# Waves of Change: The Rise of Ultrasound at the Pediatric and Neonatal Bedside - Pediatric Grand Rounds-5-2-25-Meeting Recording

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45m 29s

**Kamat, Deepak M** started transcription

**Kamat, Deepak M** 0:29

7:30 and let's get started with the grand rounds.
Welcome to pediatric grand rounds.
Next 5 grand Rounds will be presented by our graduating fellows and today will be the first presentation by Doctor Justin Rauli, who is a board certified pediatrician and 3rd year Newnan Perinatal Medicine Fellow at UT Health San Antonio.
He completed his undergraduate degree at the University of Texas at Austin.
And stayed in San Antonio for medical school, Pediatrics, residency and fellowship in.
Unital perinatal medicine.
The Raleigh has strong interest in point of care ultrasound, both in clinical care and in education. As a medical student, he helped start the school's first ultrasound interest group, and he has continued that focus through his fellowship by developing A and piloting a condensed point of care.
Ultrasound.
Curriculum for NICU providers.
His current research explores how this training impacts providers confidence and use of ultrasound in real time clinical settings. He has been recognized for his teaching with multiple awards and is dedicated to working with learners across all levels to expand access to and comfort with better ultrasound in P.
And neonatal care.
Doctor Rauli, the floor is yours.
So we are looking forward to your presentation.

**Rowley, Justin Grant** 1:59

Perfect. Thank you Doctor Kamat.
So First things first, I have no financial disclosures to make.

Next up for us to talk about is some of our objectives. So I'm hoping by the end of this talk today, I will understand the history and evolution of bedside ultrasounds and we will explore current pediatric and neonatal applications of point of care ultrasound.
We'll recognize some barriers to implementation of.
Pocus and adoption of POIS.
Look at a couple of educational strategies to support focus use.
I will briefly go over some of my curriculum.
Research and design.
And then we'll talk about some future directions for focus in Pediatrics and neonatology. And all of that.
So I'm going to start with the case first.
You are in the NIU and you called to a new to the newborn nursery at 2:31 AM you? Just laid down.
It's a term neonate who has respiratory distress on exam, but they don't have clear etiology, so you order a stat X-ray as per usual, and you call down to get the response.
Sorry, the texts are all busy.
It's going to be at least an hour.
Brilliantly, you pull out your pocket ultrasound device and see this on the chest ultrasound.
I don't expect anyone out there to know this.
I'm hopeful that some people do, but.
You instantly diagnose that as a pneumothorax for the neonate and you see the same finding throughout all the fields that you check on the right side of the chest.
You quickly perform a needle decompression and you see rapid improvement in the baby's clinical status.
You admit the baby to Nikki for observation and crawl back into your bed by 3:05 AM.
Of course, at 345, the X-ray tech calls you to ask where the baby moved to. Now I bring up this case not to hate on the X-ray techs.
They are very busy and I appreciate everything that they do for us, but to just demonstrate a real life situation that point of care ultrasound may be useful and save time and effort.
Worked in radiation.

So let's step back just a little bit here.
What is ultrasound?
Ultrasound imaging is a modality that uses sounds to generate images in real time.
It's considered to be safe.
It has no exposure to ionizing radiation, and typically not contrast.
There's an Asterix there because there are some new methods of ultrasound imaging that do utilize it.
But sound waves are emitted by crystals in the ultrasound probes that then go on to interact with tissues in the body, bounce back to the probe, and finally are read by the machine to make an image.
This happens thousands of times.
Per second.
Specifically, using sounds that are greater than than the upper limit of human hearing, which is 20,000 Hertz.
Most diagnostic ultrasounds ever in the millions of Hertz.
So you'll see.
MHC noted for that.
If you're more of a visual learner like I am, this is a better diagram of that.
So electricity is converted into sound in the ultrasound probe.
Which is then pushed into the body.
Bounces around and less than 1% of that sound comes back into the probe, which then turns that sound back into electricity that the computer reads and generates an image.
This is updated incredibly frequently by the machine to produce a real time movie, quote UN quote.
These are some of the typical images that that you might see produced from an ultrasound machine. Different tissues have different properties that lend themselves to looking different on an image, allowing us to diagnose things.
Use ultrasound to help us guide procedures, things like that.
I won't go into too much detail on these because it's not necessarily the point of this discussion, but.
I I really did want to point out just some of the differences and how things can look.
So my first question for you all is what are we seeing in this ultrasound?
I know. I just told you I'm not going to teach you about how to read an ultrasound, but that's because this is a trick question.

