WEBVTT

NOTE duration: ”00:41:18.137”

NOTE Confidence: 0.9008995

00:00:00.399 --> 00:00:01.599 Hey there. Thanks for your

NOTE Confidence: 0.9008995

00:00:01.599 --> 00:00:02.720 interest in doing a scanning

NOTE Confidence: 0.9008995

00:00:02.720 --> 00:00:03.520 shift with us in the

NOTE Confidence: 0.9008995

00:00:03.520 --> 00:00:04.420 QDR FAQD.

NOTE Confidence: 0.8996283

00:00:04.960 --> 00:00:06.319 We thought it'd likely be

NOTE Confidence: 0.8996283

00:00:06.319 --> 00:00:08.660 useful to have, an introductory

NOTE Confidence: 0.9607624

00:00:08.960 --> 00:00:11.059 lecture provided before your shift

NOTE Confidence: 0.9607624

00:00:11.119 --> 00:00:11.759 so you can have a

NOTE Confidence: 0.9607624

00:00:11.759 --> 00:00:13.139 little bit of background information

NOTE Confidence: 0.9607624

00:00:13.280 --> 00:00:14.420 to use as a guide,

NOTE Confidence: 0.9322645

00:00:14.934 --> 00:00:15.974 when you're doing your hands

NOTE Confidence: 0.9322645

00:00:15.974 --> 00:00:17.735 on scanning with us on

NOTE Confidence: 0.9322645

00:00:17.735 --> 00:00:19.575 Shift. And without further ado,

NOTE Confidence: 0.9322645

00:00:19.575 --> 00:00:20.695 we'll go on to the

NOTE Confidence: 0.9322645

00:00:20.695 --> 00:00:21.435 next slide.

NOTE Confidence: 0.9918396

00:00:22.535 --> 00:00:23.915 So this intro presentation,

NOTE Confidence: 0.8245624

00:00:24.775 --> 00:00:26.055 hopefully, you'll be able to

NOTE Confidence: 0.8245624

00:00:26.055 --> 00:00:27.595 view for your scanning shift,

NOTE Confidence: 0.9353189

00:00:28.000 --> 00:00:29.680 and, it'll give you a

NOTE Confidence: 0.9353189

00:00:29.680 --> 00:00:31.540 a brief introduction to some

NOTE Confidence: 0.9353189

00:00:31.680 --> 00:00:32.800 key concepts that you're gonna

NOTE Confidence: 0.9353189

00:00:32.800 --> 00:00:33.920 need to be familiar with

NOTE Confidence: 0.9353189

00:00:33.920 --> 00:00:35.440 in in order to,

NOTE Confidence: 0.99437565

00:00:35.760 --> 00:00:37.440 be good at getting images

NOTE Confidence: 0.99437565

00:00:37.440 --> 00:00:38.800 and interpreting the images on

NOTE Confidence: 0.99437565

00:00:38.800 --> 00:00:39.940 the screen. So

NOTE Confidence: 0.9595407

00:00:40.295 --> 00:00:41.495 we'll have to delve into

NOTE Confidence: 0.9595407

00:00:41.495 --> 00:00:42.455 a little bit and some

NOTE Confidence: 0.9595407

00:00:42.455 --> 00:00:43.915 basic ultrasound physics.

NOTE Confidence: 0.88652796

00:00:44.854 --> 00:00:46.055 We're gonna talk about scanning

NOTE Confidence: 0.88652796

00:00:46.055 --> 00:00:47.335 concepts that are related to

NOTE Confidence: 0.88652796

00:00:47.335 --> 00:00:48.295 the type of code that

NOTE Confidence: 0.88652796

00:00:48.295 --> 00:00:49.975 you use, you refer to

NOTE Confidence: 0.88652796

00:00:49.975 --> 00:00:50.715 as a transducer,

NOTE Confidence: 0.992373

00:00:52.055 --> 00:00:53.515 orientation on the screen,

NOTE Confidence: 0.79038894

00:00:54.600 --> 00:00:56.800 some function some functionalities such

NOTE Confidence: 0.79038894

00:00:56.800 --> 00:00:58.300 as, color Doppler,

NOTE Confidence: 0.9512312

00:00:59.000 --> 00:01:00.860 depth gain, things like that.

NOTE Confidence: 0.9512312

00:01:00.920 --> 00:01:02.620 And NOBOLOGY is an idea

NOTE Confidence: 0.9512312

00:01:02.680 --> 00:01:03.180 of,

NOTE Confidence: 0.96386814

00:01:03.640 --> 00:01:04.860 all these different functions,

NOTE Confidence: 0.99752724

00:01:05.240 --> 00:01:06.280 as it pertains to your

NOTE Confidence: 0.99752724

00:01:06.280 --> 00:01:07.340 particular machine.

NOTE Confidence: 0.93141663

00:01:07.645 --> 00:01:08.765 This is something that is

NOTE Confidence: 0.93141663

00:01:08.765 --> 00:01:10.365 often the rate limiting step,

NOTE Confidence: 0.9796698

00:01:10.845 --> 00:01:11.345 for,

NOTE Confidence: 0.9161453

00:01:12.605 --> 00:01:14.045 sonologists or physicians who are

NOTE Confidence: 0.9161453

00:01:14.045 --> 00:01:14.944 using ultrasound

NOTE Confidence: 0.992151

00:01:15.325 --> 00:01:16.225 to get comfortable

NOTE Confidence: 0.86078656

00:01:16.685 --> 00:01:17.345 at doing,

NOTE Confidence: 0.82266015

00:01:17.965 --> 00:01:19.025 clinical care studies.

NOTE Confidence: 0.9977743

00:01:19.740 --> 00:01:20.240 And,

NOTE Confidence: 0.89251834

00:01:20.780 --> 00:01:21.740 you know, do a little

NOTE Confidence: 0.89251834

00:01:21.740 --> 00:01:22.620 bit of nature. I'm trying

NOTE Confidence: 0.89251834

00:01:22.620 --> 00:01:23.420 to keep this short for

NOTE Confidence: 0.89251834

00:01:23.420 --> 00:01:24.860 you guys. There's tons of

NOTE Confidence: 0.89251834

00:01:24.860 --> 00:01:26.220 other resources you can tap

NOTE Confidence: 0.89251834

00:01:26.220 --> 00:01:28.300 into. Focus Atlas, five Minute

NOTE Confidence: 0.89251834

00:01:28.300 --> 00:01:31.260 Sono, additional podcast, picture video

NOTE Confidence: 0.89251834

00:01:31.260 --> 00:01:31.760 based,

NOTE Confidence: 0.93899757

00:01:32.295 --> 00:01:33.815 teaching materials. And,

NOTE Confidence: 0.89705247

00:01:34.775 --> 00:01:37.175 Lillian as well, has, some

NOTE Confidence: 0.89705247

00:01:37.175 --> 00:01:38.395 case based ultrasound.

NOTE Confidence: 0.84850883

00:01:51.530 --> 00:01:53.210 So, you know, our goals

NOTE Confidence: 0.84850883

00:01:53.210 --> 00:01:54.330 for when we do the

NOTE Confidence: 0.84850883

00:01:54.330 --> 00:01:55.930 scanning test together is just

NOTE Confidence: 0.84850883

00:01:55.930 --> 00:01:57.130 spend a little bit time

NOTE Confidence: 0.84850883

00:01:57.130 --> 00:01:58.410 to to teach how to

NOTE Confidence: 0.84850883

00:01:58.410 --> 00:01:58.910 perform

NOTE Confidence: 0.8637186

00:01:59.425 --> 00:02:01.604 a quality clinical ultrasound scans.

NOTE Confidence: 0.84894925

00:02:02.625 --> 00:02:03.505 And it's nice to have

NOTE Confidence: 0.84894925

00:02:03.505 --> 00:02:04.625 a dedicated time for us

NOTE Confidence: 0.84894925

00:02:04.625 --> 00:02:05.745 to do this so we

NOTE Confidence: 0.84894925

00:02:05.745 --> 00:02:07.125 don't have complete interest,

NOTE Confidence: 0.9093151

00:02:07.665 --> 00:02:08.865 with other clinical care needs

NOTE Confidence: 0.9093151

00:02:08.865 --> 00:02:10.165 that are happening simultaneously.

NOTE Confidence: 0.96693325

00:02:11.025 --> 00:02:12.145 So we can really spend

NOTE Confidence: 0.96693325

00:02:12.145 --> 00:02:13.185 the time to to go

NOTE Confidence: 0.96693325

00:02:13.185 --> 00:02:14.805 over the approach to

NOTE Confidence: 0.970376

00:02:15.400 --> 00:02:16.220 patient, how

NOTE Confidence: 0.9310738

00:02:16.840 --> 00:02:18.760 to integrate family members, and

NOTE Confidence: 0.9310738

00:02:18.760 --> 00:02:20.220 some tricks to make things,

NOTE Confidence: 0.93875563

00:02:20.680 --> 00:02:21.880 a little bit easier and

NOTE Confidence: 0.93875563

00:02:21.880 --> 00:02:23.800 and smoother for, for the

NOTE Confidence: 0.93875563

00:02:23.800 --> 00:02:24.300 students.

NOTE Confidence: 0.9152869

00:02:25.560 --> 00:02:26.940 We talk a lot about,

NOTE Confidence: 0.70920163

00:02:27.240 --> 00:02:28.220 what our roles,

NOTE Confidence: 0.96101284

00:02:28.895 --> 00:02:30.175 in terms of binary yes

NOTE Confidence: 0.96101284

00:02:30.175 --> 00:02:31.075 or no questions,

NOTE Confidence: 0.6862296

00:02:32.095 --> 00:02:33.215 when we're doing more percent

NOTE Confidence: 0.6862296

00:02:33.215 --> 00:02:34.735 of the bedside. So if

NOTE Confidence: 0.6862296

00:02:34.735 --> 00:02:36.014 you're going to dominant trauma

NOTE Confidence: 0.6862296

00:02:36.014 --> 00:02:36.514 patient,

NOTE Confidence: 0.769558

00:02:37.215 --> 00:02:38.095 yes or no is a

NOTE Confidence: 0.769558

00:02:38.095 --> 00:02:39.395 big fluid in the abdomen,

NOTE Confidence: 0.61787534

00:02:40.095 --> 00:02:40.470 but,

NOTE Confidence: 0.88748646

00:02:41.669 --> 00:02:43.270 patient that you're concerned about

NOTE Confidence: 0.88748646

00:02:43.270 --> 00:02:43.770 undifferentiated

NOTE Confidence: 0.9222739

00:02:44.230 --> 00:02:45.750 shock, yes or no is

NOTE Confidence: 0.9222739

00:02:45.750 --> 00:02:47.770 the cardiac function preserved.

NOTE Confidence: 0.93505055

00:02:48.790 --> 00:02:50.150 And so that really is

NOTE Confidence: 0.93505055

00:02:50.150 --> 00:02:50.970 is a unique

NOTE Confidence: 0.90047127

00:02:53.935 --> 00:02:55.474 aspect of chronic care ultrasound,

NOTE Confidence: 0.90047127

00:02:55.614 --> 00:02:58.575 which, differs from radiology ultrasound.

NOTE Confidence: 0.90047127

00:02:58.575 --> 00:02:59.215 We tend to be a

NOTE Confidence: 0.90047127

00:02:59.215 --> 00:03:00.495 little more in-depth and in

NOTE Confidence: 0.90047127

00:03:00.495 --> 00:03:01.614 detail in terms of their

NOTE Confidence: 0.90047127

00:03:01.614 --> 00:03:03.215 scope and the questions that

NOTE Confidence: 0.90047127

00:03:03.215 --> 00:03:03.954 they're answering.

NOTE Confidence: 0.87297463

00:03:05.950 --> 00:03:06.829 So just to get on

NOTE Confidence: 0.87297463

00:03:06.829 --> 00:03:08.209 my ultrasound here

NOTE Confidence: 0.9504707

00:03:08.510 --> 00:03:09.810 for a moment, there's,

NOTE Confidence: 0.9868994

00:03:10.590 --> 00:03:11.730 multiple advantages,

NOTE Confidence: 0.93840957

00:03:12.349 --> 00:03:13.950 to ultrasound sort of relative

NOTE Confidence: 0.93840957

00:03:13.950 --> 00:03:14.930 to other diagnostic

NOTE Confidence: 0.64155895

00:03:15.549 --> 00:03:17.150 and diodes like X rays

NOTE Confidence: 0.64155895

00:03:17.150 --> 00:03:18.430 and and the CT scans

NOTE Confidence: 0.64155895

00:03:18.430 --> 00:03:19.549 and even on the line.

NOTE Confidence: 0.64155895

00:03:19.549 --> 00:03:19.709 So,

NOTE Confidence: 0.8964101

00:03:20.724 --> 00:03:21.525 our point of view at

NOTE Confidence: 0.8964101

00:03:21.525 --> 00:03:23.065 ultrasound is a very dynamic

NOTE Confidence: 0.8964101

00:03:23.125 --> 00:03:24.644 study. So you're looking at

NOTE Confidence: 0.8964101

00:03:24.644 --> 00:03:26.165 objects and organs in two

NOTE Confidence: 0.8964101

00:03:26.165 --> 00:03:27.845 planes. If everything we want

NOTE Confidence: 0.8964101

00:03:27.845 --> 00:03:29.125 to image, we have an

NOTE Confidence: 0.8964101

00:03:29.125 --> 00:03:30.885 object of interest. We wanna

NOTE Confidence: 0.8964101

00:03:30.885 --> 00:03:32.325 get get an image in

NOTE Confidence: 0.8964101

00:03:32.325 --> 00:03:32.825 perpendicular

NOTE Confidence: 0.91568184

00:03:33.125 --> 00:03:34.084 plane, so we say a

NOTE Confidence: 0.91568184

00:03:34.084 --> 00:03:35.444 long axis and a short

NOTE Confidence: 0.91568184

00:03:35.444 --> 00:03:36.300 axis plane.

NOTE Confidence: 0.96883106

00:03:36.780 --> 00:03:39.100 Obviously, ultrasound doesn't, employ any

NOTE Confidence: 0.96883106

00:03:39.100 --> 00:03:40.460 radiation, so it's safe for

NOTE Confidence: 0.96883106

00:03:40.460 --> 00:03:40.960 patients.

NOTE Confidence: 0.8239389

00:03:41.660 --> 00:03:43.200 We could do it serially

NOTE Confidence: 0.8239389

00:03:43.340 --> 00:03:44.160 so you can

NOTE Confidence: 0.9810768

00:03:44.540 --> 00:03:45.020 check,

NOTE Confidence: 0.6036147

00:03:45.580 --> 00:03:47.020 progression of illness with point

NOTE Confidence: 0.6036147

00:03:47.020 --> 00:03:48.140 four zero percent on two

NOTE Confidence: 0.6036147

00:03:48.140 --> 00:03:49.020 different points in time.

NOTE Confidence: 0.9083478

00:03:50.575 --> 00:03:52.035 It's fairly painless.

NOTE Confidence: 0.9095674

00:03:52.495 --> 00:03:53.855 There's been tons of studies

NOTE Confidence: 0.9095674

00:03:53.855 --> 00:03:55.375 on fracture literature with twenty

NOTE Confidence: 0.9095674

00:03:55.375 --> 00:03:56.835 four percent been applied

NOTE Confidence: 0.7111827

00:03:57.215 --> 00:03:58.915 with pain face scores and

NOTE Confidence: 0.9193679

00:03:59.455 --> 00:04:00.975 and if you use enough

NOTE Confidence: 0.9193679

00:04:00.975 --> 00:04:02.835 gel and use appropriate techniques,

NOTE Confidence: 0.9193679

00:04:02.895 --> 00:04:03.935 you really should not be

NOTE Confidence: 0.9193679

00:04:03.935 --> 00:04:04.435 causing

NOTE Confidence: 0.97984594

00:04:04.750 --> 00:04:06.030 any additional pain.

NOTE Confidence: 0.9531496

00:04:06.670 --> 00:04:07.870 And it's certainly something that

NOTE Confidence: 0.9531496

00:04:07.870 --> 00:04:09.470 does not require sedation or

NOTE Confidence: 0.9531496

00:04:09.470 --> 00:04:10.989 should not require sedation in

NOTE Confidence: 0.9531496

00:04:10.989 --> 00:04:12.290 order to be performed.

NOTE Confidence: 0.92653066

00:04:13.790 --> 00:04:15.709 And, and finally, again, sort

NOTE Confidence: 0.92653066

00:04:15.709 --> 00:04:15.790 of,

NOTE Confidence: 0.8989439

00:04:16.925 --> 00:04:18.385 it's repeatable. So,

NOTE Confidence: 0.86687565

00:04:19.058 --> 00:04:21.245 if if, repeatable not only

NOTE Confidence: 0.86687565

00:04:21.245 --> 00:04:22.765 by a different operator or,

NOTE Confidence: 0.86687565

00:04:22.765 --> 00:04:23.904 you say, a synergist,

NOTE Confidence: 0.99767095

00:04:25.165 --> 00:04:25.904 but it's

NOTE Confidence: 0.92777145

00:04:26.365 --> 00:04:27.404 easy to repeat at a

NOTE Confidence: 0.92777145

00:04:27.404 --> 00:04:28.605 different point in time,

NOTE Confidence: 0.8693411

00:04:28.925 --> 00:04:30.285 having machine at the ready

NOTE Confidence: 0.8693411

00:04:30.285 --> 00:04:31.630 of the dead cell. So

NOTE Confidence: 0.8693411

00:04:31.630 --> 00:04:32.750 it's really great and it

NOTE Confidence: 0.8693411

00:04:32.750 --> 00:04:34.029 adds a lot of really

NOTE Confidence: 0.8693411

00:04:34.029 --> 00:04:35.970 important information to the clinical

NOTE Confidence: 0.8693411

00:04:36.029 --> 00:04:37.490 picture in many cases.

NOTE Confidence: 0.8888016

00:04:38.910 --> 00:04:40.190 So the questions you always

NOTE Confidence: 0.8888016

00:04:40.190 --> 00:04:41.470 are gonna ask yourself is

NOTE Confidence: 0.8888016

00:04:41.470 --> 00:04:43.070 where was an ultrasound done?

NOTE Confidence: 0.8888016

00:04:43.070 --> 00:04:44.290 Is it done by

NOTE Confidence: 0.93326414

00:04:44.794 --> 00:04:46.074 a clinician at the point

NOTE Confidence: 0.93326414

00:04:46.074 --> 00:04:48.074 of care, a clinician who's

NOTE Confidence: 0.93326414

00:04:48.074 --> 00:04:49.115 who's likely taking care of

NOTE Confidence: 0.93326414

00:04:49.115 --> 00:04:49.695 the patient?

NOTE Confidence: 0.84602165

00:04:50.074 --> 00:04:51.214 Or is it a technician

NOTE Confidence: 0.84602165

00:04:51.275 --> 00:04:53.115 performed or a radiology performed

NOTE Confidence: 0.84602165

00:04:53.115 --> 00:04:55.354 ultrasound done with diagnostic imaging

NOTE Confidence: 0.84602165

00:04:55.354 --> 00:04:57.035 suite? And then who's doing

NOTE Confidence: 0.84602165

00:04:57.035 --> 00:04:58.635 it? Well, ultrasound's unique is

NOTE Confidence: 0.84602165

00:04:58.635 --> 00:04:59.595 that it's we say it's

NOTE Confidence: 0.84602165

00:04:59.595 --> 00:05:01.529 very operator dependent. So even

NOTE Confidence: 0.84602165

00:05:01.529 --> 00:05:02.029 even

NOTE Confidence: 0.9923687

00:05:02.490 --> 00:05:03.550 within a certain,

NOTE Confidence: 0.9274701

00:05:04.250 --> 00:05:05.529 application. So let's take the

NOTE Confidence: 0.9274701

00:05:05.529 --> 00:05:06.750 appendix, for example.

