WEBVTT

NOTE duration: ”00:15:41.141”

NOTE Confidence: 0.95402884

00:00:02.879 --> 00:00:04.400 In this lecture we will

NOTE Confidence: 0.95402884

00:00:04.400 --> 00:00:06.740 review pediatric point of care

NOTE Confidence: 0.95402884

00:00:06.879 --> 00:00:07.700 lung ultrasound.

NOTE Confidence: 0.9810829

00:00:15.485 --> 00:00:16.845 In general, the approach to

NOTE Confidence: 0.9810829

00:00:16.845 --> 00:00:18.285 your patients will differ depending

NOTE Confidence: 0.9810829

00:00:18.285 --> 00:00:19.885 on the clinical picture and

NOTE Confidence: 0.9810829

00:00:19.885 --> 00:00:21.185 the presenting symptoms.

NOTE Confidence: 0.99086744

00:00:22.364 --> 00:00:23.884 The most common pathology you'll

NOTE Confidence: 0.99086744

00:00:23.884 --> 00:00:24.845 be looking for is the

NOTE Confidence: 0.99086744

00:00:24.845 --> 00:00:26.125 presence or absence of a

NOTE Confidence: 0.99086744

00:00:26.125 --> 00:00:26.625 pneumothorax,

NOTE Confidence: 0.98983246

00:00:27.244 --> 00:00:28.685 the presence or absence of

NOTE Confidence: 0.98983246

00:00:28.685 --> 00:00:29.585 a pleural effusion,

NOTE Confidence: 0.9982168

00:00:30.350 --> 00:00:31.790 the presence or absence of

NOTE Confidence: 0.9982168

00:00:31.790 --> 00:00:33.250 lung tissue consolidation

NOTE Confidence: 0.90740377

00:00:34.110 --> 00:00:36.610 or fluid filled alveolar spaces.

NOTE Confidence: 0.9674975

00:00:40.590 --> 00:00:42.030 So one common thread in

NOTE Confidence: 0.9674975

00:00:42.030 --> 00:00:43.630 pediatric patients is that they

NOTE Confidence: 0.9674975

00:00:43.630 --> 00:00:44.930 may not be too cooperative

NOTE Confidence: 0.9674975

00:00:44.989 --> 00:00:46.504 with your exam. They may

NOTE Confidence: 0.9674975

00:00:46.504 --> 00:00:48.204 be overly tired, fussy,

NOTE Confidence: 0.9983503

00:00:48.585 --> 00:00:49.085 irritable,

NOTE Confidence: 0.9843889

00:00:49.784 --> 00:00:51.225 arching their backs and bringing

NOTE Confidence: 0.9843889

00:00:51.225 --> 00:00:52.824 the scapula together so as

NOTE Confidence: 0.9843889

00:00:52.824 --> 00:00:54.445 to not expose the posterior

NOTE Confidence: 0.9843889

00:00:54.504 --> 00:00:56.265 lung field, or just simply

NOTE Confidence: 0.9843889

00:00:56.265 --> 00:00:57.405 trying to run away.

NOTE Confidence: 0.9800601

00:00:58.184 --> 00:00:59.625 Some potential tricks of the

NOTE Confidence: 0.9800601

00:00:59.625 --> 00:01:02.210 trade include engaging a caregiver

NOTE Confidence: 0.9800601

00:01:02.270 --> 00:01:03.710 so that the child feels

NOTE Confidence: 0.9800601

00:01:03.710 --> 00:01:04.450 more comfortable,

NOTE Confidence: 0.9970155

00:01:05.069 --> 00:01:06.770 having an infant or toddler

NOTE Confidence: 0.97703856

00:01:07.150 --> 00:01:08.610 give their parent a hug.

NOTE Confidence: 0.97703856

00:01:08.750 --> 00:01:09.869 This will provide both a

NOTE Confidence: 0.97703856

00:01:09.869 --> 00:01:11.409 sense of comfort and expose

NOTE Confidence: 0.97703856

00:01:11.470 --> 00:01:12.645 their back for a good

NOTE Confidence: 0.97703856

00:01:12.645 --> 00:01:13.385 lung examination.

NOTE Confidence: 0.9878216

00:01:14.005 --> 00:01:15.385 And finally, I would encourage

NOTE Confidence: 0.9878216

00:01:15.525 --> 00:01:17.305 distraction in whatever

NOTE Confidence: 0.99256146

00:01:17.845 --> 00:01:18.905 means possible.

NOTE Confidence: 0.9743433

00:01:20.005 --> 00:01:21.604 And yes, screen time is

NOTE Confidence: 0.9743433

00:01:21.604 --> 00:01:23.284 okay during a pediatric lung

NOTE Confidence: 0.9743433

00:01:23.284 --> 00:01:23.784 pocus.

NOTE Confidence: 0.9976565

00:01:28.910 --> 00:01:30.690 So to improve your patient

NOTE Confidence: 0.9985449

00:01:31.230 --> 00:01:33.150 cooperation and optimize your time

NOTE Confidence: 0.9985449

00:01:33.150 --> 00:01:34.590 performing lung pocus, you may

NOTE Confidence: 0.9985449

00:01:34.590 --> 00:01:35.090 consider

NOTE Confidence: 0.9983881

00:01:35.550 --> 00:01:36.850 getting some warm gel.

NOTE Confidence: 0.99961877

00:01:37.685 --> 00:01:38.725 This can be done with

NOTE Confidence: 0.99961877

00:01:38.725 --> 00:01:40.185 some relatively inexpensive

NOTE Confidence: 0.9324507

00:01:40.805 --> 00:01:42.805 commercially available products if you're

NOTE Confidence: 0.9324507

00:01:42.805 --> 00:01:43.285 using,

NOTE Confidence: 0.9993685

00:01:43.605 --> 00:01:44.105 typical

NOTE Confidence: 0.9999447

00:01:44.805 --> 00:01:45.305 gel

NOTE Confidence: 0.99930084

00:01:45.765 --> 00:01:46.265 tubes.

NOTE Confidence: 0.986859

00:01:46.725 --> 00:01:47.685 If for some reason you

NOTE Confidence: 0.986859

00:01:47.685 --> 00:01:48.805 happen to be using gel

NOTE Confidence: 0.986859

00:01:48.805 --> 00:01:49.970 packets, a hack that I

NOTE Confidence: 0.986859

00:01:49.970 --> 00:01:50.770 like to use is to

NOTE Confidence: 0.986859

00:01:50.770 --> 00:01:51.730 put one or two in

NOTE Confidence: 0.986859

00:01:51.730 --> 00:01:53.010 my pocket at the beginning

NOTE Confidence: 0.986859

00:01:53.010 --> 00:01:54.370 of a shift and then

NOTE Confidence: 0.986859

00:01:54.370 --> 00:01:55.330 have them at the ready

NOTE Confidence: 0.986859

00:01:55.330 --> 00:01:56.790 when the timing is right.

NOTE Confidence: 0.9894404

00:01:57.170 --> 00:01:58.130 Now in terms of the

NOTE Confidence: 0.9894404

00:01:58.130 --> 00:02:00.050 transducer, your probe selection is

NOTE Confidence: 0.9894404

00:02:00.050 --> 00:02:01.410 gonna depend a lot on

NOTE Confidence: 0.9894404

00:02:01.410 --> 00:02:01.935 the question

NOTE Confidence: 0.96944326

00:02:06.735 --> 00:02:06.788 that you're trying to answer.

