

WEBVTT

NOTE duration:"00:41:08.5880000"

NOTE language:en-us

NOTE Confidence: 0.911062777042389

00:00:00.030 --> 00:00:04.770 Morning and Welcome to medical grand rounds a couple of brief announcements before main speaker.

NOTE Confidence: 0.909555852413177

00:00:06.500 --> 00:00:11.780 The maintenance of certification credits are available for this grand rounds.

NOTE Confidence: 0.887535393238068

00:00:12.730 --> 00:00:28.540 In next week will be a talk by Shelly for Hedian, who's going to be assistant professor in infectious disease and she's going to be talking about new information during chronic HIV infection and she is also the winner of the standard physician scientists award.

NOTE Confidence: 0.916201412677765

00:00:29.700 --> 00:00:42.660 And the week after next on June 13th is a special the 3rd annual special medical grand rounds, which is uh. The stories of your internal Medison and you'll hear about you hear 6 wonderful inspirational stories.

NOTE Confidence: 0.887147128582001

00:00:44.390 --> 00:00:51.540 Now reminder that we have no commercial support for grand rounds in the conflicts of interests and now to introduce our speaker.

NOTE Confidence: 0.863380968570709

00:00:53.100 --> 00:01:19.560 Yes, you already got up I'm doctor, Siegel. It's my pleasure to introduce doctor Maryland. Daisy this morning to give her some medical grand rounds before I began. I'd like to welcome her family were here to support her. Maryland was born in Switzerland. But like a lot of brilliant people. She grew up in Queens.

NOTE Confidence: 0.90753436088562

00:01:20.580 --> 00:01:51.180 And and attended the City University of New York Soviet based Davis School of Biomedical Sciences, where she graduated as the Co valedictorian. She then went on to the medical school at Stony Brook, where she was elected to away and we were thrilled to recruiter here in 2015 as you'll see this morning. Marilyn is smart, she's kind. She has a way with words as you can tell from the title to focus on focus and she's contributed.

NOTE Confidence: 0.922653794288635

00:01:51.180 --> 00:02:12.020 Greatly to our program, she has done marvelous research with Doctor Edward Miller and the Cardiology section focusing on cardiac Sarcoid Oasys. She was a member of our program evaluation committee. She was founding member of our ultrasound leadership group and she was the editor in chief of the beasts and beat.

NOTE Confidence: 0.823050737380981

00:02:12.550 --> 00:02:18.350 We're going to be losing early. Unfortunately, I forgot your chief resident too.

NOTE Confidence: 0.865978419780731

00:02:19.140 --> 00:02:42.110 Yes, Marilyn is marvelous teacher a compassionate listener and runs the most marvelous morning reports as I said, We're going to be losing. Maryland this year. Or she leaves for the Beth Israel. Deaconess to do her Cardiology Fellowship before she returns to join faculty Maryland. Welcome to the podium.

NOTE Confidence: 0.923988282680511

00:02:49.210 --> 00:02:56.780 Well, thank you. Everyone for being here and Welcome to today's grand rounds and titled a focus on Pocus embracing the future of Madison.

NOTE Confidence: 0.923740744590759

00:02:57.300 --> 00:03:11.690 I have no disclosures or conflicts of interests and for those who have been wondering focus stands for point of care ultrasound and a strict definition can be ultrasound used at the bedside for diagnostic or therapeutic purposes.

NOTE Confidence: 0.892493009567261

00:03:12.450 --> 00:03:16.150 But in a little bit of a change from the norm. Let's go to today's called the week.

NOTE Confidence: 0.92368745803833

00:03:16.770 --> 00:03:32.440 Are called the week comes to us from the CCU? Where we have an 84 year old woman with a past medical history of hypertension and sick sinus syndrome? Who is initially admitted from an outside hospital for pacemaker removal in the context of the pacemaker infection.

NOTE Confidence: 0.89342474937439

00:03:33.520 --> 00:03:38.400 After this pacemaker was removed, she was noted tax significant pauses on Telemetry.

NOTE Confidence: 0.929790198802948

00:03:38.940 --> 00:03:41.430 As a result, another pacemaker was implanted.

NOTE Confidence: 0.91514128446579

00:03:42.090 --> 00:03:48.090 After this pacemaker was implanted, she returned to the CCU and shortly thereafter became hypotensive.

NOTE Confidence: 0.87660163640976

00:03:48.760 --> 00:04:04.210 The CCU team had this focused exam a hypotensive patient with systolic's in the 70s. Tachycardia CTO the one 20s in acute distress with prominent JVD muffled heart sounds lungs that we're clear to auscultation and some cold extremities.

NOTE Confidence: 0.871581614017487

00:04:04.800 --> 00:04:12.840 The clinical suspicion here was for cardiac Tampa nod, but a pulses paradoxes was Unfortunately unattainable due to severe hypotension.

NOTE Confidence: 0.861949682235718

00:04:13.500 --> 00:04:24.800 The team did 3 things at this point, they gave a fluid bolus then rapidly found the need to start pressers and uptight rate them. They call the fellow and next they obtained a point of care ultrasound.

NOTE Confidence: 0.908302545547485

00:04:25.400 --> 00:04:31.110 Now I know a lot of us don't look at many echoes or point of care ultrasound. So just for reference. Let's look at a normal heart.

NOTE Confidence: 0.89721292257309

00:04:31.660 --> 00:04:40.800 So this is called the parasternal long axis view with the pro place like so and we have the right ventricle on the top with the left atrium leading to the left ventricle.

NOTE Confidence: 0.877234816551209

00:04:41.610 --> 00:04:45.100 Let's take a look at our patients point of care alter sound.

NOTE Confidence: 0.910951018333435

00:04:47.720 --> 00:04:58.450 As you know the right ventricle really isn't as boisterous and big as it was before, and we see this black line around the heart and if we use the general rule that black represents fluid?

NOTE Confidence: 0.873462200164795

00:04:59.200 --> 00:05:04.070 Here we have an infusion and a clinical confirmation of cardiac Tampa nod.

NOTE Confidence: 0.934887826442719

00:05:04.670 --> 00:05:11.410 As a result, the team was able to save precious time by coordinating emergent intervention for patient.

NOTE Confidence: 0.909197330474854

00:05:12.260 --> 00:05:24.670 They were able to get get the patient to the Cath lab as they were transferring the patient from the table. The patient lost consciousness leading to truly emergent placement of this cap needle an 800CC's of blood being drained.