NOTE Confidence: 0.95676816

00:05:07.210 --> 00:05:08.349 We can have two,

NOTE Confidence: 0.7054346

00:05:09.770 --> 00:05:10.270 skilled

NOTE Confidence: 0.6834775

00:05:12.250 --> 00:05:13.229 ultrasound performers,

NOTE Confidence: 0.9553579

00:05:13.945 --> 00:05:14.685 and one,

NOTE Confidence: 0.9634976

00:05:15.305 --> 00:05:16.265 of the two has a

NOTE Confidence: 0.9634976

00:05:16.265 --> 00:05:16.745 higher,

NOTE Confidence: 0.91087097

00:05:18.585 --> 00:05:20.665 accuracy in terms of appendix

NOTE Confidence: 0.91087097

00:05:20.665 --> 00:05:21.165 identification

NOTE Confidence: 0.7231474

00:05:21.785 --> 00:05:22.265 and,

NOTE Confidence: 0.9555711

00:05:23.145 --> 00:05:25.545 ability to interpret surrounding structures

NOTE Confidence: 0.9555711

00:05:25.545 --> 00:05:27.160 and things like that. So

NOTE Confidence: 0.9555711

00:05:27.160 --> 00:05:27.960 even amongst,

NOTE Confidence: 0.78664386

00:05:28.440 --> 00:05:30.779 ourselves as, immunosuppressive medicine,

NOTE Confidence: 0.95162266

00:05:31.319 --> 00:05:31.819 physicians

NOTE Confidence: 0.8791673

00:05:32.599 --> 00:05:33.800 and even in in,

NOTE Confidence: 0.967345

00:05:34.440 --> 00:05:35.099 the radiology

NOTE Confidence: 0.8492094

00:05:35.400 --> 00:05:37.319 and environment, the the operator

NOTE Confidence: 0.8492094

00:05:37.319 --> 00:05:38.520 is gonna make a difference.

NOTE Confidence: 0.8492094

00:05:38.520 --> 00:05:40.814 So it's very different than,

NOTE Confidence: 0.8719513

00:05:41.354 --> 00:05:43.115 putting a plate on somebody's

NOTE Confidence: 0.8719513

00:05:43.115 --> 00:05:45.055 back and shooting a picture

NOTE Confidence: 0.8719513

00:05:45.115 --> 00:05:46.154 like what they do for

NOTE Confidence: 0.8719513

00:05:46.154 --> 00:05:48.254 radiography for x rays. So

NOTE Confidence: 0.90990144

00:05:48.634 --> 00:05:50.074 so very important to to

NOTE Confidence: 0.90990144

00:05:50.074 --> 00:05:51.675 be aware that ultrasound is

NOTE Confidence: 0.90990144

00:05:51.675 --> 00:05:53.294 an operator dependent modality.

NOTE Confidence: 0.9662795

00:05:54.000 --> 00:05:54.880 And then why is the

NOTE Confidence: 0.9662795

00:05:54.880 --> 00:05:56.160 ultrasound being done? So where

NOTE Confidence: 0.9662795

00:05:56.160 --> 00:05:57.200 is it done? Who's doing

NOTE Confidence: 0.9662795

00:05:57.200 --> 00:05:58.560 it? Are you doing this

NOTE Confidence: 0.9662795

00:05:58.560 --> 00:06:00.000 as a as a diagnostic?

NOTE Confidence: 0.9662795

00:06:00.000 --> 00:06:00.880 And if show and if

NOTE Confidence: 0.9662795

00:06:00.880 --> 00:06:01.520 so, at the point of

NOTE Confidence: 0.9662795

00:06:01.520 --> 00:06:02.400 care, it should really be

NOTE Confidence: 0.9662795

00:06:02.400 --> 00:06:03.620 a yes or no question,

NOTE Confidence: 0.9672073

00:06:04.080 --> 00:06:05.120 for the most part. And

NOTE Confidence: 0.9672073

00:06:05.120 --> 00:06:07.505 then there's times where ultrasound

NOTE Confidence: 0.9672073

00:06:07.565 --> 00:06:09.485 is just, a necessary part

NOTE Confidence: 0.9672073

00:06:09.485 --> 00:06:10.764 of of clinical care because

NOTE Confidence: 0.9672073

00:06:10.764 --> 00:06:11.505 it's safer.

NOTE Confidence: 0.9139255

00:06:11.884 --> 00:06:13.404 It's safer, when it comes

NOTE Confidence: 0.9139255

00:06:13.404 --> 00:06:15.245 to procedures, and it, has

NOTE Confidence: 0.9139255

00:06:15.245 --> 00:06:16.205 been shown time and time

NOTE Confidence: 0.9139255

00:06:16.205 --> 00:06:17.884 again to increase success rates

NOTE Confidence: 0.9139255

00:06:17.884 --> 00:06:18.945 of prescription procedures.

NOTE Confidence: 0.9592539

00:06:21.420 --> 00:06:23.020 So let's get into what

NOTE Confidence: 0.9592539

00:06:23.020 --> 00:06:24.220 you're looking at on the

NOTE Confidence: 0.9592539

00:06:24.220 --> 00:06:25.420 screen. How are the images

NOTE Confidence: 0.9592539

00:06:25.420 --> 00:06:27.180 created by either a handheld

NOTE Confidence: 0.9592539

00:06:27.180 --> 00:06:28.700 device or a more standard

NOTE Confidence: 0.9592539

00:06:28.700 --> 00:06:29.520 sort of ultrasound,

NOTE Confidence: 0.920611

00:06:31.900 --> 00:06:33.120 machine? So

NOTE Confidence: 0.9899978

00:06:33.915 --> 00:06:35.275 what what happens is you

NOTE Confidence: 0.9899978

00:06:35.275 --> 00:06:35.775 have

NOTE Confidence: 0.9401674

00:06:36.154 --> 00:06:37.695 everything starts with the transducer.

NOTE Confidence: 0.9401674

00:06:37.835 --> 00:06:38.335 So

NOTE Confidence: 0.92889225

00:06:38.794 --> 00:06:40.395 the the machine sends an

NOTE Confidence: 0.92889225

00:06:40.395 --> 00:06:42.095 electrical signal, so energy

NOTE Confidence: 0.851378

00:06:42.555 --> 00:06:44.095 is tran transmitted,

NOTE Confidence: 0.92159605

00:06:45.195 --> 00:06:46.235 to the probe, to the

NOTE Confidence: 0.92159605

00:06:46.235 --> 00:06:46.735 transducer,

NOTE Confidence: 0.97510153

00:06:47.550 --> 00:06:49.470 and these these probes are

NOTE Confidence: 0.97510153

00:06:49.470 --> 00:06:51.550 tightly packed with crystals. And

NOTE Confidence: 0.97510153

00:06:51.550 --> 00:06:52.770 so that that electricity,

NOTE Confidence: 0.97980547

00:06:53.070 --> 00:06:54.050 that that current,

NOTE Confidence: 0.94931436

00:06:54.510 --> 00:06:55.630 what it does is it

NOTE Confidence: 0.94931436

00:06:55.630 --> 00:06:57.089 it causes vibration

NOTE Confidence: 0.961761

00:06:57.550 --> 00:06:59.070 of these crystals at a

NOTE Confidence: 0.961761

00:06:59.070 --> 00:07:00.290 very high frequency,

NOTE Confidence: 0.95499814

00:07:00.824 --> 00:07:02.044 hence the name ultrasound.

NOTE Confidence: 0.9693321

00:07:03.625 --> 00:07:04.845 So the sound signal

NOTE Confidence: 0.9109818

00:07:05.305 --> 00:07:06.585 at that point is sent

NOTE Confidence: 0.9109818

00:07:06.585 --> 00:07:07.404 to a tissue.

NOTE Confidence: 0.8597603

00:07:07.944 --> 00:07:08.985 In this case here you

NOTE Confidence: 0.8597603

00:07:08.985 --> 00:07:09.384 have,

NOTE Confidence: 0.63814443

00:07:10.745 --> 00:07:11.324 a cardiac

NOTE Confidence: 0.86765957

00:07:11.705 --> 00:07:12.205 structure.

NOTE Confidence: 0.9926736

00:07:13.080 --> 00:07:15.240 And depending on the tissue

NOTE Confidence: 0.9926736

00:07:15.240 --> 00:07:17.240 density and some properties, how

NOTE Confidence: 0.9926736

00:07:17.240 --> 00:07:18.460 fluid filled it is,

NOTE Confidence: 0.95034975

00:07:20.120 --> 00:07:22.860 there is an interaction between

NOTE Confidence: 0.95034975

00:07:22.920 --> 00:07:23.660 the tissue

NOTE Confidence: 0.92294765

00:07:24.440 --> 00:07:25.420 and the probe.

NOTE Confidence: 0.77496624

00:07:25.725 --> 00:07:26.225 And,

NOTE Confidence: 0.9474891

00:07:26.925 --> 00:07:27.905 there's two concepts,

NOTE Confidence: 0.93148965

00:07:29.165 --> 00:07:30.365 that come into play. So

NOTE Confidence: 0.93148965

00:07:30.365 --> 00:07:30.865 there's,

NOTE Confidence: 0.9049792

00:07:32.445 --> 00:07:33.885 attenuation, which is loss of

NOTE Confidence: 0.9049792

00:07:33.885 --> 00:07:34.705 signal energy

NOTE Confidence: 0.88655454

00:07:35.485 --> 00:07:36.925 and there's impedance, which is

NOTE Confidence: 0.88655454

00:07:36.925 --> 00:07:37.425 reflection

NOTE Confidence: 0.8751497

00:07:37.805 --> 00:07:38.705 of ultrasound

NOTE Confidence: 0.930695

00:07:39.245 --> 00:07:40.445 back to the to the

NOTE Confidence: 0.930695

00:07:40.445 --> 00:07:40.945 probe.

NOTE Confidence: 0.81488085

00:07:41.780 --> 00:07:43.160 And a combination of,

NOTE Confidence: 0.8848238

00:07:43.700 --> 00:07:45.880 these two properties of ultrasound,

NOTE Confidence: 0.8576515

00:07:46.580 --> 00:07:47.640 the computer,

NOTE Confidence: 0.9822624

00:07:48.340 --> 00:07:49.460 is going to generate an

NOTE Confidence: 0.9822624

00:07:49.460 --> 00:07:50.260 image. It's going to be

NOTE Confidence: 0.9822624

00:07:50.260 --> 00:07:51.400 a grayscale image

NOTE Confidence: 0.72046024

00:07:51.940 --> 00:07:52.440 and,

NOTE Confidence: 0.99957395

00:07:52.900 --> 00:07:54.280 with knowledge of important

NOTE Confidence: 0.8151048

00:07:55.685 --> 00:07:57.125 concepts, of general concepts that

NOTE Confidence: 0.8151048

00:07:57.125 --> 00:07:58.185 we're gonna go into,

NOTE Confidence: 0.981367

00:07:58.565 --> 00:07:59.525 you will be able to

NOTE Confidence: 0.981367

00:07:59.525 --> 00:08:01.604 say, okay, this image that

NOTE Confidence: 0.981367

00:08:01.604 --> 00:08:02.985 is dark on the

NOTE Confidence: 0.99226665

00:08:03.525 --> 00:08:05.685 ultrasound screen is because it's

NOTE Confidence: 0.99226665

00:08:05.685 --> 00:08:06.905 a fluid filled structure

NOTE Confidence: 0.7719014

00:08:07.444 --> 00:08:08.565 because due to due to,

NOTE Confidence: 0.9914105

00:08:09.850 --> 00:08:10.590 full attenuation

NOTE Confidence: 0.9951515

00:08:11.530 --> 00:08:12.750 and lack of impedance.

NOTE Confidence: 0.8992867

00:08:15.370 --> 00:08:16.410 So let's look at these

NOTE Confidence: 0.8992867

00:08:16.410 --> 00:08:18.510 two properties of ultrasound transmission

NOTE Confidence: 0.8992867

00:08:18.650 --> 00:08:19.550 one at a time.

NOTE Confidence: 0.9893102

00:08:19.930 --> 00:08:21.310 The first is attenuation.

NOTE Confidence: 0.981399

00:08:21.690 --> 00:08:23.450 So attenuation is essentially the

NOTE Confidence: 0.981399

00:08:23.450 --> 00:08:24.830 loss of signal energy.

NOTE Confidence: 0.89207

00:08:26.055 --> 00:08:27.355 As as ultrasound

NOTE Confidence: 0.9636273

00:08:27.815 --> 00:08:29.255 goes through a certain object

NOTE Confidence: 0.9636273

00:08:29.255 --> 00:08:29.915 or structure,

NOTE Confidence: 0.9248712

00:08:30.535 --> 00:08:31.095 it's gonna,

NOTE Confidence: 0.98118484

00:08:31.575 --> 00:08:33.175 lose the amount of signal

NOTE Confidence: 0.98118484

00:08:33.175 --> 00:08:34.235 that it can transmit

NOTE Confidence: 0.9890481

00:08:35.335 --> 00:08:36.475 deep to that structure.

NOTE Confidence: 0.89031255

00:08:36.775 --> 00:08:38.075 So you have a

NOTE Confidence: 0.7294307

00:08:38.455 --> 00:08:39.515 a less defined,

NOTE Confidence: 0.8083867

00:08:41.240 --> 00:08:42.840 sort of image on the

NOTE Confidence: 0.8083867

00:08:42.840 --> 00:08:44.860 screen essentially over what happened.

NOTE Confidence: 0.9772663

00:08:45.320 --> 00:08:46.620 Now the amount of attenuation

NOTE Confidence: 0.9772663

00:08:46.679 --> 00:08:48.120 is gonna be different depending

NOTE Confidence: 0.9772663

00:08:48.120 --> 00:08:49.179 on the

NOTE Confidence: 0.9639871

00:08:49.640 --> 00:08:51.240 makeup, the composition of the

NOTE Confidence: 0.9639871

00:08:51.240 --> 00:08:52.440 structure that the beam is

NOTE Confidence: 0.9639871

00:08:52.440 --> 00:08:53.260 going through.

NOTE Confidence: 0.9234301

00:08:53.745 --> 00:08:56.085 But, you can almost always,

NOTE Confidence: 0.95421296

00:08:59.745 --> 00:09:01.665 imagine that there's some degree

NOTE Confidence: 0.95421296

00:09:01.665 --> 00:09:03.845 of attenuation that's gonna exist.

NOTE Confidence: 0.9775788

00:09:04.304 --> 00:09:05.665 That's why the images at

NOTE Confidence: 0.9775788

00:09:05.665 --> 00:09:06.625 the top half of the

NOTE Confidence: 0.9775788

00:09:06.625 --> 00:09:08.385 screen are always crisper and

NOTE Confidence: 0.9775788

00:09:08.385 --> 00:09:09.720 nicer than than those at

NOTE Confidence: 0.9775788

00:09:09.720 --> 00:09:10.760 the bottom part of the

NOTE Confidence: 0.9775788

00:09:10.760 --> 00:09:11.260 screen.

NOTE Confidence: 0.95014644

00:09:12.200 --> 00:09:13.399 And then the other property

NOTE Confidence: 0.95014644

00:09:13.399 --> 00:09:15.160 of ultrasound is impedance. So

NOTE Confidence: 0.95014644

00:09:15.160 --> 00:09:16.779 impedance has to do with,

NOTE Confidence: 0.9962492

00:09:17.720 --> 00:09:19.500 tissue density and reflection

NOTE Confidence: 0.9218912

00:09:20.120 --> 00:09:21.480 of the ultrasound being back

NOTE Confidence: 0.9218912

00:09:21.480 --> 00:09:22.300 to the transducer.

NOTE Confidence: 0.89859354

00:09:23.095 --> 00:09:24.295 So in this case with

NOTE Confidence: 0.89859354

00:09:24.295 --> 00:09:26.135 bone, which has high high

NOTE Confidence: 0.89859354

00:09:26.135 --> 00:09:26.635 impedance

NOTE Confidence: 0.9561836

00:09:27.335 --> 00:09:28.475 property, the ultrasound

NOTE Confidence: 0.97035855

00:09:29.255 --> 00:09:30.615 reflects off the bone and

NOTE Confidence: 0.97035855

00:09:30.615 --> 00:09:31.675 back to the transducer,

NOTE Confidence: 0.95417976

00:09:32.455 --> 00:09:34.054 and the machine cannot generate

NOTE Confidence: 0.95417976

00:09:34.054 --> 00:09:35.415 an image deep to the

NOTE Confidence: 0.95417976

00:09:35.415 --> 00:09:37.520 bone. So everything goes dark

NOTE Confidence: 0.95417976

00:09:37.820 --> 00:09:39.980 behind tissues that have high

NOTE Confidence: 0.95417976

00:09:39.980 --> 00:09:40.480 impedance,

NOTE Confidence: 0.9259699

00:09:41.100 --> 00:09:42.220 and we we do call

NOTE Confidence: 0.9259699

00:09:42.220 --> 00:09:43.600 that, a certain,

NOTE Confidence: 0.98702514

00:09:45.340 --> 00:09:47.679 artifact referred to as posterior

NOTE Confidence: 0.9973176

00:09:48.380 --> 00:09:48.880 acoustic

NOTE Confidence: 0.8470441

00:09:49.500 --> 00:09:50.000 shadow.

NOTE Confidence: 0.9129867

00:09:52.675 --> 00:09:54.035 So in this light, ultrasound

NOTE Confidence: 0.9129867

00:09:54.035 --> 00:09:55.715 is essentially the same as

NOTE Confidence: 0.9129867

00:09:55.715 --> 00:09:57.415 marine life with echolocation,

NOTE Confidence: 0.90180737

00:09:58.915 --> 00:09:59.955 and I like to bring

NOTE Confidence: 0.90180737

00:09:59.955 --> 00:10:01.395 up this example to back

NOTE Confidence: 0.90180737

00:10:01.395 --> 00:10:02.995 home the point that the

NOTE Confidence: 0.90180737

00:10:02.995 --> 00:10:03.495 water

NOTE Confidence: 0.9595058

00:10:04.050 --> 00:10:05.650 or fluid filled structures are

NOTE Confidence: 0.9595058

00:10:05.650 --> 00:10:06.150 excellent

NOTE Confidence: 0.900359

00:10:06.529 --> 00:10:07.830 transmitters of ultrasound.

NOTE Confidence: 0.9837458

00:10:08.450 --> 00:10:08.950 So,

NOTE Confidence: 0.9405079

00:10:10.290 --> 00:10:12.290 when a, say, an orca

NOTE Confidence: 0.9405079

00:10:12.290 --> 00:10:13.250 or a porpoise or a

NOTE Confidence: 0.9405079

00:10:13.250 --> 00:10:13.750 dolphin,

NOTE Confidence: 0.86816466

00:10:15.570 --> 00:10:16.950 sends an ultrasound signal

NOTE Confidence: 0.9680643

00:10:17.705 --> 00:10:19.304 in in the ocean through

NOTE Confidence: 0.9680643

00:10:19.304 --> 00:10:19.965 their echolocation

NOTE Confidence: 0.8270638

00:10:20.345 --> 00:10:20.845 mechanism.

