.**

- Most of them have received **AMR training**
- They strongly believe **they play a personal role in the efforts to solve AMR**



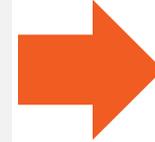
However, many indicate that they are **under-utilized on patient antibiotic care.** Since almost all of them are **trained on AMR, better utilizing ID Physicians and Pharmacists** could play an important role in improving AMR.

What we learned: Antibiotic Use Strategies



Overuse and the **inappropriate use of antibiotics** remain **major contributors to AMR**

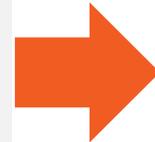
- To resolve this, most hospital ASPs have established a variety of strategies, ranging from **analyses of current antibiotics use** to **developing institutional guidelines**



Increased availability of **rapid diagnostics** as well as **improved diagnostics** could have an even stronger impact and contribute to a **decrease in the inappropriate utilization of broad-spectrum antibiotics**



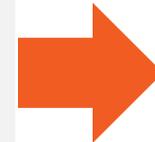
Familiarity with legislation around AMR – especially the **PASTEUR Act** – is **relatively low** among ID Physicians and Pharmacists.



For the PASTEUR Act, it will be important to **increase familiarity** with the Act and ensure ID Physicians and Pharmacists understand its implications



Patient behaviors, especially the tendency to **not finish a complete course** of antibiotics and **reluctance to get vaccinated**, also contribute to AMR. To some degree, this may be caused by a **current lack of patient education**



Currently patient education is mostly lacking. Therefore, **consistent, increased levels of patient education** could play an important role in the efforts to alleviate AMR

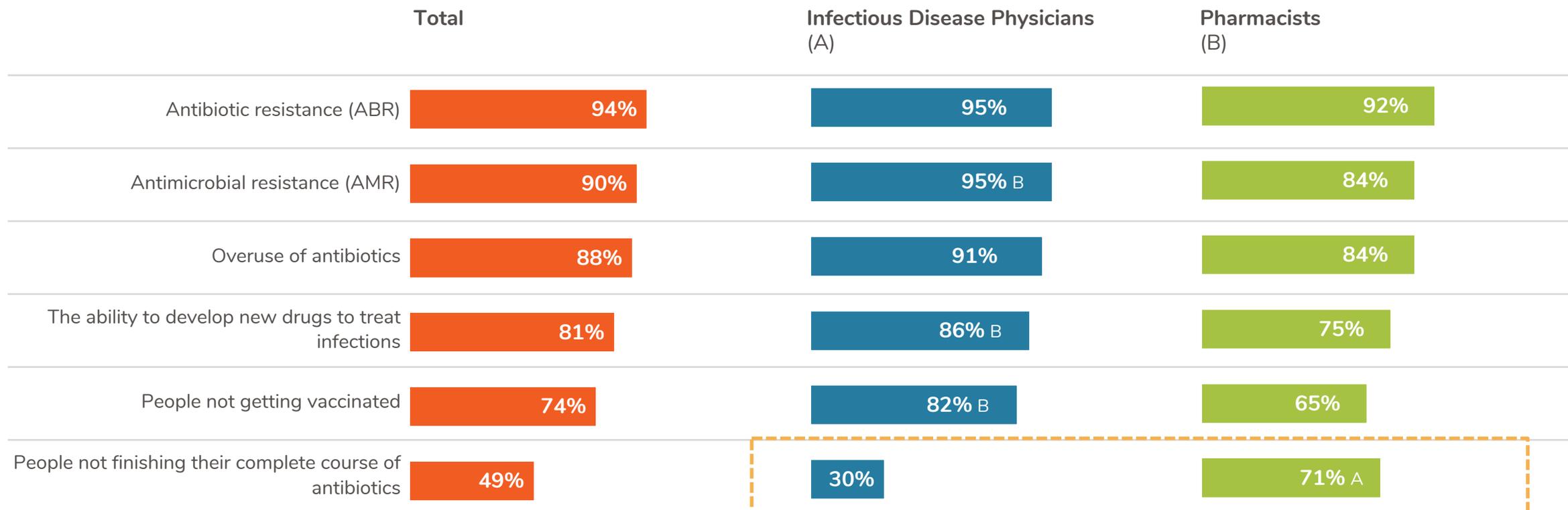
Detailed Findings:

Antimicrobial Resistance

ABR and AMR are seen as major problems among all. Pharmacists consider people not finishing their course of antibiotics as a much more severe issue than ID Physicians.

Severity of issues related to antibiotics use

(% Major problems shown)



Base Total Physicians/Pharmacists n=156; Infectious Disease Physicians n=81; Pharmacists n=75.

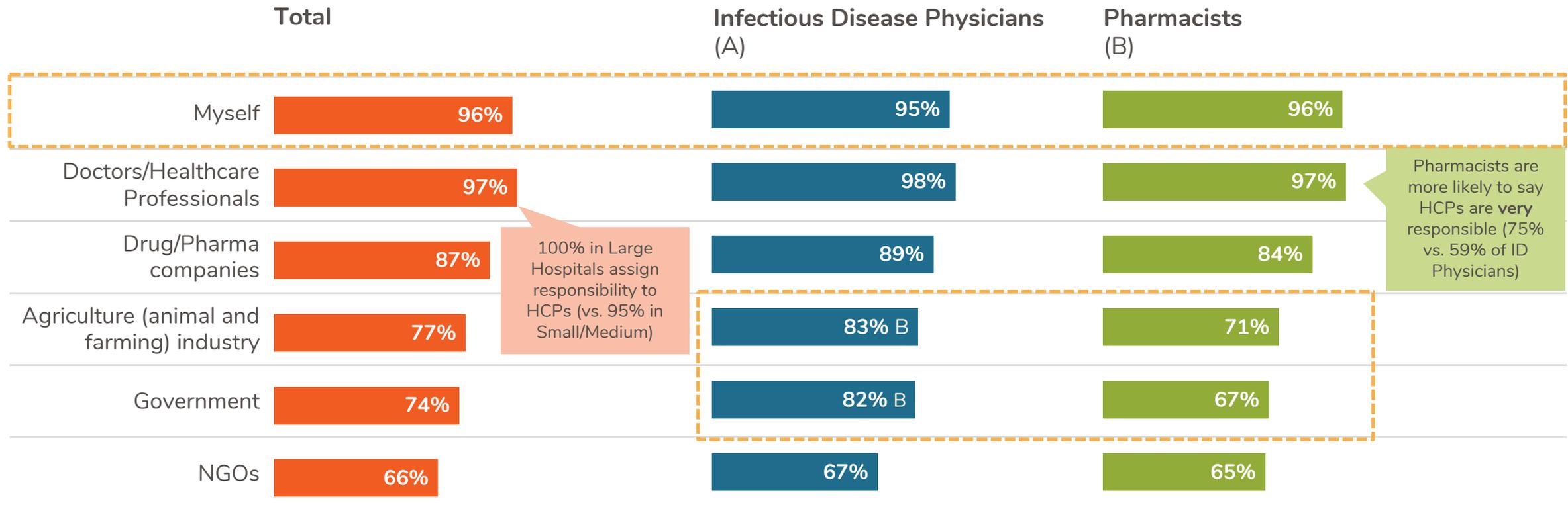
Capital letters indicate a significant difference between groups at the 90% confidence level.

B1. In the table below, please indicate if you would consider any of the issues listed a major problem, a minor problem, or not a problem at all.

Overall, both ID Physicians and Pharmacists take responsibility for solving AMR. However, Pharmacists assign a higher level of responsibility to HCPs, while Physicians are somewhat more likely to hold agriculture and the government responsible.