NOTE Confidence: 0.870506525039673

00:05:25.180 --> 00:05:46.250 So for the rapid recognition and triage with a truly sick patient and use of all the diagnostic tools available to them. I wanted to thank the CC unite team and then includes doctor, Martinez Coleman from ry PC program doctor. Colin flood from R.E.M program and Doctor Aaron vassal from a traditional program or their fantastic work.

NOTE Confidence: 0.925997853279114

00:05:54.690 --> 00:06:05.200 For me, this case demonstrates the power of point of care ultrasound to both inform clinical considerations and confirm some diagnostic opinions that we have.

NOTE Confidence: 0.886302530765533

00:06:06.170 --> 00:06:14.450 And what I consider about this case is if they hadn't done the point of care ultrasound would it have been too late with the patient have coded.

NOTE Confidence: 0.932725310325623

00:06:15.400 --> 00:06:25.290 That's why today I'm so excited to talk to you all about point of care ultrasound and how it will inform the diagnostic landscape of internal Medison.

NOTE Confidence: 0.901946246623993

00:06:26.380 --> 00:06:40.920 I4 main objectives today, first will talk about the evolution of point of care ultrasound a little bit about history next. We'll talk about evidence on focus 3rd limitations and controversies and will end off talking about some future pathways.

NOTE Confidence: 0.915802121162415

00:06:41.740 --> 00:06:45.240 But first let's start on the shores of Lake Geneva.

NOTE Confidence: 0.885670065879822

00:06:45.820 --> 00:06:53.610 As you know, Geneva, Switzerland holds special significance for me, but also for Pocus, where we have a mathematician and a physicist.

NOTE Confidence: 0.902770340442657

00:06:54.150 --> 00:06:58.880 Who bring an underwater Bell and they're able to record the sound 10 miles away?

NOTE Confidence: 0.907668709754944

00:07:00.200 --> 00:07:20.420 Built on this is in the 1880s when we have the Curie brothers and that does include Pierre Curie. The husband of Marie, who discovered the piezo electric effect, which means that for certain materials. When current is applied. Sound waves can be transmitted or generated. This is what underlies many of the transducers and probes we have today.

NOTE Confidence: 0.933259844779968

00:07:21.300 --> 00:07:29.080 1912 marked the tragedy of the sinking of the Titanic and an interest in being able to detect dangers before they appear.

NOTE Confidence: 0.91194748878479

00:07:29.620 --> 00:07:34.580 And in 1914, we have the development of sonar or sound navigation and ranging.

NOTE Confidence: 0.907444477081299

00:07:35.250 --> 00:07:44.480 1935 radio detection and ranging the difference routine road radar and sonar is sonar uses soundwaves radar uses radio waves.

NOTE Confidence: 0.913232624530792

00:07:45.470 --> 00:07:56.830 The 1940s is when we start seeing ultrasound being used for diagnostic Medison as well as therapeutic what I want to point out 1953. We see at learn hurts the father's of echocardiography.

NOTE Confidence: 0.919106721878052

00:07:57.330 --> 00:08:12.310 Of note when they came up with this idea of non invasive cardiac imaging. They weren't looked with much favor by the Cardiology Community at large. But as we know and for the good of all our patients. It's really hard to separate echocardiography from Cardiology now.

NOTE Confidence: 0.887330412864685

00:08:12.970 --> 00:08:24.350 So we then start seeing what we call the ultrasound boom, the use of ultrasound in many of the modalities. We attributed today abdominal ultrasound OB gine.

NOTE Confidence: 0.938895225524902

00:08:24.950 --> 00:08:32.350 This image is actually one of the first ultrasound that was created when patients have to be submerged in water in order to be able to get some images.

NOTE Confidence: 0.893393993377686

00:08:33.650 --> 00:08:54.250 I want to point out in 1980 as a distinct date. When we see Pocus probably used for some of the similar uses that it is today for the focused assessment with sonography for drama or the fast exam, which is used to this day by trauma, surgeons in emergency room physicians to help detect sites of bleeding and get patients to the emergent interventions that they need.

NOTE Confidence: 0.918142318725586

00:08:55.270 --> 00:09:04.540 As time progresses, we see ultrasound being used and becoming more and more portable so that we can bring ultrasounds to the bedside.

NOTE Confidence: 0.892681539058685

00:09:05.040 --> 00:09:17.960 No this machine will look familiar to all of you, it's housed in many of our mchughs and In addition to pristine image Ng? What's also notable about it is that you pay for that percent imagery. It's about \$40,000.

NOTE Confidence: 0.558389186859131

00:09:18.670 --> 00:09:19.350 So.

NOTE Confidence: 0.915715038776398

00:09:20.130 --> 00:09:26.550 Which I'm saying is that this is going to be affordable affordable for hospital institutions but not for any of us.

NOTE Confidence: 0.922703325748444

00:09:27.430 --> 00:09:38.080 The Sun, a site can be about \$20,000 if not more depending on where you're purchasing from again. You're paying for really nice images. The transducers even more extensive.

NOTE Confidence: 0.935642957687378

00:09:38.760 --> 00:09:55.510 In 2016, we see things start to change with the Phillips Lumify being created. This can connect to your Android tablet and is really the definition of things trying to get portable. But it's about \$1200 to rent for 6 months or \$10,000 in terms of a flat rate.

NOTE Confidence: 0.944968581199646

00:09:56.140 --> 00:09:57.970 So still quite expensive.

NOTE Confidence: 0.935261189937592

00:09:58.950 --> 00:10:18.480 Then we have a machine in 2017 that gets invented that is less than \$20,000 less than \$20,000. In fact, is actually less than \$2000 so let me tell you that this is quite groundbreaking and I'm going to let the ad actually speak for itself. This is called the butterfly ultrasound.

NOTE Confidence: 0.641330599784851

00:10:19.840 --> 00:10:28.150 Navigate me anyone of the transducers season one single transducer.

NOTE Confidence: 0.527325987815857

00:10:28.940 --> 00:10:30.100 Yeah.

NOTE Confidence: 0.514786303043365

00:10:31.430 --> 00:10:32.040 And this.

NOTE Confidence: 0.940045595169067

00:10:35.150 --> 00:10:52.490 So basically having a transducer that connects to your phone really represents something that can be portable, but also something that can potentially be affordable. \$2000 is no small sum, but we're starting to see the frontier and this landscape change.

NOTE Confidence: 0.904857754707336

00:10:53.180 --> 00:11:04.070 So if we look back. We've traveled from 1826 to 2019 and what to change. It has been from these huge ultrasounds where patients have to be immersed to now being able to fit in your pocket.

