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Session: Access to Care: Update on Metrics and Performance in VHA

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**Rob:** I’d like to turn things over to our presenters today, Peter Kaboli and Matthew Augustine. Guys, can I turn things over to you?

**Dr. Peter Kaboli:** Yes. Thanks Robert, Rob. This is Peter Kaboli at the Iowa City VA. And actually with me here is —

**Dr. Matthew Augustine:** This is Matthew Augustine. I’m from the James J Peters VA in the Bronx. I’m visiting Iowa City.

**Dr. Peter Kaboli:** So we’re both in the same room and looking at the same computer and glad you all could join. One of the things that Rob said is that we will take some questions during the presentation. So if something comes up as we’re talking, that you have a question on, you can go ahead and type it into the chat box and then we’ll be pausing four times throughout to take a couple of questions. So the title that we have for today is the Veterans Access to Care Evaluation, Access to Care: Update on Metrics and Performance in VHA. And thanks to Primary Care Analytics Team for inviting us to do this.

**Rob:** Okay. I’m sorry to interrupt but I need you to click on that, the popup so that we can see your slides.

**Dr. Peter Kaboli:** Oh, sorry.

**Rob:** There you go.

**Dr. Peter Kaboli:** Now can you see it?

**Rob:** Yes. We sure can, thank you.

**Dr. Peter Kaboli:** Yeah. Thank you. Even after doing the run-through I still did it wrong. Okay. So here’s the title of our presentation and our names on the first slide. So now everybody can see that. Okay.

So what our objectives are is we’re going to describe findings from VA Office of Rural Health Sponsored Access to Care Evaluation. This is some work that we’ve been doing over the past few years and give you some examples of how we’ve used metrics to evaluate performance in VA. And so we’re going to review some of these recent evaluations and describe how VA is enhancing access to care and the metrics that we use in these evaluations.

So a couple, quick background slides. There was a 2015 Institute of Medicine report that was produced in conjunction with the VA about Transforming Health Care Scheduling and Access. And one of the key findings in this was the original IOM report Crossing the Quality Chasm identified six fundamental aims for healthcare. That it be safe, effective, patient-centered, efficient, equitable, and timely. Of these fundamental aim’s, timeliness is in some ways the least well under, least well studied and understood. And part of what we’re getting at with access is timeliness. It’s not all about timeliness but it’s one of the components.

So John Fortney and colleagues had a paper that came out in 2011 producing what we call a new definition of access for the 21st Century that it represents the potential ease of having virtual or face-to-face interactions with a broad array of healthcare providers including clinicians, caregivers, peers, and computer applications. And this is broken down into actual which are directly observable and objectively measurable dimensions of access and perceived access measures which are self-reported and subjective dimensions of access. And across this there are five dimensions of access; geographical, temporal, digital, financial, cultural. And you know the various access measures you know cover these different dimensions.

So as part of the, from Fiscal Year ’18 work that we did, beginning in Fiscal Year ’18 through the Veterans Access to Care Evaluation came up with 20 different access metrics and produced brief reports on each of them. And they’re all available online that describe how these are used in VA and some of the data elements included. And some validity testing in some of them. And so we’re going to apply some of these today.

We’re going to be presenting work today that’s a collaboration across multiple sites. They include Matt’s work, he’s at the GRECC in the Bronx. People here in Iowa City in CADRE. People at Greater Los Angeles, Palo Alto, and the coordination was all done through the Primary Care Analytics Team in Seattle.

So these are the five topics that we’re going to cover today. And Matt and I are going to go back and forth and cover these one at a time. And then each, after each one ask, you can ask a couple of questions to clarify what we just described. So we’re going to talk about extended hours clinics, the use of licensed independent practitioners in call centers, secure messaging in the VA, primary care panel fullness, and [unintelligible 05:02] metric for access to care for mental health services in the hospital.

So Matt, you’ll take it from here.

**Dr. Matthew Augustine:** Thanks Peter. So this part of the presentation is looking at specifically extended hours. And in this analysis, or you know initiation of this analysis, that we’re doing is we’re looking at the association of primary care extended hours with access care metrics that we have used and produced metrics on last year. And also emergency department use which has been historically a measure of adequate access to primary care.