Responsibility for solving AMR

(% Very/Somewhat responsible shown)



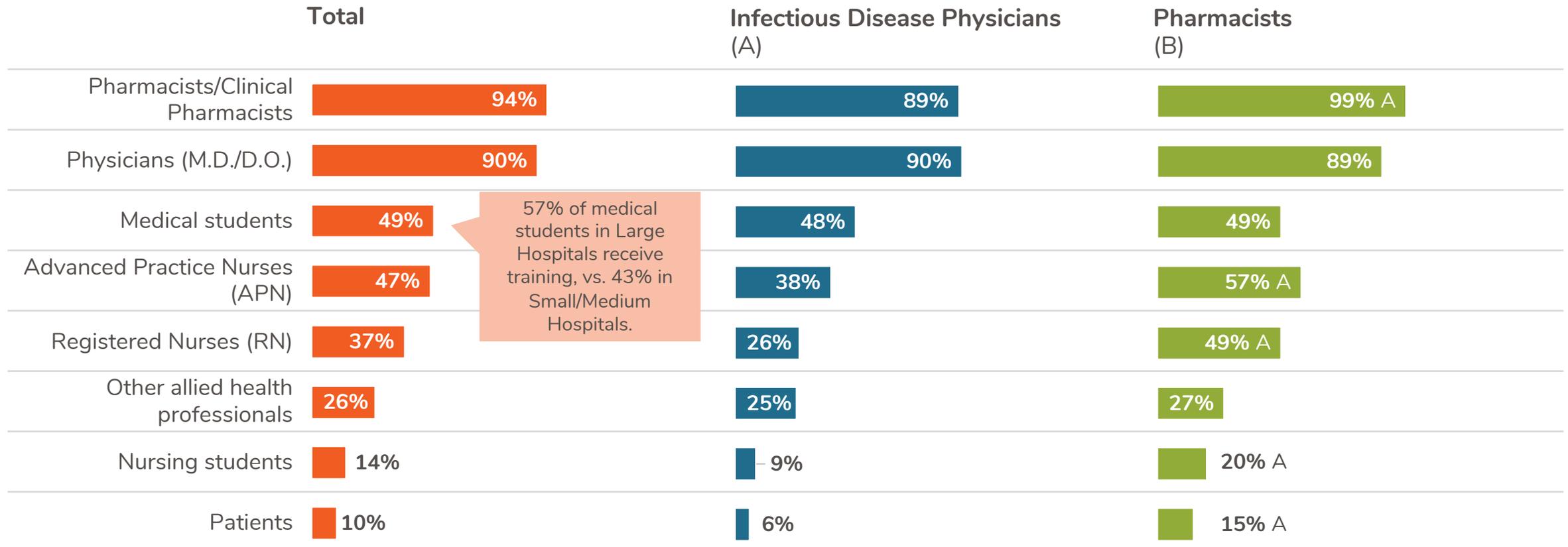
Base Total Physicians/Pharmacists n=156; Infectious Disease Physicians n=81; Pharmacists n=75; Small/Medium Hospitals n=82; Large Hospitals n=70.

Capital letters indicate a significant difference between groups at the 90% confidence level.

B2. How responsible are the following, if at all, for solving antimicrobial resistance (AMR)?

Almost all Pharmacists and ID Physicians receive training regarding AMR. Around half of medical students and APNs do as well, but only one-third of RNs get training and very few nursing students or patients get training.

Groups receiving AMR training



Base Total Physicians/Pharmacists n=156; Infectious Disease Physicians n=81; Pharmacists n=75; Small/Medium Hospitals n=82; Large Hospitals n=70.

Capital letters indicate a significant difference between groups at the 90% confidence level.

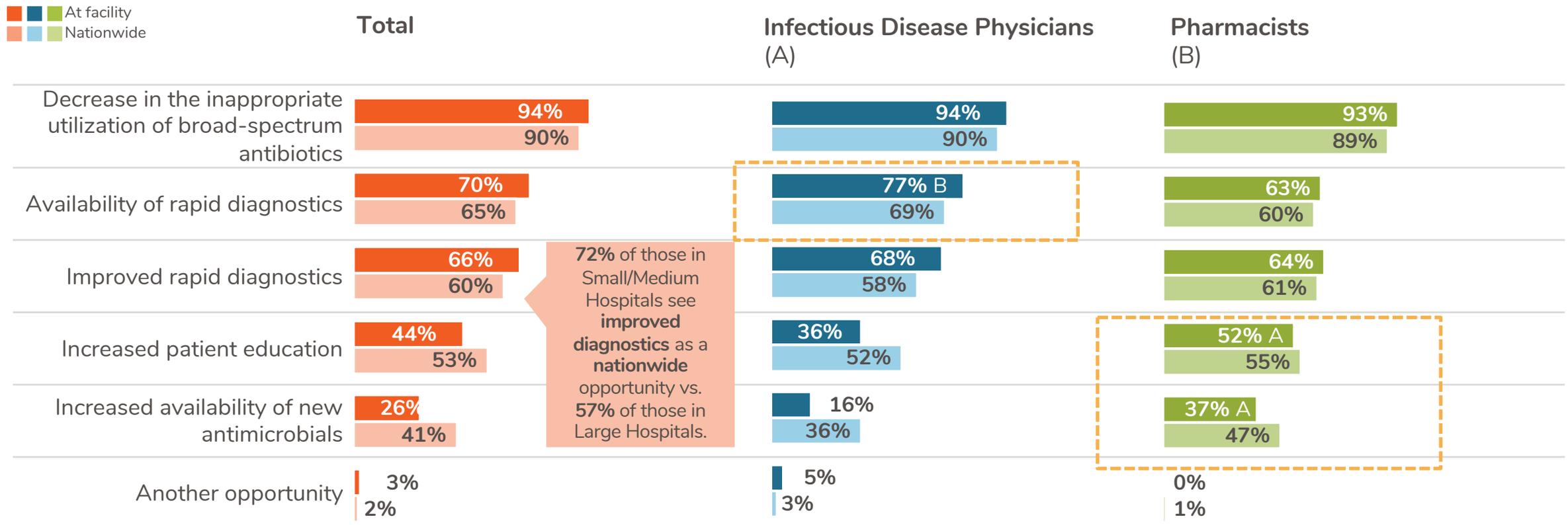
B3. Who, to the best of your knowledge, has been trained by your facility regarding antimicrobial resistance (AMR)?

A decrease in the inappropriate utilization of broad-spectrum antibiotics is seen as the number one opportunity for reducing AMR both at the facility-level and nationwide.

ID Physicians are more likely than Pharmacists to focus on rapid diagnostics, while Pharmacists are more likely than ID Physicians to focus on patient education and the availability of new antimicrobials.

Opportunities to improve AMR at facility and nationwide

(% of total ID Physicians/Pharmacists)



Base Total Physicians/Pharmacists n=156; Infectious Disease Physicians n=81; Pharmacists n=75.

Capital letters indicate a significant difference between groups at the 90% confidence level.

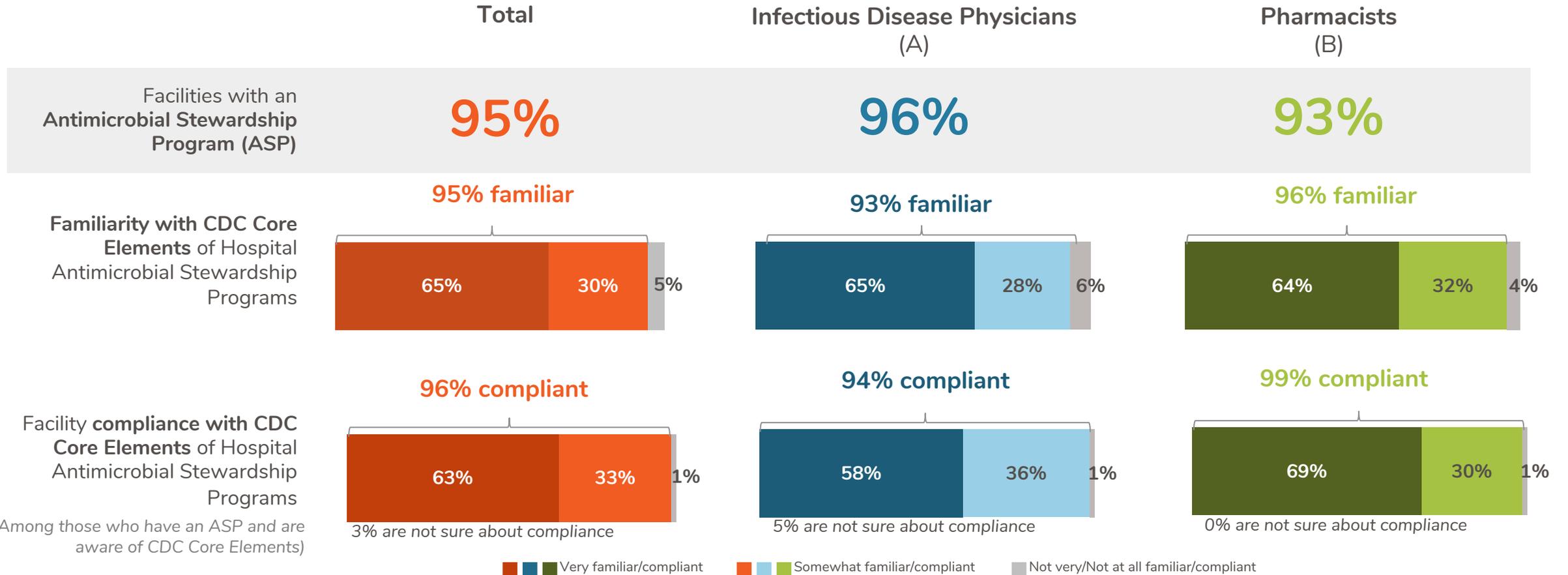
B4a. Which of the following, if any, would you consider the greatest opportunities to improve AMR at your facility?

