## WEBVTT

00:00:00.000 --> 00:00:02.460 Support for Yale Cancer Answers

NOTE Confidence: 0.8524915

 $00:00:02.460 \longrightarrow 00:00:04.920$  comes from AstraZeneca, dedicated

NOTE Confidence: 0.8524915

 $00:00:05.003 \longrightarrow 00:00:07.353$  to advancing options and providing

NOTE Confidence: 0.8524915

 $00:00:07.353 \longrightarrow 00:00:10.310$  hope for people living with cancer.

NOTE Confidence: 0.8524915

 $00:00:10.310 \longrightarrow 00:00:13.958$  More information at astrazeneca-us.com.

NOTE Confidence: 0.8524915

 $00:00:13.960 \longrightarrow 00:00:15.856$  Welcome to Yale Cancer Answers with

NOTE Confidence: 0.8524915

00:00:15.856 --> 00:00:17.945 your host doctor Anees Chappar.

NOTE Confidence: 0.8524915

 $00{:}00{:}17.945 \dashrightarrow 00{:}00{:}19.845$  Yale Cancer Answers features the

NOTE Confidence: 0.8524915

00:00:19.845 --> 00:00:22.128 latest information on cancer care by

NOTE Confidence: 0.8524915

 $00:00:22.128 \longrightarrow 00:00:23.576$  welcoming oncologists and specialists

NOTE Confidence: 0.8524915

 $00:00:23.576 \longrightarrow 00:00:26.098$  who are on the forefront of the

NOTE Confidence: 0.8524915

 $00:00:26.098 \longrightarrow 00:00:28.240$  battle to fight cancer. This week,

NOTE Confidence: 0.8524915

 $00{:}00{:}28.240 \to 00{:}00{:}30.070$  it's a conversation about the

NOTE Confidence: 0.8524915

 $00:00:30.070 \longrightarrow 00:00:31.534$  surgical management of thoracic

NOTE Confidence: 0.8524915

 $00:00:31.534 \longrightarrow 00:00:33.237$  malignancies with Doctor Andrew Dhanasopon

00:00:33.240 --> 00:00:35.436 Doctor Dhanasopon is an

NOTE Confidence: 0.8524915

 $00{:}00{:}35.436 {\:\dashrightarrow\:} 00{:}00{:}36.900$  assistant professor of thoracic

NOTE Confidence: 0.8524915

 $00:00:36.966 \longrightarrow 00:00:39.304$  surgery at the Yale School of Medicine,

NOTE Confidence: 0.8524915

 $00:00:39.310 \longrightarrow 00:00:42.118$  where Doctor Chagpar is a

NOTE Confidence: 0.8524915

00:00:42.118 --> 00:00:43.990 professor of surgical oncology.

NOTE Confidence: 0.8402907

 $00:00:44.420 \longrightarrow 00:00:46.605$  Andrew, maybe we can start

NOTE Confidence: 0.8402907

00:00:46.605 --> 00:00:49.620 off by you telling us a little

NOTE Confidence: 0.8402907

 $00:00:49.620 \longrightarrow 00:00:53.517$  bit more about what it is that you do.

NOTE Confidence: 0.8402907

 $00{:}00{:}53.520 \to 00{:}00{:}56.190$  Thoracic surgeons operate on the chest

NOTE Confidence: 0.8402907

00:00:56.190 --> 00:00:58.709 most commonly cancers within the chest,

NOTE Confidence: 0.8402907

 $00{:}00{:}58.710 \dashrightarrow 00{:}01{:}01.014$  but we take care of patients

NOTE Confidence: 0.8402907

 $00:01:01.014 \longrightarrow 00:01:03.142$  with both malignant and benign

NOTE Confidence: 0.8402907

 $00{:}01{:}03.142 \dashrightarrow 00{:}01{:}05.210$  conditions within the chest.

NOTE Confidence: 0.8402907

 $00{:}01{:}05.210 \dashrightarrow 00{:}01{:}07.200$  The majority of our patients

NOTE Confidence: 0.8402907

00:01:07.200 --> 00:01:09.970 tend to be lung cancer patients,

NOTE Confidence: 0.8402907

 $00:01:09.970 \longrightarrow 00:01:13.036$  and so that tends to be the

00:01:13.036 --> 00:01:14.980 majority of our practice.

NOTE Confidence: 0.8220748

 $00:01:14.980 \longrightarrow 00:01:18.742$  Lung cancer seems to be

NOTE Confidence: 0.8220748

00:01:18.742 --> 00:01:21.890 pretty prevalent. Is that still the case?

NOTE Confidence: 0.8220748

 $00:01:21.890 \longrightarrow 00:01:26.132$  Yes, this is still the

NOTE Confidence: 0.8220748

 $00:01:26.132 \longrightarrow 00:01:30.240$  case due to smoking history.

NOTE Confidence: 0.8220748

 $00:01:30.240 \longrightarrow 00:01:33.416$  And it is the number one cause of

NOTE Confidence: 0.8220748

00:01:33.416 --> 00:01:36.960 death by cancer in the United States.

NOTE Confidence: 0.8220748

 $00:01:36.960 \longrightarrow 00:01:40.096$  And it is the second most common

NOTE Confidence: 0.8220748

 $00:01:40.100 \longrightarrow 00:01:42.782$  highest incidence of cancer for both

NOTE Confidence: 0.8220748

 $00:01:42.782 \longrightarrow 00:01:45.918$  men and women.

NOTE Confidence: 0.8575296

 $00:01:45.920 \longrightarrow 00:01:47.712$  And when you think about that,

NOTE Confidence: 0.8575296

 $00:01:47.712 \longrightarrow 00:01:50.400$  often on this show,

NOTE Confidence: 0.8575296

 $00:01:50.400 \longrightarrow 00:01:53.634$  we talk about all kinds of different

NOTE Confidence: 0.8575296

 $00:01:53.634 \longrightarrow 00:01:56.670$  modalities that people use to treat cancer,

NOTE Confidence: 0.8575296

 $00:01:56.670 \longrightarrow 00:01:59.418$  whether it's surgery or whether it's

 $00:01:59.418 \longrightarrow 00:02:02.030$  chemotherapy or whether it's radiation.

NOTE Confidence: 0.8575296

 $00:02:02.030 \longrightarrow 00:02:04.595$  How many patients actually, or

NOTE Confidence: 0.8575296

 $00:02:04.595 \longrightarrow 00:02:07.160$  what proportion of lung cancer

NOTE Confidence: 0.8575296

00:02:07.252 --> 00:02:09.987 patients actually are treated with

NOTE Confidence: 0.8575296

 $00:02:09.987 \longrightarrow 00:02:12.722$  surgery? Is that the majority,

NOTE Confidence: 0.87110996

 $00:02:12.730 \longrightarrow 00:02:15.999$  or is that a pretty low number

NOTE Confidence: 0.87110996

 $00:02:15.999 \longrightarrow 00:02:19.304$  compared to the total number of

NOTE Confidence: 0.87110996

00:02:19.304 --> 00:02:22.892 patients who are diagnosed each year?

NOTE Confidence: 0.87110996

 $00{:}02{:}22.900 \dashrightarrow 00{:}02{:}25.990$  The number of patients who are

NOTE Confidence: 0.87110996

 $00{:}02{:}25.990 \dashrightarrow 00{:}02{:}29.257$  eligible for surgery is not the

NOTE Confidence: 0.87110996

 $00{:}02{:}29.257 \dashrightarrow 00{:}02{:}31.796$  majority of patients, however, as

NOTE Confidence: 0.87110996

 $00:02:31.796 \longrightarrow 00:02:34.862$  we detect more and more lung cancer

NOTE Confidence: 0.87110996

00:02:34.862 --> 00:02:37.108 through lung cancer screening,

NOTE Confidence: 0.87110996

 $00:02:37.110 \longrightarrow 00:02:39.415$  more patients are identified earlier

NOTE Confidence: 0.87110996

 $00:02:39.415 \longrightarrow 00:02:42.618$  in the disease process and thus are

NOTE Confidence: 0.87110996

 $00:02:42.618 \longrightarrow 00:02:45.084$  eligible for surgery as a treatment.