NOTE Confidence: 0.96944326

00:02:06.788 --> 00:02:06.841 In general, for younger patients

NOTE Confidence: 0.96944326

00:02:06.841 --> 00:02:06.895 and whom you're concerned mostly

NOTE Confidence: 0.96944326

00:02:06.895 --> 00:02:08.974 about pneumonia, a high frequency

NOTE Confidence: 0.96944326

00:02:08.974 --> 00:02:10.575 linear transducer is gonna provide

NOTE Confidence: 0.96944326

00:02:10.575 --> 00:02:11.555 excellent resolution.

NOTE Confidence: 0.9979721

00:02:12.815 --> 00:02:14.575 The linear transducer would be

NOTE Confidence: 0.9979721

00:02:14.575 --> 00:02:16.040 my choice as well for

NOTE Confidence: 0.9979721

00:02:16.040 --> 00:02:17.260 pneumothorax evaluation.

NOTE Confidence: 0.99565667

00:02:17.880 --> 00:02:19.080 That said, there are many

NOTE Confidence: 0.99565667

00:02:19.080 --> 00:02:20.620 instances where a low frequency

NOTE Confidence: 0.99565667

00:02:20.760 --> 00:02:21.900 curvilinear transducer

NOTE Confidence: 0.9935748

00:02:22.280 --> 00:02:24.139 will be an adequate choice,

NOTE Confidence: 0.9611217

00:02:24.520 --> 00:02:25.639 and I certainly would use

NOTE Confidence: 0.9611217

00:02:25.639 --> 00:02:27.340 this probe in my initial

NOTE Confidence: 0.9611217

00:02:27.400 --> 00:02:29.180 assessment for a pleural effusion.

NOTE Confidence: 0.995865

00:02:32.675 --> 00:02:34.755 So when clinical concern exists

NOTE Confidence: 0.995865

00:02:34.755 --> 00:02:35.895 for either pneumothorax

NOTE Confidence: 0.9994019

00:02:36.355 --> 00:02:37.175 or pneumonia,

NOTE Confidence: 0.99951243

00:02:37.635 --> 00:02:39.075 your probe of choice will

NOTE Confidence: 0.99951243

00:02:39.075 --> 00:02:40.215 be the high frequency

NOTE Confidence: 0.9837111

00:02:40.595 --> 00:02:41.495 linear transducer,

NOTE Confidence: 0.99836695

00:02:42.035 --> 00:02:42.995 and you will start by

NOTE Confidence: 0.99836695

00:02:42.995 --> 00:02:44.120 looking at the apex of

NOTE Confidence: 0.99836695

00:02:44.120 --> 00:02:46.139 the lung over the anterior

NOTE Confidence: 0.99836695

00:02:46.200 --> 00:02:47.019 lung fields.

NOTE Confidence: 0.9843734

00:02:47.879 --> 00:02:50.120 If clinical concerns exist for

NOTE Confidence: 0.9843734

00:02:50.120 --> 00:02:51.099 a pleural effusion,

NOTE Confidence: 0.9977412

00:02:51.560 --> 00:02:52.680 like would be the case

NOTE Confidence: 0.9977412

00:02:52.680 --> 00:02:54.219 in the context of trauma,

NOTE Confidence: 0.99685

00:02:54.760 --> 00:02:56.760 then using a curvilinear probe

NOTE Confidence: 0.99685

00:02:56.760 --> 00:02:58.459 to interrogate the lung basis

NOTE Confidence: 0.99959403

00:02:58.915 --> 00:03:00.595 would be my preferred initial

NOTE Confidence: 0.99959403

00:03:00.595 --> 00:03:01.095 approach.

NOTE Confidence: 0.9797723

00:03:04.195 --> 00:03:04.935 A pneumothorax

NOTE Confidence: 0.99571043

00:03:05.235 --> 00:03:06.995 occurs when air accumulates in

NOTE Confidence: 0.99571043

00:03:06.995 --> 00:03:08.355 the pleural space between the

NOTE Confidence: 0.99571043

00:03:08.355 --> 00:03:09.975 visceral and parietal pleura.

NOTE Confidence: 0.94906974

00:03:10.675 --> 00:03:11.875 The air buildup in this

NOTE Confidence: 0.94906974

00:03:11.875 --> 00:03:13.475 space, even when it is

NOTE Confidence: 0.94906974

00:03:13.475 --> 00:03:14.430 in small quantities,

NOTE Confidence: 0.98665845

00:03:15.549 --> 00:03:17.150 create visual changes on your

NOTE Confidence: 0.98665845

00:03:17.150 --> 00:03:18.989 ultrasound screen, which will help

NOTE Confidence: 0.98665845

00:03:18.989 --> 00:03:20.530 you make this diagnosis.

NOTE Confidence: 0.966039

00:03:23.389 --> 00:03:25.090 For the evaluation of pneumothorax,

NOTE Confidence: 0.9995969

00:03:25.629 --> 00:03:27.230 the following steps should be

NOTE Confidence: 0.9995969

00:03:27.230 --> 00:03:27.730 followed.

NOTE Confidence: 0.9881893

00:03:28.235 --> 00:03:29.594 First, it is important to

NOTE Confidence: 0.9881893

00:03:29.594 --> 00:03:30.715 position the patient in the

NOTE Confidence: 0.9881893

00:03:30.715 --> 00:03:31.614 supine position.

NOTE Confidence: 0.9985477

00:03:32.075 --> 00:03:33.534 This will increase your overall

NOTE Confidence: 0.9985477

00:03:33.594 --> 00:03:35.215 sensitivity for small pneumothorax

NOTE Confidence: 0.9341844

00:03:35.674 --> 00:03:37.375 detection as air

NOTE Confidence: 0.96919173

00:03:37.754 --> 00:03:38.954 will rise to the top,

NOTE Confidence: 0.96919173

00:03:38.954 --> 00:03:40.155 and therefore, in a supine

NOTE Confidence: 0.96919173

00:03:40.155 --> 00:03:41.890 position, that pneumothorax will be

NOTE Confidence: 0.96919173

00:03:41.890 --> 00:03:43.730 present between the probe and

NOTE Confidence: 0.96919173

00:03:43.730 --> 00:03:44.709 the chest wall.

NOTE Confidence: 0.9847189

00:03:45.090 --> 00:03:46.530 Evaluation of the apex with

NOTE Confidence: 0.9847189

00:03:46.530 --> 00:03:47.970 a linear probe over the

NOTE Confidence: 0.9847189

00:03:47.970 --> 00:03:48.470 midclavicular

NOTE Confidence: 0.97919834

00:03:48.850 --> 00:03:50.209 line with the indicator to

NOTE Confidence: 0.97919834

00:03:50.209 --> 00:03:51.569 the head is the ideal

NOTE Confidence: 0.97919834

00:03:51.569 --> 00:03:53.175 starting point. You will look

NOTE Confidence: 0.97919834

00:03:53.175 --> 00:03:55.035 for signs of lung sliding.