B4b. Which of the following, if any, would you consider the greatest opportunities to improve AMR at Nationwide?

Detailed Findings:

Antimicrobial Stewardship Programs (ASP)

Almost all ID Physicians and Pharmacists work in facilities that have an ASP. They are familiar with the CDC Core Elements of Hospital Antimicrobial Stewardship Programs and their facilities are in compliance with the CDC Core Elements.



Base Total Physicians/Pharmacists n=156; Infectious Disease Physicians n=81; Pharmacists n=75. Have ASP and familiar with CDC Core Elements Total n=148; Infectious Disease Physicians n=78; Pharmacists n=70. Capital letters indicate a significant difference between groups at the 90% confidence level.

C3. Does your facility have an Antimicrobial Stewardship Program (ASP) in place? C1. How familiar are you with the CDC Core Elements of Hospital Antimicrobial Stewardship Programs (ASP)?

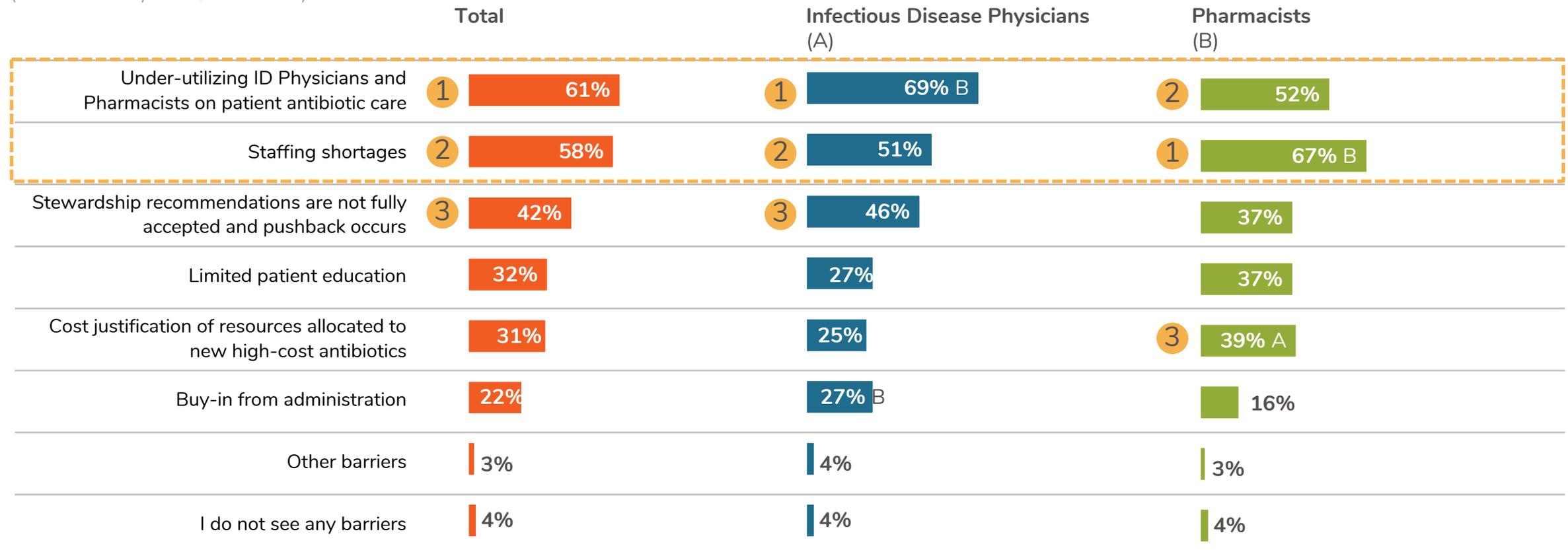
C2. Overall, how would you describe your facility's compliance with the CDC Core Elements of Hospital Antimicrobial Stewardship Programs (ASP)?

Under-utilization of ID Physicians and staffing shortages are considered to be the top 2 barriers to antimicrobial stewardship among ID Physicians and Pharmacists alike.

Physicians see non-acceptance of stewardship recommendations as another top barrier, while Pharmacists are concerned about cost justification of high-cost antibiotics.

Barriers to antimicrobial stewardship in facility

(% of total ID Physicians/Pharmacists)



Base Total Physicians/Pharmacists n=156; Infectious Disease Physicians n=81; Pharmacists n=75.

Capital letters indicate a significant difference between groups at the 90% confidence level.

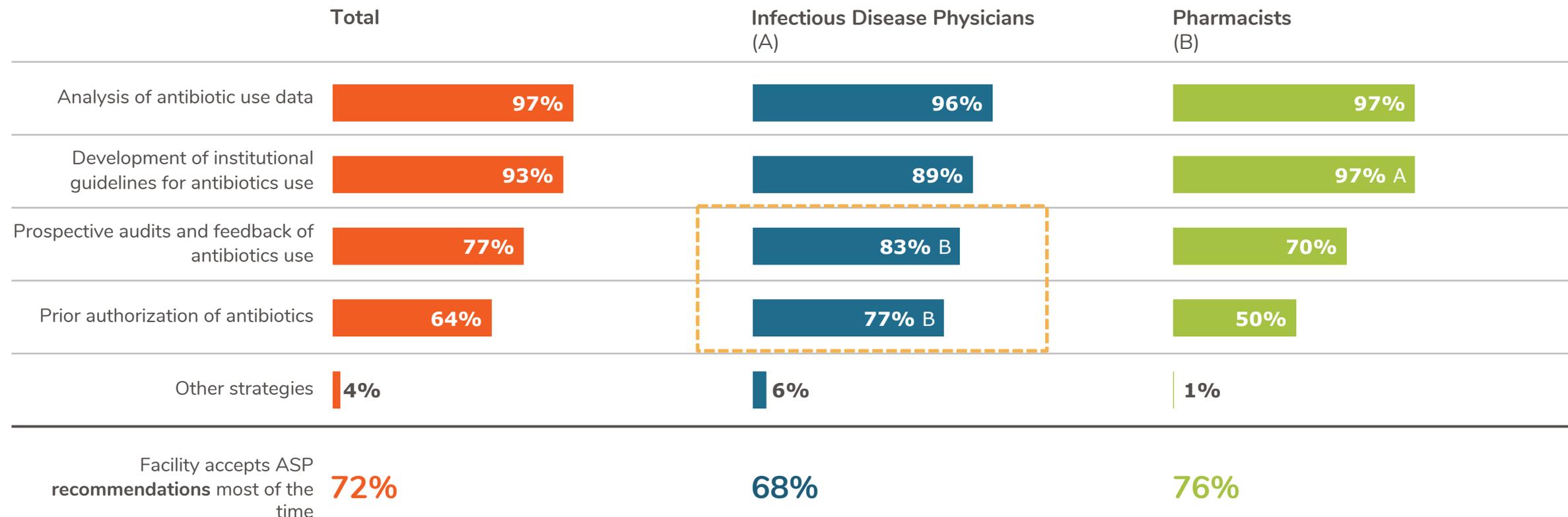
C7. What potential barriers, if any, do you see to antimicrobial stewardship in your facility?