00:02:45.090 --> 00:02:48.630 As a surgeon, I guess

NOTE Confidence: 0.8609519

 $00:02:48.630 \longrightarrow 00:02:51.288$  I am a little bit biased,

NOTE Confidence: 0.8609519

 $00:02:51.290 \longrightarrow 00:02:54.314$  but I often think that when

NOTE Confidence: 0.8609519

 $00:02:54.314 \longrightarrow 00:02:57.048$  patients are eligible for surgery,

NOTE Confidence: 0.8609519

 $00:02:57.050 \longrightarrow 00:02:59.594$  it's often a good thing because

NOTE Confidence: 0.8609519

 $00:02:59.594 \longrightarrow 00:03:01.850$  we're often treating people for

NOTE Confidence: 0.8609519

 $00:03:01.850 \longrightarrow 00:03:04.139$  curative intent. Is that right?

NOTE Confidence: 0.86993307

 $00:03:04.770 \longrightarrow 00:03:06.925$  Yes, and that's the same

NOTE Confidence: 0.86993307

00:03:06.925 --> 00:03:09.080 for lung cancer as well.

NOTE Confidence: 0.86993307

 $00:03:09.080 \longrightarrow 00:03:11.924$  Surgery for lung cancer typically is

NOTE Confidence: 0.86993307

 $00{:}03{:}11.924 \dashrightarrow 00{:}03{:}15.024$  most helpful for patients who are in

NOTE Confidence: 0.86993307

 $00{:}03{:}15.024 \dashrightarrow 00{:}03{:}17.268$  their early stage of lung cancer.

NOTE Confidence: 0.808463

 $00{:}03{:}18.390 \dashrightarrow 00{:}03{:}22.142$  And so historically talk a little bit

NOTE Confidence: 0.808463

 $00:03:22.142 \longrightarrow 00:03:25.708$  about how lung cancer was managed

NOTE Confidence: 0.808463

 $00:03:25.710 \longrightarrow 00:03:26.786$  surgically.

 $00:03:26.786 \longrightarrow 00:03:30.014$  Sure, lung cancer had been managed

NOTE Confidence: 0.808463

 $00:03:30.014 \longrightarrow 00:03:33.029$  with what's called a thoracotomy.

NOTE Confidence: 0.808463

 $00:03:33.030 \longrightarrow 00:03:36.426$  And a thoracotomy is a large

NOTE Confidence: 0.808463

 $00:03:36.426 \longrightarrow 00:03:40.348$  incision on the side of the chest,

NOTE Confidence: 0.808463

 $00:03:40.350 \longrightarrow 00:03:44.662$  usually about 6 inches or so long and

NOTE Confidence: 0.808463

 $00:03:44.662 \longrightarrow 00:03:48.870$  through that skin incision the access is

NOTE Confidence: 0.808463

00:03:48.870 --> 00:03:51.300 in between the ribs and those

NOTE Confidence: 0.808463

 $00:03:51.300 \longrightarrow 00:03:53.816$  are spread open in order to

NOTE Confidence: 0.808463

 $00{:}03{:}53.816 \to 00{:}03{:}56.246$  access the lung and the lung

NOTE Confidence: 0.808463

 $00:03:56.246 \longrightarrow 00:03:58.830$  cancer to remove the tumor.

NOTE Confidence: 0.8733703

 $00:03:59.850 \longrightarrow 00:04:02.102$  And so tell us more. I mean,

NOTE Confidence: 0.8733703

 $00:04:02.102 \longrightarrow 00:04:04.670$  it sounds like that's a pretty big operation.

NOTE Confidence: 0.8733703

 $00:04:04.670 \longrightarrow 00:04:06.590$  You're in the hospital

NOTE Confidence: 0.8733703

 $00:04:06.590 \longrightarrow 00:04:08.456$  and somebody is making this large cut

NOTE Confidence: 0.8733703

 $00:04:08.456 \longrightarrow 00:04:10.412$  in your chest and spreading ribs

NOTE Confidence: 0.8733703

 $00:04:10.412 \longrightarrow 00:04:12.687$  and taking out part of your lung.

00:04:12.690 --> 00:04:14.510 What does that feel like or look

NOTE Confidence: 0.8733703

 $00:04:14.510 \longrightarrow 00:04:16.539$  like from a patient perspective?

NOTE Confidence: 0.8733703

 $00:04:16.540 \longrightarrow 00:04:18.466$  How long are you in hospital?

NOTE Confidence: 0.8733703

 $00:04:18.470 \longrightarrow 00:04:20.075$  Does that mean that you're

NOTE Confidence: 0.8733703

 $00:04:20.075 \longrightarrow 00:04:21.359$  on a breathing tube?

NOTE Confidence: 0.8733703

 $00:04:21.360 \longrightarrow 00:04:23.600$  Does that mean that you're in ICU?

NOTE Confidence: 0.8733703

 $00:04:23.600 \longrightarrow 00:04:24.840$  Give us more of a sense of

 $00:04:27.424 \longrightarrow 00:04:29.380$  what that looks like.

NOTE Confidence: 0.86349416

00:04:29.780 --> 00:04:35.156 Sure, so overtime up till modern day when

NOTE Confidence: 0.86349416

 $00:04:35.156 \longrightarrow 00:04:38.055$  patients require thoracotomy incision

NOTE Confidence: 0.86349416

 $00:04:38.055 \longrightarrow 00:04:43.081$  for their lung cancer the hospital stay

NOTE Confidence: 0.86349416

 $00:04:43.081 \longrightarrow 00:04:47.979$  is usually between three to five days.

NOTE Confidence: 0.86349416

 $00:04:47.980 \longrightarrow 00:04:50.822$  And patients are usually in a step

NOTE Confidence: 0.86349416

 $00:04:50.822 \longrightarrow 00:04:53.678$  down unit for monitoring their vital

NOTE Confidence: 0.86349416

 $00:04:53.678 \longrightarrow 00:04:57.290$  signs and the majority of the hospital

NOTE Confidence: 0.86349416

 $00{:}04{:}57.381 \dashrightarrow 00{:}05{:}00.517$  stay is making sure their pain is

 $00{:}05{:}00.517 \dashrightarrow 00{:}05{:}03.259$  well controlled so that they can

NOTE Confidence: 0.86349416

 $00{:}05{:}03.259 \dashrightarrow 00{:}05{:}06.037$  deep breathe well and cough well

NOTE Confidence: 0.86349416

 $00:05:06.040 \longrightarrow 00:05:09.736$  and recover after such a big operation.

NOTE Confidence: 0.8172167

00:05:10.720 --> 00:05:13.814 But I understand that now,

NOTE Confidence: 0.8172167

 $00:05:13.820 \longrightarrow 00:05:17.586$  just like many surgeries we think

NOTE Confidence: 0.8172167

 $00:05:17.586 \longrightarrow 00:05:19.956$  about gallbladder surgery that used

NOTE Confidence: 0.8172167

 $00:05:19.956 \longrightarrow 00:05:23.120$  to be done with a big cut as well.

NOTE Confidence: 0.8172167

 $00:05:23.120 \longrightarrow 00:05:26.228$  Where now it can be done with

NOTE Confidence: 0.8172167

 $00:05:26.230 \longrightarrow 00:05:30.208$  3 little holes and some cameras.

NOTE Confidence: 0.8172167

 $00:05:30.210 \longrightarrow 00:05:32.694$  What many people in the lay

NOTE Confidence: 0.8172167

00:05:32.694 --> 00:05:34.350 public call little telescopes

NOTE Confidence: 0.8172167

 $00{:}05{:}34.420 \dashrightarrow 00{:}05{:}36.755$  where the gallbladder can be

NOTE Confidence: 0.8172167

 $00{:}05{:}36.755 \dashrightarrow 00{:}05{:}38.623$  removed through tiny incisions,

NOTE Confidence: 0.8172167

 $00:05:38.630 \longrightarrow 00:05:40.658$  has lung cancer surgery

NOTE Confidence: 0.8172167

 $00:05:40.658 \longrightarrow 00:05:42.686$  progressed to that point?

 $00:05:42.690 \longrightarrow 00:05:45.030$  Yes, absolutely,

NOTE Confidence: 0.862617

00:05:45.030 --> 00:05:47.955 so that's minimally invasive lung

NOTE Confidence: 0.862617

 $00:05:47.955 \longrightarrow 00:05:50.906$  surgery starting in about the 90s,

NOTE Confidence: 0.862617

 $00:05:50.910 \longrightarrow 00:05:54.746$  there was the progress in terms of

NOTE Confidence: 0.862617

 $00:05:54.746 \longrightarrow 00:05:56.390$  minimally invasive instrumentation.