NOTE Confidence: 0.911227285861969

00:11:05.220 --> 00:11:08.480 But then what's the evidence on point of care ultrasound.

NOTE Confidence: 0.860712468624115

00:11:09.520 --> 00:11:15.410 If you type in point of Care for sound into pub. Med you end up with one thousand.

NOTE Confidence: 0.946452558040619

00:11:15.910 --> 00:11:24.830 193 articles so realistically a comprehensive review of all the evidence today is not going to be possible for the time that we have.

NOTE Confidence: 0.722650408744812

00:11:25.340 --> 00:11:25.870 But.

NOTE Confidence: 0.896484971046448

00:11:26.520 --> 00:11:36.220 Well, we can look at is the evidence on focus that 3 different lenses uses diagnostic and procedural cost savings and finally global impact.

NOTE Confidence: 0.917663514614105

00:11:37.200 --> 00:11:51.170 The fundamental question, we want to answer is should a hand carried ultrasound become standard equipment. For every Internist. But I first want us to take a real look at where we are now in terms of our diagnostic capabilities.

NOTE Confidence: 0.93447071313858

00:11:52.210 --> 00:11:53.580 In 2006.

NOTE Confidence: 0.807083249092102

00:11:54.180 --> 00:12:04.180 This study came in JAMA that showed that cardiac exam skills plateau at the MS3 level and decline thereafter.

NOTE Confidence: 0.913053631782532

00:12:04.900 --> 00:12:20.130 I do urge you to take a look at this study, where they use 860 volunteers 6 sites in the US, one in Venezuela and what was notable about this study is that they use both auditory and visual signals, so really akin to the patients that we both here and see.

NOTE Confidence: 0.900645852088928

00:12:20.850 --> 00:12:38.690 And maybe also raising the question of who should really be teaching physical diagnosis. I'm going to leave. I'm going to leave that where that is, but then we see even earlier on. We see less than 1/3 of residents being able to identify prerecorded cardiac sounds and that was in 1993.

NOTE Confidence: 0.934264123439789

00:12:39.580 --> 00:12:45.260 We have another study, then were attending physicians examined patients after interns and residents.

NOTE Confidence: 0.918140172958374

00:12:46.320 --> 00:12:52.110 And they noted that 13% of residents and 16% of interns had errors in their physical diagnosis.

NOTE Confidence: 0.928809702396393

00:12:53.290 --> 00:12:58.250 2/3 of all patients had at least 1 error noted in their physical diagnosis.

NOTE Confidence: 0.927465379238129

00:12:58.960 --> 00:13:04.410 But what for me is the most notable part about this study is that it was done in 1983.

NOTE Confidence: 0.928025722503662

00:13:05.510 --> 00:13:13.110 So I would argue that if we have an issue with physical diagnosis and how it's performed today. It's an issue that lingered for over 30 years.

NOTE Confidence: 0.926737368106842

00:13:13.710 --> 00:13:17.070 And this is a call back to the bedside. We need to get better at this.

NOTE Confidence: 0.901959717273712

00:13:17.720 --> 00:13:22.930 And I'm not and I'm not advocating to throw away anyone stethoscopes that's not the goal of this.

NOTE Confidence: 0.930965781211853

00:13:23.580 --> 00:13:33.380 But the question is, is it a time for a paradigm shift in clinical assessment. Is there something that pointed care ultrasound can potentially add in our assessment of patients.

NOTE Confidence: 0.900963962078094

00:13:34.510 --> 00:13:39.590 I'm going to examine this through 3 different lenses. Let's look at the heart belongs and the kidneys.

NOTE Confidence: 0.907706141471863

00:13:40.880 --> 00:13:48.870 This study called the comparison of effectiveness of hand carried ultrasound to bedside cardiovascular physical exam looked at 2:00 medical students.

NOTE Confidence: 0.848236262798309

00:13:49.370 --> 00:13:53.280 Who used hand carried ultrasound compare them to 5 cardiologists?

NOTE Confidence: 0.8031867146492

00:13:53.960 --> 00:13:56.540 Were who use the cardiovascular physical exam?

NOTE Confidence: 0.903071522712708

00:13:57.200 --> 00:14:06.100 The medical students had 18 hours of training. The Cardiologists were board certified so to me representing the epitome of the cardiovascular physical exam.

NOTE Confidence: 0.942326366901398

00:14:07.330 --> 00:14:08.670 The medical students.

NOTE Confidence: 0.910454571247101

00:14:09.360 --> 00:14:15.100 And the cardiologist, they examined 60 patients who had confirmed pathologies on echo.

NOTE Confidence: 0.944622099399567

00:14:15.880 --> 00:14:19.730 The medical students were able to identify 75% of pathologies.

NOTE Confidence: 0.921087563037872

00:14:20.260 --> 00:14:22.520 The Cardiologists 49%.

NOTE Confidence: 0.927056491374969

00:14:23.390 --> 00:14:31.380 In terms of detecting the sensitivity behind the reason for systolic murmur and the sensitivity behind the reason for a diastolic murmur.

NOTE Confidence: 0.948559761047363

00:14:31.920 --> 00:14:35.860 We see the medical students with 93% and 75% respectively.

NOTE Confidence: 0.91688197851181

00:14:36.730 --> 00:14:41.300 For the cardiologists we see 62% and 16%.

NOTE Confidence: 0.930984318256378

00:14:42.750 --> 00:14:54.040 So for me, this study really represents the ability of Pocus to better inform the challenges represented to us by the cardiovascular exam as performed by experts.

NOTE Confidence: 0.869489252567291

00:14:55.130 --> 00:14:58.340 OK let's leave the heart right there. Let's move on to the lungs.

NOTE Confidence: 0.928997755050659

00:14:59.280 --> 00:15:15.090 So this study is a systematic review comprising of 6 studies with about a thousand 8800 patients. We see the sensitivity of long ultrasound at 88% compared to chest X Ray at 73% and the specificity of 90% across the board.

NOTE Confidence: 0.909099578857422

00:15:15.790 --> 00:15:18.610 What this might look like an in comparison to a normal lung?

NOTE Confidence: 0.8700110912323

00:15:19.250 --> 00:15:29.340 A normal lung we see the presence of a lines. The plural line is this bright line. We see at the top and the airlines are these horizontal artifacts that are reverberations that go down.

NOTE Confidence: 0.908593058586121

00:15:29.980 --> 00:15:43.620 In comparison, what we see in pulmonary edema, or generally be lines, which are vertical. They look like Searchlights and these are quite sensitive for pulmonary edema, as has been represented in a lot of the focus literature.

