Antimicrobial Stewardship – Why We Must, How We Can

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Welcome to the antibiotic stewardship call. Later we will conduct a question and answer session. This conference is being recorded. I will now turn the call over to Gail Shirley.

Good morning or afternoon everyone. Welcome to our presentation on antibiotics stewardship. I'm from Hawaii. Also on the call and cosponsoring the webinar are QIO's from Alaska, Colorado, Minnesota, Montana, Nebraska, South Dakota, Utah and Wyoming and we are so pleased that you're able to join us today. A few housekeeping items. The calls are on mute. At the end of the session, if we have time, we will open the lines for questions. At this time I will introduce our speaker Dr. Arjun Srinivasan associate director for healthcare associated infection prevention programs. His work includes oversight and coordination of efforts to eliminate infections. His research and areas include outbreak investigations, infection chrome and multidrug negative passage and member of the infection control epidemiology, and the society for healthcare epidemiology of America. A more comprehensive bio has been presented. We are so glad to have him back with us. Dr. Srinivasan, I will turn it over to you.

Thank you for having me back again. I'm really pleased that this topic continues to be one that's so important to the great A plus QIO's and remain eager to support your efforts in any way I can. What I would like to do is try and address some of these issues that she said that several of you are struggling with. And these couple of questions are the ones that really rose to the top that she had shared with me. As to are ones that she's heard in her discussions with all of you. One is how can we improve antibiotic use in small hospitals where resources are even more limited than in larger hospitals. I know that's a particular challenge in the A plus QIO's where many of your facilities are small and the second is one of the big challenges, irrespective of facility size, and that is what can be done to monitor and evaluate the effectiveness of our stewardship efforts. Both are challenging questions. There aren't perfect answers but there are a couple of things I would suggest and things I will spend the bulk of my time talking about. The first is the need to push stewardship to the front lines so everyone helps. This is one of the approaches we can take to the limited resources is to get more people involved and get more people to help us. I think one of the -- a couple ways we can do that, one is to focus on very concrete interventions, that front line clinicians see has value added and went to participate in and the other is to find groups who are willing to help us become leaders in stewardship issues. On the measurement front we have to work on emphasizing flexibility and work with each other to find simple measures that will work for all of us in the different settings that we work in. So let me begin, then, by talking a little bit about this concept of trying to move stewardship more and more to the frontlines. Where we are right now with antibiotic stewardship, when you have this discussion with people, people say we need an antibiotic stewardship program. It's the job
of the stewardship program to improve antibiotic use. That stewardship program needs to be a multidisciplinary team with an I.D. clinician and I.D. pharmacist. This model is certainly a gold standard structure. It's been very effective, based on published experience. That's why it is the foundation of the evidence-based guidelines for antimicrobial stewardship, but we also know that the goal of a stewardship program is not to try and dictate antibiotic choices. The goal of the stewardship program is to develop those systems and provide support so that every provider becomes a steward of antibiotics and that every provider uses antibiotics optimally. I would argue for stewardship to work in a hospital, every provider has to view it as their responsibility and has to play a role in stewardship. The challenge, of course, with the current approach if we try to lean on these heavily staffed programs that depend on an I.D. clinician and an I.D. pharmacist to lead the program is that we know that this -- these types of staff don't exist in the majority of hospitals and I would venture in the great A plus QIO's you probably have an even bigger challenge with trying to find these types of staff members in your facilities. We just know there aren't enough of these people to go around and we know there's simply not enough resources available to bring these people on staff and to get them engaged. We also know that even if you do have a stewardship program that's led by an I.D. clinician and where there's an I.D. pharmacist who's engaged, that may be an important step toward improving antibiotic use but it's not going to solve the problem. The program itself can't intervene on every patient getting antibiotics. Antibiotics are used too much in our hospitals in the stewardship program to intervene in every single case and I worry sometimes