

Study of antimicrobial stewardship programs sheds light on how health systems can reduce overuse of antibiotics

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Researchers at Intermountain Healthcare in Salt Lake City have conducted a landmark, first-of-its-kind survey to identify and stratify antimicrobial stewardship programs into four different groups—a first step toward studying the effectiveness of these models to best enhance patient care and reduce the rise of antibiotic resistant superbugs. Credit: Intermountain Healthcare

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Antimicrobial [stewardship](#) programs are a vital way for hospitals and healthcare systems to ensure that antibiotics are being appropriately used. If they keep being given to patients who don't need them, they can harm those patients while also contributing to antibiotic resistance, thus making bacterial infections harder to treat.

These programs can be as varied as healthcare systems themselves, leaving researchers in the dark as to [best practices](#) in their antibiotic approach. That's why this new work by the Intermountain Healthcare team is so vital.

"We brought together antimicrobial stewardship leaders from around the country to better understand both the structures and functions of their programs," said researcher Whitney Buckel, PharmD, an antimicrobial stewardship pharmacist manager at Intermountain Healthcare. "We wanted to categorize different approaches to this work, with the hope of then identifying which methods are most effective, and what can be used as models for other healthcare systems."

"You could find 50 different marathon training programs that would all get you to the finish line, but they may not all be efficient, or applicable to you. It's the same with antimicrobial stewardship programs," added researcher Eddie Stenehjem, MD, medical director of antibiotic stewardship at Intermountain Healthcare. "We wanted to get a better idea of what is happening out in mostly in-patient healthcare settings, so that we can start determining which programs are best suited to which kind of healthcare systems."

The study, led by Intermountain researchers in collaboration with scientists from Pew Charitable Trusts and the University of Utah, surveyed 20 different healthcare systems, including Kaiser Permanente, the Mayo Clinic and Veterans Health Administration.

Results were published in a recent issue journal *Clinical Infectious Diseases*.

As part of the national survey, program leaders were asked about things like key aspects of their system or network's current antibiotic stewardship structure and function. Researchers also conducted a webinar, virtual breakout group discussions and focus groups, which gave them more information about these antimicrobial stewardship programs, and also prompted leaders in this field to start conversations with each other about their work.

Researchers found four categories of programs exist in the United States:

1. Collaborative Model (15%): These programs developed organically with no formal structure and are run by committees with limited accountability. Through this model, participation by sites is voluntary, and antimicrobial stewardship goals are set by individual sites, rather than at the system level.
2. Centrally Coordinated Model (30%): These programs have a formal written structure and committee with some level of system accountability. This model often forms organically at first but also has committee-led system stewardship initiatives, systemwide goals coordinated through a central committee (and may be augmented by local goals), data resources that are often prioritized by the committee.

These programs typically have tools and technology changes coordinated

and shared through a central committee; and subject-matter expertise, communication and education provide locally with committee support. Under this model, participation is often required.

3. Centrally Led Model (40%): These programs have a formal system of antimicrobial stewardship leaders, and system accountability with system-level resources. Goals are set by leaders at the system level (and may be augmented by local goals), with system leaders responsible for standardized data across all sites, and with benchmarking prioritized.

Under this model, system leaders coordinate tools and technology changes so that they are universally implemented. Subject-matter expertise, communication and education is often provided at a system level and reinforced locally as well. Like with Centrally Coordinated models, participation is often required.

4. Collaborative, Consultative Network Model (10%). These program, where antimicrobial stewardship leaders outside the organization serve as consultants, mentors, or members in collaboration with on-site leaders, allow sites to participate in and receive support from a network. This model also has site-specific mentoring, goals, stewardship and tools adopted from external sites; data technology and communication developed locally or through the system's network; and subject-matter expertise and education provided by external leaders as well.

Understanding [antimicrobial stewardship programs](#) across integrated [health systems](#) is becoming more critical as healthcare systems merge and expand. In 2018, for example, about 75% of hospitals in the United States and 90% of hospital beds were affiliated with a health system, said Dr. Stenehjem.

"In addition to healthcare systems becoming larger, they're also coming together with similar electronic health records platforms and trying to

streamline resources," said Buckel. "Every healthcare system is federally mandated to have an antibiotic stewardship program, and everyone worked hard to meet the minimum. Now we're trying to show the way to improve upon that if they haven't already."

Next, researchers hope to use these categories to start studying which models are most effective for which kinds of healthcare systems. This study also focused largely on practices for in-patient care, and researchers hope to expand their work to antibiotic prescribing activity at in out-patient settings, like urgent care clinics and doctor's offices.

"We hope bringing together these groups and starting to learn more about how we all approach antimicrobial stewardship is the start of a call to action and will also get healthcare systems to prioritize and fund centrally-lead stewardship programs," said Dr. Stenehjem. "It makes our [patient care](#) better and benefits the overall health of our communities at the same time."

More information: Robert Weinstein et al, Harnessing the Power of Health Systems and Networks for Antimicrobial Stewardship, *Clinical Infectious Diseases* (2022). [DOI: 10.1093/cid/ciac515](https://doi.org/10.1093/cid/ciac515)

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