NOTE Confidence: 0.9810572

00:10:21.705 --> 00:10:23.545 That signal is gonna continue

NOTE Confidence: 0.9810572

00:10:23.545 --> 00:10:25.065 to travel until it hits

NOTE Confidence: 0.9810572

00:10:25.065 --> 00:10:25.885 an object.

NOTE Confidence: 0.9923709

00:10:26.505 --> 00:10:27.945 And then based on the

NOTE Confidence: 0.9923709

00:10:27.945 --> 00:10:28.445 distance

NOTE Confidence: 0.9877221

00:10:29.225 --> 00:10:30.125 of that object,

NOTE Confidence: 0.9405497

00:10:31.065 --> 00:10:32.105 to the to the marine

NOTE Confidence: 0.9405497

00:10:32.105 --> 00:10:32.605 life

NOTE Confidence: 0.9316354

00:10:33.000 --> 00:10:34.540 and potentially the size

NOTE Confidence: 0.8916688

00:10:34.920 --> 00:10:37.080 of that object or multiple

NOTE Confidence: 0.8916688

00:10:37.080 --> 00:10:37.580 objects.

NOTE Confidence: 0.78320354

00:10:38.440 --> 00:10:38.940 The,

NOTE Confidence: 0.9613821

00:10:40.200 --> 00:10:41.480 marine life mammal will get

NOTE Confidence: 0.9613821

00:10:41.480 --> 00:10:42.200 a sense of,

NOTE Confidence: 0.9974613

00:10:42.760 --> 00:10:44.540 predator versus prey

NOTE Confidence: 0.9667058

00:10:45.255 --> 00:10:46.215 and then how far that

NOTE Confidence: 0.9667058

00:10:46.215 --> 00:10:47.515 they would have to travel

NOTE Confidence: 0.9667058

00:10:47.575 --> 00:10:48.795 to, reach

NOTE Confidence: 0.9247086

00:10:49.255 --> 00:10:50.775 that that object that's in

NOTE Confidence: 0.9247086

00:10:50.775 --> 00:10:51.515 front of them.

NOTE Confidence: 0.87406695

00:10:51.895 --> 00:10:53.355 Or perhaps in some cases,

NOTE Confidence: 0.8195477

00:10:54.055 --> 00:10:54.955 whether how far,

NOTE Confidence: 0.8620293

00:10:56.375 --> 00:10:58.055 the object could make they

NOTE Confidence: 0.8620293

00:10:58.055 --> 00:11:00.059 pose potential risk to their

NOTE Confidence: 0.8620293

00:11:00.059 --> 00:11:01.580 livelihoods so so that they

NOTE Confidence: 0.8620293

00:11:01.580 --> 00:11:02.940 can react in a timely

NOTE Confidence: 0.8620293

00:11:02.940 --> 00:11:03.440 manner.

NOTE Confidence: 0.9934422

00:11:04.059 --> 00:11:04.559 So,

NOTE Confidence: 0.9988097

00:11:05.340 --> 00:11:06.700 it's it's a great example

NOTE Confidence: 0.9988097

00:11:06.700 --> 00:11:07.440 of how

NOTE Confidence: 0.9473704

00:11:08.059 --> 00:11:10.000 there is very little attenuation

NOTE Confidence: 0.93578905

00:11:10.700 --> 00:11:12.220 of ultrasound and fluid filled

NOTE Confidence: 0.93578905

00:11:12.220 --> 00:11:13.820 structures, and we we talk

NOTE Confidence: 0.93578905

00:11:13.820 --> 00:11:15.200 about this a a lot,

NOTE Confidence: 0.9992027

00:11:16.245 --> 00:11:17.304 when we're imaging

NOTE Confidence: 0.8638464

00:11:18.165 --> 00:11:19.225 when we wanna see,

NOTE Confidence: 0.96652853

00:11:21.125 --> 00:11:22.644 organs that are potentially deep

NOTE Confidence: 0.96652853

00:11:22.644 --> 00:11:23.764 in the pelvis. So a

NOTE Confidence: 0.96652853

00:11:23.764 --> 00:11:25.444 common one would be workups

NOTE Confidence: 0.96652853

00:11:25.444 --> 00:11:27.944 for ovarian pathology, ovarian torsion.

NOTE Confidence: 0.8944852

00:11:28.309 --> 00:11:29.690 If we're doing trans abdominal

NOTE Confidence: 0.8944852

00:11:29.829 --> 00:11:31.190 ultrasound, we wanna have a

NOTE Confidence: 0.8944852

00:11:31.190 --> 00:11:33.130 nice fluid filled bladder

NOTE Confidence: 0.9544485

00:11:33.990 --> 00:11:35.429 so that the ultrasound beam

NOTE Confidence: 0.9544485

00:11:35.429 --> 00:11:36.490 can be

NOTE Confidence: 0.97369653

00:11:37.110 --> 00:11:37.610 well,

NOTE Confidence: 0.904739

00:11:38.230 --> 00:11:39.910 transmitted to the pelvic structures

NOTE Confidence: 0.904739

00:11:39.910 --> 00:11:40.630 to get a good look

NOTE Confidence: 0.904739

00:11:40.630 --> 00:11:41.690 at the fluid piece.

NOTE Confidence: 0.9382056

00:11:44.925 --> 00:11:46.045 And here we have one

NOTE Confidence: 0.9382056

00:11:46.045 --> 00:11:47.665 last slide just to,

NOTE Confidence: 0.9497964

00:11:48.285 --> 00:11:49.565 once again go over this

NOTE Confidence: 0.9497964

00:11:49.565 --> 00:11:51.105 idea of ultrasound transmission.

NOTE Confidence: 0.9379059

00:11:51.884 --> 00:11:53.084 And when we talk about

NOTE Confidence: 0.9379059

00:11:53.084 --> 00:11:55.165 transmission, we are essentially asking

NOTE Confidence: 0.9379059

00:11:55.165 --> 00:11:55.665 ourselves,

NOTE Confidence: 0.9777951

00:11:56.360 --> 00:11:57.980 how well is my ultrasound

NOTE Confidence: 0.9777951

00:11:58.040 --> 00:11:59.980 being penetrated through the tissue?

NOTE Confidence: 0.98115134

00:12:01.000 --> 00:12:01.880 This has to do with

NOTE Confidence: 0.98115134

00:12:01.880 --> 00:12:03.240 the composition of the tissue.

NOTE Confidence: 0.98115134

00:12:03.240 --> 00:12:04.040 So if you have a

NOTE Confidence: 0.98115134

00:12:04.040 --> 00:12:05.179 fluid filled structure,

NOTE Confidence: 0.9181149

00:12:05.559 --> 00:12:07.399 you have excellent transmission, a

NOTE Confidence: 0.9181149

00:12:07.399 --> 00:12:09.640 nice fluid filled, nice nicely

NOTE Confidence: 0.9181149

00:12:09.640 --> 00:12:10.459 filled bladder

NOTE Confidence: 0.97373617

00:12:10.824 --> 00:12:11.865 is gonna act as an

NOTE Confidence: 0.97373617

00:12:11.865 --> 00:12:12.925 acoustic window

NOTE Confidence: 0.7510065

00:12:13.384 --> 00:12:14.665 so that the ultrasound can

NOTE Confidence: 0.7510065

00:12:14.665 --> 00:12:16.184 visualize structures deep to it,

NOTE Confidence: 0.7510065

00:12:16.184 --> 00:12:17.464 such as the ovaries, when

NOTE Confidence: 0.7510065

00:12:17.464 --> 00:12:18.425 you read about a very

NOTE Confidence: 0.7510065

00:12:18.425 --> 00:12:20.845 important phthalmoidic system or ovarian

NOTE Confidence: 0.7510065

00:12:20.904 --> 00:12:21.404 biology.

NOTE Confidence: 0.9777618

00:12:23.720 --> 00:12:23.960 When you have,

NOTE Confidence: 0.96667206

00:12:26.279 --> 00:12:26.860 a structure

NOTE Confidence: 0.9909859

00:12:27.240 --> 00:12:28.700 with high impedance,

NOTE Confidence: 0.8788239

00:12:29.480 --> 00:12:31.260 there's either very poor transmission

NOTE Confidence: 0.8983041

00:12:31.640 --> 00:12:32.520 behind that,

NOTE Confidence: 0.93867195

00:12:33.880 --> 00:12:35.800 object or sometimes, in fact,

NOTE Confidence: 0.93867195

00:12:35.800 --> 00:12:36.620 no transition.

NOTE Confidence: 0.9843094

00:12:37.355 --> 00:12:38.815 And then you have air.

NOTE Confidence: 0.9917256

00:12:39.675 --> 00:12:41.295 Air is actually the enemy,

NOTE Confidence: 0.9704411

00:12:41.754 --> 00:12:42.574 for ultrasound.

NOTE Confidence: 0.99818075

00:12:42.954 --> 00:12:43.454 So

NOTE Confidence: 0.9863468

00:12:44.154 --> 00:12:45.535 in terms of the appearance

NOTE Confidence: 0.9863468

00:12:45.595 --> 00:12:46.415 of ultrasound

NOTE Confidence: 0.936078

00:12:47.115 --> 00:12:47.934 as it crosses,

NOTE Confidence: 0.7760059

00:12:48.315 --> 00:12:49.615 an airfield structure,

NOTE Confidence: 0.9779029

00:12:50.235 --> 00:12:51.774 you really cannot delineate,

NOTE Confidence: 0.98814267

00:12:53.160 --> 00:12:55.080 any crispness on the screen

NOTE Confidence: 0.98814267

00:12:55.080 --> 00:12:55.740 at all.

NOTE Confidence: 0.7617294

00:12:56.120 --> 00:12:57.640 And for air essentially does

NOTE Confidence: 0.7617294

00:12:57.640 --> 00:12:59.179 is it causes scatter

NOTE Confidence: 0.95150965

00:12:59.480 --> 00:13:00.700 of ultrasound beam.

NOTE Confidence: 0.8847507

00:13:01.400 --> 00:13:02.520 So air can cause a

NOTE Confidence: 0.8847507

00:13:02.520 --> 00:13:04.520 very bright or hyper echoic

NOTE Confidence: 0.8847507

00:13:04.520 --> 00:13:05.020 appearance

NOTE Confidence: 0.9450838

00:13:05.640 --> 00:13:06.460 to the image,

NOTE Confidence: 0.96798784

00:13:06.785 --> 00:13:07.585 and it can,

NOTE Confidence: 0.9670271

00:13:08.145 --> 00:13:09.105 and and what it will

NOTE Confidence: 0.9670271

00:13:09.105 --> 00:13:10.385 do is it will give

NOTE Confidence: 0.9670271

00:13:10.385 --> 00:13:11.445 you a

NOTE Confidence: 0.9989203

00:13:12.145 --> 00:13:12.645 very

NOTE Confidence: 0.8873901

00:13:13.184 --> 00:13:14.245 poorly defined,

NOTE Confidence: 0.99877965

00:13:16.785 --> 00:13:18.085 picture on the screen.

NOTE Confidence: 0.9605294

00:13:21.570 --> 00:13:23.089 Alright. So let's apply this

NOTE Confidence: 0.9605294

00:13:23.250 --> 00:13:25.010 these concepts of ultrasound transmission

NOTE Confidence: 0.9605294

00:13:25.010 --> 00:13:26.470 to an actual still image.

NOTE Confidence: 0.95390636

00:13:26.850 --> 00:13:27.970 In this case, I will

NOTE Confidence: 0.95390636

00:13:27.970 --> 00:13:29.170 let you know this is

NOTE Confidence: 0.95390636

00:13:29.170 --> 00:13:30.710 a, long access,

NOTE Confidence: 0.9234768

00:13:31.490 --> 00:13:33.350 longitudinal ultrasound in the midline

NOTE Confidence: 0.9722661

00:13:33.970 --> 00:13:35.350 of a pregnant patient.

NOTE Confidence: 0.89500743

00:13:36.405 --> 00:13:37.445 You can see that,

NOTE Confidence: 0.895873

00:13:38.485 --> 00:13:39.765 over the bladder, because it's

NOTE Confidence: 0.895873

00:13:39.765 --> 00:13:41.545 a nice fluid filled structure,

NOTE Confidence: 0.895873

00:13:41.605 --> 00:13:42.745 there's no attenuation

NOTE Confidence: 0.85682774

00:13:43.365 --> 00:13:44.565 to ultrasound. So you can

NOTE Confidence: 0.85682774

00:13:44.565 --> 00:13:45.385 actually see,

NOTE Confidence: 0.8593417

00:13:47.365 --> 00:13:48.804 structures deep to it. In

NOTE Confidence: 0.8593417

00:13:48.804 --> 00:13:50.165 this case, there's the vaginal

NOTE Confidence: 0.8593417

00:13:50.165 --> 00:13:51.385 stripe, which is the landmark

NOTE Confidence: 0.95143616

00:13:51.899 --> 00:13:52.779 that lets us know that

NOTE Confidence: 0.95143616

00:13:52.779 --> 00:13:53.760 we're at the midline,

NOTE Confidence: 0.5906242

00:13:55.500 --> 00:13:58.000 of this trans transpiled loop.

NOTE Confidence: 0.9753899

00:13:58.940 --> 00:13:59.660 And then if you think

NOTE Confidence: 0.9753899

00:13:59.660 --> 00:14:00.860 about the uterus, look at

NOTE Confidence: 0.9753899

00:14:00.860 --> 00:14:02.279 how the the,

NOTE Confidence: 0.999064

00:14:02.700 --> 00:14:03.839 fundus portion

NOTE Confidence: 0.9463829

00:14:04.575 --> 00:14:06.035 is sort of well delineated

NOTE Confidence: 0.8640328

00:14:06.415 --> 00:14:07.855 with the gestational sac, and

NOTE Confidence: 0.8640328

00:14:07.855 --> 00:14:08.895 also you can get a

NOTE Confidence: 0.8640328

00:14:08.895 --> 00:14:09.715 sense here

NOTE Confidence: 0.946805

00:14:10.175 --> 00:14:11.775 of a fetal pull right

NOTE Confidence: 0.946805

00:14:11.775 --> 00:14:12.275 there.

NOTE Confidence: 0.89689755

00:14:13.934 --> 00:14:15.855 So the ultrasound transmission here

NOTE Confidence: 0.89689755

00:14:15.855 --> 00:14:16.895 may be a slightly little

NOTE Confidence: 0.89689755

00:14:16.895 --> 00:14:18.434 bit different, so more attenuation

NOTE Confidence: 0.89689755

00:14:18.575 --> 00:14:19.555 deep to the structures.

NOTE Confidence: 0.9027758

00:14:20.070 --> 00:14:21.190 So you don't see as

NOTE Confidence: 0.9027758

00:14:21.190 --> 00:14:22.470 crisp of the margin of

NOTE Confidence: 0.9027758

00:14:22.470 --> 00:14:24.310 the posterior biliary uterus like

NOTE Confidence: 0.9027758

00:14:24.310 --> 00:14:25.930 you you do anteriorly.

NOTE Confidence: 0.98421013

00:14:26.870 --> 00:14:28.150 And guess what's behind the

NOTE Confidence: 0.98421013

00:14:28.150 --> 00:14:29.450 uterus? Well,

NOTE Confidence: 0.96667135

00:14:30.070 --> 00:14:31.430 it's mostly bowel, and it's

NOTE Confidence: 0.96667135

00:14:31.430 --> 00:14:32.950 probably bowel that's filled with

NOTE Confidence: 0.96667135

00:14:32.950 --> 00:14:33.450 air

NOTE Confidence: 0.9777663

00:14:33.905 --> 00:14:35.265 because we're not seeing anything.

NOTE Confidence: 0.9777663

00:14:35.265 --> 00:14:37.345 Everything looks very indistinct. And

NOTE Confidence: 0.9777663

00:14:37.345 --> 00:14:39.045 that makes sense based on

NOTE Confidence: 0.9962396

00:14:39.825 --> 00:14:40.405 the ultrasound

NOTE Confidence: 0.98632705

00:14:41.185 --> 00:14:43.045 interaction with air. So

NOTE Confidence: 0.97288454

00:14:43.585 --> 00:14:45.365 back here, even though there's

NOTE Confidence: 0.96161234

00:14:45.905 --> 00:14:48.005 intestines and there's actual anatomy,

NOTE Confidence: 0.96161234

00:14:48.225 --> 00:14:49.505 we're not seeing anything on

NOTE Confidence: 0.96161234

00:14:49.505 --> 00:14:52.120 the screen because bowel gas

NOTE Confidence: 0.96161234

00:14:52.120 --> 00:14:53.180 causes ultrasound,

NOTE Confidence: 0.8373811

00:14:53.959 --> 00:14:55.480 being to scatter. And you

NOTE Confidence: 0.8373811

00:14:55.480 --> 00:14:56.440 just have a lot of

NOTE Confidence: 0.8373811

00:14:56.440 --> 00:14:57.740 white the right,

NOTE Confidence: 0.7966405

00:14:59.000 --> 00:15:00.839 enhancement of of the the

NOTE Confidence: 0.7966405

00:15:00.839 --> 00:15:02.215 computer screen, and so you're

NOTE Confidence: 0.7966405

00:15:02.215 --> 00:15:03.495 not really seeing anything other

NOTE Confidence: 0.7966405

00:15:03.495 --> 00:15:04.235 than that.

NOTE Confidence: 0.86906904

00:15:07.895 --> 00:15:09.735 Okay. So here we have

NOTE Confidence: 0.86906904

00:15:09.735 --> 00:15:11.115 a a quiz,

NOTE Confidence: 0.7559951

00:15:12.295 --> 00:15:13.595 named that phone.

NOTE Confidence: 0.8544759

00:15:14.535 --> 00:15:15.495 And so how do we

NOTE Confidence: 0.8544759

00:15:15.495 --> 00:15:16.615 know what we are looking

NOTE Confidence: 0.8544759

00:15:16.615 --> 00:15:17.115 from?

NOTE Confidence: 0.9611774

00:15:17.769 --> 00:15:18.730 So one of the things

NOTE Confidence: 0.9611774

00:15:18.730 --> 00:15:20.170 we always wanna keep an

NOTE Confidence: 0.9611774

00:15:20.170 --> 00:15:21.850 eye out when we're reviewing

NOTE Confidence: 0.9611774

00:15:21.850 --> 00:15:23.610 clips and also when you're

NOTE Confidence: 0.9611774

00:15:23.610 --> 00:15:25.690 performing ultrasound scans is the

NOTE Confidence: 0.9611774

00:15:25.690 --> 00:15:26.190 settings.

NOTE Confidence: 0.98664963

00:15:26.970 --> 00:15:28.089 So here's a bit of

NOTE Confidence: 0.98664963

00:15:28.089 --> 00:15:28.750 a clue.

NOTE Confidence: 0.92295563

00:15:29.850 --> 00:15:31.835 This happens to be an

NOTE Confidence: 0.92295563

00:15:31.895 --> 00:15:33.515 ultrasound of lung tissue.