This is not an ultrasound.
This is sonar.
I bring that up to give you a little history about ultrasound.
Medical ultrasound actually owes its development to sonar, which is a technology invented in the early 1900s and utilized heavily in World War 1.
It stands for sound navigation and radar.
It's a very similar concept and that sound is sent out and things that are about the sound that's bounced back produces an image.
That goes on to the first medical ultrasounds.
That were published in 1947 with images of the human skull and then the first abdominal disease.
Ultrasound images. Not until the late 1950s.
There were lots of problems with these early ultrasounds.
They were large.
They were difficult to use.
You had to have multiple people operating it at one time.
They didn't give you real time images and it actually required the subjects to be initially submerged in water.
Here are two very interesting pictures. On the left is one of the earliest ultrasound devices and on the right is actually the first image of a fetal head.
Yes, that is.
An image that measures the bipartal diameter of a baby a 33 weeks gestation.
This again is an image of one of the first ultrasound machines of the subject having to be submerged in a tub of water.
So not really ideal for.
For bedside use.
So with all that in mind, formal clinical ultrasound, what we think of when we order an ultrasound for radiology to come to it.
Really expanded its use in the 60s to 80s, mostly just in radiology, cardiology and obstetrics, where point of care ultrasound saw its rapid increase in use was in the 1990s. Once we started to have better technology that was smaller and more affordable.
And it allowed many, if not all specialties to develop the use of pocus to some extent.
Obviously, adults, emergency medicine and critical care.
At the forefrfrrr, this really is just kind of.

**Peds Workroom** 9:15
We went there first like we went.

**Rowley, Justin Grant** 9:17
Image trajectory of the uptake of pocus in different medical specialties.
It might be a bit ambitious in how they portrayed it.
Here's 2020.
So all providers definitely know how to use ultrasound at this point, right?
No they don't.
Although we are seeing a lot of medical students, residents and fellows and fellows.
Often want to learn are expecting to learn how to use ultrasound and actually do know how to use ultrasound.
With.
An example here for you. Actually at our institution this is an article from 2016 showing.
The the institution implementing a significant focus curriculum to the medical school and then opening up the state-of-the-art ultrasound training facility.
That's actually here on campus.
Believe it's on the third floor of the medical school. Mrs. Doctor Sisson up in the front, he's one of the faculty at the Emergency Medicine Ultrasound Fellowship.
But this is just to show that it is expanding. Use down into medical students nursing students.
And everybody at this point?
But let's hold off what is point of care ultrasound.
How does it differ from other ultrasound?
So it's ultrasonography that's done by the provider caring for the patient at the patient's bedside, and it's interpreted in real time.
It's aimed at answering quickly a specific question and then broadly categorized into use for diagnostic or procedural augmentation.
What isn't point of care ultrasound?
It is not a replacement for detailed radiographic studies.
It's not meant to be a detailed anatomic survey and it does not replace the thorough physical exam.
This is a table from an AAP technical report in 2022 on the use of or the definition

and differences of focus in the NICU.
So answering a focus clinical question.
That helps to delineate pathology or?
Show specific Physiology is performed by the clinician and triggers immediate changes. It's supposed to be short 5-10 minutes.
Whereas a radiologist perform ultrasound is routine, can be emergent, but goes beyond the therapeutic decisions of the bedside. Clinician often is more to look at anatomic detail and pathologic detail.
And can be much longer.
In in.
In duration.
So there's a lot of applications that that we find pocus use of in adults, which is the earlier adopters.
So of course they would have more things that they look for.
These are just a few selected ones that I showed here, but many of these.
Are actually being used or proposed to be used in Pediatrics.
So what about point of care, ultrasound and Pediatrics?
Often it's the ideal imaging modality due to its relative safety and relatively low cost.
It's a real time imaging, so it works well in squirming children that don't want to sit still for an X-ray or an MRI.
Selfishly, for us in the NICU, the best patient for maximizing your image content and the quality of that image is a small patient that's made of more water. So that's.
Just babies. In fact, the AAP came out with this technical and clinical report on the use of focus in the NICU in 2022 with a whole bunch of recommendations for implementation, which we'll talk about a little bit more in a minute.
But I just wanted to.
Kind of show you that they have a lot of recommendations and suggestions on things that it can be used for.
So where is it used most frequently in Pediatrics?
Well, for now, most frequently it's used in.
Pediatric emergency medicine in the PICU it's seeing rapid growth in use in the NICU in pediatric hospital medicine and general Pediatrics.
And then there's many pediatric specialties that are kind of in the early stages of developing how they're using it.
To augment their clinical practice.