NOTE Confidence: 0.99893683

00:03:55.735 --> 00:03:57.015 If lung sliding happens to

NOTE Confidence: 0.99893683

00:03:57.015 --> 00:03:58.055 be absent, then you will

NOTE Confidence: 0.99893683

00:03:58.055 --> 00:03:59.015 want to slide the probe

NOTE Confidence: 0.99893683

00:03:59.015 --> 00:04:00.535 down the chest wall to

NOTE Confidence: 0.99893683

00:04:00.535 --> 00:04:01.815 get a general sense of

NOTE Confidence: 0.99893683

00:04:01.815 --> 00:04:02.955 how big of a pneumothorax

NOTE Confidence: 0.9998266

00:04:03.335 --> 00:04:04.715 you will be dealing with.

NOTE Confidence: 0.99922746

00:04:07.099 --> 00:04:08.379 So let's start by looking

NOTE Confidence: 0.99922746

00:04:08.379 --> 00:04:09.819 at the appearance of normal

NOTE Confidence: 0.99922746

00:04:09.819 --> 00:04:10.560 lung tissue

NOTE Confidence: 0.99785924

00:04:10.939 --> 00:04:12.239 as seen by ultrasound.

NOTE Confidence: 0.91721296

00:04:12.780 --> 00:04:13.980 As discussed, you will place

NOTE Confidence: 0.91721296

00:04:13.980 --> 00:04:15.019 the linear probe, we can

NOTE Confidence: 0.91721296

00:04:15.019 --> 00:04:16.300 get indicator to the head.

NOTE Confidence: 0.91721296

00:04:16.300 --> 00:04:17.520 If you look at the

NOTE Confidence: 0.91721296

00:04:17.580 --> 00:04:19.339 screenshot on the left, that

NOTE Confidence: 0.91721296

00:04:19.339 --> 00:04:21.500 indicator is represented by the

NOTE Confidence: 0.91721296

00:04:21.500 --> 00:04:22.000 pea.

NOTE Confidence: 0.989201

00:04:22.695 --> 00:04:23.815 The ribs can be seen

NOTE Confidence: 0.989201

00:04:23.815 --> 00:04:25.915 in cross section with posterior

NOTE Confidence: 0.989201

00:04:25.975 --> 00:04:26.955 acoustic enhancement,

NOTE Confidence: 0.999421

00:04:27.335 --> 00:04:28.375 and the goal here is

NOTE Confidence: 0.999421

00:04:28.375 --> 00:04:29.415 for the pleura to be

NOTE Confidence: 0.999421

00:04:29.415 --> 00:04:30.294 at the center of your

NOTE Confidence: 0.999421

00:04:30.294 --> 00:04:30.794 screen.

NOTE Confidence: 0.9850417

00:04:31.415 --> 00:04:32.775 Note that the ultrasound machine

NOTE Confidence: 0.9850417

00:04:32.775 --> 00:04:34.375 is set on lung window

NOTE Confidence: 0.9850417

00:04:34.375 --> 00:04:35.815 setting, and this makes the

NOTE Confidence: 0.9850417

00:04:35.815 --> 00:04:37.595 pleura bright or echogenic.

NOTE Confidence: 0.9844676

00:04:38.420 --> 00:04:40.100 Right above the pleura and

NOTE Confidence: 0.9844676

00:04:40.100 --> 00:04:41.300 between the ribs, you will

NOTE Confidence: 0.9844676

00:04:41.300 --> 00:04:42.920 find your intercostal muscle.

NOTE Confidence: 0.975684

00:04:43.460 --> 00:04:44.920 And again, the first echogenic

NOTE Confidence: 0.975684

00:04:45.220 --> 00:04:45.720 line

NOTE Confidence: 0.99341273

00:04:46.100 --> 00:04:47.720 represents the pleural interface.

NOTE Confidence: 0.95874274

00:04:48.339 --> 00:04:49.380 Now on the video on

NOTE Confidence: 0.95874274

00:04:49.380 --> 00:04:50.420 the right, you can see

NOTE Confidence: 0.95874274

00:04:50.420 --> 00:04:52.525 that there is motion, movement,

NOTE Confidence: 0.9959434

00:04:52.904 --> 00:04:53.404 shimmering

NOTE Confidence: 0.96958035

00:04:54.025 --> 00:04:55.724 of the pleura, which represents

NOTE Confidence: 0.98901826

00:04:56.025 --> 00:04:57.884 normal sliding of the visceral

NOTE Confidence: 0.98901826

00:04:57.944 --> 00:05:00.425 and parietal components during typical

NOTE Confidence: 0.98901826

00:05:00.425 --> 00:05:00.925 respirations.

NOTE Confidence: 0.9989131

00:05:01.784 --> 00:05:03.224 In addition, you will see

NOTE Confidence: 0.9989131

00:05:03.224 --> 00:05:03.724 additional

NOTE Confidence: 0.99974495

00:05:04.330 --> 00:05:04.830 horizontal

NOTE Confidence: 0.9308828

00:05:05.529 --> 00:05:07.930 lines also echogenic, which we

NOTE Confidence: 0.9308828

00:05:07.930 --> 00:05:09.550 refer to as a lines.

NOTE Confidence: 0.99934995

00:05:09.850 --> 00:05:11.310 This is a normal reverberation

NOTE Confidence: 0.99905145

00:05:11.690 --> 00:05:13.449 artifact that is seen in

NOTE Confidence: 0.99905145

00:05:13.449 --> 00:05:15.370 healthy lung tissue. We will

NOTE Confidence: 0.99905145

00:05:15.370 --> 00:05:16.330 come back to these a

NOTE Confidence: 0.99905145

00:05:16.330 --> 00:05:17.610 lines at another point in

NOTE Confidence: 0.99905145

00:05:17.610 --> 00:05:18.350 this presentation.

NOTE Confidence: 0.9862604

00:05:21.375 --> 00:05:23.375 So when air collects between

NOTE Confidence: 0.9862604

00:05:23.375 --> 00:05:25.074 the visceral and parietal pleura,

NOTE Confidence: 0.99240583

00:05:25.375 --> 00:05:26.895 the lack of lung sliding

NOTE Confidence: 0.99240583

00:05:26.895 --> 00:05:28.754 that result will cause physiologic

NOTE Confidence: 0.99240583

00:05:28.895 --> 00:05:31.714 changes easily detectable by ultrasound.

NOTE Confidence: 0.99937993

00:05:35.270 --> 00:05:36.870 Your first assessment is going

NOTE Confidence: 0.99937993

00:05:36.870 --> 00:05:38.390 to be a careful visual

NOTE Confidence: 0.99937993

00:05:38.390 --> 00:05:40.470 assessment of the pleura. These

NOTE Confidence: 0.99937993

00:05:40.470 --> 00:05:42.550 images represent lung ultrasound findings

NOTE Confidence: 0.99937993

00:05:42.550 --> 00:05:43.270 of a patient with a

NOTE Confidence: 0.99937993

00:05:43.270 --> 00:05:44.330 right sided pneumothorax.

NOTE Confidence: 0.9771753

00:05:45.190 --> 00:05:46.470 Note the normal clip on

NOTE Confidence: 0.9771753

00:05:46.470 --> 00:05:47.670 the left. You can see

NOTE Confidence: 0.9771753

00:05:47.670 --> 00:05:49.830 normal lung sliding with appearance

NOTE Confidence: 0.9771753

00:05:49.830 --> 00:05:52.235 of shimmering or sometimes described

NOTE Confidence: 0.9771753

00:05:52.235 --> 00:05:53.754 as ants marching on a

NOTE Confidence: 0.9771753

00:05:53.754 --> 00:05:54.254 log,

NOTE Confidence: 0.9992048

00:05:54.555 --> 00:05:56.875 which represents normal motion between

NOTE Confidence: 0.9992048

00:05:56.875 --> 00:05:58.335 the visceral and parietal pleura.