NOTE Confidence: 0.9613854

00:15:35.255 --> 00:15:36.155 So in terms

NOTE Confidence: 0.8947424

00:15:36.535 --> 00:15:37.815 of meaning a bone, what

NOTE Confidence: 0.8947424

00:15:37.815 --> 00:15:39.035 bone would be seen,

NOTE Confidence: 0.9524558

00:15:40.135 --> 00:15:41.115 in front of,

NOTE Confidence: 0.9680997

00:15:42.855 --> 00:15:43.815 lung? Well, that would be,

NOTE Confidence: 0.9680997

00:15:43.815 --> 00:15:45.690 of course, your ribs. So

NOTE Confidence: 0.9016786

00:15:46.470 --> 00:15:48.709 here you see the top

NOTE Confidence: 0.9016786

00:15:48.709 --> 00:15:49.449 of the rib

NOTE Confidence: 0.99366766

00:15:49.750 --> 00:15:50.250 in

NOTE Confidence: 0.8362365

00:15:50.630 --> 00:15:51.449 short axis.

NOTE Confidence: 0.98334825

00:15:52.070 --> 00:15:53.209 And as you can see,

NOTE Confidence: 0.99967533

00:15:54.870 --> 00:15:56.329 ultrasound cannot penetrate

NOTE Confidence: 0.92320704

00:15:56.630 --> 00:15:57.990 deep to the rib, so

NOTE Confidence: 0.92320704

00:15:57.990 --> 00:15:59.930 everything here is dark,

NOTE Confidence: 0.7476727

00:16:00.915 --> 00:16:01.415 dark.

NOTE Confidence: 0.94211334

00:16:01.955 --> 00:16:03.255 And so that is this

NOTE Confidence: 0.94211334

00:16:03.395 --> 00:16:04.755 artifact that we have alluded

NOTE Confidence: 0.94211334

00:16:04.755 --> 00:16:06.935 to as, posterior acoustic enhancement.

NOTE Confidence: 0.95152324

00:16:07.475 --> 00:16:08.355 So you know that this

NOTE Confidence: 0.95152324

00:16:08.355 --> 00:16:09.255 is a red hue.

NOTE Confidence: 0.97238934

00:16:10.675 --> 00:16:12.435 The other interesting sort of

NOTE Confidence: 0.97238934

00:16:12.435 --> 00:16:14.215 finding is that we typically

NOTE Confidence: 0.97238934

00:16:14.355 --> 00:16:15.740 will see the

NOTE Confidence: 0.83230954

00:16:16.120 --> 00:16:18.120 plural be a very bright

NOTE Confidence: 0.83230954

00:16:18.120 --> 00:16:19.320 line in between the blue

NOTE Confidence: 0.83230954

00:16:19.320 --> 00:16:19.820 spaces.

NOTE Confidence: 0.98121595

00:16:21.000 --> 00:16:22.140 So in this case,

NOTE Confidence: 0.9829779

00:16:23.640 --> 00:16:25.080 not only do you sort

NOTE Confidence: 0.9829779

00:16:25.080 --> 00:16:25.580 of

NOTE Confidence: 0.94073343

00:16:26.120 --> 00:16:27.260 see separation

NOTE Confidence: 0.8827454

00:16:27.640 --> 00:16:29.420 of the plural right here,

NOTE Confidence: 0.7770159

00:16:29.855 --> 00:16:30.975 Looks like there's one line

NOTE Confidence: 0.7770159

00:16:30.975 --> 00:16:31.954 and another line.

NOTE Confidence: 0.8547118

00:16:34.175 --> 00:16:35.295 Do a small little fluid

NOTE Confidence: 0.8547118

00:16:35.295 --> 00:16:36.495 collection there, a small little

NOTE Confidence: 0.8547118

00:16:36.495 --> 00:16:37.315 fluid effusion.

NOTE Confidence: 0.9446941

00:16:37.855 --> 00:16:38.735 But this is actually a

NOTE Confidence: 0.9446941

00:16:38.735 --> 00:16:40.254 patient who has pneumonia by

NOTE Confidence: 0.9446941

00:16:40.254 --> 00:16:40.995 one ultrasound

NOTE Confidence: 0.8583334

00:16:41.535 --> 00:16:43.235 in the right posterior field.

NOTE Confidence: 0.9555475

00:16:44.770 --> 00:16:47.270 We said briefly that air

NOTE Confidence: 0.9555475

00:16:47.330 --> 00:16:49.730 gives no image, so just

NOTE Confidence: 0.9555475

00:16:49.730 --> 00:16:50.230 a

NOTE Confidence: 0.64217377

00:16:50.770 --> 00:16:51.910 essentially artifact.

NOTE Confidence: 0.93241656

00:16:52.850 --> 00:16:53.350 And,

NOTE Confidence: 0.89887774

00:16:56.225 --> 00:16:57.265 we can spend an entire

NOTE Confidence: 0.89887774

00:16:57.265 --> 00:16:58.865 hour talking about lung ultrasound,

NOTE Confidence: 0.89887774

00:16:58.865 --> 00:17:01.445 but essentially this jaggedness here

NOTE Confidence: 0.97536147

00:17:02.465 --> 00:17:03.285 of the,

NOTE Confidence: 0.8818378

00:17:04.625 --> 00:17:05.905 the tissue of this lung

NOTE Confidence: 0.8818378

00:17:05.905 --> 00:17:06.405 tissue

NOTE Confidence: 0.9303629

00:17:06.945 --> 00:17:08.785 is an appearance that you

NOTE Confidence: 0.9303629

00:17:08.785 --> 00:17:10.165 would see with a subfloor

NOTE Confidence: 0.9303629

00:17:10.305 --> 00:17:10.805 consolidation.

NOTE Confidence: 0.8839871

00:17:12.820 --> 00:17:14.340 And there's some other findings

NOTE Confidence: 0.8839871

00:17:14.340 --> 00:17:15.539 that in addition to that

NOTE Confidence: 0.8839871

00:17:15.539 --> 00:17:16.899 shred sign, you have these

NOTE Confidence: 0.8839871

00:17:16.899 --> 00:17:18.580 sort of bright, echogenic appearances,

NOTE Confidence: 0.8160094

00:17:20.899 --> 00:17:22.039 in within

NOTE Confidence: 0.99192035

00:17:22.580 --> 00:17:23.320 a tissue

NOTE Confidence: 0.9369175

00:17:23.855 --> 00:17:25.234 that we shouldn't be seeing.

NOTE Confidence: 0.9369175

00:17:25.295 --> 00:17:26.734 We we shouldn't be seeing

NOTE Confidence: 0.9369175

00:17:26.734 --> 00:17:28.335 a distinct sort of organ

NOTE Confidence: 0.9369175

00:17:28.335 --> 00:17:30.575 appearing tissue up there under

NOTE Confidence: 0.9369175

00:17:30.575 --> 00:17:31.795 the flora because,

NOTE Confidence: 0.8085779

00:17:32.895 --> 00:17:34.415 lung, because since it's when

NOTE Confidence: 0.8085779

00:17:34.415 --> 00:17:36.095 it's health healthy as air

NOTE Confidence: 0.8085779

00:17:36.095 --> 00:17:36.595 filled,

NOTE Confidence: 0.86094

00:17:37.169 --> 00:17:38.289 does not give off any

NOTE Confidence: 0.86094

00:17:38.289 --> 00:17:39.730 appearance on the lurchaser. You

NOTE Confidence: 0.86094

00:17:39.730 --> 00:17:41.429 just see the liberation artifact,

NOTE Confidence: 0.91610235

00:17:42.129 --> 00:17:43.250 which we call a lungs.

NOTE Confidence: 0.91610235

00:17:43.250 --> 00:17:44.769 But, a little bit ahead

NOTE Confidence: 0.91610235

00:17:44.769 --> 00:17:45.009 of,

NOTE Confidence: 0.9616485

00:17:47.409 --> 00:17:48.450 where where we are right

NOTE Confidence: 0.9616485

00:17:48.450 --> 00:17:49.490 now in terms of this

NOTE Confidence: 0.9616485

00:17:49.490 --> 00:17:49.990 lecture,

NOTE Confidence: 0.9970147

00:17:51.325 --> 00:17:52.845 but I'm hoping you can

NOTE Confidence: 0.9970147

00:17:52.845 --> 00:17:54.144 get a good sense of

NOTE Confidence: 0.8783993

00:17:54.605 --> 00:17:55.664 rib bone here,

NOTE Confidence: 0.93929803

00:17:56.365 --> 00:17:58.304 ultrasound hitting the rib bone.

NOTE Confidence: 0.96990097

00:17:58.845 --> 00:18:00.625 It looks bright and echogenic.

NOTE Confidence: 0.94750595

00:18:01.644 --> 00:18:03.244 There's high impedance, there's no

NOTE Confidence: 0.94750595

00:18:03.244 --> 00:18:04.924 transmission, so you get this

NOTE Confidence: 0.94750595

00:18:04.924 --> 00:18:05.424 complete

NOTE Confidence: 0.9930459

00:18:06.040 --> 00:18:07.020 acoustic shadowing,

NOTE Confidence: 0.9580132

00:18:07.640 --> 00:18:08.700 deep to that structure.

NOTE Confidence: 0.905914

00:18:10.600 --> 00:18:11.720 Alright. So when we're talking

NOTE Confidence: 0.905914

00:18:11.720 --> 00:18:13.660 about what transducers to choose,

NOTE Confidence: 0.7635269

00:18:14.600 --> 00:18:16.280 the transducers are the former

NOTE Confidence: 0.7635269

00:18:16.280 --> 00:18:18.540 term for a ultrasound probe.

NOTE Confidence: 0.97870016

00:18:18.895 --> 00:18:20.895 There's essentially three choices. You

NOTE Confidence: 0.97870016

00:18:20.895 --> 00:18:21.395 have,

NOTE Confidence: 0.9683744

00:18:22.734 --> 00:18:24.494 a linear probe, which has

NOTE Confidence: 0.9683744

00:18:24.494 --> 00:18:26.195 a nice flat footprint

NOTE Confidence: 0.78074265

00:18:26.494 --> 00:18:26.994 here,

NOTE Confidence: 0.89087516

00:18:27.375 --> 00:18:29.775 creating superficial structures. You have

NOTE Confidence: 0.89087516

00:18:29.775 --> 00:18:30.674 a curvilinear

NOTE Confidence: 0.44161993

00:18:31.380 --> 00:18:31.880 flow.

NOTE Confidence: 0.9474159

00:18:32.820 --> 00:18:34.580 There's a curved footprint, which

NOTE Confidence: 0.9474159

00:18:34.580 --> 00:18:35.700 is better to look for

NOTE Confidence: 0.9474159

00:18:35.700 --> 00:18:36.600 deeper structures.

NOTE Confidence: 0.9963327

00:18:36.980 --> 00:18:38.119 And you have a

NOTE Confidence: 0.8328445

00:18:38.420 --> 00:18:40.420 type of curvilinear flow, called

NOTE Confidence: 0.8328445

00:18:40.420 --> 00:18:42.180 a phased array flow, which

NOTE Confidence: 0.8328445

00:18:42.180 --> 00:18:43.080 is a cardiac,

NOTE Confidence: 0.92829186

00:18:43.619 --> 00:18:44.440 together between

NOTE Confidence: 0.854866

00:18:44.820 --> 00:18:46.260 grid spaces and get a

NOTE Confidence: 0.854866

00:18:46.260 --> 00:18:46.760 nice

NOTE Confidence: 0.68612146

00:18:47.835 --> 00:18:49.215 view of the car structures

NOTE Confidence: 0.68612146

00:18:49.275 --> 00:18:50.554 when you're doing a focus

NOTE Confidence: 0.68612146

00:18:50.554 --> 00:18:51.455 product focusing.

NOTE Confidence: 0.8754633

00:18:52.875 --> 00:18:53.835 So when we talk about

NOTE Confidence: 0.8754633

00:18:53.835 --> 00:18:55.455 code selection or or cancellation

NOTE Confidence: 0.8754633

00:18:55.515 --> 00:18:57.934 selection, you're gonna pick a

NOTE Confidence: 0.8754633

00:18:58.075 --> 00:18:58.815 a probe,

NOTE Confidence: 0.98481774

00:19:00.155 --> 00:19:01.595 which is gonna fit your

NOTE Confidence: 0.98481774

00:19:01.595 --> 00:19:03.480 needs. So the trade off

NOTE Confidence: 0.98481774

00:19:03.480 --> 00:19:04.460 between a curvilinear,

NOTE Confidence: 0.9976932

00:19:05.160 --> 00:19:05.820 low frequency

NOTE Confidence: 0.9022021

00:19:06.359 --> 00:19:07.100 and a

NOTE Confidence: 0.906617

00:19:07.880 --> 00:19:09.020 linear high frequency

NOTE Confidence: 0.9945332

00:19:09.400 --> 00:19:10.220 is resolution

NOTE Confidence: 0.8772846

00:19:10.600 --> 00:19:12.119 to depth. Or or depth

NOTE Confidence: 0.8772846

00:19:12.119 --> 00:19:13.900 is how how much penetration

NOTE Confidence: 0.8772846

00:19:13.960 --> 00:19:15.500 can the ultrasound be achieved.

NOTE Confidence: 0.9175562

00:19:16.744 --> 00:19:17.865 So the linear probe, the

NOTE Confidence: 0.9175562

00:19:17.865 --> 00:19:19.625 higher frequency probes are able

NOTE Confidence: 0.9175562

00:19:19.625 --> 00:19:20.125 to,

NOTE Confidence: 0.99201345

00:19:21.545 --> 00:19:22.765 achieve a greater resolution,

NOTE Confidence: 0.9877404

00:19:23.225 --> 00:19:24.665 a higher level of detail

NOTE Confidence: 0.9877404

00:19:24.665 --> 00:19:25.325 for superficial

NOTE Confidence: 0.8385628

00:19:25.945 --> 00:19:27.545 structures at the trade off

NOTE Confidence: 0.8385628

00:19:27.545 --> 00:19:28.045 of

NOTE Confidence: 0.8134926

00:19:29.179 --> 00:19:30.640 depth, the ability to penetrate,

NOTE Confidence: 0.9816218

00:19:31.100 --> 00:19:32.640 deep to deeper structures

NOTE Confidence: 0.9073855

00:19:33.179 --> 00:19:34.619 and vice versa with the

NOTE Confidence: 0.9073855

00:19:34.619 --> 00:19:36.380 curvilinear probes and and the

NOTE Confidence: 0.9073855

00:19:36.380 --> 00:19:37.760 phased array for these curvilinear

NOTE Confidence: 0.9073855

00:19:37.900 --> 00:19:39.359 probes. So with these probes,

NOTE Confidence: 0.9073855

00:19:39.420 --> 00:19:41.280 you're gonna sacrifice resolution

NOTE Confidence: 0.92660385

00:19:41.705 --> 00:19:43.325 for your ability to penetrate

NOTE Confidence: 0.92660385

00:19:43.465 --> 00:19:44.445 deeper structures.

NOTE Confidence: 0.91980934

00:19:45.145 --> 00:19:46.205 So intra abdominal

NOTE Confidence: 0.82036954

00:19:47.145 --> 00:19:49.565 examinations, the classical being trauma,

NOTE Confidence: 0.8036304

00:19:50.744 --> 00:19:52.265 focus assessment of synoptic and

NOTE Confidence: 0.8036304

00:19:52.265 --> 00:19:53.545 trauma. So the FAST exam,

NOTE Confidence: 0.8036304

00:19:53.545 --> 00:19:54.525 you're gonna perform

NOTE Confidence: 0.81085724

00:19:55.180 --> 00:19:55.760 with permalinear

NOTE Confidence: 0.9143369

00:19:56.060 --> 00:19:57.520 or low frequency plates.

NOTE Confidence: 0.9375576

00:19:59.340 --> 00:20:00.700 Alright. So there's two scanning

NOTE Confidence: 0.9375576

00:20:00.700 --> 00:20:02.220 planes to be familiar with.

NOTE Confidence: 0.86300564

00:20:02.700 --> 00:20:04.300 And there it's important because

NOTE Confidence: 0.86300564

00:20:04.300 --> 00:20:05.820 we have convention in terms

NOTE Confidence: 0.86300564

00:20:05.820 --> 00:20:06.960 of how we image

NOTE Confidence: 0.8581284

00:20:10.685 --> 00:20:11.165 patients,

NOTE Confidence: 0.79730034

00:20:11.805 --> 00:20:13.244 so that our pattern recognition

NOTE Confidence: 0.79730034

00:20:13.244 --> 00:20:14.445 could be consistent with those

NOTE Confidence: 0.79730034

00:20:14.445 --> 00:20:14.945 patients.

NOTE Confidence: 0.8888776

00:20:15.565 --> 00:20:17.165 So we will use in

NOTE Confidence: 0.8888776

00:20:17.165 --> 00:20:18.685 the long axis of the

NOTE Confidence: 0.8888776

00:20:18.685 --> 00:20:19.825 sagittal or longitudinal

NOTE Confidence: 0.70498145

00:20:20.205 --> 00:20:20.700 axis,

NOTE Confidence: 0.93761957

00:20:21.179 --> 00:20:22.700 plane, we will use the

NOTE Confidence: 0.93761957

00:20:22.700 --> 00:20:24.320 convention of having the indicator,

NOTE Confidence: 0.93761957

00:20:24.380 --> 00:20:25.419 which is usually like a

NOTE Confidence: 0.93761957

00:20:25.419 --> 00:20:25.919 little,

NOTE Confidence: 0.9694727

00:20:27.179 --> 00:20:29.100 notch or line on the

NOTE Confidence: 0.9694727

00:20:29.100 --> 00:20:29.919 probe itself

NOTE Confidence: 0.91401464

00:20:30.619 --> 00:20:31.580 towards the head of the

NOTE Confidence: 0.91401464

00:20:31.580 --> 00:20:32.080 patient.

NOTE Confidence: 0.9983735

00:20:32.460 --> 00:20:32.960 So

NOTE Confidence: 0.9751196

00:20:33.340 --> 00:20:34.940 the indicator always faces the

NOTE Confidence: 0.9751196

00:20:34.940 --> 00:20:35.440 head

NOTE Confidence: 0.950086

00:20:35.884 --> 00:20:36.544 when we're,

NOTE Confidence: 0.9115472

00:20:38.205 --> 00:20:39.904 doing a longitudinal access

NOTE Confidence: 0.9778791

00:20:40.845 --> 00:20:42.205 scan. And this is gonna

NOTE Confidence: 0.9778791

00:20:42.205 --> 00:20:44.125 correlate with the monitor this

NOTE Confidence: 0.9778791

00:20:44.125 --> 00:20:45.504 way. You're gonna have head

NOTE Confidence: 0.7556857

00:20:46.125 --> 00:20:46.625 here.

NOTE Confidence: 0.96903086

00:20:47.004 --> 00:20:48.445 You're gonna have the top

NOTE Confidence: 0.96903086

00:20:48.445 --> 00:20:49.565 part of the patient. You're

NOTE Confidence: 0.96903086

00:20:49.565 --> 00:20:50.365 gonna have the bottom part

NOTE Confidence: 0.96903086

00:20:50.365 --> 00:20:51.244 of the patient, and you're

NOTE Confidence: 0.96903086

00:20:51.244 --> 00:20:52.299 gonna have feet.