that we've created a perception where frontline providers, particularly in places where there is some sort of a stewardship program, well, I don't have to pay attention to how well I use antibiotics because stewardship is someone else's job. We have a stewardship program that will take care of improving antibiotic use, so I don't have to worry about that. I think that my argument and my push is to really change that model and to follow the example of infection control. I think all of us remember the days when infection control was really thought to be the sole responsibility of the infection prevention and control program and, you know, it was clear, I think, that the limited staff in those programs really wasn't able to do all of the things that we wanted done, and I think over time we've shifted the model of infection control and we've come to an understanding that the way this works is that the frontline providers, the providers who are providing the care, are the ones who are ultimately responsible for infection control, and the healthcare epidemiology and infection control program is there to provide expertise, guidance, resources, support in order to help those providers do good infection control and that's exactly the model we need to follow for antibiotic stewardship, which means we're going to need other groups to assume leadership roles in stewardship, not to just be there for the ride but take responsibility. Think about your projects that you might have done with CLABSI where the champion of that project is not the infection control professional or the healthcare epidemiology. The champion, the leader of that effort is often times an intensiveness or another member of the ICU staff. Likewise for sword -- we need intensiveness to take on a leadership role in critical care areas. We need surgeons to come on board for surgical prophylaxis. These stewardship efforts will be most effective if they become a true partnership between a stewardship team, which has the stewardship expertise and the clinicians who can translate that expertise to the frontline providers. A group that I think is incredibly important for us to try to engage are hospitalists, and there are a couple of reasons why I think hospitalists are such an important group for us to work toward engaging. First of all, there are a lot of them. I think it is the single fastest growing medical specialty in the United States. There are more than 30,000 hospitalists a couple years ago. We know many hospitals have hospitalist programs. Two thirds of hospitalists are in place in two thirds of U.S. hospitals in over 90% of larger hospitals. Many, many more places have stewardship programs, of course, than have I.D. Docs and I.D. pharmacists, have hospitalists. In 2006. We know that more than half of all U.S. nonsurgical Medicare discharges were cared for by hospitalists. So they touch a very large number of patients. We also know that the complications of antimicrobial resistant gram positive and l--- resist tense like difficile hit home. We know some of the types of things we need to do for stewardship like developing templates and guidelines and checklists are the types of things that are very, very common place in hospital medicine and very comfortable to hospitalists. We also know that some of the challenges that we have with ward -- stewardship are patient sign off, H. off, care transitions where one physician has to be comfortable altering the treatment course. Again, these are all issues that hospitalists deal with on daily basis and have some skills in dealing with. We also know that it works. So CDC and the institute of healthcare improvement did a pilot project over the past couple of years where weigh took five hospitalist groups, who were willing to join us and asked them to develop and initiate a stewardship intervention that would be truly led by the hospitalist group. These were going to be designed and executed purely by the hospitalists. Now some of these programs, some of these hospitals did have stewardship programs. The key to the project was that the word warped intervention -- the stewardship team would be led by the
hospitalists. They got support from pharmacists but not all had support from I.D. Some were places where they didn't have an I.D. group available. We sat down with the hospitalists and we used the format of the driver diagram, which I think we talked about during our last webinar last year, but if any of you are not familiar with the CDC, driver diagram, please let Gail know. I believe the driver diagram -- in fact, I know it's up on the CDC website. It's a tool that tries to break down the potential areas where you can work on efforts to improve antibiotic use and from that menu of options, the hospitals picked three interventions that they thought were most important and most realistic for them to implement. The first was information at the point of care, the day of therapy, indication and durations. The second was addressing appropriate length of treatment, specifically where there are treatment guidelines. The final one was a 72-hour timeout to facilitate