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Session: Trends in Antibiotic Prescribing for Acute Upper Respiratory Tract Infections (ARIs) and Implementation of a Provider-Directed Intervention Within the Veterans Affairs Healthcare System

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Rob: I’d like to begin by introducing our panelist today. Dr. Karl Madaras-Kelly, PharmD, MPH, is a clinical pharmacist at the Boise VA Medical Center and professor of pharmacy practice at Idaho State University. Karl, can I turn things over to you?

Dr. Karl Madaras-Kelly: Hello! Can people hear me okay?

Rob: I can hear you, and your slides look great.

Dr. Karl Madaras-Kelly: Okay, great. Thank you. So I’ve been at the Boise VA for about 20-some years, and ISU has a number of pharmacy faculty that are sort of embedded within that healthcare system. In that time, essentially I helped get our Antimicrobial Stewardship Program going in about 2000 or 1999 and worked with a great infectious disease doc, Denny Stevens [phonetic 1:04], there for a number of years. More recently, about four years ago, a stewardship sort of gained momentum across the VA. We expanded our program and I’ve turned that over predominantly to Antimicrobial Stewardship team, but I’m still involved in designing specific interventions and data management and still contribute in that capacity.

The talk we’ll talk about today, I’ve been, we’ve been working on upper respiratory tract infection stuff now for about four years. I’d like to tell you today that we were using some very specific framework to implement this, but that’s not the case. A lot of this has been having to fit this within different organizational structures, bring together different partners to make things work. And as you’re all aware, the trick to taking something from one facility and applying it, to scale it and then implement that across a number of facilities is challenging. So with that, though, I think we were able to put together a package of things and implement those just with some prior experience and the hard work of a number of different people.

The other thing to bear in mind today is that this is still a work in progress. I was asked to talk on this about, oh, eight, nine months ago, and I said well, let’s wait until we have some data together. So I will share with you what we have, but recognize that this is not complete by any means.

Here are the objectives.

If you talk, for those of you that, I’m guessing most people know Antimicrobial Stewardship here, but just to kind of put this in context, when we talk with providers about stewardship, we’re talking about things such as diagnosis, dose, duration, discontinuation, those types of things. But really, stewardship programs are a little more, and that’s essentially systematically providing coordinated interventions designed to improve antibiotic use across healthcare systems. This has really gained momentum over the past maybe five, six, seven years as antibiotic resistance continues to be problematic. And in fact, we may not even be keeping pace with some of the trends in antimicrobial resistance, even with the improvements in stewardship. But there are IDSA guidelines to sort of direct how programs should be set up. There are a number of VA representatives on the guidelines committee. The VA was sort of unique in that we, as a system, decided to mandate stewardship programs across our facilities in 2014 now, well ahead of the Joint Commission requirements.

And then now recently CMS has required skilled nursing facilities to implement Antimicrobial Stewardship programs in conjunction with their infection prevention program. It took them a while to get some of those tags in place to be able to track that, but that is in place now. And really the last group here that still doesn’t have specific regulatory framework would be outpatient stewardship. But I think that you will eventually see some of that framework come to fruition.

So a little bit about Antimicrobial Stewardship Task Force. This is a group within the VA that was chartered with the ID Program Office and the Pharmacy Benefits Management group. It’s a voluntary group, multi-disciplinary teams. It’s predominantly ID physicians and ID pharmacists. The big thing to take out of ASTF, it has limited authority. It really, we can encourage people to do things. We can facilitate groups to improve things, but we don’t have direct authority to mandate that people do things.

If you look, some of the things that ASTF has done is we have a SharePoint site that is sort of a clearinghouse for Antimicrobial Stewardship materials within the VA. We have a robust Listserv that ID pharmacists and physicians can use. We’re going on about six years of webinars now where we do about eight webinars a year that are very well attended on different stewardship topics. And we were able to obtain funding to train pharmacists that didn’t have ID training already and do that.

If you look at some of the accomplishments of this group, they passed a VHA directive essentially, or facilitated VHA directive that defined minimal requirements for stewardship programs. We partner with a group called VA MedSAFE to do national utilization reviews, and I’ll talk about that in a bit. We’ve developed some model policies and tools. We’ve done field surveys of Antimicrobial Stewardship practices with the HAIG group. We’ve now, when we started we had about 30 facilities reporting to NHSN in terms of their antibiotic use. That’s now more than 90 facilities. And so we’ve done a number of things.