NOTE Confidence: 0.9611408

00:20:54.760 --> 00:20:56.440 And when we're doing the

NOTE Confidence: 0.9611408

00:20:56.440 --> 00:20:56.940 transverse,

NOTE Confidence: 0.93400764

00:20:59.640 --> 00:21:00.140 orientation,

NOTE Confidence: 0.9418771

00:21:01.000 --> 00:21:02.520 the convention is always gonna

NOTE Confidence: 0.9418771

00:21:02.520 --> 00:21:04.140 be for that indicator

NOTE Confidence: 0.99722874

00:21:04.679 --> 00:21:06.140 to be to the right

NOTE Confidence: 0.9024999

00:21:06.595 --> 00:21:08.514 of the body. So indicator

NOTE Confidence: 0.9024999

00:21:08.514 --> 00:21:09.335 to the right,

NOTE Confidence: 0.9717263

00:21:09.715 --> 00:21:10.595 again it's going to be

NOTE Confidence: 0.9717263

00:21:10.595 --> 00:21:12.195 a little notch or some

NOTE Confidence: 0.9717263

00:21:12.195 --> 00:21:13.815 sort of mark on

NOTE Confidence: 0.951714

00:21:14.115 --> 00:21:14.914 the right side of the

NOTE Confidence: 0.951714

00:21:14.914 --> 00:21:15.414 patient,

NOTE Confidence: 0.96614236

00:21:15.715 --> 00:21:16.755 and these are almost like

NOTE Confidence: 0.96614236

00:21:16.755 --> 00:21:17.734 your cross section,

NOTE Confidence: 0.9664742

00:21:18.595 --> 00:21:20.054 your CT scan cross sections

NOTE Confidence: 0.9934347

00:21:20.450 --> 00:21:21.270 where you have,

NOTE Confidence: 0.972023

00:21:22.290 --> 00:21:23.650 indicated to the right, you

NOTE Confidence: 0.972023

00:21:23.650 --> 00:21:24.869 have the right kidney

NOTE Confidence: 0.77490234

00:21:25.410 --> 00:21:25.910 here,

NOTE Confidence: 0.9465122

00:21:26.290 --> 00:21:27.570 and on the screen, the

NOTE Confidence: 0.9465122

00:21:27.570 --> 00:21:29.430 right kidney is gonna appear,

NOTE Confidence: 0.95611167

00:21:30.530 --> 00:21:31.810 as you're looking at the

NOTE Confidence: 0.95611167

00:21:31.810 --> 00:21:33.090 screen, it's actually the the

NOTE Confidence: 0.95611167

00:21:33.090 --> 00:21:34.310 left side of the screen,

NOTE Confidence: 0.95611167

00:21:34.605 --> 00:21:35.984 but it's the right side

NOTE Confidence: 0.95611167

00:21:36.165 --> 00:21:37.905 of the patient.

NOTE Confidence: 0.83140254

00:21:39.244 --> 00:21:39.744 So

NOTE Confidence: 0.9954069

00:21:40.605 --> 00:21:41.965 once you get this down

NOTE Confidence: 0.9954069

00:21:41.965 --> 00:21:42.465 visually,

NOTE Confidence: 0.95707506

00:21:43.405 --> 00:21:44.845 spatially in your in your

NOTE Confidence: 0.95707506

00:21:44.845 --> 00:21:45.345 brain,

NOTE Confidence: 0.8563729

00:21:46.365 --> 00:21:47.565 a a few times, it's

NOTE Confidence: 0.8563729

00:21:47.565 --> 00:21:49.085 a very easy concept to

NOTE Confidence: 0.8563729

00:21:49.085 --> 00:21:50.065 to tuck away.

NOTE Confidence: 0.9612936

00:21:51.890 --> 00:21:52.930 And then we we will

NOTE Confidence: 0.9612936

00:21:52.930 --> 00:21:54.530 use some scanning lingo. So

NOTE Confidence: 0.9612936

00:21:54.530 --> 00:21:56.210 we will slide, rock, sweep,

NOTE Confidence: 0.9612936

00:21:56.210 --> 00:21:57.670 and fan the probe.

NOTE Confidence: 0.9939716

00:21:58.369 --> 00:22:00.550 Sliding means you're just bringing

NOTE Confidence: 0.9939716

00:22:00.609 --> 00:22:01.109 the

NOTE Confidence: 0.99914074

00:22:01.650 --> 00:22:02.150 transducer

NOTE Confidence: 0.8917169

00:22:03.045 --> 00:22:04.645 back and forth along the

NOTE Confidence: 0.8917169

00:22:04.645 --> 00:22:06.165 y axis or the the

NOTE Confidence: 0.8917169

00:22:06.165 --> 00:22:08.025 long axis of a object.

NOTE Confidence: 0.97643757

00:22:08.645 --> 00:22:10.345 And when you walk,

NOTE Confidence: 0.94287187

00:22:10.805 --> 00:22:12.505 along this y axis line,

NOTE Confidence: 0.94287187

00:22:12.645 --> 00:22:13.925 you would essentially keep the

NOTE Confidence: 0.94287187

00:22:13.925 --> 00:22:14.825 hand still

NOTE Confidence: 0.9545789

00:22:15.205 --> 00:22:16.665 and just sort of swivel

NOTE Confidence: 0.9951688

00:22:17.740 --> 00:22:18.320 the probe

NOTE Confidence: 0.9349086

00:22:18.700 --> 00:22:19.679 back and forth.

NOTE Confidence: 0.8447149

00:22:20.059 --> 00:22:22.140 Right? Because remember the, image

NOTE Confidence: 0.8447149

00:22:22.140 --> 00:22:23.179 that we're gonna generate is

NOTE Confidence: 0.8447149

00:22:23.179 --> 00:22:24.020 gonna have to do with

NOTE Confidence: 0.8447149

00:22:24.020 --> 00:22:24.799 the how

NOTE Confidence: 0.9702677

00:22:26.299 --> 00:22:28.159 perpendicular, how straight that ultrasound

NOTE Confidence: 0.9702677

00:22:28.220 --> 00:22:29.340 beam is to a certain

NOTE Confidence: 0.9702677

00:22:29.340 --> 00:22:30.539 structure. So you may have

NOTE Confidence: 0.9702677

00:22:30.539 --> 00:22:31.200 a gallbladder,

NOTE Confidence: 0.8167759

00:22:32.285 --> 00:22:33.244 for example, just put in

NOTE Confidence: 0.8167759

00:22:33.244 --> 00:22:34.125 an example. You may have

NOTE Confidence: 0.8167759

00:22:34.125 --> 00:22:35.424 a gallbladder here,

NOTE Confidence: 0.9981922

00:22:35.804 --> 00:22:37.325 but if you don't rock

NOTE Confidence: 0.9981922

00:22:37.325 --> 00:22:37.984 the probe

NOTE Confidence: 0.9969741

00:22:38.285 --> 00:22:39.184 just right

NOTE Confidence: 0.97282094

00:22:39.484 --> 00:22:40.544 to have it,

NOTE Confidence: 0.94884557

00:22:41.405 --> 00:22:42.924 perpendicular, you're not gonna see

NOTE Confidence: 0.94884557

00:22:42.924 --> 00:22:44.125 it. It's not that it's

NOTE Confidence: 0.94884557

00:22:44.125 --> 00:22:45.359 not there, it's

NOTE Confidence: 0.8968463

00:22:46.080 --> 00:22:48.260 right there nearby hiding out.

NOTE Confidence: 0.8968463

00:22:48.400 --> 00:22:50.580 But sometimes some small motions

NOTE Confidence: 0.8968463

00:22:50.720 --> 00:22:51.920 of the hand with with

NOTE Confidence: 0.8968463

00:22:51.920 --> 00:22:52.740 these maneuvers

NOTE Confidence: 0.93728924

00:22:53.119 --> 00:22:53.760 is what you need to

NOTE Confidence: 0.93728924

00:22:53.760 --> 00:22:54.520 do in order to get

NOTE Confidence: 0.93728924

00:22:54.520 --> 00:22:55.520 a good image on your

NOTE Confidence: 0.93728924

00:22:55.520 --> 00:22:56.020 screen.

NOTE Confidence: 0.9808245

00:22:56.480 --> 00:22:58.820 So we have, the sliding

NOTE Confidence: 0.9808245

00:22:58.960 --> 00:23:00.480 and and the rocking, which

NOTE Confidence: 0.9808245

00:23:00.480 --> 00:23:00.765 is,

NOTE Confidence: 0.93289936

00:23:01.325 --> 00:23:02.305 essentially along

NOTE Confidence: 0.986832

00:23:02.685 --> 00:23:03.005 the,

NOTE Confidence: 0.8962243

00:23:03.805 --> 00:23:04.845 a y axis plane or

NOTE Confidence: 0.8962243

00:23:04.845 --> 00:23:07.165 longitudinal axis plane. And then,

NOTE Confidence: 0.9280782

00:23:07.885 --> 00:23:09.725 sweeping would be in short

NOTE Confidence: 0.9280782

00:23:09.725 --> 00:23:10.925 access. So say you have

NOTE Confidence: 0.9280782

00:23:10.925 --> 00:23:11.805 a say you have a

NOTE Confidence: 0.9280782

00:23:11.805 --> 00:23:13.630 a blood vessel here, and

NOTE Confidence: 0.9280782

00:23:13.630 --> 00:23:15.230 it's you're you're sort of

NOTE Confidence: 0.9280782

00:23:15.230 --> 00:23:17.150 forcing the probe. You're sweeping

NOTE Confidence: 0.9280782

00:23:17.150 --> 00:23:17.869 all the way up and

NOTE Confidence: 0.9280782

00:23:17.869 --> 00:23:18.850 down the vessel

NOTE Confidence: 0.94627136

00:23:19.470 --> 00:23:20.350 to see it in its

NOTE Confidence: 0.94627136

00:23:20.350 --> 00:23:20.850 entirety.

NOTE Confidence: 0.9865496

00:23:21.150 --> 00:23:22.030 And on the screen, you're

NOTE Confidence: 0.9865496

00:23:22.030 --> 00:23:22.990 actually gonna see it as

NOTE Confidence: 0.9865496

00:23:22.990 --> 00:23:23.650 a circle

NOTE Confidence: 0.9056035

00:23:24.109 --> 00:23:25.570 when you're when you're imaging

NOTE Confidence: 0.9936651

00:23:26.234 --> 00:23:26.975 the vessel,

NOTE Confidence: 0.578004

00:23:27.355 --> 00:23:28.795 the representative is typically going

NOTE Confidence: 0.578004

00:23:28.795 --> 00:23:29.615 this way,

NOTE Confidence: 0.9412669

00:23:29.915 --> 00:23:32.175 and you're gonna see circle,

NOTE Confidence: 0.9412669

00:23:32.234 --> 00:23:34.335 circle, circle on the screen

NOTE Confidence: 0.9412669

00:23:34.555 --> 00:23:35.675 as you sweep up and

NOTE Confidence: 0.9412669

00:23:35.675 --> 00:23:37.275 down. And then fanning, we

NOTE Confidence: 0.9412669

00:23:37.275 --> 00:23:38.075 do a lot of fanning

NOTE Confidence: 0.9412669

00:23:38.075 --> 00:23:39.535 with our our FAST exams.

NOTE Confidence: 0.9412669

00:23:39.595 --> 00:23:41.020 So, again, the the it's

NOTE Confidence: 0.9412669

00:23:41.020 --> 00:23:42.080 a swivel motion

NOTE Confidence: 0.79784584

00:23:42.460 --> 00:23:43.600 in the short access,

NOTE Confidence: 0.85403824

00:23:43.980 --> 00:23:44.480 cut

NOTE Confidence: 0.96126187

00:23:44.859 --> 00:23:45.260 with,

NOTE Confidence: 0.8733906

00:23:46.220 --> 00:23:47.980 the the essentially, your your

NOTE Confidence: 0.8733906

00:23:47.980 --> 00:23:49.100 hand isn't moving up or

NOTE Confidence: 0.8733906

00:23:49.100 --> 00:23:50.619 down on the patient's body.

NOTE Confidence: 0.8733906

00:23:50.619 --> 00:23:52.080 Your hand is staying still,

NOTE Confidence: 0.8733906

00:23:52.140 --> 00:23:53.520 then you're sort of fanning

NOTE Confidence: 0.8733906

00:23:53.580 --> 00:23:55.840 or rotating like this, rotating

NOTE Confidence: 0.8733906

00:23:55.900 --> 00:23:56.559 the fold.

NOTE Confidence: 0.8294084

00:24:00.485 --> 00:24:01.925 Down. So get a good

NOTE Confidence: 0.8294084

00:24:01.925 --> 00:24:02.725 look at that at that

NOTE Confidence: 0.8294084

00:24:02.725 --> 00:24:04.425 structure that we're interested in.

NOTE Confidence: 0.98891515

00:24:06.565 --> 00:24:07.685 Alright. So let's look at

NOTE Confidence: 0.98891515

00:24:07.685 --> 00:24:08.085 this,

NOTE Confidence: 0.99848974

00:24:08.645 --> 00:24:10.244 another way. So you have,

NOTE Confidence: 0.9571734

00:24:10.645 --> 00:24:12.085 your indicators, which have a

NOTE Confidence: 0.9571734

00:24:12.085 --> 00:24:13.730 notch. Our our probes have

NOTE Confidence: 0.9571734

00:24:13.730 --> 00:24:14.869 a a t notch.

NOTE Confidence: 0.99705106

00:24:15.570 --> 00:24:17.429 And when we image,

NOTE Confidence: 0.8032569

00:24:18.130 --> 00:24:19.990 an individual in a transverse

NOTE Confidence: 0.8032569

00:24:20.130 --> 00:24:21.490 plane or the short axis

NOTE Confidence: 0.8032569

00:24:21.490 --> 00:24:21.990 plane,

NOTE Confidence: 0.936669

00:24:22.369 --> 00:24:23.889 the indicator is gonna point

NOTE Confidence: 0.936669

00:24:23.889 --> 00:24:24.769 towards the right of the

NOTE Confidence: 0.936669

00:24:24.769 --> 00:24:26.205 patient, which is here in

NOTE Confidence: 0.936669

00:24:26.205 --> 00:24:27.805 this gingerbread line, the right

NOTE Confidence: 0.936669

00:24:27.805 --> 00:24:28.465 of the patient.

NOTE Confidence: 0.98509204

00:24:28.845 --> 00:24:29.965 And you're gonna actually see

NOTE Confidence: 0.98509204

00:24:29.965 --> 00:24:30.705 the indicator,

NOTE Confidence: 0.9878777

00:24:32.684 --> 00:24:33.184 appear

NOTE Confidence: 0.93602335

00:24:33.645 --> 00:24:35.085 on the left side of

NOTE Confidence: 0.93602335

00:24:35.085 --> 00:24:36.205 the screen as you're looking

NOTE Confidence: 0.93602335

00:24:36.205 --> 00:24:36.945 at the screen.

NOTE Confidence: 0.89772356

00:24:37.340 --> 00:24:38.400 So this is a convention

NOTE Confidence: 0.9473298

00:24:38.780 --> 00:24:40.619 for transverse. You have a

NOTE Confidence: 0.9473298

00:24:40.619 --> 00:24:42.240 fluid filled structure with

NOTE Confidence: 0.9435503

00:24:43.020 --> 00:24:44.540 a balloon catheter inside of

NOTE Confidence: 0.9435503

00:24:44.540 --> 00:24:45.820 it. This is a child

NOTE Confidence: 0.9435503

00:24:45.820 --> 00:24:47.180 with urine retention that had

NOTE Confidence: 0.9435503

00:24:47.180 --> 00:24:48.780 to have a fully, catheter

NOTE Confidence: 0.9435503

00:24:48.780 --> 00:24:50.575 placed, and that's what the

NOTE Confidence: 0.9435503

00:24:50.575 --> 00:24:51.774 bladder would look like in

NOTE Confidence: 0.9435503

00:24:51.774 --> 00:24:53.154 in transverse orientation

NOTE Confidence: 0.9542802

00:24:53.774 --> 00:24:54.975 with the indicator towards the

NOTE Confidence: 0.9542802

00:24:54.975 --> 00:24:56.335 patient right. And if we're

NOTE Confidence: 0.9542802

00:24:56.335 --> 00:24:58.034 gonna image it in longitudinal

NOTE Confidence: 0.8137762

00:24:58.335 --> 00:24:58.835 access,

NOTE Confidence: 0.9947542

00:24:59.534 --> 00:25:00.755 longitudinal orientation,

NOTE Confidence: 0.9697588

00:25:01.294 --> 00:25:02.835 the indicator is gonna go

NOTE Confidence: 0.9697588

00:25:03.109 --> 00:25:04.390 to the patient's head. So

NOTE Confidence: 0.9697588

00:25:04.390 --> 00:25:05.670 the indicator, the notch, is

NOTE Confidence: 0.9697588

00:25:05.670 --> 00:25:06.790 gonna point towards the head

NOTE Confidence: 0.9697588

00:25:06.790 --> 00:25:07.530 of the patient.

NOTE Confidence: 0.95067817

00:25:08.630 --> 00:25:09.830 On the screen, it's gonna

NOTE Confidence: 0.95067817

00:25:09.830 --> 00:25:10.330 appear,

NOTE Confidence: 0.9632487

00:25:11.510 --> 00:25:13.030 a little circle on the

NOTE Confidence: 0.9632487

00:25:13.030 --> 00:25:14.070 left side of the screen

NOTE Confidence: 0.9632487

00:25:14.070 --> 00:25:14.950 as you're looking at the

NOTE Confidence: 0.9632487

00:25:14.950 --> 00:25:15.450 screen.

NOTE Confidence: 0.9910309

00:25:15.875 --> 00:25:17.475 And the image itself, you're

NOTE Confidence: 0.9910309

00:25:17.475 --> 00:25:18.295 gonna have

NOTE Confidence: 0.47496846

00:25:18.755 --> 00:25:19.255 ladder

NOTE Confidence: 0.8810005

00:25:20.435 --> 00:25:21.975 and then fully balloon calculator

NOTE Confidence: 0.8810005

00:25:22.115 --> 00:25:24.195 right there. So, that's just

NOTE Confidence: 0.8810005

00:25:24.195 --> 00:25:24.855 the convention,

NOTE Confidence: 0.98642796

00:25:25.235 --> 00:25:26.275 and that's how you're gonna

NOTE Confidence: 0.98642796

00:25:26.275 --> 00:25:28.295 keep this little mark,

NOTE Confidence: 0.93896914

00:25:28.595 --> 00:25:29.415 on the screen.

NOTE Confidence: 0.93770707

00:25:30.840 --> 00:25:32.200 Just general sense of awareness

NOTE Confidence: 0.93770707

00:25:32.200 --> 00:25:33.080 so that, you know, that,

NOTE Confidence: 0.93770707

00:25:33.320 --> 00:25:34.840 if things are converted, you're

NOTE Confidence: 0.93770707

00:25:35.000 --> 00:25:36.280 it's likely that your flow

NOTE Confidence: 0.93770707

00:25:36.280 --> 00:25:36.780 is

NOTE Confidence: 0.92012334

00:25:37.320 --> 00:25:37.820 turned

NOTE Confidence: 0.88842195

00:25:38.119 --> 00:25:39.480 a hundred eighty degrees by

NOTE Confidence: 0.88842195

00:25:39.480 --> 00:25:39.980 accident.