de-escalation and discontinuation of antibiotics. What the pilot demonstrated to us was that the hospitalists were able to successfully implement these interventions. I don't have outcomes to share with you. We didn't design it as an outcomes assessment this. Was a feasibility study, but what we found was that all of these hospitalist groups were able to actually lead these stewardship efforts and they were able to get support from their groups to lead the efforts because they were focused on the types of things that the hospitalists themselves were most interested in accomplishing. Now another key step we think toward trying to get more participation from stewardship more broadly would be to develop some concrete guidance on how to accomplish antibiotic stewardship. I believe it's important for CDC to develop and put more formal and comprehensive recommendations on hospital antimicrobial stewardship. Right now the recommendations are not very detailed and they are a part of our multidrug-resistant organisms guideline. There's not a lot on antimicrobial stewardship. I think we have come to recognize that is a gap, that stewardship is one of the core strategies in addressing antimicrobial resistance. So we are working on this guidance document. The overall goals would be to define minimal expectations and to outline beyond minimum, those that will be useful and helpful as they advance stewardship work. We want to provide specific guidance on how facilities can implement stewardship interventions and set up programs. The key recommendation will be that CDC recommends that all hospitals take action to improve antibiotic use. All hospitals take action to improve antibiotic use by implementing an antimicrobial stewardship program. So this will be our first statement specifically that we do believe that all hospitals should have these type of stewardship programs. We're going to define some essential elements for a successful stewardship program, and we believe that there are -- the literature suggests and expert opinions suggest there are six key elements that all hospitals need to have in order to have a successful stewardship program. We think you need to have adequate resources and support from administration. That includes staffing and information technology support. Now we recognize, though that support may be very, very different and will look different in different types of healthcare facilities. So we wouldn't try to specify that you have to hire X number of people or devote X number of dollars to it, but we think it's important that there be a statement that there need to be resources that go along with doing this. Just as important, it needs support from the administration. That may come -- we hope it comes both in the terms of financial support and kind of moral support. There are a lot of places where we know initially that may only be statements of support and moral support and that financial support may follow. We also recommend that we think facilities need time to implement at least one intervention to improve antibiotic use, that the facility track antibiotic use in some way, that there's a single person who has responsibility as the leader of the stewardship program that there's a name on the line and a person who's responsible. A lot of places have a physician appointed in that role. Some places use an I.D. physician when they have access to an I.D. physician. There are other models. There are places that have hospitalists, even where it's the chief medical officer who plays and assumes that role. The goal is to say you can't relegate this to the function of a committee. There really needs to be a person who takes charge of it. We also think there needs to be a pharmacy leader. Obviously, the antibiotic use is such a core and important issue for pharmacists. There needs to be a pharmacist leader who is part of this and that facilitates the need to report back on a regular basis. So those six things would be what we consider to be the essential elements for a successful stewardship program, but we also recognize that there needs to be a lot of flexibility within these elements and our desire would be to point out these elements but then also recognize that there needs to be a tremendous amount of flexibility on how people accomplish these elements. Some of the things that I think are tips to getting programs going and getting them expanded are one, to start small. Does it make sense to go into a facility and ask for a very big budget stewardship initiative? The support may initially be moral support for example, you want to initially only ask for your leadership to buy into that and make it a priority for clinicians and show they're supportive of it. The leaders of your effort may not need to be on staff at your facility. We recognize there are some hospitals that don't have any on staff and may be leaders who are consultants, who aren't at
your site full-time but come occasionally. There are many successful models where people have done that. They have the engagement of a clinician leader who is not on staff, not on site all the time.

