

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 phthalamoidic 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 permealinear
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 hypochoial 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 Levenson, 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.