NOTE Confidence: 0.9929983

00:25:40.520 --> 00:25:41.900 Now in terms of positioning,

NOTE Confidence: 0.9929983

00:25:41.960 --> 00:25:43.000 this is a pretty easy

NOTE Confidence: 0.9929983

00:25:43.000 --> 00:25:44.060 concept to

NOTE Confidence: 0.9684975

00:25:44.615 --> 00:25:45.115 understand.

NOTE Confidence: 0.998977

00:25:45.655 --> 00:25:46.955 Structures that are

NOTE Confidence: 0.9962732

00:25:47.415 --> 00:25:49.415 closer to the probe are

NOTE Confidence: 0.9962732

00:25:49.415 --> 00:25:51.335 gonna appear higher on the

NOTE Confidence: 0.9962732

00:25:51.335 --> 00:25:51.835 screen.

NOTE Confidence: 0.9779543

00:25:52.375 --> 00:25:53.734 So in in this case,

NOTE Confidence: 0.9779543

00:25:53.734 --> 00:25:54.795 we have liver

NOTE Confidence: 0.9394167

00:25:55.575 --> 00:25:57.035 here in front of kidney,

NOTE Confidence: 0.9785088

00:25:57.450 --> 00:25:58.750 and here's your liver,

NOTE Confidence: 0.9268759

00:25:59.450 --> 00:26:01.369 this view. And that's, closer

NOTE Confidence: 0.9268759

00:26:01.369 --> 00:26:02.010 to the top of the

NOTE Confidence: 0.9268759

00:26:02.010 --> 00:26:02.970 screen, whereas you have a

NOTE Confidence: 0.9268759

00:26:02.970 --> 00:26:04.350 kidney that's more posterior,

NOTE Confidence: 0.9988757

00:26:05.130 --> 00:26:06.190 and the kidney

NOTE Confidence: 0.9794297

00:26:06.890 --> 00:26:07.390 is

NOTE Confidence: 0.85314596

00:26:08.330 --> 00:26:08.830 here.

NOTE Confidence: 0.9671361

00:26:13.494 --> 00:26:14.295 If you can read that

NOTE Confidence: 0.9671361

00:26:14.295 --> 00:26:14.795 handwriting.

NOTE Confidence: 0.9878397

00:26:15.175 --> 00:26:15.655 So,

NOTE Confidence: 0.98738927

00:26:16.295 --> 00:26:17.415 position on the monitor has

NOTE Confidence: 0.98738927

00:26:17.415 --> 00:26:18.375 to do with how close

NOTE Confidence: 0.98738927

00:26:18.375 --> 00:26:19.815 an object is to the

NOTE Confidence: 0.98738927

00:26:19.815 --> 00:26:21.255 probe, top of the screen,

NOTE Confidence: 0.98738927

00:26:21.255 --> 00:26:22.475 closer to the probe.

NOTE Confidence: 0.99638283

00:26:24.010 --> 00:26:25.790 Alright. So the gain is

NOTE Confidence: 0.99638283

00:26:25.850 --> 00:26:27.150 going to be an important,

NOTE Confidence: 0.9762977

00:26:28.170 --> 00:26:30.270 function that you're gonna familiarize

NOTE Confidence: 0.9762977

00:26:30.490 --> 00:26:31.530 yourself with so you can

NOTE Confidence: 0.9762977

00:26:31.530 --> 00:26:33.390 become comfortable with how to

NOTE Confidence: 0.99194694

00:26:33.770 --> 00:26:35.050 adjust it when you're doing

NOTE Confidence: 0.99194694

00:26:35.050 --> 00:26:36.170 scans and how to interpret

NOTE Confidence: 0.99194694

00:26:36.170 --> 00:26:37.965 images. So think about gain

NOTE Confidence: 0.99194694

00:26:37.965 --> 00:26:38.865 as the volume

NOTE Confidence: 0.9963487

00:26:39.165 --> 00:26:39.665 of,

NOTE Confidence: 0.9884935

00:26:41.965 --> 00:26:42.945 of your ultrasound,

NOTE Confidence: 0.9860844

00:26:43.645 --> 00:26:45.244 I guess, globally. So if

NOTE Confidence: 0.9860844

00:26:45.244 --> 00:26:46.285 the gain if the volume

NOTE Confidence: 0.9860844

00:26:46.285 --> 00:26:47.984 is turned up too high,

NOTE Confidence: 0.9692463

00:26:48.445 --> 00:26:50.205 everything is gonna appear very

NOTE Confidence: 0.9692463

00:26:50.205 --> 00:26:51.970 bright on the screen. Whereas

NOTE Confidence: 0.9692463

00:26:52.030 --> 00:26:53.070 if the gain is too

NOTE Confidence: 0.9692463

00:26:53.070 --> 00:26:54.270 low, if the volume is

NOTE Confidence: 0.9692463

00:26:54.270 --> 00:26:56.030 turned down, everything is gonna

NOTE Confidence: 0.9692463

00:26:56.030 --> 00:26:57.869 appear too dark. And this

NOTE Confidence: 0.9692463

00:26:57.869 --> 00:26:59.970 is gonna affect your image

NOTE Confidence: 0.97385234

00:27:00.430 --> 00:27:01.630 quality, and it's gonna affect

NOTE Confidence: 0.97385234

00:27:01.630 --> 00:27:03.090 your ability to interpret images.

NOTE Confidence: 0.97385234

00:27:03.150 --> 00:27:03.650 So,

NOTE Confidence: 0.9368254

00:27:04.350 --> 00:27:05.605 on the first one, the

NOTE Confidence: 0.9368254

00:27:05.605 --> 00:27:06.644 game's a little high in

NOTE Confidence: 0.9368254

00:27:06.644 --> 00:27:08.345 that clip there with the,

NOTE Confidence: 0.8928887

00:27:10.484 --> 00:27:12.024 kidney over here,

NOTE Confidence: 0.90882874

00:27:12.404 --> 00:27:13.845 and this actually looks like

NOTE Confidence: 0.90882874

00:27:13.845 --> 00:27:16.105 spleen over here. And this

NOTE Confidence: 0.9641264

00:27:16.644 --> 00:27:18.565 entire area here is is

NOTE Confidence: 0.9641264

00:27:18.565 --> 00:27:20.024 fairly bright. So

NOTE Confidence: 0.92490315

00:27:20.730 --> 00:27:22.330 in terms of assessing for

NOTE Confidence: 0.92490315

00:27:22.330 --> 00:27:23.850 fluid collecting in that space

NOTE Confidence: 0.92490315

00:27:23.850 --> 00:27:25.050 and sometimes we look for

NOTE Confidence: 0.92490315

00:27:25.130 --> 00:27:26.570 or not sometimes, we we

NOTE Confidence: 0.92490315

00:27:26.570 --> 00:27:28.010 wanna look for fluoro fusions

NOTE Confidence: 0.92490315

00:27:28.010 --> 00:27:29.130 when we do these FAST

NOTE Confidence: 0.92490315

00:27:29.130 --> 00:27:29.630 exams.

NOTE Confidence: 0.98441666

00:27:29.930 --> 00:27:31.710 You you're gonna wanna have,

NOTE Confidence: 0.9350924

00:27:32.650 --> 00:27:33.850 just a slight adjustment of

NOTE Confidence: 0.9350924

00:27:33.850 --> 00:27:34.970 the gain here just to

NOTE Confidence: 0.9350924

00:27:34.970 --> 00:27:36.965 avoid all this bright artifacts

NOTE Confidence: 0.9350924

00:27:37.025 --> 00:27:37.765 down here.

NOTE Confidence: 0.9936051

00:27:38.945 --> 00:27:39.445 Conversely,

NOTE Confidence: 0.9920065

00:27:40.304 --> 00:27:41.105 we have a,

NOTE Confidence: 0.8347131

00:27:41.984 --> 00:27:43.265 a child here, a patient

NOTE Confidence: 0.8347131

00:27:43.265 --> 00:27:44.965 with concern for, like, the

NOTE Confidence: 0.94022983

00:27:45.585 --> 00:27:47.825 hip diffusion, fluid collection. And

NOTE Confidence: 0.94022983

00:27:47.825 --> 00:27:48.945 if you're just looking at

NOTE Confidence: 0.94022983

00:27:48.945 --> 00:27:50.145 this area here, it looks

NOTE Confidence: 0.94022983

00:27:50.145 --> 00:27:51.265 kinda dark, and that's where

NOTE Confidence: 0.94022983

00:27:51.265 --> 00:27:52.890 we would teach to look

NOTE Confidence: 0.94022983

00:27:52.890 --> 00:27:53.609 for fluid,

NOTE Confidence: 0.9810326

00:27:53.930 --> 00:27:54.510 to collect.

NOTE Confidence: 0.89375335

00:27:54.890 --> 00:27:56.170 But this is actually an

NOTE Confidence: 0.89375335

00:27:56.170 --> 00:27:57.930 operator error, not even operator

NOTE Confidence: 0.89375335

00:27:57.930 --> 00:27:59.369 error, machine error, however you

NOTE Confidence: 0.89375335

00:27:59.369 --> 00:28:00.830 wanna call it, false error,

NOTE Confidence: 0.89375335

00:28:01.050 --> 00:28:01.930 it would be a false

NOTE Confidence: 0.89375335

00:28:01.930 --> 00:28:02.430 positive.

NOTE Confidence: 0.9245417

00:28:03.690 --> 00:28:04.890 This this is a case

NOTE Confidence: 0.9245417

00:28:04.890 --> 00:28:05.850 where the gain is just

NOTE Confidence: 0.9245417

00:28:05.850 --> 00:28:06.730 too low. You have to

NOTE Confidence: 0.9245417

00:28:06.730 --> 00:28:08.165 increase the gain to be

NOTE Confidence: 0.9245417

00:28:08.165 --> 00:28:09.924 able to distinguish the the

NOTE Confidence: 0.9245417

00:28:09.924 --> 00:28:11.044 the tissue here is actually

NOTE Confidence: 0.9245417

00:28:11.044 --> 00:28:13.544 normal appearing relative to the

NOTE Confidence: 0.9245417

00:28:13.765 --> 00:28:15.365 the hip flexion muscle over

NOTE Confidence: 0.9245417

00:28:15.365 --> 00:28:16.825 here. This is the

NOTE Confidence: 0.65407526

00:28:17.284 --> 00:28:18.424 hip bone over here.

NOTE Confidence: 0.9798348

00:28:18.965 --> 00:28:19.365 So,

NOTE Confidence: 0.89561915

00:28:20.085 --> 00:28:20.850 this is,

NOTE Confidence: 0.9618977

00:28:21.330 --> 00:28:22.850 learning for another day, but

NOTE Confidence: 0.9618977

00:28:22.850 --> 00:28:24.369 gain too high is not

NOTE Confidence: 0.9618977

00:28:24.369 --> 00:28:25.809 helpful and gain too low

NOTE Confidence: 0.9618977

00:28:25.809 --> 00:28:26.309 also,

NOTE Confidence: 0.9988321

00:28:27.010 --> 00:28:28.470 is a potential problem.

NOTE Confidence: 0.9807542

00:28:29.169 --> 00:28:30.850 Yep. Depth also is another

NOTE Confidence: 0.9807542

00:28:30.850 --> 00:28:32.690 big one. So here's a

NOTE Confidence: 0.9807542

00:28:32.690 --> 00:28:33.669 patient with

NOTE Confidence: 0.85571706

00:28:34.734 --> 00:28:35.875 erylocolic intussusception,

NOTE Confidence: 0.9842021

00:28:37.215 --> 00:28:37.934 on the,

NOTE Confidence: 0.92823297

00:28:38.575 --> 00:28:39.615 the first image with a

NOTE Confidence: 0.92823297

00:28:39.615 --> 00:28:41.395 linear with a linear probe.

NOTE Confidence: 0.94561964

00:28:42.015 --> 00:28:43.215 You have a depth set

NOTE Confidence: 0.94561964

00:28:43.215 --> 00:28:44.575 at nine centimeters. So how

NOTE Confidence: 0.94561964

00:28:44.575 --> 00:28:45.375 do I know it's nine

NOTE Confidence: 0.94561964

00:28:45.375 --> 00:28:46.815 centimeters? Well, every hash mark

NOTE Confidence: 0.94561964

00:28:46.815 --> 00:28:48.515 is a centimeter. So one,

NOTE Confidence: 0.9956302

00:28:48.990 --> 00:28:50.210 two three

NOTE Confidence: 0.99724895

00:28:50.590 --> 00:28:51.090 four

NOTE Confidence: 0.93728375

00:28:51.470 --> 00:28:52.910 five six, and it comes

NOTE Confidence: 0.93728375

00:28:52.910 --> 00:28:54.450 down here to to nine.

NOTE Confidence: 0.93728375

00:28:54.590 --> 00:28:55.630 So you have a very

NOTE Confidence: 0.93728375

00:28:55.630 --> 00:28:57.470 end instinct structure there. It

NOTE Confidence: 0.93728375

00:28:57.470 --> 00:28:58.830 just looks like there's something

NOTE Confidence: 0.93728375

00:28:58.830 --> 00:29:00.190 wrong, and it's really hard

NOTE Confidence: 0.93728375

00:29:00.190 --> 00:29:01.570 to make a a judgment

NOTE Confidence: 0.93728375

00:29:01.630 --> 00:29:02.130 call

NOTE Confidence: 0.99911755

00:29:02.865 --> 00:29:03.745 as to what that could

NOTE Confidence: 0.99911755

00:29:03.745 --> 00:29:04.245 be.

NOTE Confidence: 0.9791263

00:29:05.505 --> 00:29:07.505 When the depth is adjusted

NOTE Confidence: 0.9791263

00:29:07.505 --> 00:29:09.105 here to four centimeters, you

NOTE Confidence: 0.9791263

00:29:09.105 --> 00:29:10.785 have a much more crisp

NOTE Confidence: 0.9791263

00:29:10.785 --> 00:29:11.285 appearing

NOTE Confidence: 0.9323904

00:29:11.905 --> 00:29:13.665 target sign where this is

NOTE Confidence: 0.9323904

00:29:13.665 --> 00:29:14.165 ilium

NOTE Confidence: 0.87124026

00:29:14.625 --> 00:29:15.125 here,

NOTE Confidence: 0.8727045

00:29:15.425 --> 00:29:16.465 and this is the outer

NOTE Confidence: 0.8727045

00:29:16.465 --> 00:29:17.765 wall of the ceta

NOTE Confidence: 0.7921742

00:29:18.169 --> 00:29:19.549 here. There's your target,

NOTE Confidence: 0.9894251

00:29:20.650 --> 00:29:21.610 more than two and a

NOTE Confidence: 0.9894251

00:29:21.610 --> 00:29:22.350 half centimeters

NOTE Confidence: 0.80527395

00:29:22.650 --> 00:29:24.090 in terms of, a tube

NOTE Confidence: 0.80527395

00:29:24.090 --> 00:29:25.710 diameter. So this is iliopollicant

NOTE Confidence: 0.80527395

00:29:25.929 --> 00:29:26.429 dissection,

NOTE Confidence: 0.92385113

00:29:27.530 --> 00:29:29.370 which could easily be missed

NOTE Confidence: 0.92385113

00:29:29.370 --> 00:29:30.990 if you're looking at an,

NOTE Confidence: 0.8651066

00:29:32.925 --> 00:29:34.465 at not the appropriate depth

NOTE Confidence: 0.8651066

00:29:34.525 --> 00:29:35.025 setting.

NOTE Confidence: 0.9591805

00:29:37.245 --> 00:29:38.685 Alright. And color doppler is

NOTE Confidence: 0.9591805

00:29:38.685 --> 00:29:40.765 a really important function that

NOTE Confidence: 0.9591805

00:29:40.765 --> 00:29:42.125 we're gonna use all the

NOTE Confidence: 0.9591805

00:29:42.125 --> 00:29:42.625 time,

NOTE Confidence: 0.97592175

00:29:43.760 --> 00:29:45.460 when we're doing scans. So,

NOTE Confidence: 0.99099636

00:29:46.480 --> 00:29:46.980 essentially,

NOTE Confidence: 0.92021567

00:29:47.360 --> 00:29:48.100 you have

NOTE Confidence: 0.87958044

00:29:49.840 --> 00:29:51.700 a application where the ultrasound

NOTE Confidence: 0.87958044

00:29:52.000 --> 00:29:53.140 can detect flow.

NOTE Confidence: 0.85198736

00:29:55.520 --> 00:29:56.820 So the the

NOTE Confidence: 0.9530582

00:29:57.514 --> 00:29:59.514 the important thing to remember

NOTE Confidence: 0.9530582

00:29:59.514 --> 00:30:00.554 is that here in in

NOTE Confidence: 0.9530582

00:30:00.554 --> 00:30:01.195 this first,

NOTE Confidence: 0.90419865

00:30:02.154 --> 00:30:02.654 image,

NOTE Confidence: 0.7062686

00:30:04.235 --> 00:30:05.054 right here,

NOTE Confidence: 0.9632187

00:30:05.514 --> 00:30:07.215 we have a pulsating vessel.

NOTE Confidence: 0.987823

00:30:07.674 --> 00:30:08.575 Right? So

NOTE Confidence: 0.953023

00:30:09.115 --> 00:30:10.634 the reason it appears blue

NOTE Confidence: 0.953023

00:30:10.634 --> 00:30:11.835 is because the appearance of

NOTE Confidence: 0.953023

00:30:11.835 --> 00:30:13.670 blue in ultrasound is flow

NOTE Confidence: 0.95604825

00:30:14.050 --> 00:30:16.290 away from the transducer. Whereas

NOTE Confidence: 0.95604825

00:30:16.290 --> 00:30:16.790 flow

NOTE Confidence: 0.9656029

00:30:17.170 --> 00:30:18.610 to the transducer is gonna

NOTE Confidence: 0.9656029

00:30:18.610 --> 00:30:20.290 appear as red. So even

NOTE Confidence: 0.9656029

00:30:20.290 --> 00:30:21.750 this is an arterial structure,

NOTE Confidence: 0.90064156

00:30:22.050 --> 00:30:23.650 it's a, vagal artery in

NOTE Confidence: 0.90064156

00:30:23.650 --> 00:30:24.390 this case,

NOTE Confidence: 0.90663224

00:30:26.365 --> 00:30:28.385 The the appearance of the,

NOTE Confidence: 0.9924096

00:30:31.085 --> 00:30:31.585 filling

NOTE Confidence: 0.85357016

00:30:32.045 --> 00:30:33.105 of that lumen

NOTE Confidence: 0.9924307

00:30:33.405 --> 00:30:34.845 is blue because the probe

NOTE Confidence: 0.9924307

00:30:34.845 --> 00:30:37.105 is slightly twisted away. So

NOTE Confidence: 0.9622638

00:30:37.970 --> 00:30:39.730 if I have, a vessel

NOTE Confidence: 0.9622638

00:30:39.730 --> 00:30:40.230 here

NOTE Confidence: 0.93182504

00:30:40.770 --> 00:30:42.550 and I'm looking at it

NOTE Confidence: 0.9832268

00:30:43.410 --> 00:30:44.950 with my probe this way,

NOTE Confidence: 0.9420855

00:30:46.050 --> 00:30:47.490 if I'm tilted that way,

NOTE Confidence: 0.9420855

00:30:47.490 --> 00:30:48.450 you may have a blue

NOTE Confidence: 0.9420855

00:30:48.450 --> 00:30:51.030 appearance. Whereas if I'm twisting

NOTE Confidence: 0.9420855

00:30:51.250 --> 00:30:51.910 this way

NOTE Confidence: 0.7904591

00:30:52.565 --> 00:30:52.965 and,

NOTE Confidence: 0.91600573

00:30:53.525 --> 00:30:55.045 the artery is coming from

NOTE Confidence: 0.91600573

00:30:55.045 --> 00:30:56.165 where my wrist, the placenta

NOTE Confidence: 0.91600573

00:30:56.165 --> 00:30:57.285 that's coming from my wrist

NOTE Confidence: 0.91600573

00:30:57.285 --> 00:30:58.805 is, then it's gonna appear

NOTE Confidence: 0.91600573

00:30:58.805 --> 00:30:59.305 red.