NOTE Confidence: 0.862617

 $00:05:56.390 \longrightarrow 00:05:59.672$  Just as you had mentioned

NOTE Confidence: 0.862617

00:05:59.672 --> 00:06:01.313 for Gallbladder surgery,

NOTE Confidence: 0.862617

 $00:06:01.320 \longrightarrow 00:06:02.964$  these laparoscopic instruments

NOTE Confidence: 0.862617

 $00:06:02.964 \longrightarrow 00:06:05.704$  were modified for the chest,

NOTE Confidence: 0.862617

 $00:06:05.710 \longrightarrow 00:06:09.028$  and so what that looks like

NOTE Confidence: 0.862617

00:06:09.028 --> 00:06:13.160 today is usually a camera

NOTE Confidence: 0.862617

 $00:06:13.160 \longrightarrow 00:06:16.583$  and it's usually about a 5 millimeter

NOTE Confidence: 0.862617

 $00{:}06{:}16.583 \dashrightarrow 00{:}06{:}20.598$  or less than half an inch in diameter

NOTE Confidence: 0.862617

 $00{:}06{:}20.600 \dashrightarrow 00{:}06{:}23.815$  that gets projected onto

NOTE Confidence: 0.862617

00:06:23.815 --> 00:06:27.990 a typical HD screen in the OR

NOTE Confidence: 0.862617

 $00{:}06{:}27.990 \dashrightarrow 00{:}06{:}30.710$  through one incision and there

 $00:06:30.710 \longrightarrow 00:06:33.430$  are three other small incisions,

NOTE Confidence: 0.862617

00:06:33.430 --> 00:06:35.734 again, usually quite small,

NOTE Confidence: 0.862617

 $00{:}06{:}35.734 \dashrightarrow 00{:}06{:}39.190$  about a centimeter and through these

NOTE Confidence: 0.862617

 $00:06:39.280 \longrightarrow 00:06:42.745$  total of four incisions we use that

NOTE Confidence: 0.862617

00:06:42.745 --> 00:06:45.400 technique to remove lung cancer,

NOTE Confidence: 0.862617

 $00:06:45.400 \longrightarrow 00:06:50.468$  where previously we had done a thoracotomy.

 $00{:}06{:}50.830 \dashrightarrow 00{:}06{:}52.894$  So it sounds like that would

NOTE Confidence: 0.90155673

 $00:06:52.894 \longrightarrow 00:06:54.270$  potentially be much easier

NOTE Confidence: 0.90155673

 $00{:}06{:}54.338 \dashrightarrow 00{:}06{:}56.125$  on patients, much less pain.

NOTE Confidence: 0.90155673

00:06:56.125 --> 00:06:58.990 So what does that picture look like?

NOTE Confidence: 0.90155673

00:06:58.990 --> 00:07:02.938 I mean, do patients go home sooner? 00:07:04.272 --> 00:07:07.380 It doesn't sound like you'd need to

NOTE Confidence: 0.90155673

00:07:07.471 --> 00:07:10.656 spread ribs and those kinds of things,

NOTE Confidence: 0.90155673

 $00{:}07{:}10.660 \dashrightarrow 00{:}07{:}13.838$  so pain is a contrasting picture to

NOTE Confidence: 0.83112234

 $00:07:13.840 \longrightarrow 00:07:16.105$  what that looks like as

NOTE Confidence: 0.83112234

 $00:07:16.105 \longrightarrow 00:07:17.917$  opposed to a thoracotomy.

 $00:07:17.920 \longrightarrow 00:07:20.165$  Sure, so when patients undergo

NOTE Confidence: 0.83112234

 $00:07:20.165 \longrightarrow 00:07:22.930$  this type of surgery called VATS

NOTE Confidence: 0.83112234

 $00:07:22.930 \longrightarrow 00:07:25.100$  or video assisted thoracoscopic surgery

 $00:07:27.460 \longrightarrow 00:07:30.178$  because of the smaller incisions,

NOTE Confidence: 0.83112234

 $00:07:30.180 \longrightarrow 00:07:33.010$  patients do have less pain.

NOTE Confidence: 0.83112234

 $00{:}07{:}33.010 \dashrightarrow 00{:}07{:}35.854$  They do recover in the hospital

NOTE Confidence: 0.83112234

 $00:07:35.854 \longrightarrow 00:07:39.070$  and at home much more easily,

NOTE Confidence: 0.83112234

 $00:07:39.070 \longrightarrow 00:07:42.374$  and their quality of life and a

NOTE Confidence: 0.83112234

 $00:07:42.374 \longrightarrow 00:07:45.784$  return to work is sooner as well

NOTE Confidence: 0.83112234

 $00:07:45.784 \longrightarrow 00:07:48.616$  and from a variety of studies

NOTE Confidence: 0.83112234

 $00{:}07{:}48.722 \dashrightarrow 00{:}07{:}51.697$  that have been done over time

NOTE Confidence: 0.83112234

 $00:07:51.700 \longrightarrow 00:07:55.244$  this has shown to be the case compared

NOTE Confidence: 0.83112234

 $00:07:55.244 \longrightarrow 00:07:58.259$  to open thoracotomy cases and

NOTE Confidence: 0.81430984

00:07:58.260 --> 00:08:00.428 so, whereas thoracotomy patients

NOTE Confidence: 0.81430984

00:08:00.428 --> 00:08:03.680 spend about three to four days

NOTE Confidence: 0.81430984

 $00:08:03.680 \longrightarrow 00:08:06.878$  in hospital, in a step down,

 $00:08:06.880 \longrightarrow 00:08:10.078$  what happens to patients who are

NOTE Confidence: 0.8619048

 $00{:}08{:}10.080 \dashrightarrow 00{:}08{:}12.855$  treated with vats usually does

NOTE Confidence: 0.8619048

 $00:08:12.855 \longrightarrow 00:08:16.225$  result in a reduction of the

NOTE Confidence: 0.8619048

00:08:16.225 --> 00:08:19.669 hospital stay from one to two days,

NOTE Confidence: 0.8619048

 $00:08:19.670 \longrightarrow 00:08:22.340$  depending on various other factors.

NOTE Confidence: 0.8619048

 $00:08:22.340 \longrightarrow 00:08:25.430$  But the reduction in the hospital

NOTE Confidence: 0.8619048

 $00:08:25.430 \longrightarrow 00:08:28.730$  stay is usually from reduction in pain.

 $00:08:33.510 \longrightarrow 00:08:36.732$  If we take a step back and we think

NOTE Confidence: 0.8619048

00:08:36.732 --> 00:08:39.898 about it from the health care system,

NOTE Confidence: 0.8619048

 $00:08:39.900 \longrightarrow 00:08:43.155$  Is 1 procedure cheaper than the other?

NOTE Confidence: 0.8619048

00:08:43.160 --> 00:08:46.624 I mean, I can see that you know

NOTE Confidence: 0.8619048

 $00:08:46.624 \longrightarrow 00:08:48.555$  thoracotomies likely have increased

NOTE Confidence: 0.8619048

 $00:08:48.555 \longrightarrow 00:08:51.985$  costs due to increased length of stay,

NOTE Confidence: 0.8619048

 $00{:}08{:}51.990 \dashrightarrow 00{:}08{:}55.441$  but on the other hand there's

NOTE Confidence: 0.8619048

 $00:08:55.441 \longrightarrow 00:08:57.430$  capital equipment and technology

NOTE Confidence: 0.8619048

 $00:08:57.430 \longrightarrow 00:09:00.356$  that adds up to cost as well.

 $00:09:00.360 \longrightarrow 00:09:02.220$  Have people looked at

NOTE Confidence: 0.8619048

 $00:09:02.220 \longrightarrow 00:09:04.080$  differences between vats and

NOTE Confidence: 0.85912424

 $00:09:04.080 \longrightarrow 00:09:06.410$  thoracotomy in terms of cost?