NOTE Confidence: 0.917780160903931

00:15:45.200 --> 00:15:49.760 Let's go on in our exploration of the lungs. Let's talk a little bit about pleural effusions.

NOTE Confidence: 0.880464494228363

00:15:50.370 --> 00:15:54.540 This study compared auscultation to chest X Ray in long ultrasound.

NOTE Confidence: 0.911717236042023

00:15:55.160 --> 00:16:25.980 Our astute clinicians will note you don't diagnose pleural effusion slowly by auscultation and that is a limitation of this study, but look at our sensitivity specificity's and diagnostic accuracy here. We're talking about long ultrasound 92 percent 93% with the diagnostic accuracy of 93% compared to 47% for chest X Ray what this might look like on your ultrasound

and this image is capturing the edge of the liver as well as this diaphragm is the shiny line.

NOTE Confidence: 0.905811011791229

00:16:25.980 --> 00:16:31.100 And we see the pleural effusion being represented by black again for fluid.

NOTE Confidence: 0.888717472553253

00:16:32.810 --> 00:17:03.450 So let's look at this review article next that tie some of these concepts together and this came out in the BMJ in 2017 and doctor. Kamari did was he amassed a different sensitivities of physical findings that were done in prior studies and as well. Compared them to poke his findings for LV systolic dysfunction. We see a sensitivity of an S3 at 11 to 51% displaced apical impulse 5 to 6%, whereas the focus findings of subjective.

NOTE Confidence: 0.903558075428009

00:17:03.450 --> 00:17:12.590 Estimation of contraction or the Ipoint Septal separation greater than 1 centimeter, giving us a sensitivity of 69 to 94%.

NOTE Confidence: 0.915988683700562

00:17:13.240 --> 00:17:21.560 Rails crackles you see a sensitivity of 19 to 64%, whereas be lines, you have a sensitivity of 85 to 98%.

NOTE Confidence: 0.891067564487457

00:17:22.830 --> 00:17:39.140 This study also looked at pleural effusion as diagnosed by Dulles Precaution of noted great limitation of these studies as they used chest X Ray as the gold standard and as we know chest. X Ray misses a lot of pleural effusions. But in those studies. We have a sensitivity raining from 73 to 89%.

NOTE Confidence: 0.918196439743042

00:17:39.660 --> 00:17:48.970 When you look at focus when you can actually see fluid into Thorax. Your sensitivity is 64 to 90% using CT, which is a more accurate gold standard.

NOTE Confidence: 0.90520566701889

00:17:50.040 --> 00:17:57.540 So we have some intriguing findings for the heart and the lungs and don't worry about leaving the lungs just yet because pneumonia seems to be a problem.

NOTE Confidence: 0.919854342937469

00:17:58.900 --> 00:18:07.470 So this these studies used chest, X-ray incitti as the gold standard and we have a sensitivity of 97% and the specificity of 94%.

NOTE Confidence: 0.869083285331726

00:18:08.050 --> 00:18:24.700 What we're looking at in terms of the ultrasound image again capturing the edge of the liver we see that diaphragm is that shiny line and we see the consolidation. If you're saying the consolidation. Looks like the liver. You're right? That finding is called hepatization work along looks like the liver.

NOTE Confidence: 0.913780987262726

00:18:25.480 --> 00:18:51.110 And the instance in which this could be potentially helpful is if you are in an outpatient clinic and we've all had these patients who if we have to refer to outside radiology. We don't know that they'll get their data. Access issues or other things that might prevent them from doing so, but if you have a clinical suspicion of new Monia and you're trained in point of care ultrasound being able to see this consolidation might help you confirm your clinical suspicions when you send that patient antibiotics.

NOTE Confidence: 0.892465591430664

00:18:52.450 --> 00:18:56.610 OK, we talked about the lungs and the heart. Let's talk a little bit about the kidneys.

NOTE Confidence: 0.889763951301575

00:18:57.150 --> 00:19:24.040 This study called the accuracy in prognostic value of Pocus were nephrolithiasis in the Ed was a systematic review and it shows a moderate sensitivity of 70% and the specificity of 75%. But if you see moderate or severe hydronephrosis your specification specificity jumps to 94% in essence. We're talking about more modest data in terms of some renal uses. But for certain cohorts in modern severe hydro this could be quite useful.

NOTE Confidence: 0.901803135871887

00:19:25.880 --> 00:19:31.860 But there's a different set of uses that we use point. Carol percent for that now represents standard of care.

NOTE Confidence: 0.904254794120789

00:19:32.370 --> 00:19:33.590 That's procedures.

NOTE Confidence: 0.843963384628296

00:19:34.090 --> 00:19:38.750 And thoracentesis we have decrease rates in pneumothorax with focus.

NOTE Confidence: 0.837489068508148

00:19:39.900 --> 00:19:43.340 In abdominal Paris and T CS we have decreased bleeding complications.

NOTE Confidence: 0.911298334598541

00:19:44.210 --> 00:19:47.650 In central venous lines, we have decreased arterial punctures.

NOTE Confidence: 0.913768231868744

00:19:48.270 --> 00:20:01.810 Numa Thoraces, an hematomas in fact, there every single house staff member here myself included have not performed any of these procedures in any other way, but with focus it does represent standard of care.

NOTE Confidence: 0.906382083892822

00:20:03.390 --> 00:20:12.740 But there's another procedure that we might not consider consider to be 1. What patients most definitely do and it effects almost every single one of them and that's the peripheral Ivy.

NOTE Confidence: 0.884077191352844

00:20:14.410 --> 00:20:15.610 The peripheral Ivy.

NOTE Confidence: 0.91928619146347

00:20:16.210 --> 00:20:25.770 In a study for patients who would have otherwise received a central venous line, it prevented the need for them in 85% when performed under ultrasound.

NOTE Confidence: 0.910532176494598

00:20:26.420 --> 00:20:55.350 It reduces the need of the number of sticks and increases the success rate of peripheral ivs. We have some intriguing cost savings analysis coming to us from the nursing literature? Which shows that a traditional ID is cheaper about \$32 which are talking about more attempts. Let's say 3.7 attempts on average. You're talking about a total cost of about \$118. However, \$45.00 for ultrasound guided purple Ivy, but 1.7 attempts, meaning 76 dollars.

NOTE Confidence: 0.901194632053375

00:20:55.990 --> 00:20:58.540 So you could see a potential cost savings there.