Another area where I think you can get success is to be very specific. Choose very concrete and focused interventions. Some of the interventions that people talk about, things like antibiotic restrictions or post prescription review, are wonderful. There's been a lot of study of how effective those are but they may not be realistic in every setting. You may want to start, especially if you're starting from scratch or in a small place, you may want to start with something that's more concrete and clinically focused, something that frontline providers can take on. For example a stewardship initiative for community acquired pneumonia. That's a small project. It's very specific and it's something that I think hospitalists, other type of front line clinicians can get on board with and even lead. In keeping with the theme of trying to get very specific, I think we can identify some key moments for antibiotic stewardship, and I think there are certain moments in the care of a patient where interventions are likely to be well perceived by priors and improving patient outcomes. When we can find interventions that fit at that intersection, we really need to take advantage of them because they're very likely to be quite favorably perceived by clinicians and they're likely to make a big difference for our patients and there are a handful of these that I would like to put forward for antibiotic stewardship because I think there's excellent data and that these are the ones that make a lot of sense and I will talk about each of these very briefly. The first is antibiotic use in patients with Clostridium difficile. Given the problems that we face with it, this is one that gains a lot of traction with a number of clinicians. Certainly, it's a topic of great importance to you. We know that there is a lot of antibiotic overuse in patients who have Clostridium difficile and it's a group of patients where antibiotic use is especially important because we know that antibiotic use really drives the development of Clostridium difficile. In this study published in 2011, the investigators looked at 246 patients with new onsets of Clostridium difficile and found receipt of an antibiotic increased the risk of recurrent disease, even after they adjusted for other patients. We know that patients who get Clostridium difficile and get antibiotics, those patients have lower cure rates for their C. diff, more diarrhea and more likely to have more current C. diff. We know a fair number of patients who have it and are getting antibiotics are getting unnecessary antibiotics. This is a very nice study that looked at 141 patients who got antibiotics following a new diagnosis of C. difficile. And this suggests that we stop all unnecessary antibiotics in patients with C. difficile. So they looked to see how often it was happening. What they found is half the time the antibiotic days of patients with C. difficile, 45%, had at least one unnecessary antibiotic onboard. In a third of the cases, all of the antibiotics that the patient was getting were felt to be unnecessary. So a fully third of the time, the patients suffering excess complications of excess antibiotic use continued to be given these unnecessary excess antibiotics. So, clearly, patients with Clostridium difficile present a great opportunity for interventions. Patients are relatively easy to fine. There's usually a lab result that tells you the patient has it and it's likely the providers may be much more willing than normal to stop the antibiotics because their patient is currently suffering an adverse event from those antibiotics. Patients with positive blood cultures, I think represent another excellent target for excellent stewardship interventions. You can go to your lab and find them. Many of you have to find them anyway because you use that information to do your veins for bloodstream infections. Generally, there aren't too many. This has a dual purpose. One is from the patient safety side. It ensures patients with serious infections get proper therapy so you can look to see there aren't drug mismatches and ensure that patients who have, for example, things like Staphylococcus aureus infections are getting the right kind of therapy and reduce contaminants in your blood cultures, so patients get the right antibiotics when they need them and patients who don't need antibiotics have those antibiotics stopped. Another study from a couple years ago pointed out that patients who were being discharged with plans for IV antibiotics might present another place where stewardship could be done. They found in this study, among patients planned for IV antibiotics, a third of those patients didn't even need IV antibiotics after discharge. The infections in those cases had been adequately treated while the patient was in the hospital but the treating team, either there was a miscommunication or the days of therapy weren't recorded properly, but a third of the time when the chart was reviewed carefully, it was felt the patient didn't need any antibiotics post discharge. What they found is this intervention was very safe. There were no readmissions or even emergency department visits among patients who did not get antibiotics post discharge. Community acquired pneumonia also presents a critical fount for antibiotic stewardship. We know a lot of patients who get an initial diagnosis of community acquired diagnosis don't even have it. These are patients, of course, with heart failure who get misdiagnosed and started on therapy. There's a perfect opportunity there to make sure our diagnostic criteria are being met. We know that antibiotics often aren't tailored to cultures. Most of the time we don't have good diagnostics for community acquired pneumonia but we can make sure that the treatment is...