So just for some examples here and I'll go through quite a few of these point of care. Ultrasound for vascular access is perhaps the most common use in Pediatrics at this point.
And has a lot of benefits to patient care.
So poke is kind of placement is the gold standard for IJ central line placement.
This is true in Pediatrics and in adults.
It is also the gold standard for umbilical catheter tip management.
Specifically, after it's already been placed.
Not for insertion yet.
The use of pocus increases success rate while decreasing the number of attempts for arterial punctures and pick placement.
In Pediatrics, it decreases line placement procedure time and it increases first rated success attempts. First attempt success rates for peripheral Iv's and actually increases the longevity of those lines.
I know that.
In the pic you they're working on using pocus for PIB placement with the providers and the nursing staff. And I've heard good things about its use there.
I wanted to just show an image of what it might look like to place.
I believe this is a femoral line here and with the use of ultrasound on the bottom part of the image, you can see the.
Vane with the guide wire or needle in the center there.
This is a little bit outside of my wheelhouse, so this is where I'm more comfortable.
This is just several images showing what it might look like to look at proper.
Positioning of a UVC UAC pick line and the tip in NEO innate in several different positions.
Well, again, there are some studies that are attempting to evaluate the use of pocus during umbilical catheter placement for success and for troubleshooting. Currently the standard of practice is not to use it during the initial placement but afterwards for routine management.
I'm kind of moving on to some of the other things that it's used for in these settings.
So focus cardiac ultrasound is a big hot topic right now.
In theory, it's to assess the overall function of the heart.
Look for signs of obstruction and possibly assess fluid status.
In the PICU pocus credentialed pediatric intensivists have been reported to have a greater than 90% agreement with cardiologists when it comes to cardiac function.

And then there's a lot of discussion about, at least for fluid status, IBC extensibility and some other predictors.
IBC distance ability has been positively correlated to percent fluid overloaded in children.
And then there are some other cardiac measures that can actually predict fluid resuscitation responsiveness in mechanically ventilated children.
So just very quickly here, I won't go through this.
This is a quote.
This is an image depicting a qualitative estimate of left ventricular function, something that can guide management, potentially for the use.

**Seidner, Steven R** 17:39
You just muted, Justin.

**Kamat, Deepak M** 17:44
Jason, we lost sound. You muted?

**Rowley, Justin Grant** 17:48
Can you hear me now?

**Kamat, Deepak M** 17:49
Yes, we can.

**Rowley, Justin Grant** 17:50
OK.
I'm not sure what happened.
So.
This this image that I've flipped to is looking at the.
Aortic velocities and velocity time integrals.
That, again, are beyond the scope of what we're doing, but these have been shown to be predictive of which which pediatric patients might be more fluid responsive to resuscitation.
Moving on a little bit more, so talking about Pocus for Airwave management, abdominal emergencies and other emergencies. As far as the airway goes, our patients are actually again small and made of a lot of water. So they lend themselves

