

## In Conversation With... Alison Holmes, MD, MPH

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**Editor's note:** *Dr. Alison Holmes is Director of Infection Prevention and Control at Imperial College Healthcare NHS Trust and a Professor of Infectious Diseases at Imperial College London. Dr. Holmes is Co-Director of the National Centre for Infection Prevention and Management and a Theme Lead at the Centre for Patient Safety and Service Quality. Her research includes molecular epidemiology, antimicrobial prescribing, behavior change, and health care–associated infection. We spoke with her about infection prevention and patient safety.*

**Dr. Robert Wachter, Editor, AHRQ WebM&M:** Do you see infection prevention as part of the field of patient safety?

**Dr. Alison Holmes:** Yes, I do think the energy around the patient safety movement could have really been harnessed more. Globally the patient safety agenda may be slightly patchier in some places than infection prevention. But wherever the energy is, just use it—be opportunistic. It's all part of improving the quality of care and reducing harm. What could be more appropriate than applying the patient safety agenda to infection prevention?

**RW:** Infection prevention has been around much longer than the patient safety field. What are a few lessons that people in the infection world have learned that might be relevant to patient safety?

**AH:** The use of data to drive quality improvements—Florence Nightingale was looking at infection-related outcomes and mortality—and the surveillance of processes and outcomes related to infection intervention and antibiotic prescribing are really important. Issues that more recently have been taken on board are the need for multidisciplinary networks, embedding things in the structure of organizations to make sure the agenda is delivered, learning from the negatives like avoiding small technical teams not aligned with organizational frameworks, ensuring reinforcement from your academic partnerships and colleagues, making sure that the agenda is positively reinforced within hospitals supported by management and academia. Also, the [antimicrobial resistance](#) agenda has been there for a long time. It should have been much stronger and much more positively reinforced and recognized within the infection prevention agenda and the patient safety world.

**RW:** I wonder whether some of the more general patient safety issues are easier to explain or understand. "We operated on the wrong patient" is so tangible. "You have a health care–associated infection" seems a little bit more inaccessible or more technical. Did that have anything to do with it?

**AH:** Perhaps, but that might be influenced by the social context and the sociopolitical context, because some countries have had a major focus on infection control outcomes and many patients believe it is very important. What they are most worried about when coming into hospital, regardless of the data, has been health care–associated infection. People are much more concerned about health care–associated infections than whether the surgeon will remove the wrong limb, operate on the wrong person, or give the wrong medication. So I think it's a bit more complicated than saying it's easier to understand. It depends on where you are, the level of media interest, the type of health care, etc.

**RW:** The infection prevention universe has systems for surveillance and monitoring and standard ways of collecting data. In much of the patient safety world, we rely on voluntary incident reporting, which hasn't worked very well. Why do you think that difference arose, and are lessons about how the infection world collects evidence about harm relevant to broader areas in patient safety?

**AH:** Also there's the tension between the top-down and bottom-up. I'm talking to you from a country where they've had very strong mandatory reporting and mandatory targets, which have been incredibly effective but may have reached the limits of what they can do some time ago. The useful thing about the mandatory requirements was the strong external positive reinforcement provided for trust [health system] hospital boards. That framework was incredibly useful, but it also stifled the opportunity to look at other things beyond the external target. It's critically important, whether you're within infection prevention or you're a patient safety leader, to make sure that whatever you're providing and whatever your structure, it goes beyond addressing any legislative and statutory requirements. It must address what is locally important and locally credible as well.

**RW:** Give an example of your trust or your hospital system or network. What would a target be, who would it come from, and what kinds of pressures would it create?

**AH:** Within the United Kingdom, there has been a major focus on health care–associated infections, with an enormous amount of media attention. There are very stringent targets about how many MRSA bacteremias are allowed per large hospital organization. Also *Clostridium difficile* targets get lower and lower every year. And these targets have driven lots of improvement, but there are unintended consequences. Hospital boards have crowded agendas. How on earth can we move on the antimicrobial resistance agenda if the only item of concern remains very small numbers of MRSA bacteremia? Similarly when MRSA was the only target, the problems with *C. difficile* were ignored until that was made a target. It's really important that those leading local programs, regardless of the external targets, make sure that they are addressing comprehensively the issues, potential problems, and challenges that face their patient populations and clinical specialties.