This paper was published in 2017 where it shows the relationship between some of the activities that I just mentioned and the number of facilities based on the HAIG survey that took those activities. You can show in comparing surveys between 2015 and ’15 that we effectively reduced some of the barriers associated with doing stewardship. Then essentially antibiotic use was reduced over that timeframe and continues to be reduced in the inpatient setting, but that's starting to plateau in terms of some of the reductions in antimicrobial use.

But one issue that comes to mind is that most antibiotic use by humans is in the outpatient setting. If you look at that in the U.S., this paper in JAMA in 2016 shows that there are about 833 prescriptions per 1,000 persons, which is definitely higher than many northern European countries and Canada, etc. So we use a lot of antibiotic in the outpatient setting. If you look at, for the definition of this talk, acute respiratory tract infections, or ARIs, consist predominantly of acute sinusitis, pharyngitis, bronchitis, colds, and other upper respiratory tract infections. And in fact, they account for about 44% of all prescribing in primary care offices and emergency departments. And it's estimated that 30% of that is thought to be unnecessary.

If you look to the specific conditions, the things to take out of this would be that sinusitis antibiotics are prescribed most frequently, about 70% of the time. Pharyngitis is less but still very common. And when you consider that only five to 10% of patients presenting with pharyngitis actually have a bacterial infection, there's plenty of room for improvement. Acute bronchitis, a similar type of situation and antibiotics are rarely indicated for those. And even in common colds, 30% of people still get antibiotics. If you add all of those up together, about 50% of that is unnecessary, which is approximately 20 to 25% of all antibiotic use in the outpatient setting.

So this is a paper published by the Salt Lake City VA group, the University of Utah group, that looks at VA-wide, a swath, a cross-section review from 2005 to 2012 of uncomplicated upper respiratory tract infections. By uncomplicated, I mean they excluded people that had recent infections, people that were recently on antibiotics, immunosuppressed patients, hemodialysis patients, diabetes, a number of different groups. What they could show was that the proportion that received antibiotics increased from 2005 to 2012 despite fairly vigorous national campaigns for people to, such as Get Smart, to reduce use for URIs. If you look at what drugs are being used, macrolide use actually increased over that same timeframe, and macrolides are not recommended as first-line treatment for any of these types of conditions.

What the figure on the bottom right shows are providers with at least 30 visits. You can see that there's a large degree of variation in how frequently providers prescribe. After adjustment for other factors, 59% of the variance in prescribing was at the provider level. You can see that many times a fairly small proportion of providers are prescribing antibiotics almost all the time, whereas the bottom providers do so in substantially less frequency. So I think there's a lot of variation across that system and that there is room for improvement.

So I'm going to just jump around a little bit here at the role of medical utilization evaluation in Antimicrobial Stewardship. Now the stewardship guidelines recommend regularly evaluating areas for improvement and targeted interventions and then adapting your program accordingly. There are limited resources for stewards to spend their activities on. What utilization reviews do is they allow you to sort of evaluate where to put your efforts. As I mentioned, we've partnered, the ASTF has partnered to do utilization reviews on the national level for two reasons. I mean one is that people respond better to local data, and the other is that when people find problems, they usually want to fix those problems. So I believe utilization review is an important component of stewardship. It just gives the stewards a systematic way to look at specific problem areas.

So back in 2014 we did a local MUE, and we wanted to look at our ARI management. We used similar definitions to the Jones paper, the paper I just showed you on VA variation, and identified about a 70% prescribing rate. As you can see, in this case there was a lot of unnecessary antibiotics being given for acute bronchitis and pharyngitis, less so with URI, NOS, and sinusitis. So when we saw this, we reviewed the literature and looked at what was out there. There was less out there then than there is now. But one of the things we found that education by itself was not going to be sustained, that typically multi-faceted interventions work better, and there was some data to suggest that provider behavioral targeted interventions were going to be effective.

So we sort of created two groups. One was just a VA-wide, our facility-wide group where we had things, enablers like order menus and education materials and nurse education and things. But then we also focused on where we prescribed the most antibiotics for these conditions, which was in the ED and urgent care settings. In conjunction with the Salt Lake City group, they had created a line list of respiratory tract infections that they made available through a preliminary dashboard. We took those and just generated our own feedback reports based on that data where we essentially would compare use by providers within their target area, for example, comparing ED providers to ED providers, comparing their prescribing rates for the average and then the best provider status. And we gave those feedback reports to the clinics.