NOTE Confidence: 0.907252371311188

00:20:59.570 --> 00:21:24.000 The other note that they did. There's in one hospital system. They did ultrasound guided purple lives in a very systematic way and were able to save over \$1,000,000 by avoiding the need for pics so for me if there is such a thing as low hanging fruit that enhances the patient experience in terms of focus. It is the use of focus for ultrasound guided ivs.

NOTE Confidence: 0.902636408805847

00:21:24.650 --> 00:21:35.850 So we talked about some cost savings data in this aspect and the avoidance of procedural complications as one might expect does save money for hospital. Simpson systems, but how 'bout?

NOTE Confidence: 0.926757335662842

00:21:36.360 --> 00:21:41.160 Saving money from narrowing differential diagnosis and avoiding other diagnostic tools.

NOTE Confidence: 0.914130568504334

00:21:41.680 --> 00:21:49.510 We have a small community D study in which pocus aid between 1000 to \$2000 of additional diagnostic testing per patient.

NOTE Confidence: 0.910776853561401

00:21:50.380 --> 00:22:04.070 But for me a huge limitation of this study is that there wasn't follow up for these patients. We don't know if they came back in shock or if they came back in with the same issue. So I'd say that the cost savings data from this aspect isn't as robust as of yet.

NOTE Confidence: 0.879009366035461

00:22:05.170 --> 00:22:09.680 OK, we talked about uses and cost savings data. Let's turn our gaze globally.

NOTE Confidence: 0.929132342338562

00:22:10.850 --> 00:22:26.060 In 1999, The Who, released this statement approximately 2/3 of patients needing diagnostic imaging can be diagnosed by the use of simple X Ray examinations and ultrasound examinations, either singly or in combination.

NOTE Confidence: 0.921409726142883

00:22:27.540 --> 00:22:32.350 And we have several small scale studies that are done throughout the world and I want to bring a few of them up.

NOTE Confidence: 0.893153429031372

00:22:33.010 --> 00:22:58.830 In Mexico, a study of 126 patients. Pocus illuminated the need for formal echo in 90%. They brought Pocus to the Amazon rainforest and use it. In 25 patients where it helped in the triage of 7 of them and buy that for 4:00 patients they were able to avoid emergent evacuation by being able to confirm such findings, as an intrauterine pregnancy rather than an ectopic pregnancy.

NOTE Confidence: 0.886651933193207

00:23:00.300 --> 00:23:18.030 In the Congo, we have 14 of 20 patients word assisted with preoperative planning and prevented the need to go to see T and fax ET would not have been accessible to many of these patients and it confirmed the findings of such things as abdominal masses that were acceptable or not.

NOTE Confidence: 0.942813098430634

00:23:19.030 --> 00:23:19.990 In Indonesia.

NOTE Confidence: 0.907485067844391

00:23:20.670 --> 00:23:36.430 We see in a study of patients with dengue a fever daily bedside ultrasound for the assessment of pleural effusions ascites and Gallbladder thickening was a better predictor of progression to severe dengue a than any other individual marker alone.

NOTE Confidence: 0.916889846324921

00:23:37.940 --> 00:23:49.280 And what we know is that all our residents who go on our international health electives to places like Rwanda in South Africa can attest to the use of point of care ultrasound in different locales.

NOTE Confidence: 0.905879974365234

00:23:50.070 --> 00:24:02.300 And my question to the educators is this, if we are indeed trying to train the global physician who can practice any? Where are we not doing them a disservice by not training done in point of care ultrasound?

NOTE Confidence: 0.685555517673492

00:24:04.200 --> 00:24:05.170 That right there.

NOTE Confidence: 0.904528498649597

00:24:06.350 --> 00:24:30.160 To recap our evidence on focus we have strong data on improvements in the pulmonary and cardiovascular assessment. We have modest data on renal uses. We do see some procedural safety improvements. We see cost savings data for narrowing diagnosis, not being as robust at this point in time. But we see improvements in global access to diagnostic imaging that are quite profound.

NOTE Confidence: 0.916570603847504

00:24:31.110 --> 00:24:43.100 OK, not everything can be positive right so let's talk about some limitations in the controversies will talk about this through 3 different lenses, including definitions litigation and billing.

NOTE Confidence: 0.924210965633392

00:24:44.600 --> 00:25:04.120 Now to start off with any discussion of point of care ultrasound would be remiss if we didn't recognize the huge contributions of emergency. Madison to this field in terms of earliest adopters of focus well over 20 years ago. It has been emergency. Medison and a lot of our literature does come from the emergency Madison Field.

NOTE Confidence: 0.914943277835846

00:25:04.920 --> 00:25:10.640 But as you can imagine if you're talking about image Ng, especially ultrasounds, you have to mention radiology.

NOTE Confidence: 0.671075999736786

00:25:11.550 --> 00:25:13.020 Cardiology.

NOTE Confidence: 0.885841965675354

00:25:13.740 --> 00:25:28.010 The basically the folks who we go to Bora. Formal ultrasounds in our formal echoes and I don't think anyone is arguing that the expertise in these formal formal imaging studies lies in anyone, but these 2 specialties.

NOTE Confidence: 0.918946146965027

00:25:28.660 --> 00:25:39.780 But the question becomes if we want to use focus in an evidence based way for the good of all our patients is there a way in which we can avoid this type of scenario.

NOTE Confidence: 0.926705956459045

00:25:40.960 --> 00:25:43.250 Right is there a way to work together on this.

NOTE Confidence: 0.908720731735229

00:25:44.130 --> 00:26:00.160 And to further elucidate some of the concerns for the car from the cardiologist and from the radiologist. I wanted us to go to this case study from the agency of Healthcare research and quality called the ultrasound looked fine now. This has been abbreviated some Watt.

NOTE Confidence: 0.909264922142029

00:26:00.790 --> 00:26:16.650 We where we have a 58 year old man or the past medical history of heart failure with reduced ejection fraction. Mitral valve replacement on antique regulation and end stage renal disease on dialysis who comes in with dyspnea and inability to hear his valve clicking.

NOTE Confidence: 0.89118218421936

00:26:18.010 --> 00:26:23.360 Pocus showed stable Louis F and a mechanical valve in place with some evidence of volume overload.

NOTE Confidence: 0.873391211032867

00:26:25.090 --> 00:26:33.140 The patient was dire Easton discharged home, a formal echo was never done the patient returns hours later in cardiogenic shock.