to being able to see the endotracheal tube and.
The trachea itself a little bit better.
Than otherwise, in fact.
Use.
Pocus has been shown to have faster confirmation of a successful endotracheal intubation than chest X chest, X-ray or auscultation, and it's as fast as capnography in the delivery room. With the Asterix of it has to be a trained provider that knows what they're doing.
And that's not.
Widespread use at all at this point in terms of abdominal ultrasound.
For pocus, there's a possibility that it's useful as an adjunct diagnostic tool for NEC, however.
That.
'S pretty hotly debated at this point, but it is an objective ascites measurement tool to to follow your patients day-to-day to see the depth of the deepest pocket or in the same location.
Interestingly, many of you, I'm sure, have heard of the fast exam in the.
In the emergency department, or if you've watched the show, the pit, they use it there, but that's an exam that's very rapidly looks at a few locations using ultrasound to find rapidly correctable problems.
There's a similar protocol being developed in the neonatal population to look at infants who are crashing for unknown reasons to look for things like pneumothoracies.
Abdominal or intestinal perforations. Pericardial effusions and things of that nature that are things that we can correct and this one specifically has not been thoroughly studied.
But it is an interesting thing in development.
Just kind of looking at what some of those ultrasounds might look like on the left side here we have a right upper quadrant ultrasound that's part of a fast exam or potentially in the future part of the crashing neonate exam.
That actually shows you some pre fluid in between the liver and the kidney.
On the right side here, you can actually see what the airway.
Might look like.
In probably an older patient here.
But with.

The air column in the middle here and then surrounding tissues thyroid gland.
And musculature beyond that.
Moving a little bit further down pocus for lungs is a very big topic in neonatology right now, but.
It's quite useful in all kinds of.
Specialties and pediatric situations.
So it actually has a higher sensitivity as well as a similar specificity for diagnosing a pneumothorax compared to an X-ray.
And that's why I wanted to show you that example, because it is actually quite quite good at that.
And it also has a higher accuracy for diagnosing pediatric pneumonia.
It actually reduced chest X-rays in one study for patients admitted for pneumonia by 39%. It had no cases of misdiagnosis or adverse events or unscheduled health visits after that admission.
Just kind of looking at what we were seeing with the pneumothorax, that's what is depicted on the left side here. So the a column is actually.
Normal lung. This is a specific mode. You can look at, but if you see that you're on the beach with the sand in the front and the waves in the back, you're good.
If you see the stratosphere sign or the barcode sign, that is an indication of a pneumothorax.
So this is showing a normal versus a unhealthy thoracic cavity on the right side here.
I really just wanted to show that it's also good at at diagnosing a collapse lung or consolidation.
And because the tissue will be squished together as well as looking at pleural effusions.
In situations where you would need to know those things.
I know I had showed this table before, but just to bring the table back up for other things that in the neonatal world we've been using ultrasound for in addition to pneumothorax, we are able to pretty effectively diagnose ttn.
RDS and predict bpd.
Many of those are still being studied, so they're not in use for general practice yet, but they are in the works.
Moving a little bit further down and more into the general Pediatrics world as opposed to neonatology.
So abdominal pocus can be used for Constipation evaluation. It measures the Tran

rectal diameter and actually performs similarly to X-rays and sensitivity and specificity.
And the one that I find the most fascinating is actually the diagnosis of a mid gut volvulus.
You can observe an inversion of the.
Superior mesenteric artery in vein that makes this Whirlpool sign that I've put an image in here for.
So this is the Whirlpool sign with the superior mesenteric vein.
That's the white arrow here twisting around the SMA. The green arrow down here.
The SMA also has a cut off sign where there's blood flow and then there's not.
This is diagnostic for mid gut volvulis and.
Is often much faster than getting your.
Upper GI series. If you have somebody who is trained and proficient in looking for this sign, I have tried to get the I am not provision of this yet.
I have tried to get the ultrasound text here to do it overnight and have been told that they don't do that, so I'm hopeful that this one comes up sooner than later, but for now I haven't seen it here yet.
A couple other common uses in general Pediatrics.
Point of care ultrasound actually identifies abscesses versus Cellulitis, better than just physical exam alone.
The.
Ultrasound machine is also very good at ruling out orbital Cellulitis.
You can look at bladder distension and calculate urine volume.
There are standard formulas out there to use for that to help you identify if a patient is in retention or has some kind of obstruction or is just not making urine at all.
And it also helps identify landmarks in lumbar punctures and actually has been shown to increase successful tap rates.
A couple other pediatric specialties that are using point of care, ultrasound and the pediatric emergency medicine departments.
Again, they're using things like the fast exam.
They also use ultrasound for cardiac motion during a code event to help you know if there's any electrical activity at all. If there's a heartbeat, they are starting to use it more for fractures, both in limbs.
And in skull bones.
I've seen a few articles from specialties like nephrology and endocrinology about