Analysis of antibiotic use data and developing institutional guidelines for antibiotics use are the top 2 strategies used by almost all facilities.

Physicians are more likely than Pharmacists to also report prospective audits and prior authorization of antibiotics. Just over 2 in 3 ID Physicians and 3 in 4 Pharmacists mention a high acceptance of ASP recommendations.

Primary strategies utilized by the facility's ASP

(Among facilities that have an ASP)



Base: ID Physicians/Pharmacists who have an ASP at their facility. Total n=148; Infectious Disease Physicians n=78; Pharmacists n=70.

Capital letters indicate a significant difference between groups at the 90% confidence level.

C4. What are the primary strategies, if any, that are utilized by your facility's ASP?

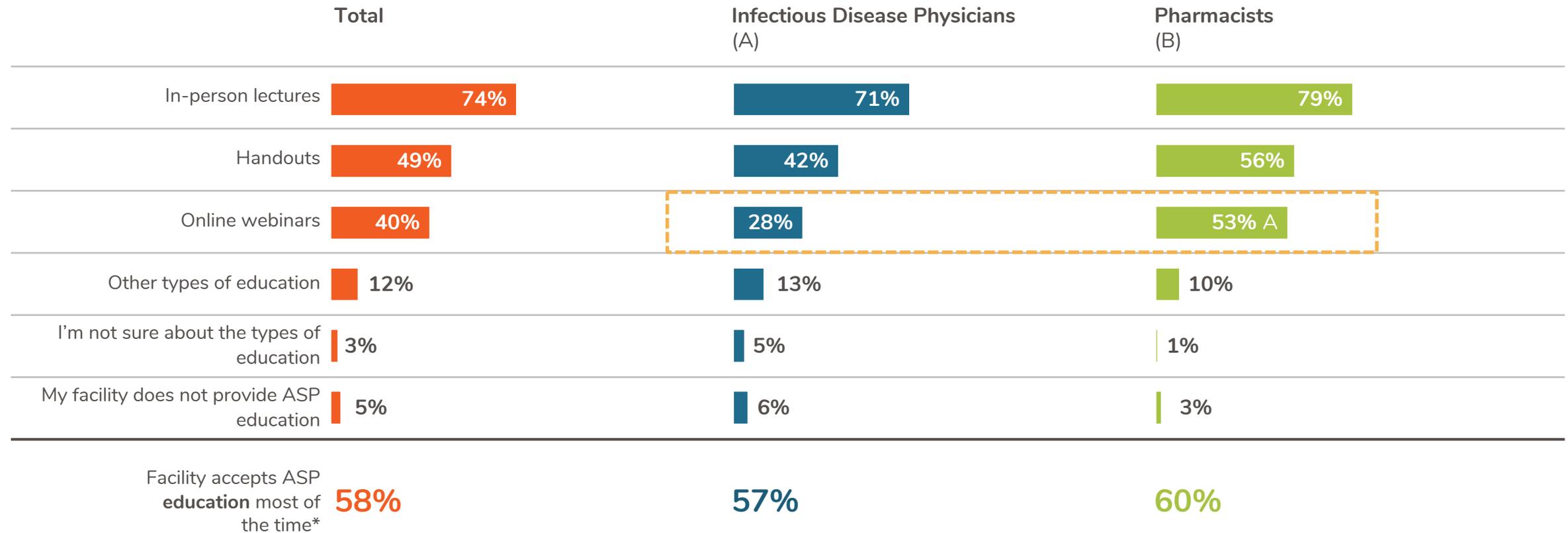
C6. How often, if at all, do you believe recommendations from the Antimicrobial Stewardship Program are accepted in your facility?

In-person lectures are the most common type of education provided among ID Physicians and Pharmacists alike. More than half of facilities accept ASP education.

Pharmacists are almost twice as likely as Physicians to report the use of online webinars.

Types of education provided by the facility's ASP

(Among facilities that have an ASP)



Base: Physicians/Pharmacists who have an ASP at their facility. Total n=148; Infectious Disease Physicians n=78; Pharmacists n=70;

*Base: Physicians/Pharmacists who have an ASP at their facility and ASP provides education. Total n=136; Infectious Disease Physicians n=69; Pharmacists n=67.

Capital letters indicate a significant difference between groups at the 90% confidence level.

C5. What types of education related to antimicrobial resistance, if any, does your facility's ASP provide?

C6. How often, if at all, do you believe education from the Antimicrobial Stewardship Program are accepted in your facility?

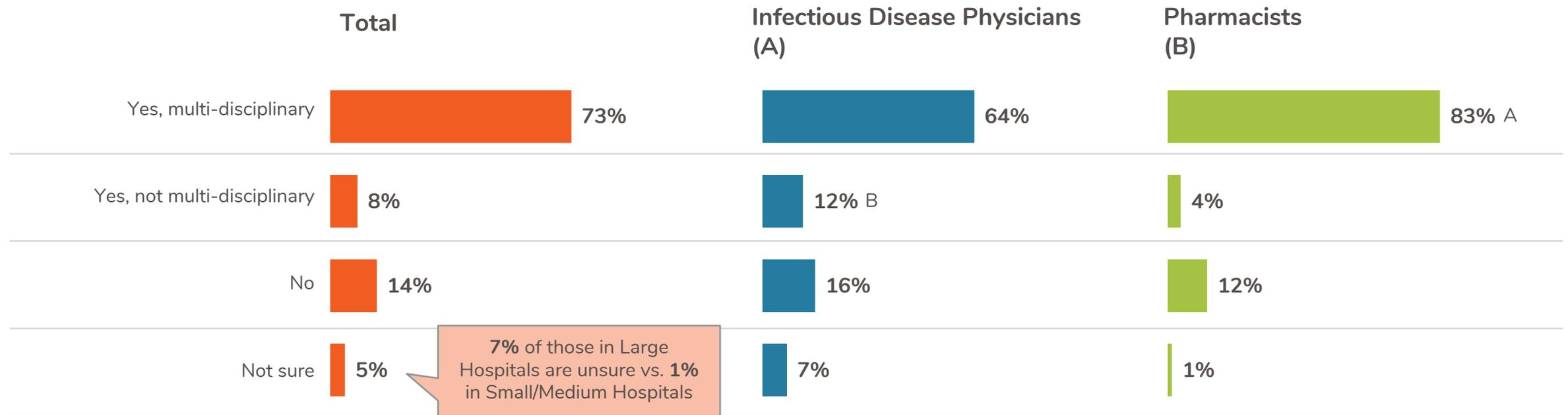
Detailed Findings:

Sepsis, COVID-19, & Emergency Room (ER) Pharmacists

Overall, 8 in 10 facilities have a sepsis program or team in place and most have a multi-disciplinary team. However, multi-disciplinary sepsis teams are more common among Pharmacists' facilities than among ID Physicians'.

Sepsis team/program in place at facility

(% of total ID Physicians/Pharmacists)



Base: Total Physicians/Pharmacists n=156; Infectious Disease Physicians n=81; Pharmacists n=75

Capital letters indicate a significant difference between groups at the 90% confidence level.