NOTE Confidence: 0.9657305

00:05:58.714 --> 00:06:00.335 In contrast on the abnormal

NOTE Confidence: 0.9657305

00:06:00.395 --> 00:06:01.275 side, you can see that

NOTE Confidence: 0.9657305

00:06:01.275 --> 00:06:03.430 that pleura looks stuck together.

NOTE Confidence: 0.95805156

00:06:03.970 --> 00:06:05.490 There is no discrete motion

NOTE Confidence: 0.95805156

00:06:05.490 --> 00:06:06.690 that can be seen. In

NOTE Confidence: 0.95805156

00:06:06.690 --> 00:06:07.970 this case, the probe was

NOTE Confidence: 0.95805156

00:06:07.970 --> 00:06:09.350 placed in the mid axillary

NOTE Confidence: 0.95805156

00:06:09.410 --> 00:06:11.970 line around t four precisely

NOTE Confidence: 0.95805156

00:06:11.970 --> 00:06:13.169 where a chest tube or

NOTE Confidence: 0.95805156

00:06:13.169 --> 00:06:15.570 pigtail catheter would typically be

NOTE Confidence: 0.95805156

00:06:15.570 --> 00:06:15.855 placed.

NOTE Confidence: 0.98661596

00:06:18.735 --> 00:06:20.255 So to quantify the size

NOTE Confidence: 0.98661596

00:06:20.255 --> 00:06:20.915 of pneumothorax,

NOTE Confidence: 0.99880534

00:06:21.295 --> 00:06:22.815 you want to identify its

NOTE Confidence: 0.99880534

00:06:22.815 --> 00:06:23.315 transition

NOTE Confidence: 0.9917975

00:06:23.695 --> 00:06:25.375 zone, which many will refer

NOTE Confidence: 0.9917975

00:06:25.375 --> 00:06:27.135 to as lung point. During

NOTE Confidence: 0.9917975

00:06:27.135 --> 00:06:27.635 expiration,

NOTE Confidence: 0.9852043

00:06:28.015 --> 00:06:29.695 air tracking into the pleural

NOTE Confidence: 0.9852043

00:06:29.695 --> 00:06:32.100 space will expand, while inspiration

NOTE Confidence: 0.9852043

00:06:32.240 --> 00:06:33.540 leads to air accumulation

NOTE Confidence: 0.99923176

00:06:33.920 --> 00:06:35.140 within the lungs themselves.

NOTE Confidence: 0.99867326

00:06:35.600 --> 00:06:36.560 Depending on the size of

NOTE Confidence: 0.99867326

00:06:36.560 --> 00:06:38.000 the pneumothorax, you will be

NOTE Confidence: 0.99867326

00:06:38.000 --> 00:06:38.740 able to

NOTE Confidence: 0.99782795

00:06:39.120 --> 00:06:40.480 determine at what point in

NOTE Confidence: 0.99782795

00:06:40.480 --> 00:06:42.100 the thorax a pneumothorax

NOTE Confidence: 0.9986387

00:06:42.480 --> 00:06:42.980 meets

NOTE Confidence: 0.99511087

00:06:43.354 --> 00:06:45.915 and deposes aerated lung with

NOTE Confidence: 0.99511087

00:06:45.915 --> 00:06:48.235 preserved visceral and parietal pleural

NOTE Confidence: 0.99511087

00:06:48.235 --> 00:06:48.735 sliding.

NOTE Confidence: 0.9979726

00:06:49.275 --> 00:06:50.555 Lung point is the most

NOTE Confidence: 0.9979726

00:06:50.555 --> 00:06:52.574 specific ultrasound finding for pneumothorax

NOTE Confidence: 0.97329795

00:06:53.035 --> 00:06:54.154 and can be used to

NOTE Confidence: 0.97329795

00:06:54.154 --> 00:06:55.914 distinguish from other causes of

NOTE Confidence: 0.97329795

00:06:55.914 --> 00:06:57.595 abnormal lung sliding such as

NOTE Confidence: 0.97329795

00:06:57.595 --> 00:06:58.095 pleurodesis.

NOTE Confidence: 0.99510884

00:07:01.420 --> 00:07:02.620 In this video clip, you

NOTE Confidence: 0.99510884

00:07:02.620 --> 00:07:04.380 can see lung point being

NOTE Confidence: 0.99510884

00:07:04.380 --> 00:07:04.880 demonstrated.

NOTE Confidence: 0.9743233

00:07:05.339 --> 00:07:06.540 The pleura again is the

NOTE Confidence: 0.9743233

00:07:06.540 --> 00:07:08.380 echogenic line seen here between

NOTE Confidence: 0.9743233

00:07:08.380 --> 00:07:09.820 the ribs. On the left

NOTE Confidence: 0.9743233

00:07:09.820 --> 00:07:10.780 side of the screen, you

NOTE Confidence: 0.9743233

00:07:10.780 --> 00:07:12.965 can see motion, which represents

NOTE Confidence: 0.9743233

00:07:13.185 --> 00:07:14.785 movement between the visceral and

NOTE Confidence: 0.9743233

00:07:14.785 --> 00:07:16.465 parietal pleura, while on the

NOTE Confidence: 0.9743233

00:07:16.465 --> 00:07:17.605 right side of the screen,

NOTE Confidence: 0.9743233

00:07:17.825 --> 00:07:19.605 the pleural line is still

NOTE Confidence: 0.91299474

00:07:19.985 --> 00:07:21.525 consistent with a pneumothorax.

NOTE Confidence: 0.9478666

00:07:25.490 --> 00:07:27.330 Now finally, you can use

NOTE Confidence: 0.9478666

00:07:27.330 --> 00:07:28.770 m mode, which stands for

NOTE Confidence: 0.9478666

00:07:28.770 --> 00:07:30.550 motion mode, to confirm,

NOTE Confidence: 0.99926203

00:07:31.009 --> 00:07:32.289 your suspicion for the presence

NOTE Confidence: 0.99926203

00:07:32.289 --> 00:07:33.669 or absence of a pneumothorax.

NOTE Confidence: 0.9728784

00:07:34.210 --> 00:07:35.570 So here you drop the

NOTE Confidence: 0.9728784

00:07:35.570 --> 00:07:37.490 motion line over the center

NOTE Confidence: 0.9728784

00:07:37.490 --> 00:07:38.150 of the pleura,

NOTE Confidence: 0.9291807

00:07:38.505 --> 00:07:39.705 and this will split the

NOTE Confidence: 0.9291807

00:07:39.705 --> 00:07:40.605 screen and

NOTE Confidence: 0.97453105

00:07:41.065 --> 00:07:42.345 the bottom half will detect

NOTE Confidence: 0.97453105

00:07:42.345 --> 00:07:44.265 motion over time. So the

NOTE Confidence: 0.97453105

00:07:44.265 --> 00:07:45.865 same concept applies. When there

NOTE Confidence: 0.97453105

00:07:45.865 --> 00:07:46.365 is

NOTE Confidence: 0.93445504

00:07:46.745 --> 00:07:48.745 opposition and normal sliding between

NOTE Confidence: 0.93445504

00:07:48.745 --> 00:07:50.205 the visceral and parietal pleura,

NOTE Confidence: 0.99979335

00:07:50.600 --> 00:07:51.720 you will see a distinct

NOTE Confidence: 0.99979335

00:07:51.720 --> 00:07:52.220 transition

NOTE Confidence: 0.9965604

00:07:52.600 --> 00:07:53.960 as your ultrasound device is

NOTE Confidence: 0.9965604

00:07:53.960 --> 00:07:55.100 picking up this movement.