starting to train their their fellows in use of poinicare ultrasound for clinic use.
And then, interestingly, for sports medicine and and transportation of patients, we're starting to see that they're using these pocket ultrasounds for youth sport events.
S looking for fractures, hematomas, other joint injuries, ligamentous injuries, things like that.
So with all of these fancy things out here that we can do with it, why aren't we using it all the time?
Well, some people are.
Most of us want to.
Many of us aren't able to use it all the time for many, many reasons.
Some of those are, it just takes time to learn and become proficient. And with Pediatrics and neonatology being late adopters.
That's just we're just on the front side of that.
One other problem is that to become proficient.
Has has definitions that you need to meet, at least in the adult medical field, but there are very few people who agree on exactly what that means in Pediatrics. To be competent in performing point of care ultrasounds.
Certainly not in the NICU, and that's something that we're trying to figure out.
There's often no infrastructure in place to obtain these images or store the images.
Or document what your decision making process was. Once you got the image.
Using and implementing Pocus and the POCUS program requires multiple departments to all come together and be on the same page, like radiology and cardiology, as well as the administration and.
The hospital.
And many places.
Have limited access to ultrasound machines.
And.
Specifically, there was a recent study sent out to general pediatricians asking about.
Essentially demands and gaps in point care ultrasound.
This specific question that I've put up here shows that many providers think that there's an opportunity for using point of care ultrasound, and that they want to use point of care ultrasound. In fact, 50% of the providers that were polled said that there was an opportunity for.
Them to use point of care ultrasound.
In their clinical practice multiple times a week, up to multiple times a day, most of

these providers unfortunately did not or were not able to use pocus at the time and had a follow up question.
That was what are some of the barriers to the use of poinicare ultrasound in your practice?
The most.
Common responses were things like discomfort with acquiring the images and technique, or interpreting them.
So kind of going back to just not having.
The training and education in it, yet not having ultrasound machine and then lower down the list.
Lack of access to experts.
Who can?
They can talk the findings with.
Storing images.
And very few people did not expect that pocus would change their clinical management.
So I bring all of that up to start talking about developing a pocus program because.
The best way to combat all of these issues would be to put something in place to address them.
Developing a pocus program takes time. It takes resources and it takes lots of people, and if you're lucky, you have one of those.
It requires training and education from experts to the people.
People being trained and it requires setting up quality assurance to review images once they've been taken.
It requires buy in from multiple departments like I alluded to.
That includes radiology, cardiology and the departments using the imaging.
That would likely require system changes or workflow changes.
The other problem, especially in neonatology and Pediatrics, is that there's very little national consensus on competency standards as part of that AAP technical report from 2022, they actually gave.
That's a nice slide.
On kind of an overview framework of developing a pocus program.
I bring this up to show you that it looks like it shouldn't be that complicated.
There's only about what 15 bullet points there.
I think we can knock that out in about a week, right?

The answer is no.
It's much more complex than that. In each of these steps takes time.
This arrow shows you where I started when I got interested in developing a program for us about 2 1/2 years ago at the very bottom with huge ideas that we would be done with this in about six months.
Some centers actually do have all of those resources, and experts and everyone on the same page from the get go to start an ambitious curriculum. This is a article from the journal Perinatology, I believe.
From 2021.
Where?
Large academic NICU actually implemented a curriculum with multiple uses.
Within about a year and saw an increase in uses and change in management for the positive.
That is not the norm.
So they were.
They were very lucky with that. Realistically, most centers start pretty small.
There will be iterations with with it, as with all programs and curriculums, and it will grow.
But you have to do it by the book. At this point I'm going to kind of switch gears here.
Talk briefly about.
Our pilot curriculum that we that we did in the NICU is part of my fellow scholarly activity.
So just going through a couple of other background things, because this is an educational curriculum and that we were trying to identify the need.
Trying to answer the need of what does competency mean in the NICU, we had to step back a little bit further.
And say that we know that knowledge and confidence are critical milestones on the route to developing competence. We thought that making a condensed pocus curriculum for this umbilical catheter tip monitoring and management, if given to Nikki providers, would improve their knowledge on the basics and improve their conf.
Towards focus.
Hmm.
Here we go.