One other aspect of that that was different, though, as we were deciding on how to do this was I met with one of the PAs that I worked a fair amount with, and he said don't send them this stuff in an email link and forget about it. They get overloaded with that type of information. So we agreed to train. I do this individually and then we trained one of our ED providers to give one-on-one education along with those reports and then to follow-up reports as needed.

You can see just in our small groups, this is only about 20 providers, but you can see a rather robust reduction in antibiotic use. The point, the things to point out, out of this would be that the people that got the feedback reports had a large reduction in antibiotic use and the academic detailing. But even the whole facility had a fairly robust reduction in antibiotic use. If you looked at this compared to a baseline period, this improved from, in terms of appropriateness. And then in terms of outcomes, there were really no significant differences in related return visits and things. Order menus were higher in people that got detailed, and in particular, people used a symptomatic therapy menu a lot. Having said that, that's still less than a fifth of the visits were essentially using menus.

So why did this work so well in that group? This is an old paper, but it's an interesting paper where they did 12-step CDC campaign presentations at four hospitals in Pittsburgh. Then they surveyed clinicians. One of the things that came out of that survey was they asked them if they thought antibiotic resistance was a problem nationally in their area or their facility or in their own practice. What you can see is that people are more likely to perceive that antibiotic resistance is a problem nationally compared to their own facility or in their institution compared to their practice.

So I was speaking with a healthcare psychologist at University of Utah, and we thought that this actually, what we observed in our local intervention was that this fit very well this self-determination theory, and that is that literally every single provider we gave this information to reduce their antibiotic use in specific areas. And self-determination theory sort of has three major components to this: Competence, relatedness, and autonomy. I think in some ways because that data, you're meeting with individuals, they feel, they understand what this issue is and what the problem is and they feel that they can probably in most cases fix that. The data itself is being delivered by people that they're familiar with and processes that work, and they feel that in general they can actually do something about these things.

So I think these two components together provide something that each one by itself does not provide. We gave individual feedback. We gave regular feedback. And we compared them to a reference group. We were having local clinicians and stewards actually explain that data and go through it with them. But we also then provided them enablers and suggested alternatives as ways to sort of improve, more on there team as opposed to saying you got to do something.

About the time we finished our local intervention or we were in the process of our local intervention, this paper came out in JAMA, which is a very interesting paper. Essentially what they did was they looked at upper respiratory tract infection prescribing across a large swath of clinics in Boston and Los Angeles. They had three interventions here. One was accountable justification where clinicians when they would type in or start a note for a diagnosis and they wanted to prescribe an antibiotic, a template would pop up that required them to explicitly justify why they were ordering antimicrobials. There was a suggested alternative. In this case, when they would initiate the encounter, it would provide them non-antibiotic treatment alternatives, and then there was a peer comparison where their rates for prescribed, inappropriate antibiotic prescribing were compared to top performing peers in the facilities.

Predictably, antimicrobial use improved. It improved both in the accountable justification group and the peer comparison group very similarly. Then just suggesting alternatives to clinicians did not really significantly improve use. After the study was completed, they published some work showing through a series of qualitative interviews with providers that they liked the suggested alternatives the best. It was the least effective. They disliked the accountable justification the most because they felt that this was overreaching. But they were actually fairly favorable to the peer comparison. And we've actually, through some of our qualitative work, found that in general peer comparison is a relatively well-accepted strategy if it's non-punitive, if the data are sound, and it's delivered by somebody that understands the data.

So one of the problems with all the audit and feedback studies, and we see this in our study too, is that once the intervention is pulled away, behavior reverts to baseline. While the consensus, in general I think people would suggest that feedback should be timely. But there's a tradeoff in upper respiratory tract infections because 70% of those in adults occur between October and April. So we may not have significant accounts to provide meaningful feedback to people over the summer months.

So after our success locally, we were participating with a collaborative group of stewards, a small group of stewards in facilities, and we sort of discussed the strategy. As soon as we started to see improvements in Salt Lake City VA, essentially did a very similar intervention with audit and feedback, and several other VAs and this group started planning interventions for the subsequent year. We then partnered with the VA Academic Detailing Service to explore an ARI campaign based on our successes. Then we designed and implemented an ASTF/VA MedSAFE respiratory tract infection MUE. The goals here subsequent to that would be to disseminate the results of the MUE, sort of garnering support by stewards to take on an upper respiratory tract infection campaign, then launch that campaign as a partnership with the National Academic Detailing Service, which we did in October of 2017.