So as many of you know if you work within the VA, especially within primary care, in 2013 the Directive 2013-001 was released in January of 2013 and was expected to be implemented in July that same year. And it defined what extended hours exactly is. And it’s any clinic visits that are beyond normal operation hours which are defined as 8:00 a.m. to 4:30 p.m., Monday through Friday. So any visits, you know, beyond that were considered extended hours. And specifically, in that Directive it stated that primary care, including women’s health, should offer a full range of services at VA Medical Centers and CBOCs who are treating more than 10,000 unique Veterans at that facility. And they should offer extended hours at least one during the week and one during the weekend, and that is considered two consecutive hours. So they need to offer four in general. And so that was implemented throughout the past years. And as recently as of October this year, and recently on a seminar for all the administrators, this was updated in the Directive 1231 which stated that, again, that medical centers and Community Based Outpatient Clinics over 10,000 patients need to offer extended hours. However they relaxed the recommendations to offer it on the weekends or at what specific times. So now they just have to, clinics are expected to offer four hours of extended hours each week. No matter what the timeframe is. As long as it’s outside of 8:00 a.m. to 4:30 p.m.

So last year we took a look at this in Fiscal Year 2018 to see, you know, what did extended hours looks like overall. And here we’re, this is a draft looking at the percentage of total primary care appointments. And as you can see in 2013 with the implementation of the Directive there’s a dramatic rise in the percentage of extended hours departments offered throughout the VA. This rise was, you know, predominantly seen in what we see that this red line here which was during the weekend, during that recommendation. And as you can see as it persisted throughout the last few fiscal years the timeframes in the morning have kind of persistently increased, weekend hours have decreased, and evening hours have remained pretty low and the same.

And, however despite this, the Directive and the recommendation to offer extended hours, the experiences with after-hours access remains the lowest amongst the surveyed questions. So Veterans are surveyed through the Survey of Health Care Experiences of Patients and they’re asked, you know, five different questions. Their experiences with routine care, urgent care, regular hours, care by phone, after-hours care, and after-hours care by phone. And after-hours care remains the lowest. With a rate around 20% reporting that, or lower, reporting responding always to getting care after-hours. And this has persisted despite the implementation of the policy in 2013.

So the question for us was, in this perspective is, can we look at this more objectively. Can we, does extended hours impacting access from the objective measures that we looked at previously.

So what we did is we took a national sample from a timeframe of July of 2017 to October of 2018. We limited it to clinics that had at least one provider and at least 2,000 patients. And our exposure of interest was looking at, you know, the percentage of extended hours and looking at the association with timeliness outcomes which we defined as same-day access, or as timely care metric which is getting care within the first 20 to 48 hours. We looked at both wait-time measures, new patient and established patients. We looked at, what I call, capacity measure which is the third next available appointment. And also ED visits only at VA Medical Centers. We used some methods of multilevel mixed regression over this timeframe.

And our findings are, is that we found an association, a small but significant association, of same-day access. So the greater percentage of extended hours are offered at a clinic the greater the ability for a clinic to meet same-day access for their patients. We did also see an association of new patient wait-time. So although that same-day access increased we did see a slight lengthening, this is about a half-day, of new patient wait times. No effect, we saw no association with established wait-time or third next available appointment. And also we ran these measures with ED visits both overall, after-hours ED visits, and time concordant ED visits. So is morning, extended hours, associated with morning ED visits? Again we saw no association.

So in summary, we see that, you know, clinics that are offering more extended hours there’s increased, slightly increased, same-day access among those clinics. There’s a modest increase in a new patient wait-time. And then there’s no association between overall and time-concordant ED visits at the VA Medical Centers.

The implications. Extended hours may enhance same-day access. While investigations are, you know, are currently ongoing we’re looking to get look at these in a little more detail. Clinics in high demand for same-day access may consider continuing or expanding their extended hours to offer range of times for their patients to be seen in the same day. So the next steps that we’re taking this analysis is, you know, kind of to confirm our statistical modeling. We’re going to look at the earlier timeframe before July 2017, specifically during the time of implementation, and connect these with, you know, a subjective measures of patients’ experiences and hopefully integrate some non-VA data. Learn about the transition, but I can take any questions anybody have right now, if there’s any, before we talk about call centers.

**Rob:** At this time, we have no questions. But let me remind the audience that Matthew and Peter would like you to submit your questions during the presentation and they will address them midsegment. Thank you.