NOTE Confidence: 0.99842316

00:07:55.639 --> 00:07:57.000 This is often referred to

NOTE Confidence: 0.99842316

00:07:57.000 --> 00:07:58.220 as a seashore

NOTE Confidence: 0.99649566

00:07:58.600 --> 00:07:59.720 sign, which is a good

NOTE Confidence: 0.99649566

00:07:59.720 --> 00:08:01.080 thing because most of us

NOTE Confidence: 0.99649566

00:08:01.080 --> 00:08:02.120 would rather be at the

NOTE Confidence: 0.99649566

00:08:02.120 --> 00:08:03.480 beach than listening to this

NOTE Confidence: 0.99649566

00:08:03.480 --> 00:08:03.980 lecture.

NOTE Confidence: 0.9811637

00:08:06.655 --> 00:08:08.195 In contrast, when a pneumothorax

NOTE Confidence: 0.9811637

00:08:08.495 --> 00:08:09.155 is present,

NOTE Confidence: 0.98261756

00:08:09.535 --> 00:08:11.855 your ultrasound cannot detect motion

NOTE Confidence: 0.98261756

00:08:11.855 --> 00:08:14.015 between the pleura. Therefore, the

NOTE Confidence: 0.98261756

00:08:14.015 --> 00:08:15.855 appearance of a barcode will

NOTE Confidence: 0.98261756

00:08:15.855 --> 00:08:16.515 be present,

NOTE Confidence: 0.9896462

00:08:16.895 --> 00:08:18.415 which is only fitting because

NOTE Confidence: 0.9896462

00:08:18.415 --> 00:08:19.830 the next steps are likely

NOTE Confidence: 0.9896462

00:08:19.830 --> 00:08:22.070 to add additional expenses to

NOTE Confidence: 0.9896462

00:08:22.070 --> 00:08:23.130 the health care system.

NOTE Confidence: 0.980284

00:08:26.150 --> 00:08:27.110 So here we have a

NOTE Confidence: 0.980284

00:08:27.110 --> 00:08:28.310 case of a fourteen year

NOTE Confidence: 0.980284

00:08:28.310 --> 00:08:30.250 old with a spontaneous pneumothorax

NOTE Confidence: 0.9864119

00:08:30.790 --> 00:08:32.390 who was awoken up suddenly

NOTE Confidence: 0.9864119

00:08:32.390 --> 00:08:33.955 with some shortness of breath

NOTE Confidence: 0.9864119

00:08:33.955 --> 00:08:34.855 and chest pain.

NOTE Confidence: 0.9927559

00:08:35.235 --> 00:08:37.155 Ultrasound images of the apex

NOTE Confidence: 0.9927559

00:08:37.155 --> 00:08:37.815 are significant

NOTE Confidence: 0.9690849

00:08:38.115 --> 00:08:39.795 for absent lung sliding on

NOTE Confidence: 0.9690849

00:08:39.795 --> 00:08:41.715 the video clip. In addition,

NOTE Confidence: 0.9690849

00:08:41.715 --> 00:08:43.315 when m mode was applied,

NOTE Confidence: 0.9690849

00:08:43.315 --> 00:08:44.835 there was a positive barcode

NOTE Confidence: 0.9690849

00:08:44.835 --> 00:08:47.259 sign with straight horizontal lines

NOTE Confidence: 0.9690849

00:08:47.259 --> 00:08:48.879 above and below the pleura

NOTE Confidence: 0.9380323

00:08:49.179 --> 00:08:50.779 as no transition zone or

NOTE Confidence: 0.9380323

00:08:50.779 --> 00:08:52.459 lung point was seen. By

NOTE Confidence: 0.9380323

00:08:52.459 --> 00:08:54.300 ultrasound, this patient was triaged

NOTE Confidence: 0.9380323

00:08:54.300 --> 00:08:55.920 into the major treatment area

NOTE Confidence: 0.9380323

00:08:55.980 --> 00:08:57.579 where chest x rays thirty

NOTE Confidence: 0.9380323

00:08:57.579 --> 00:08:59.645 minutes later confirm the presence

NOTE Confidence: 0.9380323

00:08:59.645 --> 00:09:01.184 of a large right sided

NOTE Confidence: 0.99910814

00:09:01.565 --> 00:09:02.065 pneumothorax.

NOTE Confidence: 0.98706543

00:09:03.885 --> 00:09:05.505 Let us now shift gears

NOTE Confidence: 0.98706543

00:09:05.565 --> 00:09:07.245 and look at ultrasound for

NOTE Confidence: 0.98706543

00:09:07.245 --> 00:09:09.425 the detection of pleural effusion,

NOTE Confidence: 0.9983623

00:09:10.205 --> 00:09:11.584 be it simple fluid,

NOTE Confidence: 0.99538195

00:09:11.885 --> 00:09:13.985 complex fluid, or hemothorax.

NOTE Confidence: 0.9882334

00:09:17.780 --> 00:09:19.300 So for assessment of pleural

NOTE Confidence: 0.9882334

00:09:19.300 --> 00:09:21.059 effusion, you will want a

NOTE Confidence: 0.9882334

00:09:21.059 --> 00:09:22.280 curvilinear probe,

NOTE Confidence: 0.9745481

00:09:22.820 --> 00:09:24.600 which allows for greater tissue

NOTE Confidence: 0.9745481

00:09:24.660 --> 00:09:25.160 penetration.

NOTE Confidence: 0.98450404

00:09:25.700 --> 00:09:26.500 And you can do this

NOTE Confidence: 0.98450404

00:09:26.500 --> 00:09:28.260 in the supine position, again,

NOTE Confidence: 0.98450404

00:09:28.260 --> 00:09:29.475 with the indicator to the

NOTE Confidence: 0.98450404

00:09:29.475 --> 00:09:30.375 patient's head.

NOTE Confidence: 0.9602251

00:09:31.075 --> 00:09:32.195 Now here, you want to

NOTE Confidence: 0.9602251

00:09:32.195 --> 00:09:32.695 evaluate

NOTE Confidence: 0.99935037

00:09:33.075 --> 00:09:34.035 at the level of the

NOTE Confidence: 0.99935037

00:09:34.035 --> 00:09:34.535 diaphragm

NOTE Confidence: 0.97556794

00:09:34.915 --> 00:09:36.675 with a starting point roughly

NOTE Confidence: 0.97556794

00:09:36.675 --> 00:09:38.695 around the mid axillary line.

NOTE Confidence: 0.99676156

00:09:39.235 --> 00:09:40.515 You'll have to obtain views

NOTE Confidence: 0.99676156

00:09:40.515 --> 00:09:41.395 in both the right upper

NOTE Confidence: 0.99676156

00:09:41.395 --> 00:09:42.929 quadrant and the left upper

NOTE Confidence: 0.99676156

00:09:42.929 --> 00:09:44.630 quadrant for a complete exam.