We use the six step approach to medical education and use publicly available materials.
I'm happy to give them to whoever, if anybody would like them and came up with a blended learning module for our fellows or advanced practice providers and attendings that had several different ways for them to learn.
We.
Used a modified low fidelity simulation.
Tool that we had just changed from something in the literature for part of the hands on practice. It included not only this, but supervised live hands on practice in stable patients. After we talk to the parents and got consent, as you can see here, this is kind of.
The simulator image that we were looking for and then we would go to the live patients to try and see a similar image, usually without the catheter.
We collected all kinds of data.
In Red cap, we sense an evaluation that was before immediately after they finished the about two hour long course and then three months later looking at knowledge, confidence and attitude using.
A assessment that we created ourselves and then two Likert skills that were similar to others in the literature and then on the three month survey we had, participants report the number of ultrasounds they had done since the course as well.
I won't go too much into the analysis.
Statistics of it, but we used a linear mixed model and then did some post hoc analysis to examine the effect of the post course ultrasounds on knowledge retention.
Briefly, for the results, we had 20 providers that took the course.
And all of the participants reported prior experience in point care ultrasound as being no training or minimal or only informal training.
As well as far as the knowledge scores go over time.
Time we saw that immediately after the course, as expected, people's knowledge did improve. At the three months delayed we.
Saw a significant.
Or we saw a decline in the knowledge scores, but it was still significantly higher than the pre course levels and this was true for all providers and split by provider type.
So app attending and fellow.
The scores for attitudes and.

Confidence were similar.
I'm gonna skip over them for the sake of time.
This graph is just showing the relationship a number of post course course ultrasounds or essentially practice ultrasounds that that providers did and their knowledge scores at the three months retention and depicting that participants who performed more ultrasounds generally retained more knowledge.
So with all that in mind.
We concluded that the pilot study was effective at least at immediate knowledge, confidence and attitude improvement surrounding focus for umbilical line management.
The knowledge scores initially improved but decreased on the retention survey overall. However, it looked like repetition was important in terms of the retention of that knowledge.
The adult world has different definitions of how many ultrasounds you need to do until you're competent in said in that specific ultrasound.
Our study wasn't powered to specifically find out how many you needed to reach a certain level of knowledge and and confidence, but it is suggestive that somewhere north of the five to 10 range is probably more ideal, at least in this situation.
So all of that being said, with that study that definitely got us all the way through to the end of the framework and we're ready to go and we have a program.
Well, not so much, really. What it did.
Is it kind of checked off this box here?
I say that to show you that this is going to take time no matter what specialty you're in.
What kind of resources you have?
That it is.
A complex task.
Task that is going to take time.
So all of that together, I wanted to just give a little summary and call to action point of care. Ultrasound is fast, it's safe.
It can be impactful at the bedside.
Pediatric and neonatal focus uses are rapidly growing.
Program development is the key to helping effectively and safely grow, but it starts with education, structure and support across departments and divisions.
And anyone can be the one to start the change.

I say that because I don't know if you noticed in the background of this article this news article from 2016.
That's a young Justin in his first year of medical school.
Getting grand ideas about where ultrasound is going to take him in the future.
With that, I will leave it open for questions and some pictures of us with our live hands on practice during the curriculum.

**Kamat, Deepak M** 39:12
Technique Dr. Roli for that excellent, excellent presentation on point of care ultrasound using units and in pediatric practice is already a question in the chat box you sold me.
Now, how much will it cost me to buy one for General Pedi practice? And how can I get training?