**Dr. Peter Kaboli:** Okay. So this next project we did was looking at the, at clinical call centers and this is specifically the call centers that route calls to licensed independent practitioners and we wanted to look at the association with emergency department and outpatient visits. And this came out of collaboration with the Office of Nursing Services who was adopting a model that, places like Kaiser Permanente and other health systems have adopted, where embedding a licensed independent practitioner within the call center you can achieve sort of first contact resolution. So if you look on the right-hand side, this graphic. If you can imagine, you know, a call comes in. If you go in the middle part of that, you know, it can go to a scheduler if there’s just a scheduling issue that needs to be taken care of. If it’s a nurse question, you know, the nurse can take care of it. There’s an algorithm, a triage algorithm that they use. And based upon that algorithm, some of the algorithms, you know, are go directly to, you know, hang-up the phone and dial 911 or take yourself directly to a hospital. But others allow for judgment by a licensed independent practitioner. And then that LIP can then take the call and either resolve the issue by calling in a prescription or, you know, providing reassurance and then scheduling you know care later as opposed to coming in right away. So these clinical, these call centers are part of this clinic contact modernization and a VA priority to improve customer service, improve our business systems, and respond to the MISSION Act. So our question here at the bottom is, does the inclusion of an LIP in the clinical call center reduce subsequent healthcare utilization?

So we took advantage of, sort of a national experiment that was going on at the GLA call center and over this time period from May of 2015 to March of 2019 and the exposure was whether the call got routed to an LIP or otherwise. And what we were looking at is both VA and fee basis use of emergency department visits on that day and the subsequent days, primary care visits, specialty care visits, and hospitalizations that day and subsequently. So the methods we used was that we matched, based on the chief complaint and what the recommended follow-up intervals were and the recommended follow-up location, and we used the repeated-measures logistic regression analysis technique. And this were based on a two to one match of, [Unintelligible 14:46] match controls.

So here are the main findings. So start on the top left there. So routine, I’m sorry, emergency department visits were reduced if the call was routed to the LIP. So the LIP’s in the red line. And then, you know, it’s mainly over that first, in that same day. So you can imagine patients not being sent to the emergency department but then it dropped off over the days, the next seven days. The top right there is primary care visits which I’ll show you the numbers were lower for the LIP calls. Same for specialty care and inpatient care. And so on the right there it says Veterans whose calls were handled routinely were more likely to use the ED, the hospital, and specialty visits in the days after the call than were Veterans whose calls were handled by a nurse practitioner. And then even after adjustment the differences in healthcare use were smaller but still statistically significant for ED, inpatient, and primary care.

Actually that’s, it should’ve been ED, primary care, and specialty care not inpatient. Well I guess it depends on which, we did two different analyses here. The one on the left is probability of any use and in the adjusted model ED use was less. Primary care use was less. Specialty care use was less. Inpatient care was less but not significant. And then if you just look at the counts in the adjusted model on the right it, you see it for the ED, primary care, and specialty care. So actually, I did have that wrong on the prior slide.

So what we found, you know, is that Veterans whose calls were routed to an LIP at the GLA call center had fewer subsequent face-to-face clinic visits than Veterans who called for similar health conditions and whose calls were handled routinely be registered nurses. And so, we felt like that incorporating LIPs into the call center appears to have obviated some healthcare visits. One of the questions that still remains is you know what is sort of the cost of the, you know, added costs versus the cost savings. But one of the key things is that, you know, you’re saving people from having to come in for visits that they otherwise could just be handled over the telephone.

So that’s the second thing we’re covering on call centers. Any questions that have come in so far?

**Rob:** No questions at this time.

**Dr. Peter Kaboli:** Okay. We’re obviously crystal clear so we’re going to move on. We have three more to cover. So the next one’s on secure messaging.

So this is work that we did looking at the association between secure messaging and primary care face-to-face and phone visits. And this was in response to some work that had been published actually also by Kaiser Permanente when they initiated their secure messaging system, to look to see. And what they showed was a reduction in face-to-face visits after initiating a secure messaging system for their patients.

So we wanted to test that hypothesis in the VA and we had a good national experiment again with the adoption of secure messaging. And so, as you all know with My HealtheVet, it was initiated in 2009 and about 2.1 million Veterans are signed up. That’s about 30% of PCMM that have signed up to use this, the secure messaging portal. So in 2013 the proportion of patients in PCMM that were using it nearly tripled, increasing from 4% to over 11% by Fiscal Year ’17. So it’s still a minority of our patients that are using secure messaging but that number has been increasing. So we were able to look at, over this timeframe. So MyVA Access Initiative included secure messaging in the list of possible fulfillment options for same-day care. You know we actually included that in a measure of timely care that Adam Batten and others developed to look at, you know, our patients getting access to care and counting secure messaging as one of those methods. The one thing that was interesting that in Fiscal Year ’17 only 10% of rural patients were actively using secure messaging in comparison to 13% of urban patients you know. And you know, one of the goals of, you know, initiatives like this is people that do live farther away to get them engaged in care and make it easier for them to access their providers. So it’s still lower, slightly lower in rural patients.