Then meanwhile, while all that was going on, the CDC put out a task order request for SHEPheRD to look at audit and feedback mechanisms, and we received, University of Utah and myself received that SHEPheRD. In that study, we are looking at 16 VA clinics but also some university pediatric clinics as well. I'll explain a little bit of the differences in the study as we go ahead here.

So the results of the national MUE, we looked at about 4,300 patients in 28 VAs, using a standard protocol and data collection form. This is now the fifth. This was the fourth, I think, ASTF/MedSAFE stewardship-related MUE that was done. But essentially we developed a standardized protocol. We recruit facilities to participate in these QI initiatives, and then facilitate. MedSAFE collects this data and then presents this. We used this to sort of help direct and develop mitigation strategies. What you can see is that the antibiotic prescribing rate in these facilities was pretty high and fairly, not all that different than what was published in the 2005 to 2012 ARI MUE survey. But about 67% of the patients got antibiotics. If you look at what they got, azithromycin was still the number one prescribed antibiotic, followed by amox/clav, so relatively broad spectrum antibiotics, so things didn't change much between 2012 and 2016. Have to be a little careful of volunteer bias in terms of who agreed to participate in this, but at the same time I'll show you some data later that shows that there have been improvements but it's taken a while to get there.

So why do people, why do providers continue to prescribe antibiotics for upper respiratory tract infections? And it's not a, there are lots of reasons here. But it's complex in terms of some of the factors that go into there. You know, lack of knowledge. We'd like to say that, I think the party line is that most physicians as a primary care issue, most physicians know when antibiotics are and are not indicated. But I was surprised when you actually go out and you do these outreach visits and you talk one on one with people, clearly in some cases these people have a limited amount of time for additional training. The year they graduated from medical or a PA school or nurse practitioner school, in some cases that's what they remember rather than more recent guidelines. So I think education is important, but it needs to be used with additional strategies.

Diagnostic uncertainty and fear of complications, I think that certainly factors into this for some providers. But at the same time, there's also an under-recognition of the adverse event of overtreatment with antibiotics. So Rapid Diagnostics may improve some of this and already are improving some of these things, but also just increasing awareness among providers and patients that inappropriate use results in adverse events and harms. A recent paper in JAMA last year showed that 20% of patients that get an antibiotic in the inpatient setting have an adverse event. While it's lower in the outpatient setting, the benefits of the antibiotic are probably outweighed in many cases by the adverse events.

Patient pressure and satisfaction. Clearly there are some patients that expect and want antibiotics and that this influences prescribing behavior. In our local MUE, we were required to track patient complaints as we did the intervention. We didn't have a single patient complaint related to any encounter where there was an issue with antibiotics. But strategies are needed to help facilitate communication, patient communication. And in fact, some of the literature would suggest that these are some of the most effective strategies. So I think that is an important component if, it may be that some of this is perception rather than reality in terms of what patients want, but the way to get over that is to provide communications training.

And then antibiotic prescribing is a behavior rather than a decision. You can show that late in the day people prescribe more antibiotics for these things. You can show based on their workload they prescribe more. So it's almost a reflex decision, and behavioral types of interventions are likely to help address those types of problems.

Just to, if you're not aware of these core elements, the CDC has published core steps for stewardship in inpatient and nursing home settings, outpatient settings. I won't spend much time on them, but these are steps that have been shown to be effective, not just in stewardship but in many types of implementations and quality improvement pieces, but getting commitment from individuals, providers, leaders to improve action for policy, so implementing something systematically to look for changes, tracking and reporting, and then education and expertise. That's sort of an important component to most, designing many interventions and stewardship.

I'll introduce you a little bit to the Academic Detailing Service. They are a national program that is under the Pharmacy Benefits Management group. They have, each VISN has a National Program Office data and education manager, and each VISN has a specific detailing manager. The service develops and supports AD campaigns. They have a number of them. They're not specific to infectious diseases. But the program office helps design the detailing materials for detailers. It provides data access and tracking and then education on detailing. Then these VISNs and local detailers participate in various campaigns. It's sort of an interesting setup. In some places they have VISN level detailers that go out and may detail on specific topics or they detail across a whole VISN. In some cases these facilities have local detailers and they do things. So it's sort of a mix, a number of different types of setups. They have been able to show success in campaigns with opiates and benzodiazepines.