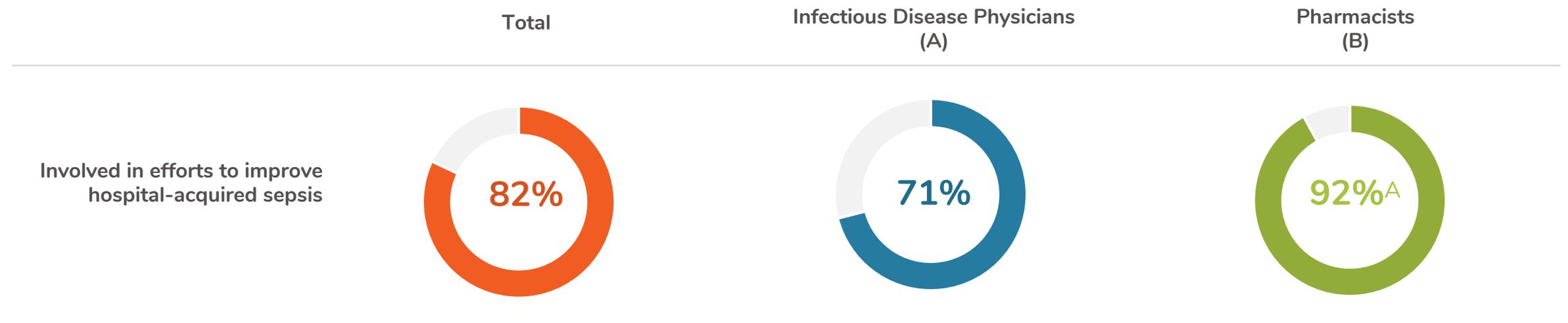
F1. Does your hospital have a sepsis team/program in place?

In hospitals with a sepsis team, the vast majority of ID Physicians and Pharmacists are involved in efforts to improve hospital-acquired sepsis.

Pharmacists are more likely than ID Physicians to be involved.

ID Physician/Pharmacist involvement in sepsis management

(% of those who practice in a facility with a sepsis team)



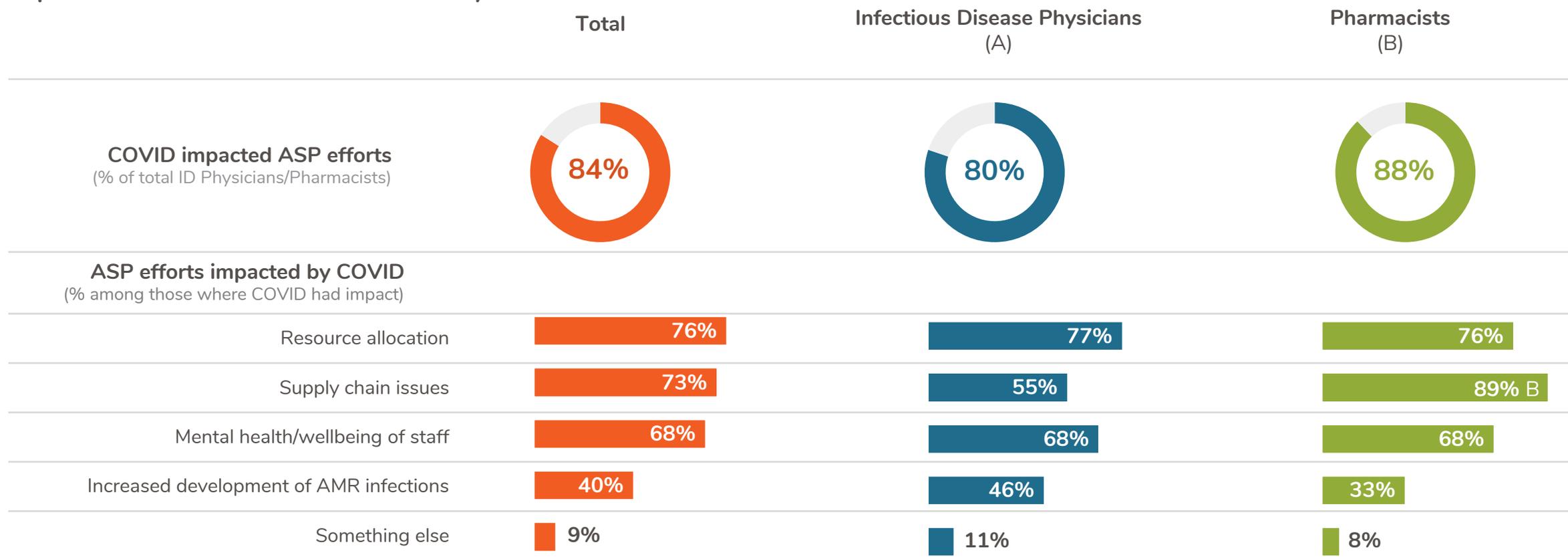
Base: ID Physicians/Pharmacists who practice at a facility that has a sepsis team; Total n=127; Infectious Disease Physicians n=62; Pharmacists n=65.

Capital letters indicate a significant difference between groups at the 90% confidence level.

F1. Does your hospital have a sepsis team/program in place? F2. Are you personally part of the sepsis team? F3. And are you involved in the efforts to improve hospital-acquired sepsis?

COVID strongly impacted ASP efforts in hospitals. While around 3 in 4 of those impacted overall report resource allocation issues, Pharmacists are more likely than ID Physicians to acknowledge supply chain issues.

Impact of COVID on ASP efforts in facility



Base Total Physicians/Pharmacists n=156; Infectious Disease Physicians n=81; Pharmacists n=75. Covid had impact on ASP Efforts Total n=131; Infectious Disease Physicians n=65; Pharmacists n=66.

Capital letters indicate a significant difference between groups at the 90% confidence level.

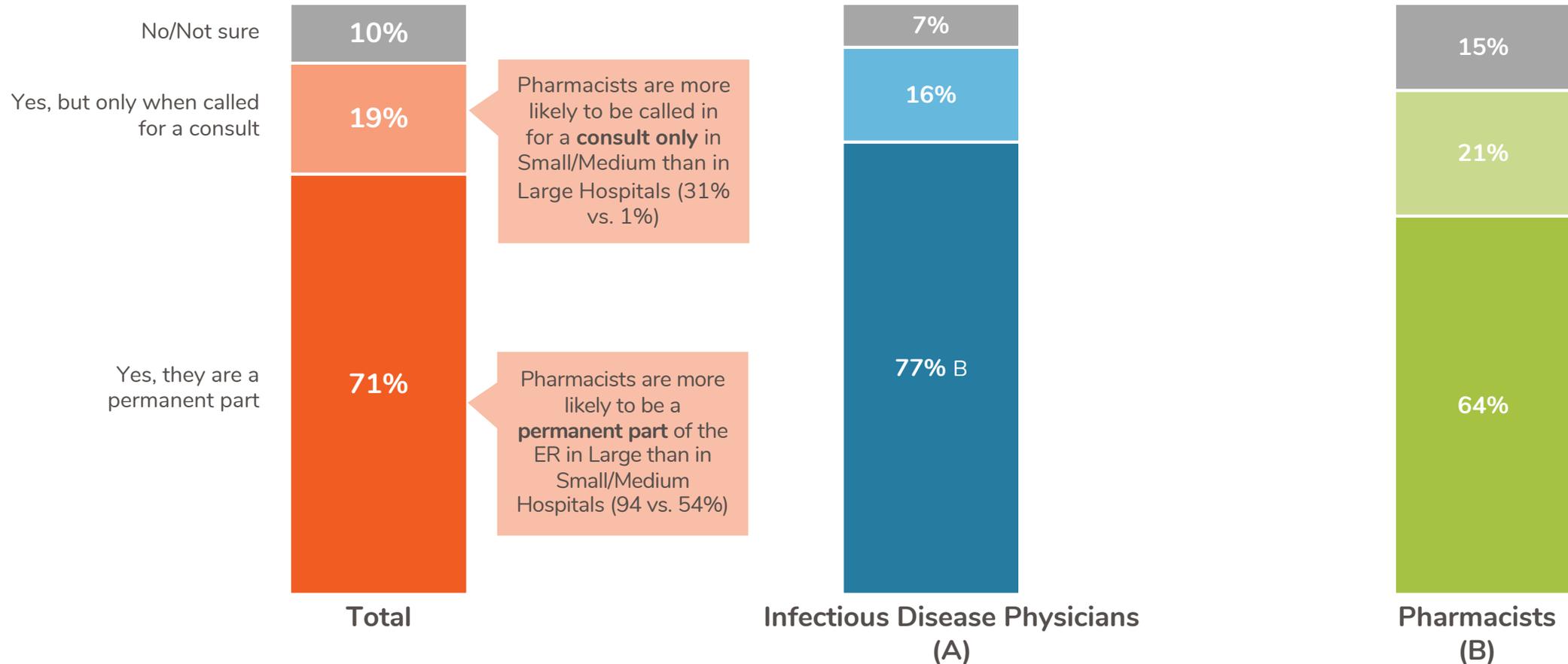
E1. Did the COVID 19 pandemic impact the ASP efforts in your facility?