So our question is, does secure messaging influence primary care utilization?

So this is, again secure messaging through My HealtheVet. So we looked at in 2016 one-year post secure messaging initiation for patients that initiated that year. So we have 25,683 new secure messaging, secure message users. Propensity matched to 49,000 non-users from the underlying populations. And this is from the primary care cohort at that time was about 5.8 million. So the matching criteria we used were; they were the same primary care provider panel, they’re similar age, sex, service connection, and rurality and with, within 1/5 of the standard deviation of the predicted propensity by the Nosos score, is sort of a comorbidity type measure we use in the VA, and their drive time to the nearest clinic. So again, patients weren’t randomized but we used propensity scores to try to match them as closely as possible. And the outcome that we were interested in was primary care utilization whether it be face-to-face or telephone visits.

So here’s what we found. So the first bullet says reduction in primary care face-to-face visits by 16% or 0.23 visits per secure message with a significant absolute difference of 7%. And what that means is we were, that both the match controls which are on the left side there and the secure messaging users both had a reduction in visits over this time period. And so the, you know, the difference, and difference between them ends up being about 7%. And that difference was almost exactly what was shown in the work that Kaiser Permanente had published. So it’s consistent with some other work. But we also saw an increase in primary care telephone visits by about 11%, or 0.27 visits per secure message, with a significant absolute difference of about 7%. So you’re also getting more telephone visits as well. So we wanted to make sure we were showing that, you know, it may not, maybe squeezing the balloon a little bit but we did show that the face-to-face visits went down. And from a patient perspective, you know, that’s certainly important if they’re coming in for visits that could be taken care of by secure messaging or by telephone.

So based on a one-year pre- and post-event period initiation of secure messaging in 2016 was associated with a decrease in face-to-face primary care visits and an increase in telephone visits. You know the future work is going to look, you know, potentially a prospective cohort study, what are some of the short-term impacts and long-term effects of this? And what are the implications for provider workload and burnout?

Okay. So we’re off and to our third, finished our third one. Any questions so far on this first three?

**Rob:** Yes we do have some questions.

**Dr. Peter Kaboli:** Okay.

**Rob:** One person wants to know are there differences in clinical outcomes? Simply.

**Dr. Peter Kaboli:** Yeah. Good question. For the secure messaging we have not looked at. And you know, for the call center one that wasn’t part of what we were trying to look at because, you know, they weren’t really randomized but it’s a really good question. One of the, you know, some of the work that’s been done with call centers and a lot of the work has been done in pediatrics and, you know, concern of whether, you know, telephone triage is safe. And you know, within the pediatric literature it’s pretty much felt that it’s a safe thing to be doing. And that there’s, if you have a robust system in place to, and experienced people and, especially with experience, especially both nurses that do this and other practitioners that have done, you know, triage work by phone, you know, they get a sense for it and good experience. So but no, we don’t have good outcome measures across these.

**Rob:** Thank you. Another person asks, any sense how many VA’s use call centers with NPs widely adopted enough to benchmark the value?

**Dr. Peter Kaboli:** So I’m not the one that could answer that. There are people now, some nursing services know the ones that do. And the GLA call center is interesting because a lot of calls from other VISNs actually get routed through there at different times of the day and there’s these sort of regional call centers. So Matthew, you have them.

**Dr. Matthew Augustine:** The Bronx VA does have nurse practitioners and I think they’re expanding. It’s just been recently updated. The clinical call centers they’re calling or they contact that are looking to expand these methods. And along with video TeleHealth as another modality to increase access and treatment for patients. But the number of clinical centers that have NPs actually treating patients over the phone, I don’t know that exact number.

**Dr. Peter Kaboli:** Yeah. And it was part of a pilot that some other centers were going to do it. I don’t know how many have ended up adopting it but the GLA one was the one that really jumped on it and initiated it.

**Rob:** Those are all the questions we have at this time.

**Dr. Peter Kaboli:** Okay. So I’ll turn it back over to Matt and cover next topic.

**Dr. Matthew Augustine:** All right. Thanks Peter. The next kind of question we had is looking at the idea of panel fullness. So how many patients that an individual provider, in this case a clinic has, and their ability to deliver the metrics that the VA has put forth as far as measuring access. So our goal was to look at the association of primary care clinic fullness with access to care and emergency department visits.