**RW:** You've made clear that these targets have been successful in driving the agenda and have generated focus and resources. These kinds of strict targets, with major accountability, are not something we do very much in the States. If you were in charge of the health care system in the United States would you build in

such targets with that kind of pressure?

**AH:** I certainly think that building in some targets that are regularly reviewed is worthwhile. It's also important to standardize them and make sure that there's adequate engagement so people understand the definitions and agree on the targets. They should not be completely set in stone. They should also be reviewed regularly.

**RW:** Some people point out that a lot of attention within the broad field of patient safety is now going to infections. In the US, central line–associated bloodstream infections are a major success story in the safety field. In some ways, because they are more easily measured than other harms, such as diagnostic errors, they perhaps get additional attention, and we tend to pay less attention to other things that are harder to measure.

**AH:** Yeah, perhaps. An analogous issue is that we've not done enough around integrating better use of antibiotics into the patient safety agenda. So I still think more could be done there. That's something that we really need to think about—how to frame that more effectively, nationally and internationally.

**RW:** Let's shift to antimicrobial stewardship. Can you define what that means?

**AH:** [Antibiotic stewardship](#) is about the effective use of antibiotics to optimize how we treat infections and to reduce unnecessary exposure so that we can ensure that we're not driving resistance and that we have an effective resource. We should be treating antibiotics as a really important resource for our population.

**RW:** It strikes me that the issue of appropriateness is marbled through all of health care, making sure we're doing the right x-rays and giving the right medicines for patients with heart failure. What's different about antimicrobial stewardship?

**AH:** The difference is that some of the examples that you're giving impact only that individual at that particular time. Every time you use antibiotics, you have to think about not only the treatment of that individual and infection but also the impact it will have on that individual, treating subsequent infections, and the impact on all of those around them. That makes it really difficult. It's a resource that we're using up, and we don't have enough antibiotics in the pipeline to replace all these ones that we have resistance against. So that is why. But your question is really pertinent. The word "stewardship" doesn't really sound clear enough. Maybe it should be around preserving the effectiveness of antibiotics or ensuring access to effective antibiotics for now and for the future.

**RW:** It strikes me that embedded in that rationale is a larger tension in health care—the role of the physician in taking care of the individual patient in the office or hospital bed versus the role of the physician in thinking about the entire population and the system.

**AH:** That's true. The tension is between the individual and public health implications. This is such an enormous problem. We're not talking about withholding antibiotics where they're necessary, but about effective use of antibiotics and ensuring access to antibiotics. If we do not look after them carefully and provide adequate stewardship, we will not be able to access effective antibiotics.

**RW:** Let me frame an issue that comes up a lot: The patient comes in and has what appears to be a viral infection or a cough and wants antibiotics. How do you make the argument to patients that this is a bad idea? Is it that this might harm you, or is it that public health piece: that we need to preserve antibiotics for others who aren't in the room right now?

**AH:** Absolutely. A variety of interventions have been done or are being examined at the public health level in terms of awareness and engagement, and at the individual consult level in primary care. There's been lots of work around using delayed prescriptions. It might be a prescription that can be used in 48 hours if the symptoms haven't gone away, or something that can be written, or it's a non-prescription. It's something that the patient can take away. Other things are being developed that can be used to talk through algorithms for when antibiotics should be used. You've highlighted something critical: we have not gotten far enough with public engagement and awareness in terms of the threat of overuse of antibiotics. But access is important. In some parts of the world, accessing antibiotics is a problem. We need to make sure that any policies that are developed and delivered do not compromise access to antibiotics where they're needed. But not for people coming in with viral upper respiratory tract infections. There are various ways of doing that. Also some beautiful studies have been done about Web-based training of primary care doctors and the use of CRP [C-reactive protein] testing at the point of care, which has reduced unnecessary antibiotic use.