NOTE Confidence: 0.85912424

 $00:09:06.410 \longrightarrow 00:09:09.130$  Yes, there have been several

NOTE Confidence: 0.85912424

 $00:09:09.130 \longrightarrow 00:09:11.306$  studies and the general

NOTE Confidence: 0.85912424

 $00:09:11.310 \longrightarrow 00:09:15.489$  conclusion from these is that because of

NOTE Confidence: 0.85912424

 $00:09:15.489 \longrightarrow 00:09:19.210$  reduced hospital stay,

NOTE Confidence: 0.85912424

00:09:19.210 --> 00:09:22.562 the minimally invasive approach,

NOTE Confidence: 0.85912424

 $00:09:22.562 \longrightarrow 00:09:25.914$  is less costly.

NOTE Confidence: 0.85912424

 $00:09:25.920 \longrightarrow 00:09:28.220$  But as you were saying,

NOTE Confidence: 0.85912424

 $00:09:28.220 \longrightarrow 00:09:30.788$  the hospital of course has to

NOTE Confidence: 0.85912424

 $00:09:30.788 \longrightarrow 00:09:33.260$  invest in the capital upfront,

NOTE Confidence: 0.85912424

 $00:09:33.260 \longrightarrow 00:09:36.525$  and this is also similar

NOTE Confidence: 0.85912424

 $00:09:36.525 \longrightarrow 00:09:39.137$  to another minimally invasive

NOTE Confidence: 0.85912424

00:09:39.140 --> 00:09:41.236 instrument, the robotic approach.

NOTE Confidence: 0.85912424

 $00:09:41.236 \longrightarrow 00:09:44.285$  Again, there is investment upfront on

00:09:44.285 --> 00:09:47.510 the hospital and the health system,

NOTE Confidence: 0.85912424

 $00{:}09{:}47.510 \dashrightarrow 00{:}09{:}51.686$  but over time there is reduced cost.

NOTE Confidence: 0.8590415

 $00:09:51.690 \longrightarrow 00:09:54.130$  For patients, when patients

NOTE Confidence: 0.8590415

00:09:54.130 --> 00:09:57.790 are looking at paying out of

NOTE Confidence: 0.8590415

 $00:09:57.903 \longrightarrow 00:10:01.007$  pocket for these procedures,

NOTE Confidence: 0.8590415

 $00{:}10{:}01.010 {\:\dashrightarrow\:} 00{:}10{:}03.803$  or if they have a particular percentage

NOTE Confidence: 0.8590415

 $00:10:03.803 \longrightarrow 00:10:06.706$  that they have to pay in terms of

NOTE Confidence: 0.8590415

 $00:10:06.706 \longrightarrow 00:10:08.930$  copays and those kinds of things,

NOTE Confidence: 0.8590415

 $00:10:08.930 \longrightarrow 00:10:11.138$  is there a difference in terms

NOTE Confidence: 0.8590415

 $00:10:11.138 \longrightarrow 00:10:13.070$  of patient cost as well?

NOTE Confidence: 0.85848075

 $00{:}10{:}14.460 \dashrightarrow 00{:}10{:}17.961$  I actually do not have a good idea on

NOTE Confidence: 0.85848075

 $00:10:17.961 \longrightarrow 00:10:21.588$  the cost from the patient standpoint.

NOTE Confidence: 0.85848075

 $00{:}10{:}21.590 \dashrightarrow 00{:}10{:}25.139$  I do believe that as the health care

NOTE Confidence: 0.85848075

 $00:10:25.139 \longrightarrow 00:10:28.343$  system has savings on this that it

NOTE Confidence: 0.85848075

00:10:28.343 --> 00:10:31.560 would get passed on to the patient,

 $00:10:31.560 \longrightarrow 00:10:33.940$  but I I don't know.

NOTE Confidence: 0.85848075

 $00:10:33.940 \longrightarrow 00:10:36.310$  Yeah one would

NOTE Confidence: 0.85848075

 $00:10:36.310 \longrightarrow 00:10:38.950$  certainly imagine so and

NOTE Confidence: 0.85848075

 $00:10:38.950 \longrightarrow 00:10:41.334$  VATS procedures now have become

NOTE Confidence: 0.85848075

00:10:41.334 --> 00:10:43.930 fairly widely accepted, right?

NOTE Confidence: 0.85848075

00:10:43.930 --> 00:10:46.355 So most insurances should cover

NOTE Confidence: 0.85848075

00:10:46.355 --> 00:10:48.417 VATS procedures just as

NOTE Confidence: 0.85848075

00:10:48.417 --> 00:10:50.460 they would thoracotomies?

NOTE Confidence: 0.80300575

 $00:10:50.460 \longrightarrow 00:10:52.272$  Yes, absolutely.

NOTE Confidence: 0.80300575

 $00:10:52.272 \longrightarrow 00:10:54.537$  All insurance companies do cover

NOTE Confidence: 0.80300575

00:10:54.540 --> 00:10:56.348 VATS the minimally invasive

NOTE Confidence: 0.80300575

00:10:56.348 --> 00:10:58.156 approach compared to thoracotomy.

NOTE Confidence: 0.80300575

 $00:10:58.160 \longrightarrow 00:11:00.878$  So are there any reasons why

NOTE Confidence: 0.80300575

 $00{:}11{:}00.880 \to 00{:}11{:}04.208$  a particular patient may not opt for a

NOTE Confidence: 0.80300575

00:11:04.208 --> 00:11:06.768 vats procedure versus a thoracotomy,

NOTE Confidence: 0.80300575

 $00{:}11{:}06.770 \dashrightarrow 00{:}11{:}09.416$  are there patients that you would

00:11:09.416 --> 00:11:12.205 kind of lean more towards doing

NOTE Confidence: 0.80300575

 $00{:}11{:}12.205 \dashrightarrow 00{:}11{:}15.430$  things as we would say old school.

NOTE Confidence: 0.799758260000001

00:11:16.310 --> 00:11:20.489 As you can imagine for the

NOTE Confidence: 0.799758260000001

 $00:11:20.489 \longrightarrow 00:11:22.971$  minimally invasive approach that

NOTE Confidence: 0.799758260000001

 $00:11:22.971 \longrightarrow 00:11:25.319$  requires instrumentation that is

NOTE Confidence: 0.799758260000001

 $00:11:25.319 \longrightarrow 00:11:28.955$  small in order to fit through

NOTE Confidence: 0.799758260000001

 $00:11:28.955 \longrightarrow 00:11:32.537$  these small incisions that we use,

NOTE Confidence: 0.799758260000001

 $00:11:32.540 \longrightarrow 00:11:37.730$  and so vats is used for

NOTE Confidence: 0.799758260000001

 $00{:}11{:}37.730 \dashrightarrow 00{:}11{:}39.506$  relatively straightforward lung

NOTE Confidence: 0.799758260000001

 $00:11:39.506 \longrightarrow 00:11:41.874$  cancer operations. For operations

NOTE Confidence: 0.799758260000001

 $00:11:41.874 \longrightarrow 00:11:44.640$  that are more complicated,

NOTE Confidence: 0.799758260000001

00:11:44.640 --> 00:11:48.854 for example, larger tumor or if the

NOTE Confidence: 0.799758260000001

 $00{:}11{:}48.854 \dashrightarrow 00{:}11{:}51.443$  patient has received chemotherapy

NOTE Confidence: 0.799758260000001

00:11:51.443 --> 00:11:56.112 and or radiation where there is more

NOTE Confidence: 0.799758260000001

00:11:56.112 --> 00:11:59.335 scarring due to those treatments

 $00:11:59.335 \longrightarrow 00:12:02.887$  that does make it more difficult

NOTE Confidence: 0.799758260000001

 $00:12:02.887 \longrightarrow 00:12:06.040$  to use the vats instruments.

NOTE Confidence: 0.799758260000001

00:12:07.960 --> 00:12:08.435 It's not totally unreasonable,

NOTE Confidence: 0.799758260000001

 $00{:}12{:}08.435 \dashrightarrow 00{:}12{:}11.760$  but it is certainly easier on the

NOTE Confidence: 0.799758260000001

00:12:11.760 --> 00:12:14.943 surgeon to do the operation through

NOTE Confidence: 0.799758260000001

 $00:12:14.943 \longrightarrow 00:12:17.628$  a thoracotomy for those scenarios.