So you know, we know from the previous research done out of Seattle actually looking at, you know, panel size and burnout as the panel size increases. In the VA currently there’s a measure of panel fullness that they use called the modeled capacity. And that is an adjustment of the, of a panel size that is expected of a provider based upon the number of support staff, rooms, clinical severity, and the number of women that are on the panel. And those adjustments give the expected size for a given clinic. For this analysis we ignore that and we use an unadjusted panel size and I’ll get more into that. But our question was, you know, as a panel size increases for a given clinic do the access, does the access decrease or change over time?

And so here we look at, this is just an unadjusted panel size fullness for I believe this is clinical-level. As you can see it’s pretty variable throughout the VA at some working at 50% of their expected capacity and some, a minority of clinics, working at above that. So you know, ideally you would like clinics to be right around 90 to 100% to get the optimal efficiency of treating patients.

So our question is, is an unadjusted panel fullness at a clinical-level associated with access to primary care and emergency department utilization?

So what we did is we used a sample from the National VA. We looked at a timeframe same as before due to availability of the measures we wanted to use, from July of 2017 to October, let’s just say 2018. The reason we use this timeframe is that there was a transition of measuring panel sizes and FTE of provider that switched from PCM web. And we felt by July 2017 those numbers became a little bit more reliable for us to use in this analysis. So the panel fullness adjusted that we used was the observed number of patients assigned to a clinic via PCM on the web over the expected panel size. And the expected panel size as calculated based on VA policy is 1,200 patients per MD or DO provider. And 900 patients per NP or PA, so that’s a nurse practitioner or a physician assistant. So we strictly just calculated that based on the number of FTE assigned to that given clinic. The outcomes we looked at, we’re looking at same-day access so that’s ability to get access less than 24 hours. This new measure that we developed called timely care which is; care by phone, secure messaging, or in clinic within 48 hours. We looked at new patient wait-time. We looked at established patient wait-time. Third next available. And we also isolated the clinics to VAMCs, and looked at ED utilization.

Sorry I’m going backwards here.

So when we did this all these models were by, looking at month. The side, each month from that timeframe and we adjusted for the age, race, ethnicity, morality. We looked at the Nosos which is the risk score of the given clinic, the patients in that clinic. We looked at drive time and we also controlled for the size of the clinic.

And so looking at these associations in our [unintelligible 29:16] models we saw that as panel fullness increases we actually see a paraxial increase in same-day and timely care. So as a panel size increases at a given clinic their ability to actually deliver same-day and timely care actually increased, although it was just slightly increased. The third next available appointment, so that’s a kind of capacity measure to deliver timely care lengthened. And then there was a slight association with increase in ED visits.

So what we see here, so this is a, these associations were, these measures here these are our incident ratios and odds ratios were as a 10% increase in panel size so that’s about 120 patients per FTE provider or about 90 patients per MP or PA. So when there’s an increase by 10% we saw an improve in timely care. We saw more urgent care, next available requests fulfilled within 24 to 48 hours that’s a timely care measure. We saw a longer third next available appointment slots. Those are likely occupied by same-day requests. And we saw like a 1.1% increase in ED visits only at VAMCs. So what are the indications of this? One is to suggest that the increase ED visits may signify some time constraints or limited face-to-face appointment slots among clinics with higher panel fullness in order for them to provide the higher acuity and complete care that are necessary to deter the ED visits at the facility. So that’s something that, that’s our next steps is to look a little bit more into that and to figure out the associates that we’re seeing with this higher panel size. And I can take any questions specifically about this analysis, if anybody has any.

**Rob:** Yeah, this one just came in. This person writes, so to clarify did you compare the panel size across providers within a specific period of time? How variable is the panel size over a period of time?

**Dr. Matthew Augustine:** That’s a good question. So we did not look at individual panel sizes of teams because that’s, it gets a little complicated. We looked at, due to the differences at facilities over the team interactions and sharing the patients. So this is at the clinical size within itself. So over time. So this is a month-to-month variability in the size of the clinic. And there is some significant variation and some clinics decreased in size from a month to month basis. And there’s some clinics that are growing a little bit more rapidly than others. And that’s the, kind of the focus for next step because what, the question is, you know, what is driving these associations? Is it, you know, the change in the FTE which is in the denominator? So that’s like, you know, providers leaving a facility or coming to a facility? Or is it the actual numbers of patients that are seen within a clinic? In our updated analysis we’re taking up specifically looking at that. And second of all we’re going to focus on clinics that have over this timeframe which have, you know, increased dramatically so they can kind of see, you know, how they are handling the timely care.

**Rob:** Thank you. We have another question that just came in. Excuse me, I’m sorry. It’s more of a comment. You may just not be seeing the increased ED visits at non-VAMCs because they are rural and more likely to go to a local non-VA ED [unintelligible 32:51].