tailored to those cultured results. We also know that community acquired pneumonia is often treated for way too long. That presents another key opportunity for stewardship for us. We know that in a study that was done, this is data from Johns Hopkins where they had a medium length of stay among patients with community acquired pneumonia for five days. What they looked at is total antibiotic treatment. So the inpatient and even though the general recommendation for an immunocompetent patient is that they get therapy for about five days, they found patients were getting much, much longer treatment durations, about an average of 11 days with four of that happening in the hospital and six happening as an outpatient. You can see what was interesting is often times whenever you do these evaluations and you present this data to your clinicians, the first thing they will tell you is what. My patients are cirque. I take care of more immune-compromised patients. What they found in this study is the immune-compromised patients had the same as those non-immune-compromised patients. The argument that this longer treatment duration represents our large immune-suppressed population really didn't hold water. What was most important is the investigators in the study were then able to take this finding and turn it into an intervention. They began with a very focused intervention simply to try to improve the treatment duration of patients who had community acquired pneumonia. What they did were two things. One, to give people whenever there was that diagnosis made to give people feedback to say, hey, this is what the treatment guidelines recommend for an immune-competent patient. So look at the guidelines when deciding how long the patient needs antibiotics and please review the culture results. Please narrow that therapy. What they found is they were able to significantly reduce the treatment duration of community acquired pneumonia. It went from 10 days down to seven days and antibiotics were much more frequently narrowed, from 67% to 19% and fewer patients got duplicate antibiotics. So a specific intervention that had very powerful results. The treatment of urinary tract infections I think represents another really important opportunity for us to improve antibiotic use. Here, I think a lot of our improvement efforts, could and should revolve around the fact that a lot of patients get treated because they have a positive urine culture but they don't have a urinary tract infection, a tremendous overtreatment of asymptomatic bacteria. As we know, there are a few situations where asymptomatic bacteria requires treatment. They really don't need to be treated. What we find in the study is that somewhere between a third and half of the time patients are being inappropriately treated for urinary tract infections. So there's a lot of antibiotic use that can be improved upon here.

Another topic area, infection type where people have shown tremendous opportunities to improve antibiotic use, is in the area of skin and soft tissue infections. We know that skin and soft tissue infections are very common reasons for hospital admissions and antibiotic use. We know that the infections are overwhelmingly caused by gram positive pathogens. Investigators have shown us that patients often get treated with agents that have very, very broad spectrum activities against gram negative bacteria that are very unlikely to be causes. Well, some investigators in Colorado, I believe, did a very nice study where they looked at a way to try to improve on the treatment of skin and soft tissue infections at their facility. What they did is they developed a treatment guideline. They looked at the guidelines that were currently available and they tailored that to their facility and they came up with a fairly straightforward treatment guideline that everybody in their facility could agree with. They put the guidelines out. They said in our facility, this is how we're going to treat skin and soft tissue infections. The interventions resulted in a three-day reduction, three fewer days for every course of therapy, and a much better use of diagnostic studies and consults and they addressed those in their guidelines as well. Very, very focused, specific but with tangible and measurable benefits in antibiotic use. The final area where I think there's a key moment, if you will, for antibiotic stewardship, comes after a patient has been getting antibiotics for a few days. There's a very nice study shown here where a group of investigators conducted this type of audit and feedback on broad spectrum antibiotics among patients in an intensive care unit. This was built around a stewardship team that was led by, I believe it was a pharmacist, but they went around and on the third day of hospitalization they gave providers feedback on antibiotics that patients were on and they did it again after 10 days of antibiotic therapy, and what they found is giving the people the feedback, helping people evaluate courses of therapy once culture results were back, imaging studies were back, they found they were really able to make an impact on antibiotic use. Monthly antibiotic use dropped from 644 days of therapy to 503, so a significant reduction in antibiotic use. They had fewer cases of Clostridium difficile and had an increase in Mirri pen’em susceptible. So end points and very positive results based on this intervention of giving people feedback on antibiotics after the third day of therapy and it lends itself nicely to this idea that we've been promoting at CDC, the idea of taking an antibiotic timeout. We know that antibiotics are almost always started with very limited clinical data and some of the data like culture results aren't available. So we know from these types of published studies, that after 72 hours we're in