NOTE Confidence: 0.799758260000001

00:12:17.630 --> 00:12:19.160 And does it

NOTE Confidence: 0.8579366

 $00:12:19.160 \longrightarrow 00:12:21.836$  take special kind of training to

NOTE Confidence: 0.8579366

 $00{:}12{:}21.836 \dashrightarrow 00{:}12{:}25.270$  be able to do vats procedures,

NOTE Confidence: 0.8579366

 $00:12:25.270 \longrightarrow 00:12:27.815$  or are most lung cancer

NOTE Confidence: 0.8579366

00:12:27.815 --> 00:12:30.360 surgeons pretty adept at both?

NOTE Confidence: 0.8615829

 $00:12:31.730 \longrightarrow 00:12:33.610$  In today's thoracic surgery

NOTE Confidence: 0.8615829

00:12:33.610 --> 00:12:35.020 practices, almost all,

NOTE Confidence: 0.8615829

00:12:35.020 --> 00:12:37.840 at least in the United States,

NOTE Confidence: 0.8615829

 $00:12:37.840 \longrightarrow 00:12:39.720$  almost all thoracic surgeons

NOTE Confidence: 0.8615829

 $00:12:39.720 \longrightarrow 00:12:42.070$  have been trained in vats.

 $00:12:42.070 \longrightarrow 00:12:44.420$  In addition to the traditional

NOTE Confidence: 0.8615829

00:12:44.420 --> 00:12:45.360 thoracotomy approach,

NOTE Confidence: 0.8615829

 $00:12:45.360 \longrightarrow 00:12:47.240$  and so most hospitals

NOTE Confidence: 0.8615829

 $00:12:47.240 \longrightarrow 00:12:49.120$  then have this technology

NOTE Confidence: 0.8615829

 $00:12:49.120 \longrightarrow 00:12:51.470$  that patients would be able

NOTE Confidence: 0.8615829

 $00:12:51.470 \longrightarrow 00:12:53.350$  to avail themselves of.

NOTE Confidence: 0.8615829

00:12:53.350 --> 00:12:57.110 It's not like you have to go to,

NOTE Confidence: 0.8615829

 $00{:}12{:}57.110 \dashrightarrow 00{:}12{:}58.990$ you know some place special

NOTE Confidence: 0.8615829

 $00:12:58.990 \longrightarrow 00:13:01.810$  to get that. Is that right?

NOTE Confidence: 0.84481424

 $00:13:02.290 \longrightarrow 00:13:05.086$  Exactly most hospitals would have this.

NOTE Confidence: 0.84481424

 $00:13:05.090 \longrightarrow 00:13:06.954$  The instrumentation for minimally

NOTE Confidence: 0.84481424

 $00:13:06.954 \longrightarrow 00:13:10.230$  invasive vats, yes.

NOTE Confidence: 0.84481424

 $00{:}13{:}10.230 \dashrightarrow 00{:}13{:}13.032$  We are going to take a very short break

NOTE Confidence: 0.84481424

 $00:13:13.032 \longrightarrow 00:13:14.900$  for a medical minute.

NOTE Confidence: 0.84481424

 $00:13:14.900 \longrightarrow 00:13:17.582$  Please stay tuned to learn more

 $00:13:17.582 \longrightarrow 00:13:20.040$  about surgical management of thoracic

NOTE Confidence: 0.84481424

00:13:20.040 --> 00:13:22.630 malignancies.

NOTE Confidence: 0.84481424

00:13:22.630 --> 00:13:25.702 Support for Yale Cancer Answers comes from

AstraZeneca, working

NOTE Confidence: 0.84481424

 $00:13:25.702 \longrightarrow 00:13:28.902$  to eliminate cancer as a cause of death.

NOTE Confidence: 0.84481424

00:13:28.910 --> 00:13:32.070 Learn more at astrazeneca-us.com.

NOTE Confidence: 0.84481424

 $00:13:32.070 \longrightarrow 00:13:35.358$  This is a medical minute about breast cancer,

NOTE Confidence: 0.84481424

 $00:13:35.360 \longrightarrow 00:13:37.415$  the most common cancer in

NOTE Confidence: 0.84481424

00:13:37.415 --> 00:13:39.059 women. In Connecticut alone,

NOTE Confidence: 0.84481424

 $00:13:39.060 \longrightarrow 00:13:41.130$  approximately 3000 women will be

NOTE Confidence: 0.84481424

00:13:41.130 --> 00:13:43.580 diagnosed with breast cancer this year,

NOTE Confidence: 0.84481424

 $00{:}13{:}43.580 \dashrightarrow 00{:}13{:}45.630$  but thanks to earlier detection,

NOTE Confidence: 0.84481424

00:13:45.630 --> 00:13:46.454 noninvasive treatments,

NOTE Confidence: 0.84481424

 $00:13:46.454 \longrightarrow 00:13:47.690$  and novel therapies,

NOTE Confidence: 0.84481424

 $00:13:47.690 \longrightarrow 00:13:50.539$  there are more options for patients to

NOTE Confidence: 0.84481424

 $00:13:50.539 \longrightarrow 00:13:53.030$  fight breast cancer than ever before.

 $00:13:53.030 \longrightarrow 00:13:55.085$  Women should schedule a baseline

NOTE Confidence: 0.84481424

00:13:55.085 --> 00:13:57.603 mammogram beginning at age 40 or

NOTE Confidence: 0.84481424

 $00:13:57.603 \longrightarrow 00:13:59.949$  earlier if they have risk factors

NOTE Confidence: 0.84481424

 $00:13:59.949 \longrightarrow 00:14:01.660$  associated with breast cancer.

NOTE Confidence: 0.84481424

 $00:14:01.660 \longrightarrow 00:14:03.595$  Digital breast tomosynthesis or

NOTE Confidence: 0.84481424

00:14:03.595 --> 00:14:05.143 3D mammography is transforming

NOTE Confidence: 0.84481424

 $00:14:05.143 \longrightarrow 00:14:07.078$  breast screening by significantly

NOTE Confidence: 0.84481424

00:14:07.080 --> 00:14:09.288 reducing unnecessary procedures while

NOTE Confidence: 0.84481424

 $00{:}14{:}09.288 \dashrightarrow 00{:}14{:}12.600$  picking up more cancers and eliminating

NOTE Confidence: 0.84481424

 $00:14:12.679 \longrightarrow 00:14:14.755$  some of the fear and anxiety

NOTE Confidence: 0.84481424

 $00:14:14.760 \longrightarrow 00:14:16.200$  many women experience.

NOTE Confidence: 0.84481424

 $00:14:16.200 \longrightarrow 00:14:18.120$  More information is available

NOTE Confidence: 0.84481424

 $00:14:18.120 \longrightarrow 00:14:19.080$  at yalecancercenter.org.

NOTE Confidence: 0.84481424

00:14:19.080 --> 00:14:22.830 You're listening to Connecticut Public Radio.

NOTE Confidence: 0.84481424

 $00:14:22.830 \longrightarrow 00:14:23.290$  Welcome

NOTE Confidence: 0.8562559

 $00:14:23.290 \longrightarrow 00:14:25.600$  back to Yale Cancer Answers.

 $00:14:25.600 \longrightarrow 00:14:27.910$  We are discussing the surgical

NOTE Confidence: 0.8562559

 $00{:}14{:}27.910 \dashrightarrow 00{:}14{:}29.758$  management of thoracic malignancies,

NOTE Confidence: 0.8562559

 $00:14:29.760 \longrightarrow 00:14:32.136$  so Andrew right before the break

NOTE Confidence: 0.8562559

 $00:14:32.136 \longrightarrow 00:14:35.164$  we were talking a lot about how

NOTE Confidence: 0.8562559

 $00{:}14{:}35.164 \dashrightarrow 00{:}14{:}37.424$  historically lung cancer had been

NOTE Confidence: 0.8562559

 $00:14:37.424 \longrightarrow 00:14:39.920$  taken out with thoracotomies,

NOTE Confidence: 0.8562559

 $00:14:39.920 \longrightarrow 00:14:42.758$  which are large cuts people needed

NOTE Confidence: 0.8562559

00:14:42.758 --> 00:14:45.822 to stay in hospital several days in

NOTE Confidence: 0.8562559

00:14:45.822 --> 00:14:49.499 a in a step down unit and how really

NOTE Confidence: 0.8562559

 $00{:}14{:}49.499 \dashrightarrow 00{:}14{:}52.709$  things have evolved towards vats or

NOTE Confidence: 0.8562559

 $00{:}14{:}52.709 \dashrightarrow 00{:}14{:}54.910$  video assisted thoracic surgery

NOTE Confidence: 0.8562559

 $00:14:54.910 \longrightarrow 00:14:59.430$  where you can use kind of small incisions,

NOTE Confidence: 0.8562559

 $00{:}14{:}59.430 \dashrightarrow 00{:}15{:}03.510$  a little camera that can go in and

NOTE Confidence: 0.8562559

00:15:03.510 --> 00:15:06.111 remove these, ultimately reducing pain,

NOTE Confidence: 0.8562559

 $00:15:06.111 \longrightarrow 00:15:09.273$  reducing length of stay and you had

00:15:09.273 --> 00:15:11.803 mentioned before the break that

NOTE Confidence: 0.8562559

00:15:11.803 --> 00:15:13.723 there's yet another technology

NOTE Confidence: 0.8562559

00:15:13.723 --> 00:15:16.258 in terms of robotic surgery.