**Dr. Matthew Augustine:** That’s right. Yeah, that’s correct. And that’s a big caveat in a lot of VA research is that we’re not looking at non-VA visits. We can look at that with, you know, the Medicare population but, again, it’s limited to Medicare fee for service. And so we do have, you know, pretty significant limitations in identifying those non-VA ED visits. Because as we know most Veterans do have coverage. And at 20, about 20 you know 20% to 30% have no coverage at all. So identifying those non-VA ED visits from claims data it can be very difficult. So I think that’s a great comment and a comment about, you know, how we look at VA research looking at ED visits in general. And that’s something I’m looking into and address that, you know, different sources of how we can identify those ED visits outside the VA and that’s on a different platform. But yeah, that’s a very good comment and should be taken into consideration when looking at research that involves ED visits. Because you know patients might be just simply shifting their care to non-VA sites for acute care purposes.

**Rob:** That was the last question we have at this time.

**Dr. Peter Kaboli:** Okay. And I’ll cover the last topic here. Which is mental health. And what we’re looking at is an association between acute psychiatric bed availability and risk of suicide in a national sample of Veterans from 2001 and 2016. And the reason we started this work was when you talk about healthcare access one of the things that has not really been described well is how you measure access to inpatient care. And you know, if you’ve been watching the news lately you know there’s a lot of talk out there about hospitals, especially mental health hospitals not having an adequate number of beds and patients boarding in emergency rooms for hours if not days. And so, you know, this is a question that came up based on some of our own experiences.

So you know, the sort of a policy question of, you know, are hospital diversions and bed capacity are they a measure of healthcare access and quality? And I think they are, but they’re just not routinely measured, reported, or studied. Just three background areas that have been studied. So there was a systematic review that was, it came out in 2016 in JGIM, that looked at overall hospital capacity and they used the word strain. And they found an overall increase mortality and reduced hospital quality in most studies looking at hospital capacity. But this wasn’t specific to mental health. There’s been quite a bit of work done in the ED literature and the risk of diversions when emergency departments have to basically go on divert. And this is actually data all the way back from 2003 but at that time, and it’s much worse now, 45% of EDs reported diverting at some point during that year and on average about 3% of the time. And you know this, this type of data not routinely collected in most hospitals although VA does have some data on ED diversions. And the last is on ICU capacity. And there’s a number of studies that have been done looking at, you know, whether ICUs are full within a hospital. And they’ve shown everything from a range of no impact on mortality up to a five times greater odds of death when you have overcrowding in an ICU. So we’re going to apply this same question to mental health.

So there is, you know, concern and there’s been writing about low psychiatry bed supply for serious mental illness being associated with higher suicide and premature mortality. Now there’s no papers that show that but there’s an assumption that it is, and that’s why we’re studying this. Extended ED wait times which then leads to a higher threshold for admission. You know the longer time that people wait in emergency department often time result in them just being sent home, or the patient just leaving the emergency department. And then short revolving-door stays. So patients coming in, you know, to a mental health unit. There’s constant pressure to get people out. So there’s pushing people out and then potential for higher rehospitalization. And then the issue of homelessness, violent crime, incarceration, and the concept of transit re-institutionalization that as we’ve shut down inpatient mental health beds, we’re transitioning people into prisons instead and using jails for patients with mental illness. So as far as how many beds you need, there’s no international consensus on a safe minimum number of beds. And just to put it in perspective, in the US we have about 22,000 beds per 100,000 of our adult population. So for adult psychiatric beds we’re one of the lowest in the world actually. The UK has about 50, is what they target in their National Health Service and I’ll talk a little bit more about that. And the Organization of Economic Cooperation Development countries is about 70, I think, countries, 50 to 60 I don’t know somewhere in there. They recommend that it should be around 70 and that’s actually, that’s the average but that’s what they recommend it should be, is around 70. And interestingly the VA currently has about 76 acute mental health beds per our 100,000 Veterans.

So to give this perspective of the UK and why this matters there in the National Health Service. Their estimate of using, of having 50 beds per 100,000, publicly funded beds is needed to provide; as equal access to medical acute beds, a four-hour rule for admission to an acute ward, meaning you shouldn’t have to wait more than four hours in an emergency department for admission, and if they can maintain at 85% occupancy rate with those beds to meet that rule and allow beds to be used for two to four weeks per patient. So that’s actually a fairly long length of stay but a generous amount of time in the hospital. So that gives you the perspective.