E2. And how has the COVID 19 pandemic impacted your facility's ASP efforts?

The majority of ID Physicians and Pharmacists report that pharmacists are utilized in the ER, with most reporting they are a permanent part in the ER of their facilities.

Facility has pharmacists in ER

(% of total ID Physicians/Pharmacists)



Base: Total Physicians/Pharmacists n=156; Infectious Disease Physicians n=81; Pharmacists n=75

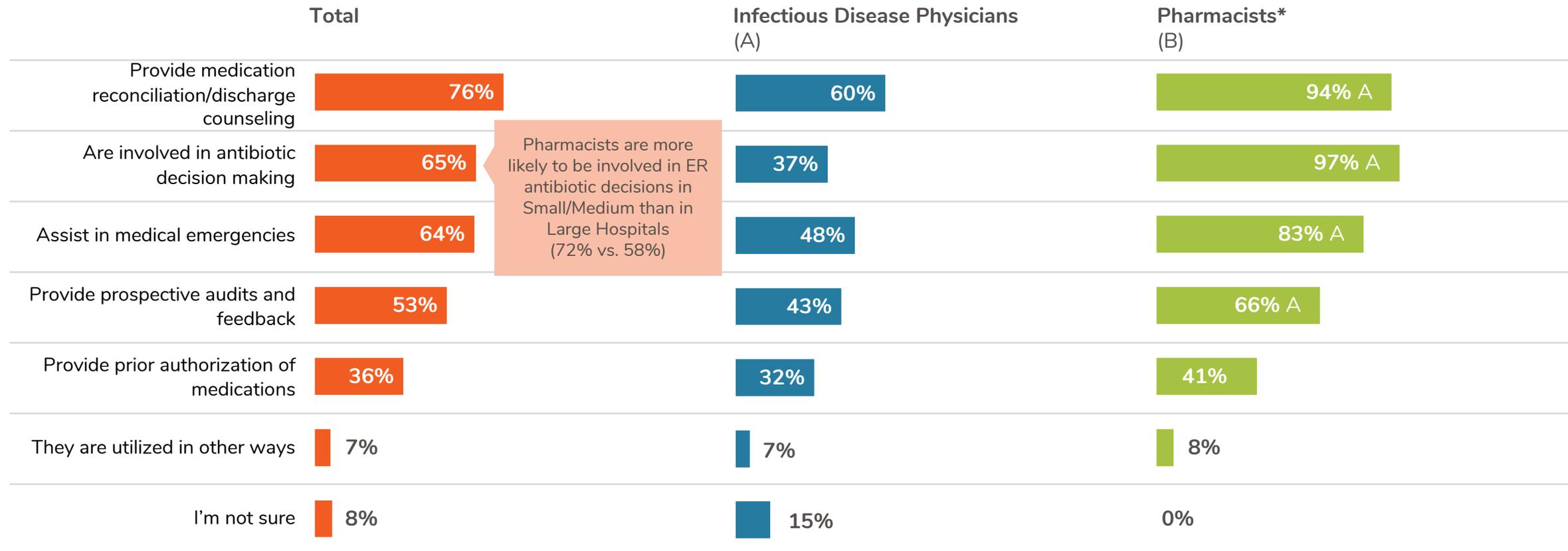
Capital letters indicate a significant difference between groups at the 90% confidence level.

A1. Does your facility have pharmacists in the Emergency Room?

Although slightly fewer Pharmacists report having pharmacists in the ER, when they do, pharmacist utilization rates in this group are higher than among ID Physicians.

How pharmacists are utilized in ER

(% of facilities that utilize pharmacists)



Base: Physicians/Pharmacists who practice at facilities that utilize Pharmacists in the ER. Total n=139; Infectious Disease Physicians n=75; Pharmacists n=64.

Capital letters indicate a significant difference between groups at the 90% confidence level.

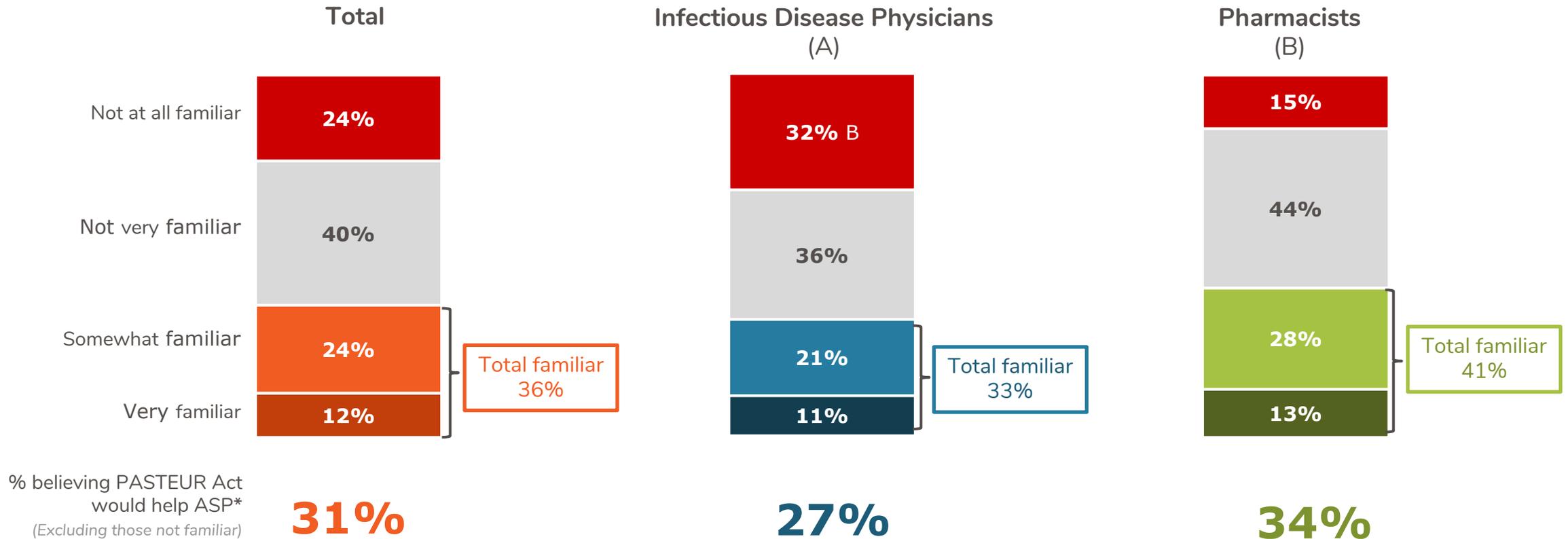
A2. How are the pharmacists in your ER utilized?

Detailed Findings: Legislation

Familiarity with the PASTEUR Act is low, especially among ID Physicians. Pharmacists are slightly more likely to believe the PASTEUR Act would help ASP.