NOTE Confidence: 0.76929796

00:31:01.125 --> 00:31:01.625 Blue,

NOTE Confidence: 0.95014644

00:31:03.845 --> 00:31:04.345 red,

NOTE Confidence: 0.9361499

00:31:04.725 --> 00:31:06.345 but it's essentially the same

NOTE Confidence: 0.9361499

00:31:06.485 --> 00:31:06.985 vessel.

NOTE Confidence: 0.98114026

00:31:07.679 --> 00:31:08.179 And,

NOTE Confidence: 0.95517826

00:31:08.880 --> 00:31:10.159 so, so that's an important

NOTE Confidence: 0.95517826

00:31:10.159 --> 00:31:11.220 concept to

NOTE Confidence: 0.9548826

00:31:11.679 --> 00:31:12.659 be aware of.

NOTE Confidence: 0.9745083

00:31:12.960 --> 00:31:13.440 And,

NOTE Confidence: 0.89176536

00:31:14.000 --> 00:31:15.679 we also use color Doppler

NOTE Confidence: 0.89176536

00:31:15.679 --> 00:31:17.360 flow for inflammation. So,

NOTE Confidence: 0.61398846

00:31:18.000 --> 00:31:18.500 hyperlamia

NOTE Confidence: 0.96637493

00:31:18.960 --> 00:31:20.419 is a common finding,

NOTE Confidence: 0.90764886

00:31:21.095 --> 00:31:22.235 when there's inflammatory

NOTE Confidence: 0.87980247

00:31:22.535 --> 00:31:23.995 to tissues and pathology.

NOTE Confidence: 0.87484086

00:31:24.695 --> 00:31:26.215 This is a an example

NOTE Confidence: 0.87484086

00:31:26.215 --> 00:31:27.595 of hyperremia around,

NOTE Confidence: 0.996729

00:31:28.615 --> 00:31:30.235 a somewhat ill defined appendix

NOTE Confidence: 0.84368986

00:31:30.695 --> 00:31:32.375 actually on this one clip

NOTE Confidence: 0.84368986

00:31:32.375 --> 00:31:32.875 here.

NOTE Confidence: 0.84580815

00:31:33.559 --> 00:31:35.000 But this is the partial

NOTE Confidence: 0.84580815

00:31:35.000 --> 00:31:36.440 wall of an appendix that,

NOTE Confidence: 0.84580815

00:31:36.760 --> 00:31:37.880 was in a patient with

NOTE Confidence: 0.84580815

00:31:37.880 --> 00:31:38.540 acute appendicitis.

NOTE Confidence: 0.9931667

00:31:39.400 --> 00:31:41.340 So detection of inflammation,

NOTE Confidence: 0.95132977

00:31:42.440 --> 00:31:44.280 and then also detect detection

NOTE Confidence: 0.95132977

00:31:44.280 --> 00:31:45.020 of flow

NOTE Confidence: 0.9675772

00:31:45.400 --> 00:31:45.900 to

NOTE Confidence: 0.9443846

00:31:46.679 --> 00:31:49.100 or away from that transfusion.

NOTE Confidence: 0.97765684

00:31:50.654 --> 00:31:51.934 Okay. We're gonna do some

NOTE Confidence: 0.97765684

00:31:51.934 --> 00:31:54.015 quick hits to finish off

NOTE Confidence: 0.97765684

00:31:54.015 --> 00:31:55.455 here for shadowing. So we

NOTE Confidence: 0.97765684

00:31:55.455 --> 00:31:55.955 have,

NOTE Confidence: 0.9807723

00:31:57.215 --> 00:31:58.654 acoustic shadowing, which is an

NOTE Confidence: 0.9807723

00:31:58.654 --> 00:31:59.154 artifact,

NOTE Confidence: 0.9995006

00:31:59.774 --> 00:32:00.995 that's caused by

NOTE Confidence: 0.97607917

00:32:01.800 --> 00:32:02.920 failure of a sound beam

NOTE Confidence: 0.97607917

00:32:02.920 --> 00:32:03.880 to pass through a certain

NOTE Confidence: 0.97607917

00:32:03.880 --> 00:32:06.140 tissue. So in still clip

NOTE Confidence: 0.97607917

00:32:06.360 --> 00:32:07.260 number one,

NOTE Confidence: 0.8829708

00:32:07.720 --> 00:32:09.020 we have acoustics

NOTE Confidence: 0.7960294

00:32:09.480 --> 00:32:11.640 shadowing because there's gallstones in

NOTE Confidence: 0.7960294

00:32:11.640 --> 00:32:12.220 the gallbladder.

NOTE Confidence: 0.9004707

00:32:12.920 --> 00:32:14.280 So you have ultrasound coming

NOTE Confidence: 0.9004707

00:32:14.280 --> 00:32:17.035 here, political structure, gallstones there,

NOTE Confidence: 0.9004707

00:32:17.035 --> 00:32:18.335 and then this

NOTE Confidence: 0.990304

00:32:19.675 --> 00:32:21.535 dark defect behind the gallstone

NOTE Confidence: 0.9397171

00:32:21.995 --> 00:32:24.075 here is, an acoustic shadowing

NOTE Confidence: 0.9397171

00:32:24.075 --> 00:32:24.575 phenomenon.

NOTE Confidence: 0.9467294

00:32:26.235 --> 00:32:27.595 Not to be concerned with

NOTE Confidence: 0.9467294

00:32:27.835 --> 00:32:29.195 not to be confused, sorry,

NOTE Confidence: 0.9467294

00:32:29.195 --> 00:32:30.255 with edge artifact,

NOTE Confidence: 0.8470066

00:32:30.690 --> 00:32:31.809 which you're seeing right next

NOTE Confidence: 0.8470066

00:32:31.809 --> 00:32:33.110 to the bellow data there.

NOTE Confidence: 0.96119064

00:32:34.769 --> 00:32:36.450 And, probably a little slightly

NOTE Confidence: 0.96119064

00:32:36.450 --> 00:32:37.750 better, more clear example,

NOTE Confidence: 0.9014097

00:32:38.130 --> 00:32:39.809 would be a heel foreign

NOTE Confidence: 0.9014097

00:32:39.809 --> 00:32:40.710 body. So

NOTE Confidence: 0.9471597

00:32:41.010 --> 00:32:42.370 you have a splinter here

NOTE Confidence: 0.9471597

00:32:42.370 --> 00:32:43.570 that's a little bit bright,

NOTE Confidence: 0.9471597

00:32:43.570 --> 00:32:44.610 and then you give off

NOTE Confidence: 0.9471597

00:32:44.610 --> 00:32:46.685 this complete shadow artifact. So

NOTE Confidence: 0.9471597

00:32:46.685 --> 00:32:47.005 that's,

NOTE Confidence: 0.99247503

00:32:47.805 --> 00:32:49.485 acoustic shadowing, which is an

NOTE Confidence: 0.99247503

00:32:49.485 --> 00:32:49.985 important,

NOTE Confidence: 0.86736965

00:32:51.005 --> 00:32:51.985 oops, an artifact,

NOTE Confidence: 0.98372024

00:32:52.525 --> 00:32:53.725 that we use to interpret

NOTE Confidence: 0.98372024

00:32:53.725 --> 00:32:54.385 our images.

NOTE Confidence: 0.99251926

00:32:56.365 --> 00:32:57.665 The next important artifact,

NOTE Confidence: 0.9506769

00:32:58.045 --> 00:32:59.250 to talk about is mirror

NOTE Confidence: 0.9506769

00:32:59.250 --> 00:33:00.930 imaging artifact, which is a

NOTE Confidence: 0.9506769

00:33:00.930 --> 00:33:01.430 normal,

NOTE Confidence: 0.9274211

00:33:02.610 --> 00:33:03.110 finding,

NOTE Confidence: 0.9988697

00:33:03.570 --> 00:33:04.550 most of the time.

NOTE Confidence: 0.99319994

00:33:05.010 --> 00:33:05.510 So,

NOTE Confidence: 0.98253506

00:33:06.930 --> 00:33:08.930 this artifact is created when

NOTE Confidence: 0.98253506

00:33:08.930 --> 00:33:09.990 you have a

NOTE Confidence: 0.98671174

00:33:10.450 --> 00:33:10.950 curved

NOTE Confidence: 0.91100997

00:33:11.810 --> 00:33:13.760 structure, which is a stronger

NOTE Confidence: 0.9421373

00:33:14.524 --> 00:33:16.284 reflector of ultrasound relative to

NOTE Confidence: 0.9421373

00:33:16.284 --> 00:33:18.205 the object that's informative. So

NOTE Confidence: 0.9421373

00:33:18.205 --> 00:33:19.424 on the FAST exam,

NOTE Confidence: 0.9419492

00:33:19.804 --> 00:33:21.485 you have typically spleen or

NOTE Confidence: 0.9419492

00:33:21.485 --> 00:33:22.784 liver here.

NOTE Confidence: 0.96640986

00:33:23.404 --> 00:33:24.784 Your stronger reflector

NOTE Confidence: 0.98110354

00:33:25.245 --> 00:33:27.825 curved object is the diaphragm

NOTE Confidence: 0.96586215

00:33:28.850 --> 00:33:31.330 there. And given the difference

NOTE Confidence: 0.96586215

00:33:31.330 --> 00:33:32.230 in the

NOTE Confidence: 0.98768085

00:33:32.690 --> 00:33:33.670 tissue interface,

NOTE Confidence: 0.9984983

00:33:34.130 --> 00:33:35.670 you have the appearance

NOTE Confidence: 0.91186494

00:33:36.050 --> 00:33:36.870 of liver,

NOTE Confidence: 0.40002555

00:33:37.570 --> 00:33:38.550 a man's own artifact.

NOTE Confidence: 0.93965036

00:33:38.930 --> 00:33:40.290 But it's really just a

NOTE Confidence: 0.93965036

00:33:40.290 --> 00:33:42.710 mirror imaging artifact that's created,

NOTE Confidence: 0.9678756

00:33:43.165 --> 00:33:44.285 which is useful to know

NOTE Confidence: 0.9678756

00:33:44.285 --> 00:33:45.085 because if you have a

NOTE Confidence: 0.9678756

00:33:45.085 --> 00:33:46.545 pleural effusion or hemothorax,

NOTE Confidence: 0.9374798

00:33:48.045 --> 00:33:49.505 this is all gonna look

NOTE Confidence: 0.9437505

00:33:49.805 --> 00:33:52.125 dark over here. So instead

NOTE Confidence: 0.9437505

00:33:52.125 --> 00:33:53.185 of the mirror imaging,

NOTE Confidence: 0.9109768

00:33:54.365 --> 00:33:56.045 what you're likely to see

NOTE Confidence: 0.9109768

00:33:56.045 --> 00:33:56.545 is

NOTE Confidence: 0.7300023

00:33:56.980 --> 00:33:58.039 a complete,

NOTE Confidence: 0.7142965

00:33:59.220 --> 00:34:01.640 anechoic hypochial fluid collection there,

NOTE Confidence: 0.7326515

00:34:02.179 --> 00:34:04.019 in in in a portion

NOTE Confidence: 0.7326515

00:34:04.019 --> 00:34:05.080 of the plant. So,

NOTE Confidence: 0.575381

00:34:07.700 --> 00:34:08.920 near imaging artifact.

NOTE Confidence: 0.99844974

00:34:09.355 --> 00:34:10.655 And another example

NOTE Confidence: 0.5017181

00:34:11.114 --> 00:34:11.614 potentially

NOTE Confidence: 0.9892037

00:34:12.155 --> 00:34:12.795 would be,

NOTE Confidence: 0.87554395

00:34:13.275 --> 00:34:15.295 say a scalp hematoma. So,

NOTE Confidence: 0.97612536

00:34:15.995 --> 00:34:17.775 here we have bone.

NOTE Confidence: 0.99276626

00:34:19.355 --> 00:34:20.735 It's a strong reflector.

NOTE Confidence: 0.9276517

00:34:21.450 --> 00:34:22.969 It's curved because it's the

NOTE Confidence: 0.9276517

00:34:22.969 --> 00:34:24.270 skull. It's the scalp.

NOTE Confidence: 0.99318856

00:34:24.810 --> 00:34:26.330 And this is your scalp

NOTE Confidence: 0.99318856

00:34:26.330 --> 00:34:26.830 hematoma

NOTE Confidence: 0.7968937

00:34:28.489 --> 00:34:28.989 hematoma.

NOTE Confidence: 0.9212561

00:34:29.369 --> 00:34:31.070 So that's just, those,

NOTE Confidence: 0.9687993

00:34:32.250 --> 00:34:33.290 injuries that we see with

NOTE Confidence: 0.9687993

00:34:33.290 --> 00:34:34.890 kids all the time. So

NOTE Confidence: 0.9687993

00:34:34.890 --> 00:34:36.349 this appearance here

NOTE Confidence: 0.91515684

00:34:37.005 --> 00:34:38.684 is not an epidural or

NOTE Confidence: 0.91515684

00:34:38.684 --> 00:34:40.305 a subdural or a subcranial

NOTE Confidence: 0.91515684

00:34:40.444 --> 00:34:42.525 intracranial bleed, but it's rather

NOTE Confidence: 0.91515684

00:34:42.525 --> 00:34:43.744 a reflection

NOTE Confidence: 0.79194903

00:34:44.045 --> 00:34:45.404 of the synchrotum behind the

NOTE Confidence: 0.79194903

00:34:45.404 --> 00:34:47.025 bone, near imaging artifact,

NOTE Confidence: 0.9316635

00:34:47.964 --> 00:34:49.005 that you will need to

NOTE Confidence: 0.9316635

00:34:49.005 --> 00:34:49.505 recognize

NOTE Confidence: 0.96410733

00:34:51.300 --> 00:34:52.680 when you're doing the scans.

NOTE Confidence: 0.90622777

00:34:53.300 --> 00:34:54.520 Here we have posterior

NOTE Confidence: 0.96351755

00:34:54.820 --> 00:34:56.739 acoustic enhancement, which is a

NOTE Confidence: 0.96351755

00:34:56.739 --> 00:34:57.640 bright or hypoelectronic

NOTE Confidence: 0.7540252

00:34:57.940 --> 00:34:58.440 appearance.

NOTE Confidence: 0.90315104

00:34:59.140 --> 00:35:00.580 At the posterior or far

NOTE Confidence: 0.90315104

00:35:00.580 --> 00:35:02.020 side of a cystic fluid

NOTE Confidence: 0.90315104

00:35:02.020 --> 00:35:03.220 fluid structure due to the

NOTE Confidence: 0.90315104

00:35:03.220 --> 00:35:04.920 lack of attenuation of ultrasound

NOTE Confidence: 0.90315104

00:35:05.060 --> 00:35:05.560 beam,

NOTE Confidence: 0.88292783

00:35:07.385 --> 00:35:08.425 So you have a bladder

NOTE Confidence: 0.88292783

00:35:08.425 --> 00:35:10.105 here, and the posterior wall

NOTE Confidence: 0.88292783

00:35:10.105 --> 00:35:11.405 appears very bright

NOTE Confidence: 0.9812954

00:35:11.864 --> 00:35:13.565 due to posterior acoustic enhancement.

NOTE Confidence: 0.9812954

00:35:13.785 --> 00:35:16.045 It's not any different consistency,

NOTE Confidence: 0.99394

00:35:17.785 --> 00:35:19.065 in terms of the wall

NOTE Confidence: 0.99394

00:35:19.065 --> 00:35:20.505 there relative to the lateral

NOTE Confidence: 0.99394

00:35:20.505 --> 00:35:21.005 side

NOTE Confidence: 0.93442327

00:35:21.650 --> 00:35:22.930 or the anterior side. But

NOTE Confidence: 0.93442327

00:35:22.930 --> 00:35:24.210 it just looks so much

NOTE Confidence: 0.93442327

00:35:24.210 --> 00:35:25.650 brighter because of the ultrasound

NOTE Confidence: 0.93442327

00:35:25.650 --> 00:35:26.150 transmission

NOTE Confidence: 0.8426912

00:35:26.690 --> 00:35:27.350 through that

NOTE Confidence: 0.9164274

00:35:27.810 --> 00:35:29.010 through the filth bladder. And

NOTE Confidence: 0.9164274

00:35:29.010 --> 00:35:31.350 it's important, again, because of

NOTE Confidence: 0.9164274

00:35:31.570 --> 00:35:32.310 the possibility

NOTE Confidence: 0.89711696

00:35:33.250 --> 00:35:34.469 for, mispathology.

NOTE Confidence: 0.99419683

00:35:34.930 --> 00:35:36.210 So if you're doing a

NOTE Confidence: 0.99419683

00:35:36.210 --> 00:35:38.555 FAST exam and everything looks

NOTE Confidence: 0.99419683

00:35:38.555 --> 00:35:39.994 very, very bright behind the

NOTE Confidence: 0.99419683

00:35:39.994 --> 00:35:41.775 bladder, you may miss

NOTE Confidence: 0.72729903

00:35:42.555 --> 00:35:43.934 free fluid. You

NOTE Confidence: 0.9789713

00:35:45.434 --> 00:35:46.635 may miss free fluid behind

NOTE Confidence: 0.9789713

00:35:46.635 --> 00:35:47.835 the bladder, so just be

NOTE Confidence: 0.9789713

00:35:47.835 --> 00:35:48.335 cognizant

NOTE Confidence: 0.9712877

00:35:48.635 --> 00:35:50.635 of this artifact and adjust

NOTE Confidence: 0.9712877

00:35:50.635 --> 00:35:51.855 your gain accordingly.

NOTE Confidence: 0.8971724

00:35:54.089 --> 00:35:55.130 Okay. And two more quick

NOTE Confidence: 0.8971724

00:35:55.130 --> 00:35:57.210 ones. So reverberation artifact, very

NOTE Confidence: 0.8971724

00:35:57.210 --> 00:35:58.569 important when we're scanning the

NOTE Confidence: 0.8971724

00:35:58.569 --> 00:35:59.769 lung, very important when we're

NOTE Confidence: 0.8971724

00:35:59.769 --> 00:36:01.150 looking at peripheral bodies.

NOTE Confidence: 0.9358241

00:36:01.529 --> 00:36:03.930 These are equidistant horizontal lines

NOTE Confidence: 0.9358241

00:36:03.930 --> 00:36:05.130 that tend to decrease in

NOTE Confidence: 0.9358241

00:36:05.130 --> 00:36:06.750 intensity on the monitor.