So I’m going to show you data from our work. Oh one more background slide and compared to the VA. So this paper on the left just looked at association between suicide, which is the top yellow line, rates in the country and number of psychiatric beds nationally. But this is, doesn’t have anything to do with occupancy, this is just a total number of beds. And if you look on the right, you’ll see the almost the exact same trend in the VA over a similar time period. That the blue line represents suicides and the green line represents the number of beds. But you know, that only tells part of the story because it’s really the occupancy of the beds that matters.

So what we did was a cross-sectional time-series with repeated-measures. We have about 10,000 Veteran, I’m sorry 10 million Veterans, over this time period that were enrolled in primary care. So this includes at any given time obviously Veterans come and go within the VA system. And the data elements that we looked at included; suicide as the outcome from the DoD/VA Suicide Data Repository, we were able to get clinical characteristics of the patients from the Corporate Data Warehouse, hospital-level variables were from VSSC data including the monthly hospital occupancy. And we calculated that two different ways to confirm the occupancy rates. Now the point of in occupancy rates is we only have it at the level of the month not by day-by-day or hour-by-hour which is a limitation of this work, but we were aggregating at a higher level anyway. And then we also included civilian- or regional-level characteristics to account for mental health spending and mental health beds in the community. And this came from the, a couple of sources; the Area Health Resource Files, State Mental Health Agencies and their spending, the Census Bureau, and the American Community Survey. And so the analysis was a relationship between hospital-level characteristics and market-level suicide rate using generalized linear mixed models. And the suicide rate was modeled as the number of suicides per quarter. And we did it by quarter because of the infrequent number of suicides we had to aggregate at a quarter level and using a Poisson distribution.

So these are preliminary findings, that’s why it says preliminary. But this is what we found so far, and we need to sort of dig a little deeper to make sure our results are robust. What we found was that there’s lower rates of suicide for each additional 25 civilian psychiatric beds, per 100,000 and each additional $50 spent on mental health per capita within that catchment area. And these are, the second finding about mental health spending has actually been reported previously. So this is consistent with other reports that community investment in mental health services is associated with lower rates of suicide. What about, these civilian beds have not been exactly reported and, again, for the civilian beds we do not have occupancy. We also found higher rates of suicide based on occupancy in the VAs hospitals. So we have 113 acute care mental health hospitals or mental health units. So compared to hospitals in the lowest occupancy quintile, the rate ratio of suicide increased. And you can see it goes up somewhat in a dose response fashion from about 1.13 to about 1.24.

And next slide can show it by using a force plot. And you can see the civilian beds in the third line down, the $50 spent per capita included race. And blacks have much lower odds of, or rate of suicide and then those are the three, I’m sorry the four, occupancy categories. And you can see the rate of occupancy, the referent category was less than 50, but basically less than 50% fall. And then the top four, you know, the quintiles were 50% to 65%, 65% to 75%, 75%, 85%, 85%, to 100% occupied.

So with the, some implications here. So the lack of mental health bed availability and this analysis was associated with a high risk of suicide. And we found that greater community mental health investment was protective against suicide. The future work; I mean first of all we, you know, we need to estimate the optimal level of bed occupancy if we can and mental health spending and look at trends over time. Look at geographic variation and hot-spotting for high-risk areas. We do know that the Intermountain West for example has the, and that’s both in VA and non-VA data, shows as the highest risk of suicide. So these are some preliminary findings but we’ll hopefully have them as finalized soon.

Okay. Can take questions on that and then we have just a couple of closing slides.

**Rob:** We don’t have any questions at this time.

**Dr. Peter Kaboli:** Okay. I’m going to do the closing slides. We’ll do the closing slides and at the, we’ll see if there’s any questions and if none, we’ll end a few minutes early.