NOTE Confidence: 0.824682950973511

00:26:33.660 --> 00:26:37.550 A formal echo at that time shows a mitral valve dramas.

NOTE Confidence: 0.92039942741394

00:26:38.580 --> 00:26:46.270 If there's anything that truly terrify is me about point of care ultrasound. It's it's the possibility for situations like this.

NOTE Confidence: 0.899230718612671

00:26:47.010 --> 00:26:55.480 Where we have patients who don't get the appropriate image in that they need and this speaks to me to the need to actually define what Pocus is.

NOTE Confidence: 0.943463623523712

00:26:56.430 --> 00:27:02.930 And so I did adapt the American Society of echocardiography a lot of a lot of different societies have different definitions.

NOTE Confidence: 0.926343262195587

00:27:03.540 --> 00:27:16.330 But I would say that in the hands of an Internist Pocus is a focused ultrasound. It identifies the presence or absence of several specific findings by using a defined preestablished image acquisition protocol.

NOTE Confidence: 0.883129060268402

00:27:17.180 --> 00:27:22.260 In other words, Pocus is not a formal echo or a formal ultrasound.

NOTE Confidence: 0.87866199016571

00:27:23.520 --> 00:27:25.180 To then go back to our case.

NOTE Confidence: 0.852751433849335

00:27:26.010 --> 00:27:28.990 An redefine it'll it'll which will do in a second.

NOTE Confidence: 0.886977255344391

00:27:29.520 --> 00:27:34.370 I wanted to just bring up some questions that you might ask for point of care alter sound.

NOTE Confidence: 0.92877322435379

00:27:35.750 --> 00:27:37.060 In terms of specific questions.

NOTE Confidence: 0.770940363407135

00:27:37.890 --> 00:27:39.390 Is there food pocket to tap?

NOTE Confidence: 0.876118779182434

00:27:39.970 --> 00:27:47.210 Are there be lines? Is there a sizable pericardial effusion? It isn't a comprehensive imaging study and should not replace one?

NOTE Confidence: 0.901543796062469

00:27:48.790 --> 00:27:50.530 So let's reframe this case.

NOTE Confidence: 0.890090942382813

00:27:51.050 --> 00:27:53.840 Right where we have that 58 year old man coming in.

NOTE Confidence: 0.896337449550629

00:27:54.440 --> 00:28:06.440 We can say that there's no pericardial effusion stable OEF on Pocus. We can't comment on the valves and would need long ultrasound or die. BC Assessment for perhaps a more thorough assessment of volume overload.

NOTE Confidence: 0.909723162651062

00:28:07.410 --> 00:28:15.560 In essence, you have clinical questions about this patient that aren't answered by pointed care ultrasound. This patient deserves a formal echo.

NOTE Confidence: 0.90411114692688

00:28:16.480 --> 00:28:23.200 So formal echo that was found at that time would have been able to save this patient a lot of grief and a lot of intervention.

NOTE Confidence: 0.89450216293335

00:28:24.450 --> 00:28:32.340 Of course when we see this case, we start thinking about litigation right. The truth is that there's not any case of litigation in the data that we have.

NOTE Confidence: 0.934910118579865

00:28:32.890 --> 00:28:41.800 A study looking at between 2008 and 2012 demonstrated 5 lawsuits. But those were over the failure to perform indicated imaging studies.

NOTE Confidence: 0.929058969020844

00:28:43.150 --> 00:28:53.180 But the truth is, we don't know what we don't know's point of care ultrasound gets more affordable more accessible. We're likely going to be looking at more cases of litigation.

NOTE Confidence: 0.909194469451904

00:28:54.800 --> 00:29:07.410 Tide to all of this is the question of what Pocus is an augmented physical exam or an image. Ng study and the reason why this becomes important is for the following reasons and I will say that emergency Medison.

NOTE Confidence: 0.888496458530426

00:29:08.050 --> 00:29:12.840 Firmly believes that focuses an imaging study internal Medison is sort of split in their camps.

NOTE Confidence: 0.908018410205841

00:29:13.500 --> 00:29:23.350 And so if you see Pocus is an augmented physical exam. You perform it along with your physical exam. It's an extension. You assess your patient you take a look at their lungs in their heart.

NOTE Confidence: 0.923160910606384

00:29:24.300 --> 00:29:52.020 But if you see it as an imaging study. It carries with it certain weights, which means that you need to upload your images there needs to be some sort of image review process you're talking about quality assurance to ensure that people who use focus are using it and effective way so that's why for those who advocated for it being an imaging study. They

were talking about a lot about patient safety, meaning you have that quality assurance in place that you may not necessarily have with augmented physical exam.

NOTE Confidence: 0.829307913780212

00:29:53.480 --> 00:29:56.950 This brings us and is intrinsically tied to this question of billing.

NOTE Confidence: 0.912147045135498

00:29:57.720 --> 00:30:09.030 Now I will say that in terms of emergency. Medisun are centers of Medicare. Medicaid data so that less than 1% of them of emergency medicine physicians actually build for point of care ultrasound.

NOTE Confidence: 0.868697762489319

00:30:09.900 --> 00:30:11.840 I will say that to preface.

NOTE Confidence: 0.930956482887268

00:30:12.340 --> 00:30:17.160 But there are only two ways to build for an ultrasound and that's limited or complete.

NOTE Confidence: 0.908015549182892

00:30:18.020 --> 00:30:47.930 And focus isn't a complete ultrasound. Therefore, it costs it's classified as a limited ultrasound. But as you can imagine. There's no other way to build for a limited echo or a limited ultrasound by radiology and limited echoes or limited ultrasound. They require sonographers. They required the interpretation of various different organs. At times when you're talking about the right upper quadrant ultrasound that evaluates everything but the left kidney and spleen and then it requires radiologist was sent a lot of time in terms of training to be able to evaluate them.

NOTE Confidence: 0.893617451190948

00:30:49.400 --> 00:31:02.560 But the focus experts also spend time training, sometimes extra years of ultrasound fellowships, so fairest way to be able to reimburse and I think a lot of the stems from trying to fit Pocus.

NOTE Confidence: 0.885359227657318

00:31:03.240 --> 00:31:04.830 Into an antiquated system.

NOTE Confidence: 0.918000221252441

00:31:05.580 --> 00:31:15.720 It isn't it isn't about this and I think that's where things go wrong and a lot of this discussion ends up coming going awry and probably a fix of the system is what we need.