Just so you're aware of what academic detailing is, it's an educational service. And it's supposed to be done by clinicians, for clinicians, that provide individualized face-to-face outreach that encourage evidence-based practice.

So what we, while we were doing our MUE, we started to work with the AD service to design this ARI campaign. It was sort of tricky because each program has to have, there's a mandate to have stewardship programs that focused on the inpatient setting. But the local stewards understand sort of the local fit and the nuances of diagnostic test ordering and they may know the clinicians and they have further depth. They have control over being able to set up CPRS menus, things like that. So they can sort of help facilitate an intervention that way. Having said that, if you talk to any antimicrobial steward, they are overwhelmed with work and they have no shortage of things to focus on.

Academic detailers, on the other hand, they're very versed in providing outreach to clinicians, including getting them to commit to improvement and they have, they're well trained in communication techniques with providers. And they actually have specific time set aside, workflow, to conduct academic detailing activities. So the campaign that we launched was set to address both of those.

The format, what we did was, and it's why I say there's no CFIR here or anything else. It's essentially taking the core elements from the CDC and then constructing a suggested approach and a checklist of activities that sites that wanted to participate in this should consider doing to maximize local fit.

So the action here was academic detailing primarily but then using dashboards and metrics in audit and feedback to supplement that and then providing a number of enablers to clinicians to help them improve. Then the checklist essentially helped planning by the facility and the stewards in the facility to engage in the campaign.

The actual intervention, we had numerous discussions with them about this, but there were three ways to set this up. Either the stewardship personnel would do some additional training on how to academic detail, and they would actually detail the local providers. They would partner with the VISN detailing personnel to conduct the campaign locally where they would introduce them to the providers, they could provide detailed information about how the system worked at that local facility, but most of the work, the detailing would be done at the VISN level. Or option three was some of the stewards could become detailers by doing additional face-to-face academic detailing training and going that route. All three of these were used to some extent. We don't know exactly, but I know of examples in different facilities where they've done all three of these.

In terms of the materials, we created dashboards that could be provider level, VISN level, facility level dashboards where they had a list of the highest users of antibiotics so they could track those people locally. You could compare to other groups. I'll take about SalesForce in a minute. We provided detailing resources on how to do academic detailing and then education materials with the key messages for the campaign on there, as well as then enablers, some communications training videos, sample CPRS order menus and patient materials.

In terms of reporting metrics, we had five major metrics here: Overall antibiotic prescribing, diagnosis of uncomplicated sinusitis. If you look at the four major URI or ARI groups, sinusitis is the one where antibiotics are usually indicated, and we could show that providers that had high proportions of sinusitis diagnoses also prescribed antibiotics more frequently, and the focus here was essentially being, differentiating between common cold symptoms and sinusitis. Prescribing rate for acute bronchitis or URI, NOS, and these are conditions where antibiotics are almost never indicated. So that, and then providing preferred antibiotic prescribing rates, meaning drug selection, focusing on what the recommended therapies were for both pharyngitis and sinusitis.

In terms of the reports, I think I mentioned the priority report, but these used averages, facility averages for ED providers and primary care providers. That's a little different than some of the other campaigns where we're looking at best providers. They could trend data over time and compare to other facilities. And then SalesForce, the academic detailing service requires their employees to actually track workload related to their visits within SalesForce. That was an issue because the stewards aren't, they don't do that. They're not required to do that. And we could encourage them to document their workload, but ultimately that was rare to happen in terms of the stewards.

Just in the instance, for the purpose of time I think I'm just going to skip over this. But the idea is that they use the dashboard to identify those people that prescribe a lot. You schedule appointments with the providers. We actually study that provider's data, so you know what the issues are, and then the target the message to address their data deficits through academic detailing and then track their prescribing practice and then go back, if needed, and schedule follow-up appointments.

We encourage campaigns to, or facilities to report their data within their program outcomes, to provide those feedback to the providers and clinics, and then capture workload as well.