much better position to assess the need for continued antibiotic therapy. So we think we should be taking a deliberate timeout to critically reassess antibiotic therapy. That can be done on day two, day three. Some of it is semantics. Some people do it every Monday, Wednesday and Friday, but the goal of this is if you have a stewardship team that's doing this, that's wonderful, but we would like to see this happening at the point of care. They should reassess therapy just like every surgeon is encouraged to do a surgical timeout before they make that incision. It's quick. It's easy. If every clinician on the third day of therapy can ask, does the patient need antibiotics or do I feel like the condition is not an infection? What is the best antibiotic to treat that infection? Is it what they're on or something else? And how long do they need it for? We think if we can get everybody into the habit of taking 60 seconds to have these three quick questions on every course of antibiotic therapy, we would go a long way toward improving our antibiotic use in our hospitals. Let me close by talking about measuring antibiotic use. We know that measurement is one of the big challenges of stewardship. It's hard to improve things when we can't measure them and all of you face this challenge. Regionally we face it and nationally. In order to help address the issue, CDC began weighing options several years ago for ways we could improve the measurement of antibiotic use in hospitals that would be useful to individual facilities but that would provide a bigger picture on inpatient antibiotic use. The module was the result. It was launched in 2012. It's live. We have 50 facilities that are submitting data and it can submit day to the national healthcare safety network through their hospital pharmacy computer system and it provides a mechanism for you to submit that data and unit use is the antibiotic use module is designed to have a lot of flexibility. Facilities can use it to monitor the effectiveness of interventions, for a single unit, single drug or facility wide. It can be used to collect aggregate information and eventually we hope to use this data to create antibiotic use benchmarks that facilities can use to compare their antibiotic use to understand where they stand and where they might need to improve. This is just an example of what the output of the antibiotic use module looks like for a specific location. What happens is you get antimicrobial days for all of these antimicrobial agents and it's puts over a denominator of days present, which is a little bit different from patient days. A patient can account -- patient condition -- you get an antibiotic use rate per thousand days present. What we hope to be able to do at some point in the future is conduct some standardized ratios for antibiotics where we can potentially tell you, given your facility characteristics in your particular unit, we can come up with a predicted amounts of antibiotic use and then can be able to tell you in the program whether your use of the particular antibiotic or within a particular ward is consistent with what would be predicted, more or less. We have a long way to go to get there. We have a lot of work to do on how we risk adjust and benchmark the data but this is the direction we would like to head. A lot of people told us the key to promoting stewardship will be this ability to do this type of risk adjusted benchmarking, just as we have done it for very long. The antibiotic module has a number of strengths and limited failings. Data submission is completely electronic. A strength of this type of electronic data submission if you're using the NHSN platform and it's being used by almost every acute care hospital, but during this type of electronic submission it requires that a facility has electronic administration system and a pharmacy system that can send data in to us at NHSN. We know this is a feature. There are a lot of places that have this information capacity, but we also know there are a lot of facilities that aren't there yet. So we know there is still progress we have to make before we can help every facility get enrolled. But if you are interested in learning more and potentially interested in beginning to submit your antibiotic use data to the antibiotic use module so that you get back that information, I'd love to talk with you more. We talk every day with different facilities that are interested in learning more and finding out how they might get connected to the module and we'd be happy to help you as well. In the meantime until we have the antibiotic use module up and running in every hospital, there are some comments I would make about measurement about antibiotic use. We know that a lot of hospital pharmacies are able to track antibiotic use in some way and it's good to talk with your pharmacy to see what they might be able to do. Some places can calculate defined daily doses. Some places have access to purchase data and we they that defined daily doses around the standard. A local measure doesn't have to be the perfect measure in order to be helpful, especially if you can follow it over time. If you were doing a community acquired pneumonia intervention, then your ability to track use over time could be a useful measure to you even if it's done in a measure like defined daily data or purchased data. I also think we should make an effort to focus our measurement strategy. Tailor it. If you're doing an intervention on urinary tract infections, maybe you should focus all of your measurement efforts on the use of the agents on the UTI's, so really focus your measurement. You're not going to get the full picture of antibiotic use in your facility but you'll get the picture of antibiotic use on the agents you're trying to improve. The final area where I think we can make some immediate progress and headway is this challenge of assessing appropriate antibiotic use. We always say that our ultimate goal is to improve appropriate antibiotic use, to improve antibiotic use, not