Familiarity with and helpfulness of the PASTEUR Act

(Among total ID Physicians and Pharmacists)

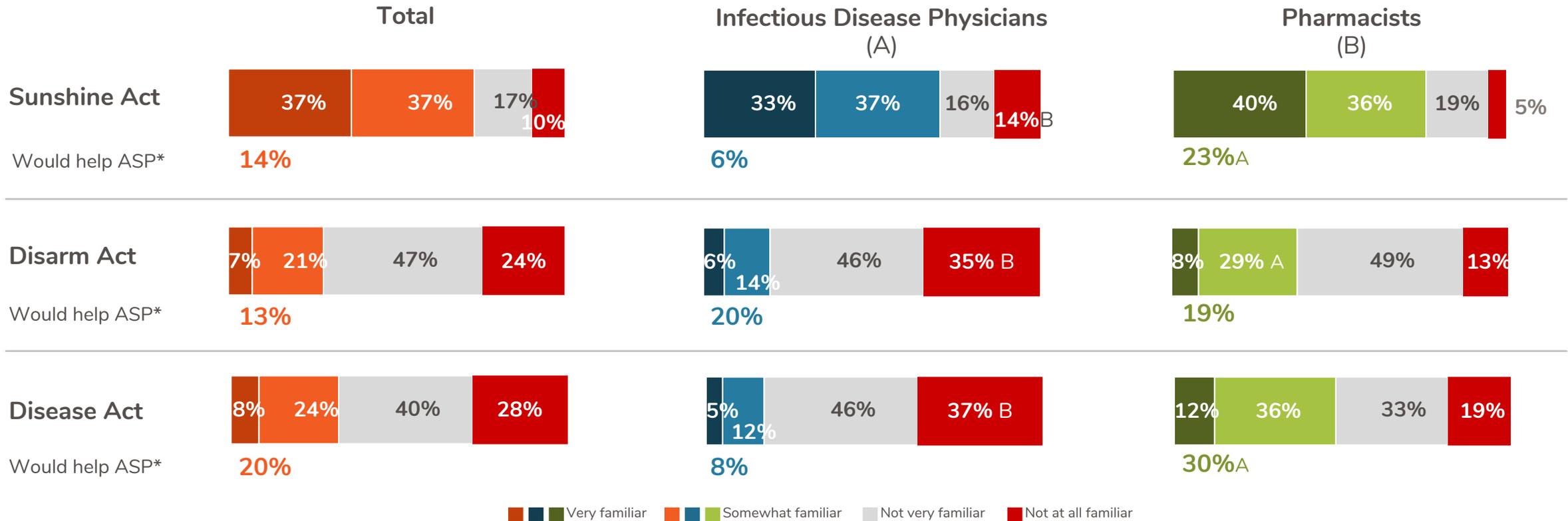


Base: Total Physicians/Pharmacists n=156; Infectious Disease Physicians n=81; Pharmacists n=75
 *Base excluding "not at all familiar" Total n=119; Infectious Disease Physicians n=55; Pharmacists n=64.
 Capital letters indicate a significant difference between groups at the 90% confidence level.
 D1. How familiar are you with each of the following Acts? (PASTEUR ACT)
 D2. And which of the following, if any, are legislation that would help ASP?

Pharmacists are more familiar than ID Physicians with other healthcare legislation as well. However, cynicism about whether legislation can help ASP is prevalent. Familiarity is highest for the Sunshine Act.

Familiarity with and helpfulness of other Acts

(Among total ID Physicians and Pharmacists)



Base: Total Physicians/Pharmacists n=156; Infectious Disease Physicians n=81; Pharmacists n=75

*Base Excluding "not at all familiar" Total n=112-141; Infectious Disease Physicians n=51-70; Pharmacists n=61-71.

Capital letters indicate a significant difference between groups at the 90% confidence level.

D1. How familiar are you with each of the following Acts?

D2. And which of the following, if any, are legislation that would help ASP? (excludes those not familiar with acts)

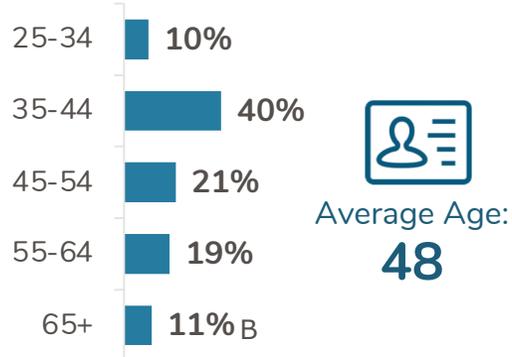
Profiles:

Infectious Disease Physicians and Pharmacists

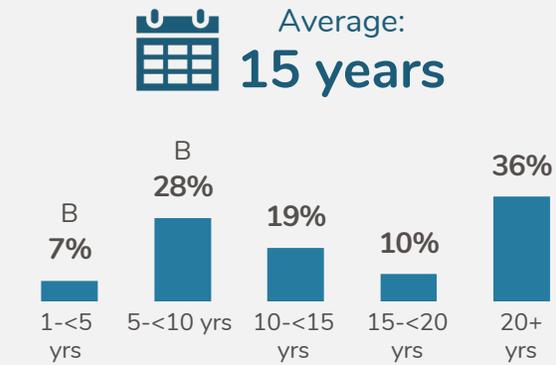
Profile: Infectious Disease Physicians

Physicians are more likely than Pharmacists to work in large, academic or private hospitals in urban areas in the West. They are also more likely to be 65 or older.

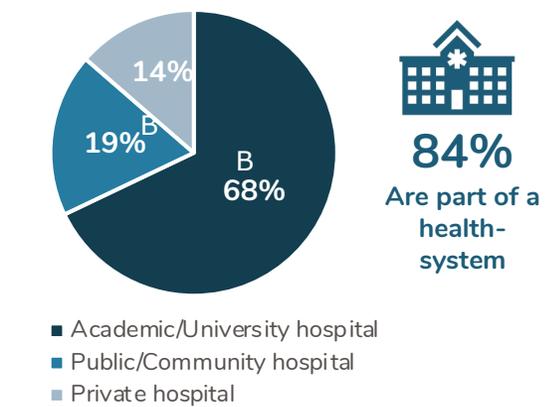
Age



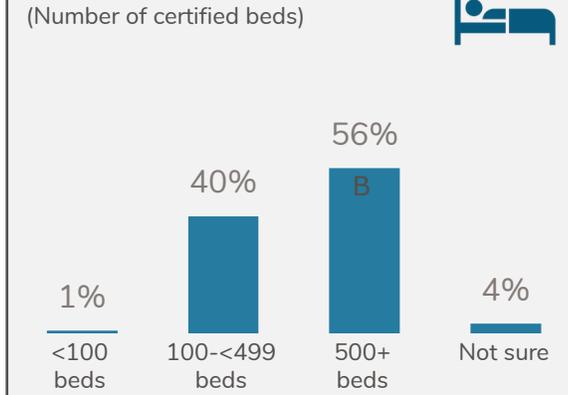
Years practicing



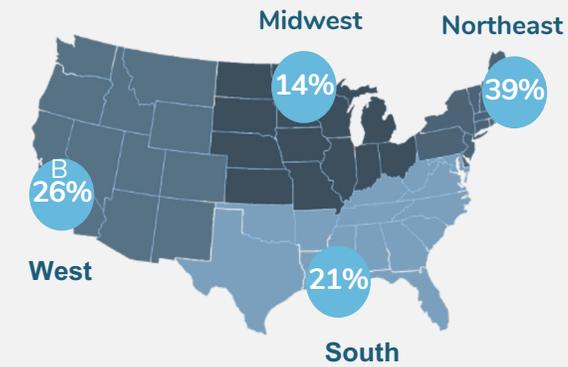
Hospital Type



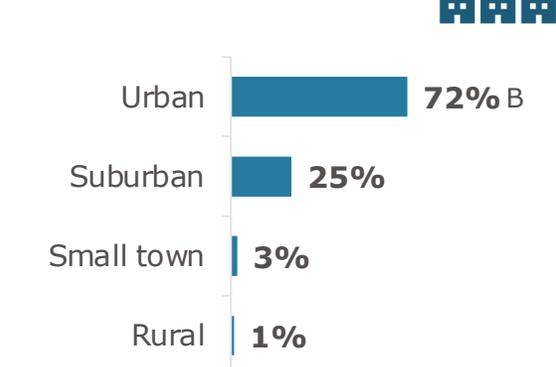
Hospital size



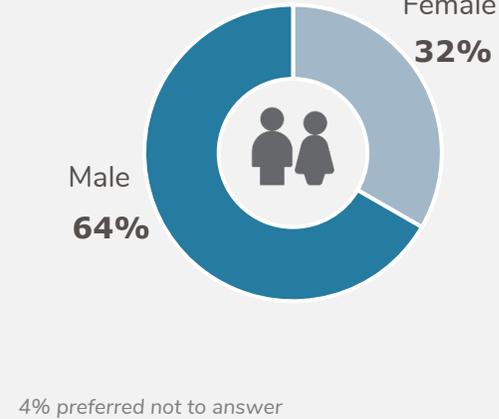
Region



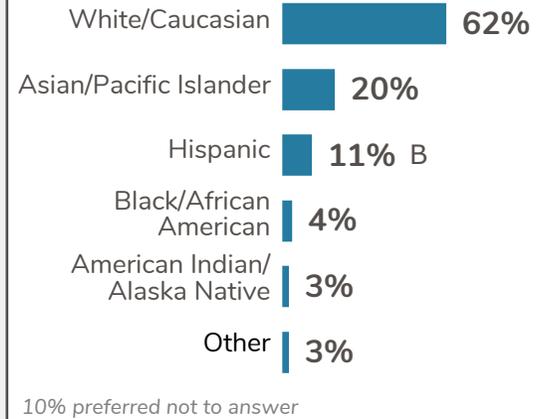
Community Type



Gender



Race/Ethnicity



Base Infectious Disease Physicians n=81; A capital B indicates a significant difference with Pharmacists at the 90% confidence level.