So I'll show you a couple of the slides in terms of some of the early findings with this. They are different depending on which finding we're looking at. Some of these are updated through July 1st. Some of them are updated through October 1st. But you can see that we had fairly robust interest in this up front. There were a number of facilities that ordered the materials in the first year of the campaign. We can track how frequently people access the dashboard to generate reports. As of July 1st, 54 facilities had used these. Almost 100 facilities had actually accessed the dashboard reports, but they don't do so on a continual basis. We estimate that, we encouraged people that had, to target people with more than 15 upper respiratory tract visits per year and that would be about 800 providers or 900 providers. In SalesForce they documented visits to about 500 providers.

So this shows essentially proportion of uncomplicated ARI visits with antibiotics prescribed over time. What you can see is that it's been slowly declining. About 2016 there started to be more variability in the data. It's hard to know clearly. The outpatient core elements of stewardship came out then. We are aware that facilities are doing all kinds of different things. But I think you can see that there was a fairly robust drop once the campaign was initiated. It's also important to remember that most of the visits occur in these winter months and that in the summer there's less opportunity to detail and give data to people, and there's typically a rebound observed.

So other findings from this, this shows essentially the effect on bronchitis and URI/NOS prescribing. These are the conditions where we really don't want people to prescribe, and you can see a relatively deep drop in antibiotic prescribing there, looking at this with rate ratios and negative binomial models. You can see that there was a general reduction in prescribing over time, over the whole eight-year period. But post intervention, that effect was pronounced. We can show that same thing for acute bronchitis. The diagnosis of sinusitis is peculiar. We were able to observe that over time that was increasing, but the proportion of sinusitis diagnoses decreased after the intervention. Then we really had minimal effect on drug selection. The drug selection had been improving over time, but the intervention itself was not associated with changes in drug selection.

This just shows, and there is certainly potential for regression to the mean with this, but because we're able to track facilities that used the dashboard, either individually or at the VISN level, there were four VISNs that did this systematically in that first winter. I think you can see that the sites with the largest drop in antibiotic use tended to be using the dashboard more. And this was preliminary analyses.

So the other thing to recognize is that to sustain this you need to reinvigorate these campaigns in the fall. We suggested, we've been doing this now for four years in our facility and have made, [unintelligible 42:54] to maintain low prescribing rates. But it's interesting when you have new providers come into the system and primary care turnover that it's fascinating to watch that they might be prescribing at 70% and they're not aware that their peers prescribe at 40%. But almost all of those folks, within receipt of a couple of dashboard reports, improve to some extent. But the idea here is that, and we did this on a fall kickoff campaign for the AD service and ASTF to encourage sites to re-engage in the fall, identify people that haven't had the reports, and essentially get those reports.

I will spend, I don’t have a lot of time left for this, but I want to at least address a couple of things specifically in our SHEPheRD. The SHEPheRD is University of Utah’s recipient with this. I’m project lead on this. There are a number of, there are six VAs that are participating in this as well. It’s a 42-month study and we also have in six University of Utah pediatric clinics in there. A couple of things in there, we still use a very similar core elements approach and standard operating procedure, but here we’re focused a little more on the feedback reports than we are on the academic detailing. Academic detailing, in this case we want that to be done by clinic champions or key clinic personnel. So you want that feedback to come from people inside the clinic. And we have the similar types of enablers for clinicians.

The differences in the campaign, as I mentioned, audit and feedback is the primary component, but we do require, ask that everybody detail at least once at the start of the intervention to allow clinicians to gain familiarity with the reports. Then the other thing is that in antibiotic use across the VA is somewhat porous. In small clinics there isn’t a reliable way. They may not have pharmacy prescription data. They’re getting that data, they’re sending patients through the Heritage program to get antibiotics outside or they are, they have lock boxes where they can dispense drugs. In the national AD campaign, we have to exclude all sites without pharmacy prescription services. So we’re using natural language processing augmentation of text notes to look for antibiotic use, and then the comparator on the dashboard reports your top performers. Then we’re looking here at a more detailed level of things like re-visits and whether or not people came back with infectious complications like pneumonia or allergies or things, adverse events, those types of things.

In the sake of time, I’m going to skip this. It’s just a, sort of shows the design of the study.

The reports, as I mentioned, are different. We have a top performer, the top 20% of providers within a group are what we’re targeting in terms of the comparator. But otherwise, many of the elements are similar to that. We recommend in our groups to give follow-up reports every two months for 12 months. The study requires us to track people for that long a period of time. In the summer months, that’s very difficult to do because many clinicians don’t have many visits.