NOTE Confidence: 0.982293

00:36:07.235 --> 00:36:08.614 It has to do with,

NOTE Confidence: 0.989393

00:36:09.395 --> 00:36:09.895 reflection

NOTE Confidence: 0.9075125

00:36:10.195 --> 00:36:12.114 or reverberation of echoes to

NOTE Confidence: 0.9075125

00:36:12.114 --> 00:36:12.515 and,

NOTE Confidence: 0.97628564

00:36:13.715 --> 00:36:15.415 from the the probe. So

NOTE Confidence: 0.9638917

00:36:16.114 --> 00:36:17.075 in this case, we have

NOTE Confidence: 0.9638917

00:36:17.075 --> 00:36:17.815 the probe

NOTE Confidence: 0.7634882

00:36:18.355 --> 00:36:18.855 here,

NOTE Confidence: 0.8498146

00:36:20.489 --> 00:36:21.610 and we're looking at oh,

NOTE Confidence: 0.8498146

00:36:21.610 --> 00:36:22.890 this lung tissue. This is

NOTE Confidence: 0.8498146

00:36:22.890 --> 00:36:23.630 the pleura.

NOTE Confidence: 0.8522874

00:36:24.090 --> 00:36:25.130 So this is an a

NOTE Confidence: 0.8522874

00:36:25.130 --> 00:36:25.870 line here,

NOTE Confidence: 0.8822968

00:36:27.050 --> 00:36:28.090 and this is a a

NOTE Confidence: 0.8822968

00:36:28.090 --> 00:36:28.590 line

NOTE Confidence: 0.82368684

00:36:29.370 --> 00:36:29.870 here.

NOTE Confidence: 0.9961921

00:36:31.530 --> 00:36:32.410 And you can see the

NOTE Confidence: 0.9961921

00:36:32.410 --> 00:36:34.030 distance between this

NOTE Confidence: 0.992521

00:36:36.135 --> 00:36:38.075 and this is the same,

NOTE Confidence: 0.98572797

00:36:38.535 --> 00:36:39.415 which is also,

NOTE Confidence: 0.8774504

00:36:39.735 --> 00:36:41.175 similar to the distance between

NOTE Confidence: 0.8774504

00:36:41.175 --> 00:36:42.775 the exact actually, precisely the

NOTE Confidence: 0.8774504

00:36:42.775 --> 00:36:44.215 distance from the probe to

NOTE Confidence: 0.8774504

00:36:44.215 --> 00:36:46.215 when the ultrasound beam hits

NOTE Confidence: 0.8774504

00:36:46.215 --> 00:36:46.955 the probe.

NOTE Confidence: 0.93926126

00:36:47.410 --> 00:36:49.810 So normal filled air, a

NOTE Confidence: 0.93926126

00:36:49.810 --> 00:36:51.750 lines are good, a okay.

NOTE Confidence: 0.93926126

00:36:51.890 --> 00:36:53.010 This is the type of,

NOTE Confidence: 0.93926126

00:36:53.410 --> 00:36:55.270 reverberation artifact that we

NOTE Confidence: 0.9573856

00:36:56.210 --> 00:36:56.710 assume

NOTE Confidence: 0.8712942

00:36:57.250 --> 00:36:58.530 or that we should be

NOTE Confidence: 0.8712942

00:36:58.530 --> 00:36:59.969 seeing when there is healthy

NOTE Confidence: 0.8712942

00:36:59.969 --> 00:37:01.570 lung tissue without any problems

NOTE Confidence: 0.8712942

00:37:01.570 --> 00:37:02.230 you're feeling.

NOTE Confidence: 0.98948103

00:37:04.445 --> 00:37:06.205 Okay. And here's another example

NOTE Confidence: 0.98948103

00:37:06.205 --> 00:37:06.864 of reverberation

NOTE Confidence: 0.88860047

00:37:07.165 --> 00:37:07.665 artifact,

NOTE Confidence: 0.78355235

00:37:07.965 --> 00:37:09.725 sometimes called ring down artifact

NOTE Confidence: 0.78355235

00:37:09.725 --> 00:37:10.945 or comet tail artifact.

NOTE Confidence: 0.9876564

00:37:11.565 --> 00:37:12.045 And,

NOTE Confidence: 0.9861771

00:37:12.364 --> 00:37:13.905 this has to do with,

NOTE Confidence: 0.9397048

00:37:15.339 --> 00:37:15.839 essentially,

NOTE Confidence: 0.9703097

00:37:17.099 --> 00:37:18.640 the interface of the

NOTE Confidence: 0.80421805

00:37:19.180 --> 00:37:20.859 the object where the sun

NOTE Confidence: 0.80421805

00:37:20.859 --> 00:37:22.700 beams are stuck reverberating back

NOTE Confidence: 0.80421805

00:37:22.700 --> 00:37:23.280 and forth,

NOTE Confidence: 0.80675304

00:37:24.380 --> 00:37:25.119 which creates

NOTE Confidence: 0.77480173

00:37:25.739 --> 00:37:26.880 a a deep dive,

NOTE Confidence: 0.9978696

00:37:27.660 --> 00:37:28.160 vertically

NOTE Confidence: 0.9391774

00:37:28.460 --> 00:37:29.520 on on the screen.

NOTE Confidence: 0.9937803

00:37:30.555 --> 00:37:31.755 So here is,

NOTE Confidence: 0.89479584

00:37:32.315 --> 00:37:33.355 an IJ in terms of

NOTE Confidence: 0.89479584

00:37:33.355 --> 00:37:34.635 jugular vein, and then you

NOTE Confidence: 0.89479584

00:37:34.635 --> 00:37:35.535 have a,

NOTE Confidence: 0.93932396

00:37:35.915 --> 00:37:36.415 presumably,

NOTE Confidence: 0.9151342

00:37:37.594 --> 00:37:39.435 a needle here that's coming

NOTE Confidence: 0.9151342

00:37:39.435 --> 00:37:40.795 towards the the lumen of

NOTE Confidence: 0.9151342

00:37:40.795 --> 00:37:41.455 that vein.

NOTE Confidence: 0.97967666

00:37:41.835 --> 00:37:44.015 So the the needle itself

NOTE Confidence: 0.97967666

00:37:44.075 --> 00:37:44.575 has,

NOTE Confidence: 0.94090843

00:37:45.670 --> 00:37:47.190 two metallic portions. Right? It

NOTE Confidence: 0.94090843

00:37:47.190 --> 00:37:48.550 has the anterior portion and

NOTE Confidence: 0.94090843

00:37:48.550 --> 00:37:49.770 the posterior portion.

NOTE Confidence: 0.9690829

00:37:50.070 --> 00:37:51.190 So what ends up happening

NOTE Confidence: 0.9690829

00:37:51.190 --> 00:37:52.630 is that ultrasound beam gets

NOTE Confidence: 0.9690829

00:37:52.630 --> 00:37:54.730 trapped between the two parts

NOTE Confidence: 0.9690829

00:37:54.790 --> 00:37:56.330 of that needle, metallic,

NOTE Confidence: 0.91001713

00:37:56.870 --> 00:37:58.705 tip. And it's gonna create

NOTE Confidence: 0.91001713

00:37:58.705 --> 00:38:00.405 these sort of repented,

NOTE Confidence: 0.98322874

00:38:02.305 --> 00:38:02.805 vertical

NOTE Confidence: 0.9115101

00:38:03.265 --> 00:38:03.765 reverberation

NOTE Confidence: 0.8230132

00:38:04.145 --> 00:38:06.224 dips. So it's gonna pass

NOTE Confidence: 0.8230132

00:38:06.224 --> 00:38:07.825 this to a little bit

NOTE Confidence: 0.8230132

00:38:07.825 --> 00:38:08.785 into the bottom of this

NOTE Confidence: 0.8230132

00:38:08.785 --> 00:38:10.790 one. So unlike unlike just

NOTE Confidence: 0.8230132

00:38:10.790 --> 00:38:12.349 the the a lines that

NOTE Confidence: 0.8230132

00:38:12.349 --> 00:38:13.010 are separated,

NOTE Confidence: 0.9581033

00:38:13.630 --> 00:38:14.589 by the distance of the

NOTE Confidence: 0.9581033

00:38:14.589 --> 00:38:15.809 probe to the cora,

NOTE Confidence: 0.9881279

00:38:16.430 --> 00:38:17.630 this is more of a,

NOTE Confidence: 0.9958877

00:38:18.029 --> 00:38:18.529 persistent

NOTE Confidence: 0.9891141

00:38:18.829 --> 00:38:20.750 ping pong effect within the

NOTE Confidence: 0.9891141

00:38:20.750 --> 00:38:21.890 lumen of that

NOTE Confidence: 0.9897624

00:38:22.935 --> 00:38:23.435 needle,

NOTE Confidence: 0.9524462

00:38:24.215 --> 00:38:26.075 causing a a a vertical

NOTE Confidence: 0.9524462

00:38:26.135 --> 00:38:26.635 dive,

NOTE Confidence: 0.9223485

00:38:27.335 --> 00:38:29.015 and and you would expect

NOTE Confidence: 0.9223485

00:38:29.015 --> 00:38:30.075 to see a

NOTE Confidence: 0.851674

00:38:30.614 --> 00:38:32.135 a wind down appearance on

NOTE Confidence: 0.851674

00:38:32.135 --> 00:38:32.795 the screen.

NOTE Confidence: 0.97186875

00:38:34.535 --> 00:38:35.655 Alright. So we've made it

NOTE Confidence: 0.97186875

00:38:35.655 --> 00:38:36.055 to the end,

NOTE Confidence: 0.9363621

00:38:37.890 --> 00:38:39.329 and I thank you for

NOTE Confidence: 0.9363621

00:38:39.329 --> 00:38:39.829 sticking,

NOTE Confidence: 0.8850882

00:38:40.609 --> 00:38:41.109 through,

NOTE Confidence: 0.9567831

00:38:41.650 --> 00:38:42.469 the the lecture.

NOTE Confidence: 0.92575496

00:38:43.809 --> 00:38:45.250 The recap, how how are

NOTE Confidence: 0.92575496

00:38:45.250 --> 00:38:46.369 you gonna get good interviews?

NOTE Confidence: 0.92575496

00:38:46.369 --> 00:38:47.089 A lot of it is

NOTE Confidence: 0.92575496

00:38:47.089 --> 00:38:49.170 gonna be practice, practice, practice,

NOTE Confidence: 0.92575496

00:38:49.170 --> 00:38:50.150 and more practice.

NOTE Confidence: 0.8669804

00:38:51.665 --> 00:38:52.805 But you're gonna,

NOTE Confidence: 0.447322

00:38:53.185 --> 00:38:53.685 employ

NOTE Confidence: 0.8693495

00:38:54.065 --> 00:38:55.844 some of the, important concepts

NOTE Confidence: 0.8693495

00:38:55.985 --> 00:38:57.745 and and understanding of physics

NOTE Confidence: 0.8693495

00:38:57.745 --> 00:38:58.245 that,

NOTE Confidence: 0.9607059

00:38:59.425 --> 00:39:00.265 we've gone through in some

NOTE Confidence: 0.9607059

00:39:00.265 --> 00:39:01.825 of these slides. You're gonna

NOTE Confidence: 0.9607059

00:39:01.825 --> 00:39:02.805 pick a good probe

NOTE Confidence: 0.9849031

00:39:03.150 --> 00:39:03.469 because,

NOTE Confidence: 0.9822546

00:39:04.030 --> 00:39:05.469 choosing the right probe is

NOTE Confidence: 0.9822546

00:39:05.469 --> 00:39:07.069 sometimes half the battle for

NOTE Confidence: 0.9822546

00:39:07.069 --> 00:39:07.569 for

NOTE Confidence: 0.9749556

00:39:07.950 --> 00:39:09.469 the application that you're you're

NOTE Confidence: 0.9749556

00:39:09.469 --> 00:39:10.930 trying to achieve.

NOTE Confidence: 0.96898234

00:39:12.030 --> 00:39:13.630 Use good windows. Use fluid

NOTE Confidence: 0.96898234

00:39:13.630 --> 00:39:15.309 filled structures to see objects

NOTE Confidence: 0.96898234

00:39:15.309 --> 00:39:16.530 that are behind them.

NOTE Confidence: 0.970214

00:39:17.225 --> 00:39:18.745 Identify landmarks. A lot of

NOTE Confidence: 0.970214

00:39:18.745 --> 00:39:19.864 what we do is pattern

NOTE Confidence: 0.970214

00:39:19.864 --> 00:39:21.305 recognition. So if you don't

NOTE Confidence: 0.970214

00:39:21.305 --> 00:39:23.325 start with good landmark identification,

NOTE Confidence: 0.9619106

00:39:24.105 --> 00:39:25.465 you're sort of going on

NOTE Confidence: 0.9619106

00:39:25.465 --> 00:39:27.065 a fishing expedition to some

NOTE Confidence: 0.9619106

00:39:27.065 --> 00:39:27.565 extent.

NOTE Confidence: 0.9583851

00:39:28.585 --> 00:39:29.864 Adjust the depth. We don't

NOTE Confidence: 0.9583851

00:39:29.864 --> 00:39:31.225 want any wasted space on

NOTE Confidence: 0.9583851

00:39:31.225 --> 00:39:32.560 the screen, so we want

NOTE Confidence: 0.9583851

00:39:32.560 --> 00:39:33.060 to

NOTE Confidence: 0.9974532

00:39:33.520 --> 00:39:34.660 maximize your

NOTE Confidence: 0.92004454

00:39:35.119 --> 00:39:36.560 object of interest and make

NOTE Confidence: 0.92004454

00:39:36.560 --> 00:39:38.739 it, as big as possible,

NOTE Confidence: 0.94489723

00:39:40.160 --> 00:39:41.839 without losing any of the

NOTE Confidence: 0.94489723

00:39:41.839 --> 00:39:43.540 important detail behind it.

NOTE Confidence: 0.91403073

00:39:44.614 --> 00:39:45.915 Get to know your machine

NOTE Confidence: 0.91403073

00:39:46.135 --> 00:39:47.035 with different,

NOTE Confidence: 0.87671316

00:39:47.974 --> 00:39:48.474 settings,

NOTE Confidence: 0.9426665

00:39:48.855 --> 00:39:50.694 even within a single hospital

NOTE Confidence: 0.9426665

00:39:50.694 --> 00:39:51.255 are gonna,

NOTE Confidence: 0.95078653

00:39:51.655 --> 00:39:53.734 have, different machines with different

NOTE Confidence: 0.95078653

00:39:53.734 --> 00:39:54.234 knobs.

NOTE Confidence: 0.9570337

00:39:54.694 --> 00:39:56.375 And so part of being

NOTE Confidence: 0.9570337

00:39:56.375 --> 00:39:57.335 able to be a good

NOTE Confidence: 0.9570337

00:39:57.335 --> 00:39:57.835 zonologist

NOTE Confidence: 0.7814096

00:39:58.569 --> 00:39:59.770 or a good clinician who

NOTE Confidence: 0.7814096

00:39:59.770 --> 00:40:01.309 would employ protecate ultrasound

NOTE Confidence: 0.8444296

00:40:01.849 --> 00:40:02.730 to help care for your

NOTE Confidence: 0.8444296

00:40:02.730 --> 00:40:03.710 patients is,

NOTE Confidence: 0.96291417

00:40:04.890 --> 00:40:06.569 getting really comfortable and not

NOTE Confidence: 0.96291417

00:40:06.569 --> 00:40:07.609 having to sort of fiddle

NOTE Confidence: 0.96291417

00:40:07.609 --> 00:40:08.989 with the machine if you're

NOTE Confidence: 0.9222899

00:40:09.450 --> 00:40:10.829 there in vivo,

NOTE Confidence: 0.9288003

00:40:12.635 --> 00:40:13.915 caring for for kids and

NOTE Confidence: 0.9288003

00:40:13.915 --> 00:40:14.815 and their families.

NOTE Confidence: 0.9932519

00:40:15.355 --> 00:40:17.135 And and and that's it.

NOTE Confidence: 0.8686399

00:40:19.275 --> 00:40:21.275 Your friendly PEM focus team

NOTE Confidence: 0.8686399

00:40:21.275 --> 00:40:22.494 consists of myself,

NOTE Confidence: 0.7845345

00:40:22.954 --> 00:40:24.015 Emily Chen,

NOTE Confidence: 0.87834686

00:40:24.330 --> 00:40:25.850 and Julie Levener, and we'll

NOTE Confidence: 0.87834686

00:40:25.850 --> 00:40:27.290 be doing the scanning shift

NOTE Confidence: 0.87834686

00:40:27.290 --> 00:40:28.270 sessions together.

NOTE Confidence: 0.9833929

00:40:28.650 --> 00:40:29.850 And we're excited for this

NOTE Confidence: 0.9833929

00:40:29.850 --> 00:40:30.350 opportunity,

NOTE Confidence: 0.98874223

00:40:30.890 --> 00:40:32.350 to augment your experience.

NOTE Confidence: 0.9670917

00:40:32.969 --> 00:40:34.170 We do realize this is

NOTE Confidence: 0.9670917

00:40:34.170 --> 00:40:35.390 an optional commitment,

NOTE Confidence: 0.99248433

00:40:35.930 --> 00:40:37.690 on your behalf. So with

NOTE Confidence: 0.99248433

00:40:37.690 --> 00:40:38.590 that in mind,

NOTE Confidence: 0.9722157

00:40:38.895 --> 00:40:40.195 we're going to

NOTE Confidence: 0.687064

00:40:40.735 --> 00:40:41.235 provide

NOTE Confidence: 0.9320736

00:40:41.695 --> 00:40:43.695 an extra fruitful experience, we

NOTE Confidence: 0.9320736

00:40:43.695 --> 00:40:44.195 hope,

NOTE Confidence: 0.8983162

00:40:46.175 --> 00:40:47.475 when we're when we spend,

NOTE Confidence: 0.94485044

00:40:48.094 --> 00:40:49.715 time together on these damageships.

NOTE Confidence: 0.6889836

00:40:50.655 --> 00:40:51.315 So the

NOTE Confidence: 0.93730044

00:40:53.300 --> 00:40:54.660 sign up sheet, will be

NOTE Confidence: 0.93730044

00:40:54.660 --> 00:40:56.420 updated quarterly. And,

NOTE Confidence: 0.9800318

00:40:57.540 --> 00:40:59.219 right now with, COVID, we're

NOTE Confidence: 0.9800318

00:40:59.219 --> 00:41:00.980 only limiting to one, maybe

NOTE Confidence: 0.9800318

00:41:00.980 --> 00:41:01.480 two

NOTE Confidence: 0.828785

00:41:01.860 --> 00:41:02.360 rotators,

NOTE Confidence: 0.6823993

00:41:02.900 --> 00:41:03.400 today.

NOTE Confidence: 0.9349434

00:41:04.915 --> 00:41:06.515 But, there's no limit. We

NOTE Confidence: 0.9349434

00:41:06.515 --> 00:41:07.175 can do,

NOTE Confidence: 0.8782011

00:41:07.714 --> 00:41:08.934 certainly if you're interested,

NOTE Confidence: 0.86013854

00:41:09.555 --> 00:41:10.035 multiple,

NOTE Confidence: 0.92647576

00:41:10.355 --> 00:41:12.035 scanning shifts with us throughout

NOTE Confidence: 0.92647576

00:41:12.035 --> 00:41:13.415 the academic year.

NOTE Confidence: 0.9695517

00:41:13.954 --> 00:41:15.255 And so see you soon,

NOTE Confidence: 0.99596244

00:41:15.875 --> 00:41:17.094 and thanks for listening.