NOTE Confidence: 0.905871689319611

00:31:16.980 --> 00:31:33.280 But imagine I want to grade this as a physical exam would be great higher on our physical exams because we use focus. But

imagine if you do that. For every single patient that you use focus on what we're talking about a lot of pressure on the health care system. If we all great higher on each of our physical exams.

NOTE Confidence: 0.94879287481308

00:31:34.060 --> 00:31:42.530 Now, what the answer to this question is, I don't know, but I think we need to have the conversation for the good of all our patients and to be fair to everyone who is involved.

NOTE Confidence: 0.90695595741272

00:31:43.860 --> 00:31:50.270 So to recap terms of limitations in controversies focuses a focused exam that answer specific questions.

NOTE Confidence: 0.885924398899078

00:31:50.820 --> 00:32:02.100 We need to clearly define what we have assessed and what we have not assessed or unsolved issues include litigation. This question of physical exam versus imaging study and finally this question of billing.

NOTE Confidence: 0.926764786243439

00:32:03.970 --> 00:32:06.890 So let's talk a little bit, then about future pathways.

NOTE Confidence: 0.921169817447662

00:32:08.110 --> 00:32:12.850 And I'm going to talk about this through 3 different lenses, including competency teaching an credentialing.

NOTE Confidence: 0.868589103221893

00:32:13.860 --> 00:32:15.450 But I want to start off with this code.

NOTE Confidence: 0.904671967029572

00:32:16.560 --> 00:32:18.310 And some of you may have seen this before.

NOTE Confidence: 0.923414647579193

00:32:18.950 --> 00:32:36.710 That will ever come into general use notwithstanding, its value is extremely doubtful because it's beneficial application requires much time and gives a good bit of trouble both to the patient and the practitioner because it's You and character or foreign and opposed to all our habits and associations.

NOTE Confidence: 0.923341453075409

00:32:37.900 --> 00:32:41.720 Now a lot of you might be thinking that they're talking about focus but they're not.

NOTE Confidence: 0.928422033786774

00:32:42.410 --> 00:32:45.340 They're talking about the stethoscope in 1834.

NOTE Confidence: 0.867201805114746

00:32:45.890 --> 00:32:48.630 If you're drawing some parallels I am too.

NOTE Confidence: 0.93502402305603

00:32:49.830 --> 00:32:50.720 Let's move on.

NOTE Confidence: 0.862826228141785

00:32:51.530 --> 00:33:01.100 And I will preface this graph by saying it's completely fictitious. I invented this data. I wanted to illustrate a purpose here.

NOTE Confidence: 0.912955343723297

00:33:01.980 --> 00:33:11.490 Focus is getting affordable. Imagine by twenty twenty four we have 70 to 80% of internists were able to afford point of care ultrasound or have access to it.

NOTE Confidence: 0.891583800315857

00:33:12.270 --> 00:33:13.990 We're saying let's say 80%.

NOTE Confidence: 0.919744431972504

00:33:14.640 --> 00:33:17.590 But imagine if we stay as competent as we are right now.

NOTE Confidence: 0.933456659317017

00:33:18.680 --> 00:33:33.190 I think this yawning gap between affordability and competency is truly scary. What is scary for patient safety what we're talking about? Is Internist with a tool that they don't really know how to use and using them to make clinical decisions.

NOTE Confidence: 0.866928935050964

00:33:34.480 --> 00:33:41.430 And if and if you're thinking you know it's only Maryland, who saying that this is the future of Madison. I want to. I want to maybe bring a point up for that.

NOTE Confidence: 0.59139221906662

00:33:42.800 --> 00:33:44.330 The anime.

NOTE Confidence: 0.921477913856506

00:33:44.860 --> 00:33:57.910 So has said that ultrasound imaging is within the scope of practice of appropriately trained physicians. The ACP in 2018 formally acknowledged the important role of point of care ultrasound in internal medicine.

NOTE Confidence: 0.911584258079529

00:33:58.420 --> 00:34:11.030 We have a society of hospital. Madison releasing similar statements. We have the Society of General Internal Medicine hosting

seminars that are filled to the brim in terms of focus so this is truly happening, it is coming.

NOTE Confidence: 0.915709733963013

00:34:12.220 --> 00:34:29.010 But poke his competency, it isn't easy. It requires a a bedrock of basic knowledge on top of that. The ability to acquire images on top of that image interpretation skills and finally the pinnacle is clinical integration.

NOTE Confidence: 0.883099317550659

00:34:29.940 --> 00:34:31.740 So what barriers do we have?

NOTE Confidence: 0.920209944248199

00:34:32.370 --> 00:34:49.720 And this is based off a survey that was done a residency program directors in terms of the barriers of integrating ultrasound curriculums into their residencies and they found that the cost of training faculty and the time to train faculty being the greatest barrier and this is something that we see across the board.

NOTE Confidence: 0.881207227706909

00:34:50.860 --> 00:34:59.340 And this is my plate you'll is that if there is a time to train our faculty. It is now this is the time the place our money.

NOTE Confidence: 0.920970559120178

00:34:59.860 --> 00:35:12.710 Into training our faculty because we are on this precipice of having ultrasounds being available to wall. If we're talking about patient safety. This is really the new frontier. We need to put funding into this.

NOTE Confidence: 0.592016935348511

00:35:13.890 --> 00:35:14.340 OK.

NOTE Confidence: 0.864322006702423

00:35:15.110 --> 00:35:16.550 Some other barriers they looked at

NOTE Confidence: 0.924565196037292

00:35:17.110 --> 00:35:23.810 The cost of ultrasound equipment again. This is done in 2013. We have the butterfly coming out in 2018 an rapid developments.

NOTE Confidence: 0.867095172405243

00:35:24.610 --> 00:35:35.100 Time to train residents and cost of training residents again very echoing back to the costs of training faculty at a time to train faculty. We don't have trained faculty? How are you supposed to train residents?

NOTE Confidence: 0.904777824878693

00:35:36.270 --> 00:35:44.760 The lack of credentialing will touch it down that the lack of quality insurance quality improvement. This goes back to our physical exam versus imaging study question.

NOTE Confidence: 0.918696224689484

00:35:45.430 --> 00:35:49.440 The lack of national guidelines. Hopefully the ACP will be able to help with that.

NOTE Confidence: 0.912208080291748

00:35:50.180 --> 00:35:53.980 The conflicts with other specialties. Oh, yes, we touched a little bit about that right.

NOTE Confidence: 0.909078299999237

00:35:54.850 --> 00:36:04.480 And the time to use ultrasound depending on which study are talking about. Sometimes these studies can range between 3:00 to 6:00 minutes in the hands of practice practitioner.