NOTE Confidence: 0.8562559

 $00:15:16.260 \longrightarrow 00:15:17.280$  Tell us more about that?

NOTE Confidence: 0.87937516

00:15:17.280 --> 00:15:22.579 The Intuitive company

NOTE Confidence: 0.87937516

 $00:15:22.580 \longrightarrow 00:15:26.507$  produced a robotic technology in the 2000s,

NOTE Confidence: 0.87937516

 $00:15:26.510 \longrightarrow 00:15:29.240$  and that's what is commonly

NOTE Confidence: 0.87937516

00:15:29.240 --> 00:15:32.680 known today as the Davinci robot,

NOTE Confidence: 0.87937516

 $00{:}15{:}32.680 \dashrightarrow 00{:}15{:}36.190$  so that is another minimally invasive

NOTE Confidence: 0.87937516

 $00:15:36.190 \longrightarrow 00:15:39.648$  tool that thoracic surgeons can use

NOTE Confidence: 0.87937516

 $00{:}15{:}39.648 {\:\raisebox{--}{\text{--}}}{\:\raisebox{--}{\text{--}}}{\:\raisebox{--}{\text{--}}} 00{:}15{:}42.218$  to surgically treat lung cancer.

NOTE Confidence: 0.8922759

 $00:15:43.550 \longrightarrow 00:15:46.702$  Tell us more about

NOTE Confidence: 0.8922759

 $00{:}15{:}46.702 \dashrightarrow 00{:}15{:}49.502$  this because the whole concept of

NOTE Confidence: 0.8922759

 $00{:}15{:}49.502 \dashrightarrow 00{:}15{:}52.388$ you know robots doing your surgery

NOTE Confidence: 0.8922759

 $00:15:52.481 \longrightarrow 00:15:56.030$  for some might seem really high tech

NOTE Confidence: 0.8922759

 $00:15:56.030 \longrightarrow 00:15:58.610$  and really innovative and for others,

 $00:15:58.610 \longrightarrow 00:16:01.760$  might seem really kind of frightening

NOTE Confidence: 0.8922759

 $00{:}16{:}01.760 \dashrightarrow 00{:}16{:}04.918$  because you kind of like the idea

NOTE Confidence: 0.8922759

 $00:16:04.918 \longrightarrow 00:16:07.475$  of a human actually being there

NOTE Confidence: 0.8922759

 $00:16:07.475 \longrightarrow 00:16:09.695$  to manage your cancer.

NOTE Confidence: 0.8922759

 $00:16:09.700 \longrightarrow 00:16:13.210$  So how exactly does this robot

NOTE Confidence: 0.8922759

00:16:13.210 --> 00:16:15.214 or robotic surgery work?

NOTE Confidence: 0.8922759

 $00:16:15.214 \longrightarrow 00:16:17.719$  Is it really like there's

NOTE Confidence: 0.8922759

 $00:16:17.719 \longrightarrow 00:16:20.060$  a small little robot

NOTE Confidence: 0.8524222

 $00:16:20.060 \longrightarrow 00:16:24.132$  that goes in there and does your surgery

NOTE Confidence: 0.8524222

00:16:24.132 --> 00:16:26.909 during robotic lung cancer cases?

NOTE Confidence: 0.8524222

 $00:16:26.910 \longrightarrow 00:16:30.473$  We have the robot arms at the

NOTE Confidence: 0.8524222

 $00:16:30.473 \longrightarrow 00:16:34.017$  patients table and a few feet away

NOTE Confidence: 0.8524222

 $00{:}16{:}34.017 \dashrightarrow 00{:}16{:}36.879$  the surgeon sits at a console

NOTE Confidence: 0.8524222

 $00:16:36.990 \longrightarrow 00:16:40.428$  where they view the images from

NOTE Confidence: 0.8524222

00:16:40.428 --> 00:16:43.822 the robotic camera and they use

 $00:16:43.822 \longrightarrow 00:16:46.577$  an instrumentation to remove the

NOTE Confidence: 0.8524222

 $00:16:46.577 \longrightarrow 00:16:50.084$  robotic arms that way so the surgeon

NOTE Confidence: 0.8524222

00:16:50.084 --> 00:16:53.293 is certainly in the room next to

NOTE Confidence: 0.8524222

 $00:16:53.293 \longrightarrow 00:16:56.101$  the patient with the robotic arms

NOTE Confidence: 0.8524222

 $00:16:56.101 \longrightarrow 00:16:59.450$  at the patient doing the

NOTE Confidence: 0.8524222

 $00:16:59.450 \longrightarrow 00:17:02.370$  actual work inside the chest. So

NOTE Confidence: 0.8519989

 $00:17:02.370 \longrightarrow 00:17:05.534$  the important key is that the surgeon

NOTE Confidence: 0.8519989

 $00:17:05.534 \longrightarrow 00:17:08.521$  is really the brain operating

NOTE Confidence: 0.8519989

 $00:17:08.521 \longrightarrow 00:17:11.593$  the robot and the robot's arms.

NOTE Confidence: 0.8519989

 $00:17:11.600 \longrightarrow 00:17:14.056$  These robots are not

NOTE Confidence: 0.8519989

 $00{:}17{:}14.056 \dashrightarrow 00{:}17{:}15.898$  operating independently of

NOTE Confidence: 0.8519989

 $00{:}17{:}15.898 \dashrightarrow 00{:}17{:}19.300$  a surgeon who is there, is

NOTE Confidence: 0.8668007

00:17:19.300 --> 00:17:21.013 that right?

NOTE Confidence: 0.8668007

 $00:17:21.013 \longrightarrow 00:17:23.868$  Absolutely, the robot is not autonomous.

NOTE Confidence: 0.8668007

 $00:17:23.870 \longrightarrow 00:17:27.874$  The robot in each and every movement is

NOTE Confidence: 0.8668007

 $00:17:27.880 \longrightarrow 00:17:30.168$  directed by the surgeon.

 $00:17:30.168 \longrightarrow 00:17:33.600$  So why is this any different

NOTE Confidence: 0.8668007

 $00:17:33.600 \longrightarrow 00:17:36.672$  then where

NOTE Confidence: 0.8668007

 $00:17:36.672 \longrightarrow 00:17:39.890$  you're still working with instruments.

NOTE Confidence: 0.8668007

 $00:17:39.890 \longrightarrow 00:17:42.750$  Looking at an image on

NOTE Confidence: 0.8668007

 $00:17:42.750 \longrightarrow 00:17:45.725$  a screen, both are certainly

NOTE Confidence: 0.8668007

00:17:45.725 --> 00:17:46.915 minimally invasive

NOTE Confidence: 0.8668007

 $00:17:46.920 \longrightarrow 00:17:52.330$  approaches with the robotic technology.

NOTE Confidence: 0.8668007

 $00:17:52.330 \longrightarrow 00:17:55.280$  Formed through four small incisions,

NOTE Confidence: 0.8668007

00:17:55.280 --> 00:18:00.014 each are between 8 to 12 millimeters in size

NOTE Confidence: 0.8668007

 $00:18:00.014 \dashrightarrow 00:18:04.715$  and there there is an additional incision.