This just shows the NLP component to this, and you can see, for example, if you pick some of the CBOCs, what you see here would be, their overall antibiotic prescribing rate might be 62%. Only 14% of that is actually through VA pharmacy services and natural language processing fills in the gaps in there. It’s taken us a long, what we can see is across the VA system about 10% of additional prescriptions are identified with the NLP system. It’s not perfect. It’s an estimate of what actually is happening there. But it’s a reasonable approximation for comparing one facility to another or provider to another. And it’s taken us quite a while to get to this step, so our other clinics were late in terms of the kickoff.

I’m going to stop in about two minutes here just to leave time for questions. But I think you can see kind of when the intervention started. We had a fairly robust drop. The bar graph here shows the 10 clinics where we have data. This is about, oh, about six months of data with the intervention for these. But the Boise and Salt Lake data, this data is almost three years and being able to sustain those reductions and drops.

Looking at the rate ratios pre/post intervention, uncomplicated ARIs have actually increased, and that’s good because we’re worried about people essentially saying, well, maybe if I code them as COPD or they have something else I won't have to count them in my widgets. But that doesn’t appear to be the case. The diagnostic distribution, this is an area we may have to explore further. It appears that when the reference group is all URIs there is seasonal variation that accounts for the change in sinusitis diagnosis where you have more bronchitis and things in the winter months. So in terms of the reductions in antibiotic use, it’s fairly robust, although within the individual diagnoses, they may not be statistically different at this point. Preferred therapy appears to be improved for pharyngitis and acute bronchitis but not much change in sinusitis.

The other thing to take out of this is that we’re looking at some of these outcomes and you can see a fairly substantial reduction in ADRs and allergies recorded after the intervention occurred. There’s not much change in anything else at this point. The numbers are fairly small in some of these cases and we still need more data. We have to run this intervention out longer to really be able to see what’s going with that. C. diff was very rare. That’s been one of the things, one of the rationales for not giving out antibiotics is that they cause all this C. diff. Well, in this patient population with uncomplicated cases, that is fairly rare.

One slide just to address the concept of diagnostic shifting. Many of these disease-based audit and feedback interventions are dependent on administrative codes assigned during the visit. And we all know that there are limitations to that, and there’s potential for diagnostic coding practices to either intentionally or subconsciously change in response to intervention. Those can be good in some ways. Perhaps a clinician is coding things and not paying attention and then I find out that, well, a COPD exacerbation should be coded differently than acute bronchitis. That may be good, but there’s also fear that people may deliberately alter documentation to avoid prescribing detection.

To date, studies really haven’t identified this at the, as being a major issue, but you still hear stories of things like that. We have not noticed at the systematic level that uncomplicated ARIs, as a proportion of all diagnoses, have gone down, so that seems fairly stable. And as I mentioned, the aggregate proportion of ARIs within complicated, uncomplications have actually increased and not decreased. So it doesn’t appear there’s systematic shifting. We’re developing processes to look for shifting at the provider level.

I’m going to stop with that. I did want to acknowledge a whole host of people here, and there are just many, many people involved in improving ARIs and great stewards and very dedicated people to working on this, and that’s all great and I’ll acknowledge. There are certainly other people of this group that are doing things with ARIs.

The last thing I would leave is just if you have questions or comments, feel free.

Rob: Thank you, Dr. Madaras-Kelly. At this time we don’t have any pending questions. Audience members, if you have a question for Dr. Madaras-Kelly, go ahead and enter it into the questions portion of the GoToWebinar dashboard. That’s that white rectangle that came up on the right‑hand side of your screen when you joined the webinar. You can just type in your question and I’ll read it to him. Meanwhile, Karl, maybe if you have, if you want to go into any details that you had to skip over, that might give some people a chance to think about and enter their questions. Or if you want to make, give more detail on who you want to give acknowledgements to or even closing comments.

Dr. Karl Madaras-Kelly: Sure. I think there’s still a lot of potential work that could be done within this. The optimal duration between feedback intervals is not completely understood. I think other things would be that who delivers that feedback. My gut in looking at this and speaking with many, many people involved in this is that in some ways local champions, dedicated local champions and stewards are well-positioned to do this. And I think feedback is received better from peers than it is, and people that are familiar with the system.