**Rowley, Justin Grant** 39:32
Yeah. So.
As far as the cost, I don't know.
I I I don't know the cost of a formal bedside ultrasound like the ones that we have in the hospital.
I know that the ones that we have in the new tower.
Were I, I believe, fairly expensive.
The ones that you can get that are handheld plug into your phone have been decreasing in cost. The last time I checked, they were about 1200 to $1500.
If that's something that someone was looking for out of.
Sorry, I'm looking for a specific slide here as far as how to how to get training. One of the things that is recommended by the AAP is.
A going going to a course a 2 day introductory focus course.
Course, there's one that's put on by the Emergency medicine department here.
Typically they have them in Austin, although I think we just very recently had one that was neonatology focused here in San Antonio. But they put on a fantastic two day pediatric course or neonatal course to get at least the basics down with.
Hands on live models that, at least in my case, were actually pediatric patients.
They go through all kinds of interactive cases and.
That's.
Kind of the the 1st place that I would start.

You can also reach out to the radiology department, the Cardiology Department, and the ultrasounds, the ultrasonographers themselves, and and ask them for help with training.
Is is something I've done myself and actually heard from other places around the country that are trying to start their own programs, but really it's just finding.
Someone who's going to help you get your hands on the ultrasound machine to start practicing on it. Looking at your own veins, looking at your friends muscles. If they let you.
You know those kinds of things.

**Kamat, Deepak M** 41:43
Thank you, doctorali.
There is a question about Doctor Tebbu the go ahead and ask you a question please.

**Wu, Theodore** 41:50
Hey, thanks.
Thanks for that presentation, Justin.
Doctor Rowe, I know you've come a long way and it's really ambitious.
That you know, the AAP guidelines kind of get you that map for you.
Just so our colleagues know here, I've even been involved with our pediatric program as well.
There has been a consortium of.
What we call a focus oversight group at University Hospital that collaborates with all our ICU docs, ER, docs.
Radiology.
Hospitalists anyone who has any you know use of the ultrasound machine because of the ease of availability of the machine. And then what is?
Is there any standardization to it?
So with this oversight committee, does is helps kind of bring some consensus of how would the machines are being used and how this modalities being used?

**Rowley, Justin Grant** 42:48
Mm hmm.

**Wu, Theodore** 42:50

And the other thing it helps is kind of.
You talked about the repository for images to transfer from that cloud storage to epic, so this committee also helps with formulating that.


**Rowley, Justin Grant** 43:01
Mm hmm.


**Wu, Theodore** 43:05
And I know I don't think the NICU.
The Niki we invited.
I don't know if anyone was in those meetings with us, but definitely we can help with creating that workflow for for the NICU.


**Rowley, Justin Grant** 43:17
Yeah, as far as I know, I don't think we have been to those meetings.
I know pretty recently Doctor Quinn has been looking.
Into that so.
If you wouldn't mind sending me some names so that I can send them to Doctor Quinn or sending them to her, that would be fantastic, because that's something that's been a huge thorn in our side.


**Wu, Theodore** 43:35
Yeah, I think Doctor Quinn is has been the one.
Yeah, she she's been the one who's been at those meetings.
I believe so.


**Rowley, Justin Grant** 43:41
OK. Perfect, great.


**Kamat, Deepak M** 43:45
Thank you, doctor Kalve.
Any other questions, comments sort of padawali?
So, do you know how many Nic use across the countries roughly percentage wise are using focus?

**Rowley, Justin Grant** 44:01
It's a different number in the academic setting than in the private setting.
I.
I I couldn't tell you the exact numbers.
But in general, I'd say it was.
It'd be pretty low for routine use at the very large academic centers.

**Kamat, Deepak M** 44:19
I see.

**Rowley, Justin Grant** 44:21
It's I would.
Well, I'm not even going to guess, but lower in private a little bit higher in academic, but there are not very many Nic use that regularly.
Use it for multiple uses.

**Kamat, Deepak M** 44:34
Thank you.
Any other questions, comments for Doctorali?
I don't see any questions or comments either in chat box or nobody has raised their hand.

**Rowley, Justin Grant** 44:55
OK.

**Kamat, Deepak M** 44:57
So thank you very much Doctor Rauli for that.
Excellent, excellent presentation on point of care.
Use of ultrasound.
Thank you all for attending.
This morning's another presentation by graduating fellow next Friday. So see, we'll see you at 7:30 in the morning next Friday.
Till then, have a wonderful week.
Thank you.

**Rowley, Justin Grant** 45:18

Thank you Doctor Kamat.

**Kamat, Deepak M** 45:20

Thank you.

**Kamat, Deepak M** stopped transcription