**RW:** The field of infection prevention and antimicrobial stewardship has always been global with a real sense of concern about developing countries, and the patient safety field less so. The patient safety field began by thinking about what life looks like in an American hospital or in a UK hospital. How has that colored these two fields?

**AH:** Yes, in the rarified world of super-duper US hospitals, you're not thinking about the safety of your water and your sanitation, etc. The infection prevention side of things is really universal and international. Of course, hospitals everywhere struggle to offer safe surgery, to prevent medication incidents and other harms. But in terms of prioritization it will depend on what health care systems can offer.

**RW:** I remember 10 years ago people were talking about rotating antibiotics and all sorts of things. As the antimicrobial and antibiotic stewardship movement has evolved over the years, what are the main new paradigms in this area? You mentioned one, the delayed antibiotic idea. What are some of the others that are taking root?

**AH:** We need to make sure that we have prescribing diversity—that we don't have very homogenous prescribing practice—so that we can try to maintain effectiveness of antibiotics. In terms of what one can do within organizations, it's the same whether you're setting up a patient safety program or an infection prevention program. Antibiotic stewardship should be part of the quality agenda in hospitals; whether it sits directly in infection prevention or your patient safety program depends on how your hospitals work. But it should be something that everybody is signed up for; it should be regarded as an indicator of quality of care. It has to have full managerial and board support. And it should be integrated into all the existing systems for monitoring best practices and providing positive reinforcement. You'll need role models. You'll need to make sure people have the skills. Shared beliefs and the organizational support all needs to be there. It shouldn't be something that's just bolted on.

**RW:** One question that's come up in many parts of patient safety, infections being one of them, is whether the approach that we've taken of trying to inspire and cajole clinicians to follow certain safety practices is the right one, or is it time to get tougher? Where should we land on that spectrum of trying to move people along and give them feedback versus saying as a system, "You must do this thing, and if you don't you cannot work here"?

**AH:** You need to do both. You need to be able to provide individual level feedback and data. But that also needs to be integrated into how you're monitoring everything else. So if you feel that it's an important quality indicator and compliance with it is important, you need to be measuring it at an individual level and feeding it back and supporting people. Clinical and managerial leaders will also need to be able to see that data, not just to target individuals but also to make sure that they are reinforcing and supporting the delivery of whatever process or outcome you're measuring. It's so important that the organization that you work in completely backs this up, so there can be no physician or surgeon feeling that they're above complying with prescribing or a particular practice. The other thing that needs to be recognized is the importance of clinical leaders and those clinical hierarchies. We need to make sure that those leaders are absolutely involved in whatever it is that you want to measure and ensure is something that your organization can robustly monitor as a quality indicator.

**RW:** In the US, we've had an incentive program to computerize hospitals and doctors' offices. And it appears to be working: the rate of computerization in American hospitals and clinics is now up to about 70%, and 4 years ago those numbers were about 10% or 20%. How does the wiring of health care change your field?

**AH:** Actually, I think this is really exciting. Going back to what you were saying about international possibilities. Here we have a variety of challenges related to IT and lack of electronic prescribing. However, what we've been doing a lot is using mobile technology. It is at the point of care whether you're seeing a patient at a desk, in your office, in consulting rooms, on a ward, whatever. This has kind of leapfrogged our existing technology. We recognize that many of our junior doctors and trainees are already using lots of mobile applications. [Mobile technology](#) offers some major opportunities for reinforcing compliance, providing information at the point of care, providing decision support, collecting data, and incentivizing people. In many countries that don't have the IT infrastructure that you're talking about, everybody uses their [smartphones](#). Your question was just about PCs and IT. Even if you have problems with your IT infrastructure, your clunky PC, there may be quite a bit of mobile technology that will provide many solutions.