The other issue is the stewards, many times in these conversations other questions may come up. Not that professional academic detailers, if they know, all of the content areas may be very good. But they really need to study those materials. And the best case in outpatient stewardship might be individuals that are actually ID trained folks that are doing detailing and providing feedback data. I think outpatient stewardship is different than inpatient, too, in that you don’t have a captive patient for four days while they’re in the hospital. These are people that the visit may occur for 15 minutes and they’re gone. So it sort of takes a different mindset in terms of how to provide an intervention.

Rob: Thank you. As soon as you launched into that, we got several questions. So I’ll just go right ahead and ask you the first. Have you separated NPs, PAs, MDs as far as prescribing patterns?

Dr. Karl Madaras-Kelly: Yeah, we have that data. We have not done that yet. We did look at that data at the baseline period and there were not huge differences. We haven’t yet, you have to be careful because work environment here factors into this. A lot of the PAs and nurse practitioners may be staffing urgent care types of clinics, and their workload may be very different. But I agree that’s, in general the thought is that mid-level providers may prescribe more, but you have to, we have to complete a full analysis to be sure it isn’t the practice setting or the clinic or the number of visits or other things.

Rob: Thank you. We have a few more questions pending. Dr. Madaras-Kelly, great presentation. Thank you. NPL, is that easy to access or use? I’m trying to do an ARI/bronchitis QI project, and I’m having issues using academic detailing for measuring CBOCs.

Dr. Karl Madaras-Kelly: Yeah. The NLP is, these are sort of home brew programs, so there isn’t yet an access for people to do this. We’ve done a number of validation steps with this. Our hope is, but it’s too early to say if we’ll get to that stage, would be to integrate once we’re comfortable completely with the NLP, is that data stream could be fed into the academic detailing data because the data has a common source. And if that’s the case, our goal would be for a year from now to potentially integrate the NLP prescribing data into the academic detailing dashboards. But much more work has to be done before that’s the case.

Rob: Thank you. Does the VA tie any incentives to performance?

Dr. Karl Madaras-Kelly: Ah! Yeah, that’s interesting. I don’t think, and we’ve talked about that. Could this be put into Rapid or EPRP-type of measures? We haven’t gone there. There isn’t anything. But having said that specifically, there may be local things. For example, in our ER we did this for two years and didn’t do that. We got a very robust effect. But now what the bonus system, as part of the QI participation bonus, a portion of their bonus in our ER is actually tied in with their, if they’re below the average in terms of prescribing for acute bronchitis, URI, NOS. And clinicians will tell you if you look at qualitative data, that is on their mind as well. But there is not a formal process that I’m aware of where this is done on larger scale.

Rob: Great. Thank you. This is the last question, and it’s 58 minutes past the hour, so it looks like we’ll probably end right on time, but audience members, if you have to leave right away, please just stick around for a few moments and fill out the short survey that pops up when you, in the Cyberseminar. So we’ll launch right into the last question, Dr. Madaras-Kelly. Who are the academic detailers (pharmacists and the stewards) for providers and pharmacists?

Dr. Karl Madaras-Kelly: I’m not sure I fully understood the question.

Rob: This person is asking who are the academic detailers and who are the stewards?

Dr. Karl Madaras-Kelly: Okay, so stewards, each VA is required to have a physician that is a clinic champion, and usually that’s an ID physician, and then a pharmacist who is an ID champion. Usually those pharmacists are ID trained, so they have specific training in infectious diseases. Not all VAs have ID physicians. Most do, but I think there may be 20 or something, smaller facilities that don’t. And so they have to partner with different groups. In terms of the stewards, that is predominantly, I’m sorry, the academic detailers. That is predominantly run by pharmacy. Most of those detailers are pharmacists. Having said that, if you look at the training materials that were put on the national site, and some physicians have also done the formal detailing training for the detailing service. But they’re predominantly pharmacists and then in some cases physicians.

Rob: Thank you, sir. As I said before, that was the last question that we have. I’m not sure, did I give you an opportunity to make closing comments or shall we just go ahead and end?

Dr. Karl Madaras-Kelly: I think I’m fine with it. If people have questions, feel free to email me.

Rob: And Dr. Madaras-Kelly’s email address is up on your screen now. Once again, sir, thank you for your work and thank you for preparing and presenting today. And audience members, thank you for your attendance. And once again, please do fill out the short survey that comes up when the Cyberseminar ends. We count on you and your answers to continue bringing high-quality Cyberseminars. Have a good day, everybody! Thanks again, sir.

[ END OF AUDIO ]