NOTE Confidence: 0.8668007

 $00:18:04.720 \longrightarrow 00:18:08.062$  A small incision that's made for

NOTE Confidence: 0.8668007

 $00:18:08.062 \longrightarrow 00:18:11.632$  the assistant at the bedside to

NOTE Confidence: 0.8668007

 $00{:}18{:}11.632 \dashrightarrow 00{:}18{:}15.334$  as sist during the operation as well.

NOTE Confidence: 0.8668007

 $00{:}18{:}15.340 \dashrightarrow 00{:}18{:}19.340$  So both certainly do result in less pain

NOTE Confidence: 0.8668007

 $00:18:19.340 \longrightarrow 00:18:23.650$  in the postoperative period then and

 $00:18:23.650 \longrightarrow 00:18:24.814$  open thoracotomy,

NOTE Confidence: 0.8668007

 $00:18:24.814 \longrightarrow 00:18:27.724$  the main advantages for the

NOTE Confidence: 0.8668007

00:18:27.724 --> 00:18:30.370 robotic approach is number 1,

NOTE Confidence: 0.8668007

 $00:18:30.370 \longrightarrow 00:18:33.370$  the improved visualization because of

NOTE Confidence: 0.8668007

 $00:18:33.370 \longrightarrow 00:18:37.017$  the robotic camera and the technology

NOTE Confidence: 0.8668007

00:18:37.017 --> 00:18:39.737 that went into developing that

NOTE Confidence: 0.8668007

 $00{:}18{:}39.737 \dashrightarrow 00{:}18{:}43.525$  it does give you a 3 dimensional

NOTE Confidence: 0.8668007

 $00:18:43.525 \longrightarrow 00:18:46.045$  view of the surgical field.

NOTE Confidence: 0.8668007

 $00:18:46.050 \longrightarrow 00:18:49.380$  Sort of like you were actually

NOTE Confidence: 0.8668007

 $00:18:49.380 \longrightarrow 00:18:52.315$  inside the chest looking at

NOTE Confidence: 0.8668007

 $00{:}18{:}52.315 \dashrightarrow 00{:}18{:}54.739$  these structures and doing

NOTE Confidence: 0.8668007

 $00:18:54.740 \longrightarrow 00:18:56.528$  the surgery that way.

NOTE Confidence: 0.8668007

 $00:18:56.528 \longrightarrow 00:18:58.316$  In addition to that,

NOTE Confidence: 0.8668007

 $00{:}18{:}58.320 \dashrightarrow 00{:}19{:}00.996$  it's certainly more ergonomic as well,

NOTE Confidence: 0.8668007

 $00:19:01.000 \longrightarrow 00:19:04.129$  and if it's easier on the surgeon,

NOTE Confidence: 0.8668007

 $00{:}19{:}04.130 \dashrightarrow 00{:}19{:}06.250$  that certainly helps the operation

 $00:19:06.250 \longrightarrow 00:19:09.393$  go well and for the patients that

NOTE Confidence: 0.8668007

 $00:19:09.393 \longrightarrow 00:19:11.277$  have a better outcome.

NOTE Confidence: 0.84329087

00:19:12.860 --> 00:19:17.004 So you know I can appreciate that

NOTE Confidence: 0.84329087

 $00{:}19{:}17.004 \dashrightarrow 00{:}19{:}20.628$  the camera is a little bit better.

NOTE Confidence: 0.84329087

 $00:19:20.630 \longrightarrow 00:19:23.724$  The arms are a little bit better

NOTE Confidence: 0.84329087

 $00:19:23.724 \longrightarrow 00:19:27.358$  in terms of their ergonomics and

NOTE Confidence: 0.84329087

 $00:19:27.360 \longrightarrow 00:19:30.755$  potentially the degree to which they are

NOTE Confidence: 0.84329087

 $00{:}19{:}30.755 \dashrightarrow 00{:}19{:}34.098$  flexible in moving in various directions,

NOTE Confidence: 0.84329087

 $00{:}19{:}34.100 \dashrightarrow 00{:}19{:}36.690$  which can make the operation

NOTE Confidence: 0.84329087

 $00:19:36.690 \longrightarrow 00:19:39.280$  easier to perform.

NOTE Confidence: 0.84329087

 $00:19:39.280 \longrightarrow 00:19:42.442$  But there must be added cost

NOTE Confidence: 0.84329087

 $00:19:42.442 \longrightarrow 00:19:44.550$  to this whole system

NOTE Confidence: 0.84329087

 $00:19:44.550 \longrightarrow 00:19:48.138$  over VATS which as you mentioned,

NOTE Confidence: 0.84329087

 $00{:}19{:}48.140 \dashrightarrow 00{:}19{:}50.532$  is pretty universally available.

NOTE Confidence: 0.84329087

 $00:19:50.532 \longrightarrow 00:19:51.130$  Certainly

 $00:19:51.130 \longrightarrow 00:19:55.253$  the robotic system has a greater capital

NOTE Confidence: 0.84984183

 $00:19:55.253 \longrightarrow 00:20:00.520$  costs for the hospital for the health system.

NOTE Confidence: 0.84984183

 $00:20:00.520 \longrightarrow 00:20:03.978$  And in addition to the actual tools,

NOTE Confidence: 0.84984183

 $00:20:03.980 \longrightarrow 00:20:07.438$  the actual robot and the consoles there

NOTE Confidence: 0.84984183

00:20:07.438 --> 00:20:10.447 does need additional training

NOTE Confidence: 0.84984183

 $00:20:10.447 \longrightarrow 00:20:14.350$  on the side of the staff as well.

NOTE Confidence: 0.84984183

00:20:14.350 --> 00:20:17.717 For example, a person at the bedside

NOTE Confidence: 0.84984183

00:20:17.717 --> 00:20:20.224 being another surgeon or resident

NOTE Confidence: 0.84984183

00:20:20.224 --> 00:20:22.180 physician assistant to assist

NOTE Confidence: 0.84984183

 $00:20:22.180 \longrightarrow 00:20:25.220$  and in addition to that person

NOTE Confidence: 0.84984183

 $00{:}20{:}25.220 \dashrightarrow 00{:}20{:}27.820$  of course, the nursing staff

NOTE Confidence: 0.84984183

 $00:20:27.820 \longrightarrow 00:20:31.719$  in the room to help set up the

NOTE Confidence: 0.84984183

 $00{:}20{:}31.720 \dashrightarrow 00{:}20{:}34.550$  robotic instrumentation for the

NOTE Confidence: 0.84984183

 $00:20:34.550 \longrightarrow 00:20:38.371$  operation and not to mention in scenarios

NOTE Confidence: 0.84984183

 $00:20:38.371 \longrightarrow 00:20:42.510$  where an acute issue needs to be dealt with,

NOTE Confidence: 0.84984183

 $00:20:42.510 \longrightarrow 00:20:45.958$  the whole team needs to be aware of

 $00:20:45.958 \longrightarrow 00:20:49.806$  how to maneuver things so that they

NOTE Confidence: 0.84984183

 $00{:}20{:}49.806 \dashrightarrow 00{:}20{:}53.820$  could be dealt with without the robot,

NOTE Confidence: 0.84984183

 $00:20:53.820 \longrightarrow 00:20:58.888$  and so there are

NOTE Confidence: 0.84984183

 $00:20:58.890 \longrightarrow 00:21:03.946$  many things that are required for

NOTE Confidence: 0.84984183

 $00:21:03.946 \longrightarrow 00:21:08.545$  a surgeon to perform robotic thoracic

NOTE Confidence: 0.84984183

 $00:21:08.545 \longrightarrow 00:21:13.345$  surgery as part of their practice.

NOTE Confidence: 0.84984183

 $00:21:13.350 \longrightarrow 00:21:19.070$  One of the ideas behind the

NOTE Confidence: 0.84984183

 $00{:}21{:}19.070 \dashrightarrow 00{:}21{:}23.743$  technology is also to allow surgeons

NOTE Confidence: 0.84984183

 $00{:}21{:}23.743 \dashrightarrow 00{:}21{:}29.240$  who have perhaps not trained in vats

NOTE Confidence: 0.84984183

 $00:21:29.240 \longrightarrow 00:21:33.034$  to be able to perform a minimally

NOTE Confidence: 0.84984183

00:21:33.034 --> 00:21:35.889 invasive approach a lot easier.