So there’s a number of future access-related issues that our group and access, newly funded Access COnsortia of REsearch, the Access CORE, is working on. The first one is, you know, related to the MISSION Act. There’s a number of issues that are going to have to be clarified for the MISSION Act in terms of standards, so access standards for when to refer to community care. That’s been, that’s changed with the MISSION Act and is going to have implications on how we refer care out. There’s also criteria that were developed by, excuse me, a group in Boston on underserved facilities and what it means to be an underserved facility and that was required for the MISSION Act to designate this and have it designated annually. The MISSION Act also is going to implement mobile deployment teams to clinical resource hubs, which I don’t have written up there, sorry. Clinical resource hubs which are, provide telemedicine. There’s a residency program pilot. There’s a pilot for scribes. So there’s a number of things that the MISSION Act’s going to be doing that are intended to improve access and it’s going to be important that people that study it or people that evaluate it have ways to measure it. The Electronic Health Modernization, EHR Modernization with Cerner, is going to have a big impact on care. You know there’s estimates that, you know, implementing a new EHR reduces efficiency by 20% to 30% which may have significant impacts on access if we become less efficient during the implementation phases. Another area is in no-shows. You know currently nationally the no-show rate is about 11%. And in talking to people in The Office Veterans Access to Care, you know, ideally that should be around 5% to 6% and you’d like that to be, you know, steady and not be constantly fluctuating so clinics can plan accordingly. There’s issues with provider and staff recruitment and retention that affect access. And this gets at Matt’s work on panel size and ensuring that we have the right number of providers in the right locations. And then when we don’t, you know, how do you make up for those gaps in coverage? The clinical resource hubs that are being implemented are going to be one of those ways to make up for those gaps and we need to be able to measure provider availability, providers FTs. Last couple of things, you know, there’s continued expansion of virtual care to improve access; whether it be E-consults, specialty care telemedicine, tele-hospitals, tele-stroke care, expansion of the tele-ICUs, all those are intended to improve access. The last two, you know, access-related marketing and satisfaction. You know, keeping track of Veteran perception of access through the SHEP surveys. But also with the new VSignals methodology that contacts Veterans immediately after visits I think is going to be really important to understand, you know, where we have problems with perceived access and when we have really good access how do we market that better, I think to overcome some of the misinformation that sometimes gets out. And the last thing, you know, we talked a little bit about the end there was access to inpatient beds. I mean the veteran population is dropping in most areas, but some areas have increases and are they going to be able to have the adequate number of beds in those areas where Veteran numbers increase?

So those are the future issues and we’ll take any other questions. And we’d like to thank our collaborators there at the bottom in Seattle and Iowa City for all the hard work on this and allowing us to present it.

**Rob:** We do have a couple of questions that came in.

**Dr. Peter Kaboli:** Go ahead.

**Rob:** This one’s a little bit long. What directionality do you attribute to the results related to occupancy? Could lower suicide in lower occupancy be related to an underlying lower prevalence of severe mental illness in the population?

**Dr. Peter Kaboli:** Yeah, so good question. And we were just literally this morning Bjarni and Matt and I were talking about that exact question and looking at some stratified analysis about whether patients have mental, a mental health diagnosis or not. Because only about, roughly about half of Veterans who commit suicide actually have a mental health diagnosis. So I think that, really good question, you know, because if you don’t have a mental health diagnosis and you don’t seek care for mental health you really can’t be admitted to the hospital for acute mental illness and that, with the hope that that prevents a suicide. And so we stratified the analysis by presence or absence of a mental health diagnosis and we don’t see an association with the pop, with the stratified group with no mental illness and those with a mental illness. Actually, their relationship’s a little bit stronger. So you know, that’s part of what we’re trying to tease out. And that’s exactly the kind of questions we were working on even as of this morning so, thank you.

**Rob:** Thank you. How will data be shared from the VA CCN/PCN network?

**Dr. Peter Kaboli:** Um, I’m not sure which, I mean there’s, I’m not sure which network that refers to specifically. I mean all the data that we used for these analyses either came from the CDW, you know the SSC, or other, you know, publicly available data. So this, all the data we used is data that’s available to researchers and administrators within VA.

**Rob:** Okay. Thank you. We have one final question. Are you available for consultation on other rural health projects?

**Dr. Peter Kaboli:** Oh, yeah. You bet! That’s you know, that’s one of the key things that we’re doing, you know, that we do through our Rural Health Resource Center here in Iowa City but also through the new Access CORE. And that Access CORE was just announced yesterday as funded so it’s with myself here in Iowa City. It’s led by Mike Ho in Denver and then other Co-PIs are Stephanie Shimada in Boston and Sameer Saini in Ann Arbor. And as part of the Access CORE, you know, we’re going to make ourselves available for access-related research questions and certainly rural health has a lot of access-related things. So yep, just send me a note and happy to help.

**Rob:** Well that was the final question we had at this time. If either of you have closing comments you’d like to make I’d like to give you an opportunity to do that.

**Dr. Peter Kaboli:** No. We just want to thank everybody that has worked on these various projects and, you know, we’re welcome to any feedback that anybody has that listened in, positively or negatively that’s fine. And you know, we’re always looking for new ways to measure access because ultimately, you know, if we’re going to improve access we have to have ways to measure it and ways to report it so that we know where we have deficiencies. And this will be work that’s going on for the next few years, probably forever, so happy to take any suggestions. That’s all I have. Thanks everybody.

**Dr. Matthew Augustine:** Thank you.

[ END OF AUDIO ]