just to lessen antibiotic use. If you look at published studies on this, most are done has part of large research studies where they have infectious disease clinicians review all of the charts. At CDC we wanted to try and develop some assessment tool that is would help clinicians and stewardship programs assess appropriate antibiotic use a little bit more broadly and be a little bit more readily applicable. We assembled a broad group of experts to help. We did include I.D. Docs, dpi. pharmacists, a broad portfolio of people who could help us gather together and try and develop some assessment tools that can be used by any clinician, not just an I.D. trained clinician. We decided to focus our efforts on a few particular treatment conditions where we thought that there were some specific criteria that were put forth in guidelines that are pretty straightforward. So a lot of our time was spent looking at trying to develop some tools for community acquired pneumonia, urinary tract infections and resistant gram positive infections. The forms are designed to focus on areas where there could be opportunities for improvement that are guideline driven and that can be assessed relatively easy. We know one of the big challenges trying to make those value judgments of whether or not a course of therapy is just tried. What the forms work they -- do, they don't tell you this is definitely wrong or right but to see common mistakes that people sometimes make or things people might not do correctly with antibiotic use. For example, do you have a patient who's being treated for a UTI who doesn't have a positive urine culture or doesn't have any symptoms? This could be opportunity for improvement. Do you have a person being treated with an anti-MRSA agent. The goals of the forms are not to be punitive. We know there will be exceptions to every rule. The goal is to highlight where there may be room for improvement. There are some patients who need an anti-MRSA agent, but we also know that should probably be the exception rather than the rule. So the form is designed to try to help focus on areas of improvement and help us track those measures over time. There are a lot of cases that are piloting these forms. We're hoping to make edits based on feedback that we get. If you would like to pilot test these forms, I sent those forms to Gail earlier today. I think she sent them out to all of you. If you end up using these forms, let me know if it was useful, easy to do, hard to do, if there were questions that were really hard to answer, other questions you thought should have been added to the form. We would like to use these testimonies and I would hope some of you will take advantage of the opportunity to delve into the forms. So, in conclusion, I would say that we can, we absolutely can and I would say we must improve antibiotic use in every hospital in this country. I think we need to collaborate with each other so we can work together to learn how best to get this done. I think we know quite a bit about how to improve antibiotic use but we have a ton that we still need to learn. I think one of the best ways to learn how to improve healthcare is this idea of the learning collaborative where a large number of facilities interested in a common topic come together, share experiences and each other move forward. I'm happy to see they great A plus group is working together. And you will be getting a survey, I think later this week or maybe next week or the week after from Gail Allen back. She's worked on a survey that she hopes all of you and I hope all of you will complete and gain a better understanding of where stewardship stands in the great A plus areas and what we might be able to do to support these efforts moving forward. I think every hospital can have an antibiotic stewardship program, and the CDC will make that formal recommendation. That guidance should come out fairly soon. I think they will all look different and that's something we need to acknowledge and recognize and not be afraid of. We need to start small but start somewhere and I really hope you will all let me know how we at CDC can help support your efforts. I should mention to all of you that in early March on March 4th, the CDC will be issuing its regularly scheduled vital signs report. This vital signs report in March will focus on inpatient hospital antibiotic use, focused on stewardship. March will be a time you will see a big push from the CDC on this issue and we will have -- we hope to have our guidance issued and up by then and a lot of tools and resources to help promote the stewardship efforts. We're eager to partner with you. I think we have a few minutes left for questions, so I will turn the microphone back over to Gayle to see how she wants to handle questions.

Okay. We will begin the question and answer session. If you have a question, please press star on our touch tone phone. If you want to be removed, please press the hashtag. While we're waiting for questions to come in you see a question about stewardship long term care. I agree with the commenter on this. Yes. That's an area where we definitely need more work. It's something that we know is important and want to keep working on.

Reporter: And I'm not seeing any questions at this moment.

Okay. Well, in lieu of that, I will say thank you so much Dr. Srinivasan for presenting. Your expertise always enlightens us and we look forward to continuing working with you as we go along. If anyone does
have questions, please submit them to your QIO. They can send them to me and I can send them to Dr. Srinivasan and get an answer for you. So I think at the end we will have some poll questions. If you could all take a moment to feel that out, it gives us important feedback. Again, thank you all for coming and participating and thank you again, Dr. Srinivasan. It's always my pleasure.

Thank you ladies and gentlemen. This concludes today's conference. Thank you for participating. You may now disconnect. [ Event concluded ]