NOTE Confidence: 0.99676156

00:09:44.850 --> 00:09:46.290 As an example, let's take

NOTE Confidence: 0.99676156

00:09:46.290 --> 00:09:47.330 a look at the images

NOTE Confidence: 0.99676156

00:09:47.330 --> 00:09:48.610 created in the left upper

NOTE Confidence: 0.99676156

00:09:48.610 --> 00:09:49.110 quadrant.

NOTE Confidence: 0.9676253

00:09:49.730 --> 00:09:51.890 The image produced should contain

NOTE Confidence: 0.9676253

00:09:51.890 --> 00:09:53.429 the following anatomy,

NOTE Confidence: 0.9957892

00:09:54.450 --> 00:09:54.950 ribs,

NOTE Confidence: 0.9844977

00:09:55.975 --> 00:09:57.735 spleen towards the top left

NOTE Confidence: 0.9844977

00:09:57.735 --> 00:09:58.475 of the screen,

NOTE Confidence: 0.9934091

00:09:59.334 --> 00:10:01.095 kidney towards the bottom right

NOTE Confidence: 0.9934091

00:10:01.095 --> 00:10:01.834 of the spleen,

NOTE Confidence: 0.9335912

00:10:02.454 --> 00:10:03.975 the diaphragm, which is a

NOTE Confidence: 0.9335912

00:10:03.975 --> 00:10:06.714 thin, curved, echogenic structure,

NOTE Confidence: 0.9982496

00:10:07.095 --> 00:10:09.254 which marks the transition zone

NOTE Confidence: 0.9982496

00:10:09.254 --> 00:10:11.600 between abdomen and lung. In

NOTE Confidence: 0.9982496

00:10:11.600 --> 00:10:12.500 normal circumstances,

NOTE Confidence: 0.99759144

00:10:12.960 --> 00:10:14.740 you will see mirror imaging

NOTE Confidence: 0.99759144

00:10:14.800 --> 00:10:16.480 or reflection of the spleen

NOTE Confidence: 0.99759144

00:10:16.480 --> 00:10:16.980 tissue

NOTE Confidence: 0.9964609

00:10:17.280 --> 00:10:18.179 flipped behind

NOTE Confidence: 0.9996295

00:10:18.720 --> 00:10:19.540 the diaphragm.

NOTE Confidence: 0.97504246

00:10:20.160 --> 00:10:22.720 However, when fluid collects at

NOTE Confidence: 0.97504246

00:10:22.720 --> 00:10:23.380 the costophonic

NOTE Confidence: 0.9724872

00:10:23.760 --> 00:10:24.260 angle,

NOTE Confidence: 0.9975393

00:10:24.595 --> 00:10:26.355 instead of spleen tissue reflected

NOTE Confidence: 0.9975393

00:10:26.355 --> 00:10:27.715 behind the diaphragm, you will

NOTE Confidence: 0.9975393

00:10:27.715 --> 00:10:29.154 now be able to detect

NOTE Confidence: 0.9975393

00:10:29.154 --> 00:10:30.215 a fluid collection,

NOTE Confidence: 0.9995813

00:10:30.595 --> 00:10:31.554 which will also make the

NOTE Confidence: 0.9995813

00:10:31.554 --> 00:10:33.154 thoracic spine more easy to

NOTE Confidence: 0.9995813

00:10:33.154 --> 00:10:33.654 identify.

NOTE Confidence: 0.98860633

00:10:37.840 --> 00:10:39.440 In this video clip, we

NOTE Confidence: 0.98860633

00:10:39.440 --> 00:10:41.520 can see normal appearance of

NOTE Confidence: 0.98860633

00:10:41.520 --> 00:10:42.800 anatomy in the left upper

NOTE Confidence: 0.98860633

00:10:42.800 --> 00:10:43.300 quadrant.

NOTE Confidence: 0.99854463

00:10:44.000 --> 00:10:45.460 The spleen is a relatively

NOTE Confidence: 0.99854463

00:10:45.520 --> 00:10:46.020 homogeneous

NOTE Confidence: 0.97552425

00:10:46.559 --> 00:10:47.920 structure, which appears in the

NOTE Confidence: 0.97552425

00:10:47.920 --> 00:10:48.980 middle of the screen.

NOTE Confidence: 0.9983101

00:10:49.440 --> 00:10:50.240 To the right of the

NOTE Confidence: 0.9983101

00:10:50.240 --> 00:10:51.840 screen and below the spleen,

NOTE Confidence: 0.9983101

00:10:51.840 --> 00:10:52.995 you will see the left

NOTE Confidence: 0.9983101

00:10:53.154 --> 00:10:53.654 kidney.

NOTE Confidence: 0.99825394

00:10:54.195 --> 00:10:55.554 The lungs will be above

NOTE Confidence: 0.99825394

00:10:55.554 --> 00:10:56.434 and to the left of

NOTE Confidence: 0.99825394

00:10:56.434 --> 00:10:58.035 the spleen and not visible

NOTE Confidence: 0.99825394

00:10:58.035 --> 00:10:58.934 on these images.

NOTE Confidence: 0.9986337

00:10:59.475 --> 00:11:00.995 The most important structure to

NOTE Confidence: 0.9986337

00:11:00.995 --> 00:11:02.214 note is the diaphragm,

NOTE Confidence: 0.97529435

00:11:02.675 --> 00:11:04.275 which will demarcate the area

NOTE Confidence: 0.97529435

00:11:04.275 --> 00:11:05.095 of the costropenic

NOTE Confidence: 0.9909781

00:11:05.395 --> 00:11:07.319 angle where fluid would build

NOTE Confidence: 0.9909781

00:11:07.319 --> 00:11:08.600 up should it be present.

NOTE Confidence: 0.9909781

00:11:08.600 --> 00:11:09.639 But in this case, we

NOTE Confidence: 0.9909781

00:11:09.639 --> 00:11:11.399 see mirror imaging and reflection

NOTE Confidence: 0.9909781

00:11:11.399 --> 00:11:12.679 of the spleen behind the

NOTE Confidence: 0.9909781

00:11:12.679 --> 00:11:14.540 diaphragm, which you would expect

NOTE Confidence: 0.9909781

00:11:14.759 --> 00:11:16.059 in normal circumstances.

NOTE Confidence: 0.9289787

00:11:19.985 --> 00:11:21.505 In this video clip, you

NOTE Confidence: 0.9289787

00:11:21.505 --> 00:11:22.945 can see a moderate sized

NOTE Confidence: 0.9289787

00:11:22.945 --> 00:11:24.785 portal diffusion by ultrasound with

NOTE Confidence: 0.9289787

00:11:24.785 --> 00:11:26.485 its corresponding chest x-ray.

NOTE Confidence: 0.99663734

00:11:26.945 --> 00:11:28.705 The fluid is accumulating above

NOTE Confidence: 0.99663734

00:11:28.705 --> 00:11:29.905 the liver and above the

NOTE Confidence: 0.99663734

00:11:29.905 --> 00:11:30.405 diaphragm.