S2. How many years have you been practicing medicine? S4. Where do you primarily practice? S6. How many total certified beds are there in the hospital where you primarily practice? G1. Is the institution you work at stand-alone or part of a health system? G2. In which state do practice

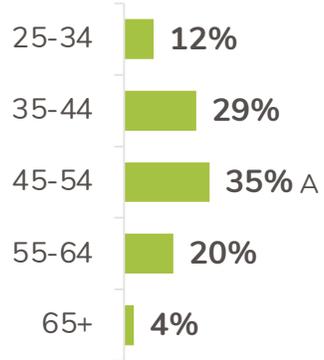
medicine? G3. Which best describes the community where you practice medicine? G4. What is your gender identity? G5. What is your age?

G6. Are you of Hispanic, Latino/a or Spanish origin? G7. Which racial group do you identify most closely with?

Profile: Pharmacists

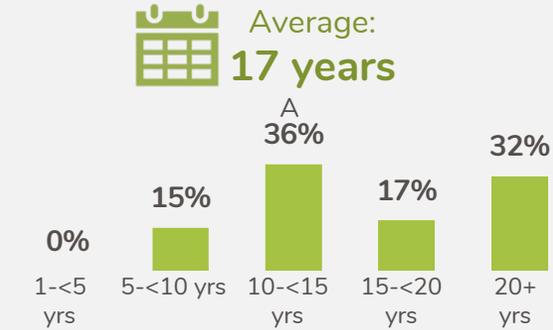
Pharmacists are more likely than ID Physicians to work in medium sized, public/community hospitals in rural areas in the South. They are also more likely to be between 45 and 54 years old

Age



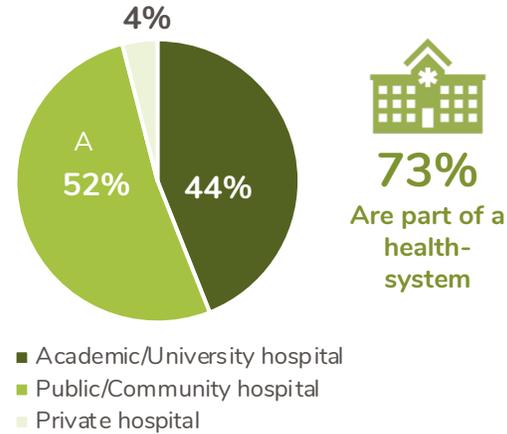
Average Age: **47**

Years practicing



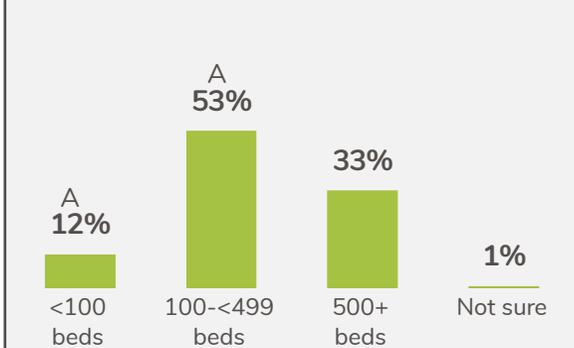
64% Received post-graduate training in infectious diseases

Hospital Type

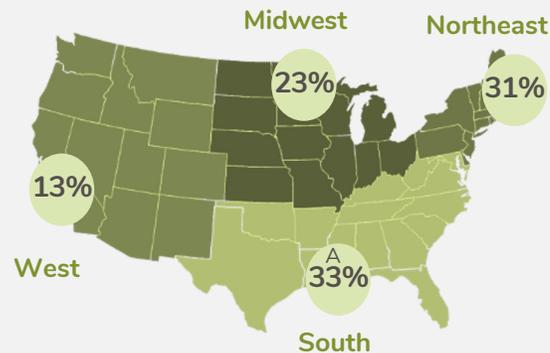


Hospital size

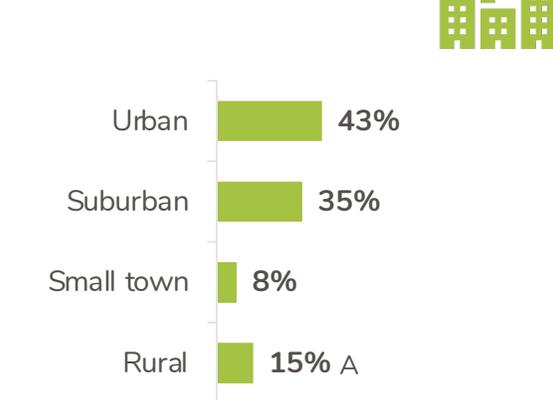
(Number of certified beds)



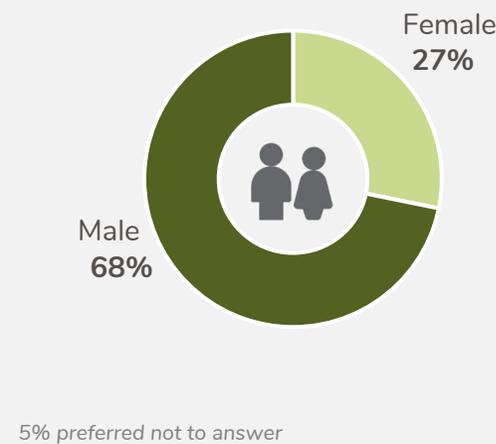
Region



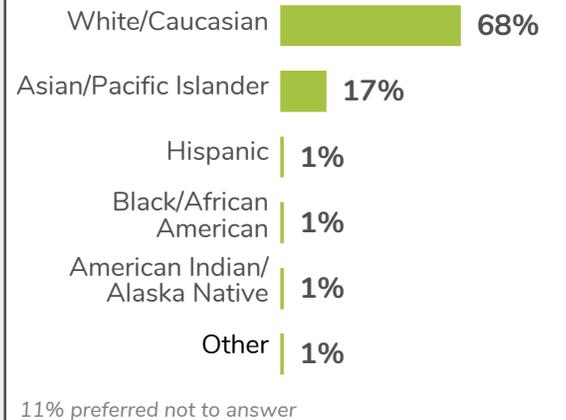
Community Type



Gender



Race/Ethnicity



Base: Pharmacists n=75. A capital A indicates a significant difference with ID Physicians at the 90% confidence level.

S2. How many years have you been practicing medicine? S4. Where do you primarily practice? S6. How many total certified beds are there in the hospital where you primarily practice? G1. Is the institution you work at stand-alone or part of a health system? G2. In which state do practice medicine? G3. Which best describes the community where you practice medicine? G4. What is your gender identity? G5. What is your age?

G6. Are you of Hispanic, Latino/a or Spanish origin? G7. Which racial group do you identify most closely with?



SEPSIS
ALLIANCE

To learn more about sepsis
and Sepsis Alliance, visit
[Sepsis.org](https://www.sepsis.org).

Access resources about antimicrobial
resistance and how you can help
Power the AMRevolution at
[EndSuperbugs.org](https://www.endsuperbugs.org).