NOTE Confidence: 0.910482227802277

00:36:05.570 --> 00:36:07.690 OK. So who's actually teaching focus.

NOTE Confidence: 0.908021628856659

00:36:08.560 --> 00:36:22.050 62% of medical schools in 2014, had ultrasound as part of their curriculum. They use it as a way to link anatomy and in terms of the patient who isn't alive to the actual structures and what they look like when the hardest beating right.

NOTE Confidence: 0.908716976642609

00:36:23.020 --> 00:36:30.620 Over 90% of residents and students in this study out of Chicago thought that Pocus knowledge was important, but the majority felt incompetent.

NOTE Confidence: 0.936359524726868

00:36:31.470 --> 00:36:41.270 Going back to the study from twenty 1325% of those surveyed had a pocus residency curriculum and another 35% plan to start in the next 12 months.

NOTE Confidence: 0.905897080898285

00:36:42.010 --> 00:36:56.200 Some other notable residency programs who already have ultrasound curriculums include Stanford MGH NYU. I could go on UCLA. OHSU this is really what is at the forefront of residency medical education today?

NOTE Confidence: 0.9135981798172

00:36:57.110 --> 00:37:00.310 So I wanted to bring up a little bit of what we have done.

NOTE Confidence: 0.84723562002182

00:37:01.080 --> 00:37:12.250 And I want this to be our officials shout out to aryel. I am traditional focus committee under the leadership of Haley and Israel and other leaders include Eric Jordan Ethan Bernstein, and Layla Huggy got.

NOTE Confidence: 0.898384213447571

00:37:13.590 --> 00:37:26.180 2 years ago we sort of realized this need that focus is coming and we don't feel quite prepared for it. It is through their efforts that we were able to integrate training into our ambulatory curriculum this year for the PGA threes.

NOTE Confidence: 0.868794143199921

00:37:26.750 --> 00:37:41.010 But honestly our dream and where we think the future is going is we need to give training to all our residents P do. I want Speedway Twos and we often ask for emergency medicine faculty? Are Cardiology, faculty and our home. Crit faculty to help come teach us.

NOTE Confidence: 0.910011529922485

00:37:41.940 --> 00:37:50.880 What we have is a scarcity a dearth of General Internal Medison faculty we really need you we need you to be trained so we can learn.

NOTE Confidence: 0.853498458862305

00:37:51.500 --> 00:37:52.570 So there's my play.

NOTE Confidence: 0.859407663345337

00:37:53.640 --> 00:37:57.820 And if you're like me, thinking, Hey, I'm not in residency anymore.

NOTE Confidence: 0.902868568897247

00:38:02.190 --> 00:38:20.020 It's not too late. It really isn't we have a society possible. Medison we have different training programs being offered but I will say that it's not 6 hours. That helps you being trained to focus. You need Lange. Tuddal training overtime. You need to be able to examine patients, so that's not where it should end.

NOTE Confidence: 0.899506807327271

00:38:20.800 --> 00:38:25.930 But imagine you say, Hey I went to all these training programs and trying to learn on patients. I'm competent.

NOTE Confidence: 0.915529310703278

00:38:26.640 --> 00:38:28.150 The next step is credentialing.

NOTE Confidence: 0.793110609054565

00:38:28.690 --> 00:38:36.340 There's no pathway for current credentialing right now for for internal Medison.

NOTE Confidence: 0.927184820175171

00:38:37.740 --> 00:38:40.750 Because you have to work with the individual hospital institutions.

NOTE Confidence: 0.879158079624176

00:38:41.450 --> 00:38:47.800 Often there isn't a clear president for internal Medison to have imaging imaging privileges at all.

NOTE Confidence: 0.931397795677185

00:38:48.520 --> 00:38:51.230 And it does require this infrastructure to be in place.

NOTE Confidence: 0.927367746829987

00:38:51.900 --> 00:39:02.750 But again, I would argue if we were thinking about the future about patient safety and what we can add to our assessment of patients us being able to go down this pathway is vitally important.

NOTE Confidence: 0.90385115146637

00:39:04.400 --> 00:39:19.540 So hope I hope I hope I keep your interest in terms of focus and if you're interested in checking out some more resources. Feel free to put in this bit LY link or if you take out your iPhones you can scan this QR code. I'll show it again at the end.

NOTE Confidence: 0.910136818885803

00:39:20.240 --> 00:39:31.950 And at this includes some resources to learn focus some links for our faculty for in terms of training training opportunities and a list of the articles that have talked about during this talk as well.

NOTE Confidence: 0.890350222587585

00:39:33.590 --> 00:39:38.910 So to recap our future pathways for taught with talked about affordability in competency.

NOTE Confidence: 0.850326716899872

00:39:39.430 --> 00:39:45.760 We've talked about the barriers to Pocus Inclusion, the strides and teaching Pocus and finally credentialing.

NOTE Confidence: 0.913689792156219

00:39:47.690 --> 00:39:55.570 And I hope my takeaways are these for you, that focuses getting affordable, and in fact, this technology has its roots from over 200 years ago.

NOTE Confidence: 0.927333235740662

00:39:56.070 --> 00:39:58.080 There is growing evidence on focus.

NOTE Confidence: 0.893500685691834

00:39:58.820 --> 00:40:09.280 We need to clearly define and redefine what focus means for the safety of all and we finally again competency and the future of IMR Interval Tide.

NOTE Confidence: 0.887452185153961

00:40:10.110 --> 00:40:40.580 I wanted to thank you all for being here and I especially wanted to thank some key people in my life, especially my family my parents. I love you. Thank you for your support my brothers my nephew and my sister, Emma Meiko Chiefs. All my friends. Thank you and I'm just going to run through this. List of mentors and faculty that have helped me throughout this year for this talk, especially to doctors Meyerson Rooster Sankey Fetterman. Miller doctor did doctor Michelle Dr Scout Doctor Siegel Doctor, Luke Doctor Van Tonder doctor. Hey, doctor, cash off after Q.

NOTE Confidence: 0.817487478256226

00:40:40.580 --> 00:40:43.290 Will Cushing or Pocus Committee were indebted to you?

NOTE Confidence: 0.910404980182648

00:40:43.800 --> 00:40:52.970 Thank you all my hope is this that will be able to work with all the specialties involved emergency Medison Internal Medison.

NOTE Confidence: 0.908139109611511

00:40:53.590 --> 00:41:01.840 Cardiology radiology and be able to truly embrace the future of Madison for the good of all our patients. Thank you.