NOTE Confidence: 0.9944036

00:11:31.070 --> 00:11:32.589 And in this instance, you

NOTE Confidence: 0.9944036

00:11:32.589 --> 00:11:34.190 can also see diseased lung

NOTE Confidence: 0.9944036

00:11:34.190 --> 00:11:36.050 tissue within the pleural effusion.

NOTE Confidence: 0.9944036

00:11:36.350 --> 00:11:38.350 An additional important finding is

NOTE Confidence: 0.9944036

00:11:38.350 --> 00:11:40.370 the thoracic spine sign,

NOTE Confidence: 0.99392515

00:11:40.830 --> 00:11:42.370 which can only be visualized

NOTE Confidence: 0.99392515

00:11:42.510 --> 00:11:44.270 when there's enough fluid present

NOTE Confidence: 0.99392515

00:11:44.270 --> 00:11:46.095 between the ultrasound probe and

NOTE Confidence: 0.99392515

00:11:46.095 --> 00:11:48.334 the thoracic vertebral body that

NOTE Confidence: 0.99392515

00:11:48.334 --> 00:11:51.074 allows for sufficient ultrasound transmission

NOTE Confidence: 0.99942875

00:11:51.375 --> 00:11:53.074 to reach and be reflected

NOTE Confidence: 0.99942875

00:11:53.214 --> 00:11:54.834 by the thoracic spine.

NOTE Confidence: 0.9944656

00:11:55.454 --> 00:11:56.574 This is a key finding

NOTE Confidence: 0.9944656

00:11:56.574 --> 00:11:58.195 to look for when diagnosing

NOTE Confidence: 0.9944656

00:11:58.415 --> 00:11:59.394 pleural effusions

NOTE Confidence: 0.99615467

00:11:59.870 --> 00:12:01.550 or hemothorax in the setting

NOTE Confidence: 0.99615467

00:12:01.550 --> 00:12:02.209 of trauma.

NOTE Confidence: 0.9493259

00:12:05.550 --> 00:12:06.910 In this video clip, we

NOTE Confidence: 0.9493259

00:12:06.910 --> 00:12:08.850 can see a large postoperative

NOTE Confidence: 0.9493259

00:12:09.149 --> 00:12:10.750 pleural effusion in a three

NOTE Confidence: 0.9493259

00:12:10.750 --> 00:12:11.949 year old who has status

NOTE Confidence: 0.9493259

00:12:11.949 --> 00:12:13.170 post liver transplantation.

NOTE Confidence: 0.99622005

00:12:14.269 --> 00:12:15.475 You can clearly make out

NOTE Confidence: 0.99622005

00:12:15.475 --> 00:12:17.554 a thoracic spine sign and

NOTE Confidence: 0.99622005

00:12:17.554 --> 00:12:19.554 see lung tissue movement within

NOTE Confidence: 0.99622005

00:12:19.554 --> 00:12:21.255 this large fluid collection.

NOTE Confidence: 0.989911

00:12:25.315 --> 00:12:26.675 In this case, we can

NOTE Confidence: 0.989911

00:12:26.675 --> 00:12:28.295 see a massive

NOTE Confidence: 0.91404206

00:12:28.995 --> 00:12:29.815 left sided

NOTE Confidence: 0.83833086

00:12:30.330 --> 00:12:31.630 paranemonic effusion

NOTE Confidence: 0.98359257

00:12:32.170 --> 00:12:33.130 in an eight year old

NOTE Confidence: 0.98359257

00:12:33.130 --> 00:12:34.970 who was eventually diagnosed with

NOTE Confidence: 0.98359257

00:12:34.970 --> 00:12:35.470 pneumonia

NOTE Confidence: 0.9510025

00:12:36.170 --> 00:12:37.870 caused by group a strep,

NOTE Confidence: 0.9510025

00:12:37.930 --> 00:12:39.309 which grew out of her

NOTE Confidence: 0.9510025

00:12:39.370 --> 00:12:39.870 thoracentesis

NOTE Confidence: 0.9993706

00:12:40.330 --> 00:12:40.830 fluid.

NOTE Confidence: 0.98887396

00:12:43.850 --> 00:12:46.304 In contrast, smaller pleural effusions

NOTE Confidence: 0.98887396

00:12:46.365 --> 00:12:47.325 may be more subtle to

NOTE Confidence: 0.98887396

00:12:47.325 --> 00:12:49.085 pick up, especially when a

NOTE Confidence: 0.98887396

00:12:49.085 --> 00:12:50.945 coexisting pneumonia is present.

NOTE Confidence: 0.9957795

00:12:51.404 --> 00:12:52.925 In this example, we have

NOTE Confidence: 0.9957795

00:12:52.925 --> 00:12:54.205 an eleven year old with

NOTE Confidence: 0.9957795

00:12:54.205 --> 00:12:55.485 a right lower lobe pneumonia

NOTE Confidence: 0.9957795

00:12:55.485 --> 00:12:56.625 as seen by X-ray.

NOTE Confidence: 0.99833226

00:12:57.260 --> 00:12:59.020 In this particular ultrasound, there's

NOTE Confidence: 0.99833226

00:12:59.020 --> 00:13:00.700 only a small area that

NOTE Confidence: 0.99833226

00:13:00.700 --> 00:13:02.000 appears hypoechoic

NOTE Confidence: 0.98521787

00:13:02.620 --> 00:13:04.220 with a visible spine sign

NOTE Confidence: 0.98521787

00:13:04.220 --> 00:13:05.600 just deep to this collection.

NOTE Confidence: 0.9576724

00:13:06.059 --> 00:13:07.900 Lung hepatization is present, so

NOTE Confidence: 0.9576724

00:13:07.900 --> 00:13:09.520 this ultrasound would be diagnostic

NOTE Confidence: 0.9002348

00:13:09.875 --> 00:13:11.475 for pneumonia with a small,

NOTE Confidence: 0.9002348

00:13:11.475 --> 00:13:13.014 nondrainable pleural effusion.

NOTE Confidence: 0.99737096

00:13:13.875 --> 00:13:15.315 In this next example, we

NOTE Confidence: 0.99737096

00:13:15.315 --> 00:13:16.274 have a twelve year old

NOTE Confidence: 0.99737096

00:13:16.274 --> 00:13:17.654 with right lower lobe pneumonia.

NOTE Confidence: 0.98256415

00:13:18.035 --> 00:13:19.635 The costophrenic angle does have

NOTE Confidence: 0.98256415

00:13:19.635 --> 00:13:21.075 a blunted appearance on chest

NOTE Confidence: 0.98256415

00:13:21.075 --> 00:13:22.834 x-ray, making a diagnosis of

NOTE Confidence: 0.98256415

00:13:22.834 --> 00:13:23.815 effusion difficult.

NOTE Confidence: 0.9994208

00:13:24.679 --> 00:13:26.679 However, ultrasound evaluation of this

NOTE Confidence: 0.9994208

00:13:26.679 --> 00:13:27.660 area reveals

NOTE Confidence: 0.8913398

00:13:28.040 --> 00:13:28.540 hepatization

NOTE Confidence: 0.9943261

00:13:28.920 --> 00:13:30.700 and bronchograms, which are consistent

NOTE Confidence: 0.9943261

00:13:30.760 --> 00:13:32.360 with infiltrate alone, and there's

NOTE Confidence: 0.9943261

00:13:32.360 --> 00:13:34.120 no secondary pleural effusion to

NOTE Confidence: 0.9943261

00:13:34.120 --> 00:13:34.780 be seen.

NOTE Confidence: 0.9955181

00:13:35.240 --> 00:13:36.360 Let's take a moment to

NOTE Confidence: 0.9955181

00:13:36.360 --> 00:13:37.559 look at these two ultrasound

NOTE Confidence: 0.9955181

00:13:37.559 --> 00:13:39.225 clips side by side so

NOTE Confidence: 0.9955181

00:13:39.225 --> 00:13:40.845 you can appreciate the difference

NOTE Confidence: 0.9955181

00:13:40.905 --> 00:13:42.365 between no effusion

NOTE Confidence: 0.87675637

00:13:42.825 --> 00:13:44.045 and a small effusion.

NOTE Confidence: 0.9094922

00:13:51.625 --> 00:13:52.505 Here you can see a

NOTE Confidence: 0.9094922

00:13:52.505 --> 00:13:54.620 rather complex complex pleural effusion

NOTE Confidence: 0.9094922

00:13:54.839 --> 00:13:57.179 with internal septations and honeycomb

NOTE Confidence: 0.9094922

00:13:57.480 --> 00:13:58.300 like appearance.

NOTE Confidence: 0.9965136

00:13:59.480 --> 00:14:00.679 Note at the bottom of

NOTE Confidence: 0.9965136

00:14:00.679 --> 00:14:02.459 the screen that the thoracic

NOTE Confidence: 0.9965136

00:14:02.519 --> 00:14:04.459 spine can be clearly visualized.

NOTE Confidence: 0.9927616

00:14:08.485 --> 00:14:09.525 Now if you happen to

NOTE Confidence: 0.9927616

00:14:09.525 --> 00:14:11.045 be using a linear probe

NOTE Confidence: 0.9927616

00:14:11.045 --> 00:14:12.745 to assess for pneumothorax

NOTE Confidence: 0.9850284

00:14:13.525 --> 00:14:15.285 or a pediatric pneumonia, you

NOTE Confidence: 0.9850284

00:14:15.285 --> 00:14:16.325 should be able to detect

NOTE Confidence: 0.9850284

00:14:16.325 --> 00:14:17.765 pleural effusion should it be

NOTE Confidence: 0.9850284

00:14:17.765 --> 00:14:18.265 present.

NOTE Confidence: 0.99950475

00:14:18.725 --> 00:14:20.325 And the appearance of fluid

NOTE Confidence: 0.99950475

00:14:20.325 --> 00:14:22.025 within the visceral and parietal

NOTE Confidence: 0.99950475

00:14:22.165 --> 00:14:23.550 pleura will give you a

NOTE Confidence: 0.99950475

00:14:23.550 --> 00:14:25.390 much different image than if

NOTE Confidence: 0.99950475

00:14:25.390 --> 00:14:27.490 that potential space was occupied

NOTE Confidence: 0.99950475

00:14:27.550 --> 00:14:28.290 by air.

NOTE Confidence: 0.97154254

00:14:29.870 --> 00:14:30.670 So let's take a look

NOTE Confidence: 0.97154254

00:14:30.670 --> 00:14:31.630 at this clip with the

NOTE Confidence: 0.97154254

00:14:31.630 --> 00:14:33.410 pleural effusion as seen by

NOTE Confidence: 0.97154254

00:14:33.550 --> 00:14:34.990 a linear probe. First, we'll

NOTE Confidence: 0.97154254

00:14:34.990 --> 00:14:36.195 make note of the ribs,

NOTE Confidence: 0.97154254

00:14:36.435 --> 00:14:38.195 which are superficial bony structures

NOTE Confidence: 0.97154254

00:14:38.195 --> 00:14:39.475 that should be bright or

NOTE Confidence: 0.97154254

00:14:39.475 --> 00:14:41.235 echogenic, but also cast a

NOTE Confidence: 0.97154254

00:14:41.235 --> 00:14:41.735 shadow.

NOTE Confidence: 0.9737772

00:14:42.035 --> 00:14:43.795 The pleural effusion will displace

NOTE Confidence: 0.9737772

00:14:43.795 --> 00:14:45.015 the pleura posteriorly.

NOTE Confidence: 0.98470736

00:14:45.395 --> 00:14:46.275 And in this case, we

NOTE Confidence: 0.98470736

00:14:46.275 --> 00:14:48.195 lose our normal sonographic lung

NOTE Confidence: 0.98470736

00:14:48.195 --> 00:14:49.910 architecture as there is no

NOTE Confidence: 0.98470736

00:14:49.910 --> 00:14:50.410 reverberation

NOTE Confidence: 0.9709468

00:14:50.950 --> 00:14:52.310 a line artifacts to be

NOTE Confidence: 0.9709468

00:14:52.310 --> 00:14:52.810 seen.

NOTE Confidence: 0.9804737

00:14:53.270 --> 00:14:54.550 So the pleural effusion here

NOTE Confidence: 0.9804737

00:14:54.550 --> 00:14:55.750 can be detected as an

NOTE Confidence: 0.9804737

00:14:55.750 --> 00:14:58.010 anechoic fluid collection that is

NOTE Confidence: 0.9804737

00:14:58.150 --> 00:14:59.830 below the ribs but in

NOTE Confidence: 0.9804737

00:14:59.830 --> 00:15:01.050 front of the lungs.

NOTE Confidence: 0.9942046

00:15:03.695 --> 00:15:05.135 And in this example, we

NOTE Confidence: 0.9942046

00:15:05.135 --> 00:15:06.675 can see a pleural effusion

NOTE Confidence: 0.9942046

00:15:06.815 --> 00:15:08.595 filling in the left costophrenic

NOTE Confidence: 0.9942046

00:15:08.895 --> 00:15:09.395 angle.

NOTE Confidence: 0.9717636

00:15:10.015 --> 00:15:11.535 With the linear probe, you

NOTE Confidence: 0.9717636

00:15:11.535 --> 00:15:13.615 can actually see tremendous resolution

NOTE Confidence: 0.9717636

00:15:13.615 --> 00:15:15.615 of the diaphragm and note

NOTE Confidence: 0.9717636

00:15:15.615 --> 00:15:17.110 that it has a double

NOTE Confidence: 0.9717636

00:15:17.110 --> 00:15:18.950 line appearance as the muscle

NOTE Confidence: 0.9717636

00:15:18.950 --> 00:15:20.490 is found between the parietal

NOTE Confidence: 0.9717636

00:15:20.630 --> 00:15:21.910 pleura and the lying of

NOTE Confidence: 0.9717636

00:15:21.910 --> 00:15:22.570 the peritoneum.

NOTE Confidence: 0.9986415

00:15:23.190 --> 00:15:24.490 Due to the poor penetration

NOTE Confidence: 0.96096575

00:15:24.870 --> 00:15:26.490 available with a linear probe,

NOTE Confidence: 0.96096575

00:15:26.790 --> 00:15:29.190 we cannot reliably assess for

NOTE Confidence: 0.96096575

00:15:29.190 --> 00:15:30.555 mirror imaging artifact

NOTE Confidence: 0.9981768

00:15:30.875 --> 00:15:31.995 nor for the presence of

NOTE Confidence: 0.9981768

00:15:31.995 --> 00:15:33.935 a thoracic spine sign.