NOTE Confidence: 0.82035017

 $00:21:37.930 \longrightarrow 00:21:41.325$  As both the vats approach and the

NOTE Confidence: 0.82035017

 $00{:}21{:}41.325 \dashrightarrow 00{:}21{:}44.125$ robotic approach do have learning

NOTE Confidence: 0.82035017

 $00:21:44.125 \longrightarrow 00:21:46.625$  curves associated with them,

NOTE Confidence: 0.82035017

 $00:21:46.630 \longrightarrow 00:21:49.780$  the learning curve from open thoracotomy

 $00:21:49.780 \longrightarrow 00:21:53.081$  to robotic approach is an easier

NOTE Confidence: 0.82035017

 $00{:}21{:}53.081 \dashrightarrow 00{:}21{:}55.876$  minimally invasive approach to learn.

NOTE Confidence: 0.8788953

00:21:57.460 --> 00:22:00.298 And so from the patient's standpoint,

NOTE Confidence: 0.8788953

00:22:00.300 --> 00:22:03.618 if you compare vats to robotic surgery,

NOTE Confidence: 0.8788953

 $00:22:03.620 \longrightarrow 00:22:06.994$  is there any difference in terms of

NOTE Confidence: 0.8788953

 $00:22:06.994 \longrightarrow 00:22:11.210$  length of stay or pain, or return to work?

NOTE Confidence: 0.8780179

 $00:22:13.130 \longrightarrow 00:22:15.845$  There have been and continue

NOTE Confidence: 0.8780179

 $00:22:15.845 \longrightarrow 00:22:19.180$  to be studies looking at this.

NOTE Confidence: 0.8780179

 $00:22:19.180 \longrightarrow 00:22:22.060$  And other factors as well.

NOTE Confidence: 0.8780179

00:22:22.060 --> 00:22:26.180 For example, the length of state there is

NOTE Confidence: 0.8780179

 $00{:}22{:}26.180 \to 00{:}22{:}30.676$  a trend towards decrease length of stay.

NOTE Confidence: 0.8780179

00:22:30.680 --> 00:22:34.705 There is a trend towards decrease pain,

NOTE Confidence: 0.8780179

 $00:22:34.710 \longrightarrow 00:22:39.240$  but so far nothing that is

NOTE Confidence: 0.8780179

 $00:22:39.240 \longrightarrow 00:22:40.750$  statistically significant.

NOTE Confidence: 0.8780179

 $00:22:40.750 \longrightarrow 00:22:43.515$  The other factor to consider

NOTE Confidence: 0.8780179

 $00:22:43.515 \longrightarrow 00:22:46.280$  is from a cancer operation.

 $00:22:46.280 \longrightarrow 00:22:49.634$  If any of these minimally invasive

NOTE Confidence: 0.8780179

 $00:22:49.634 \longrightarrow 00:22:52.589$  approaches are similar or different

NOTE Confidence: 0.8780179

00:22:52.589 --> 00:22:55.709 than the traditional approach in

NOTE Confidence: 0.8780179

00:22:55.709 --> 00:22:59.671 terms of cancer survival and so far

NOTE Confidence: 0.8780179

 $00{:}22{:}59.671 \dashrightarrow 00{:}23{:}02.407$  both events in the robotic approach

NOTE Confidence: 0.8780179

 $00:23:02.407 \longrightarrow 00:23:06.242$  do not have a difference between them

NOTE Confidence: 0.8780179

 $00:23:06.242 \longrightarrow 00:23:09.882$  or with the traditional

NOTE Confidence: 0.8780179

00:23:09.882 --> 00:23:13.740 approach in terms of cancer survivorship.

NOTE Confidence: 0.820907300000001

 $00{:}23{:}14.160 \dashrightarrow 00{:}23{:}17.352$  And is robotic surgery covered by all

NOTE Confidence: 0.820907300000001

 $00:23:17.352 \longrightarrow 00:23:20.528$  insurance the way vats is and would

NOTE Confidence: 0.820907300000001

 $00:23:20.528 \longrightarrow 00:23:23.627$  be the cost to the patient and or

NOTE Confidence: 0.820907300000001

 $00:23:23.627 \longrightarrow 00:23:26.637$  to the hospital system be the same.

NOTE Confidence: 0.8554135

 $00:23:27.840 \longrightarrow 00:23:30.355$  Most insurance companies do recognize

NOTE Confidence: 0.8554135

 $00:23:30.355 \longrightarrow 00:23:33.590$  robotic surgery and it is covered.

NOTE Confidence: 0.8554135

00:23:33.590 --> 00:23:37.468 I don't know the specifics of how

00:23:37.468 --> 00:23:40.288 the comparison between a robotic

NOTE Confidence: 0.8554135

 $00{:}23{:}40.288 \operatorname{--}{>} 00{:}23{:}42.913$  approach versus a vats approach

NOTE Confidence: 0.8554135

 $00:23:42.913 \longrightarrow 00:23:46.669$  in terms of the final cost to the

NOTE Confidence: 0.8554135

 $00:23:46.670 \longrightarrow 00:23:49.785$  patient.

NOTE Confidence: 0.8554135

 $00:23:49.785 \longrightarrow 00:23:52.267$  So how do you make the decision between whether

NOTE Confidence: 0.8554135

00:23:52.267 --> 00:23:55.417 to offer patients a VATS procedure

NOTE Confidence: 0.8554135

00:23:55.417 --> 00:23:58.169 versus a robotic procedure?

NOTE Confidence: 0.88799626

 $00:23:58.930 \longrightarrow 00:24:04.339$  I think the main thing is from the surgeon

NOTE Confidence: 0.88799626

 $00{:}24{:}04.339 \dashrightarrow 00{:}24{:}07.778$  experience and training standpoint.

NOTE Confidence: 0.88799626

00:24:07.780 --> 00:24:13.204 I think when patients are seeing a thoracic

NOTE Confidence: 0.88799626

 $00{:}24{:}13.204 \dashrightarrow 00{:}24{:}18.140$  surgeon and discussing surgical options

NOTE Confidence: 0.88799626

 $00{:}24{:}18.140 \dashrightarrow 00{:}24{:}21.346$  mostly, a surgeon has trained and is

NOTE Confidence: 0.88799626

 $00:24:21.346 \longrightarrow 00:24:24.513$  comfortable with the vats approach and then

NOTE Confidence: 0.88799626

 $00{:}24{:}24.513 \dashrightarrow 00{:}24{:}27.720$  I think that is appropriate of course.

NOTE Confidence: 0.88799626

 $00:24:27.720 \longrightarrow 00:24:30.420$  And if they are more comfortable

NOTE Confidence: 0.88799626

 $00:24:30.420 \longrightarrow 00:24:33.214$  and have trained in the robotic

 $00:24:33.214 \longrightarrow 00:24:36.378$  approach then that is fine as well.

NOTE Confidence: 0.88799626

 $00{:}24{:}36.380 \dashrightarrow 00{:}24{:}39.019$  I think the main thing for

NOTE Confidence: 0.88799626

 $00:24:39.019 \longrightarrow 00:24:42.610$  patients to be aware of is that the

NOTE Confidence: 0.88799626

 $00:24:42.610 \longrightarrow 00:24:44.985$  thoracic surgeon have some experience

NOTE Confidence: 0.88799626

00:24:45.074 --> 00:24:47.779 in a minimally invasive approach,

NOTE Confidence: 0.88799626

 $00:24:47.780 \longrightarrow 00:24:50.170$  whether it's vats or robotic.

NOTE Confidence: 0.88799626

 $00:24:50.170 \longrightarrow 00:24:54.506$  So that their length of stay is less,

NOTE Confidence: 0.88799626

 $00:24:54.510 \longrightarrow 00:24:56.682$  their pain is less.

NOTE Confidence: 0.88799626

00:24:56.682 --> 00:24:59.940 Their return to work is sooner,

NOTE Confidence: 0.88799626

 $00{:}24{:}59.940 \dashrightarrow 00{:}25{:}03.156$  and there are also less complications

NOTE Confidence: 0.88799626

 $00:25:03.156 \longrightarrow 00:25:05.932$  after surgery compared to the

NOTE Confidence: 0.88799626

 $00:25:05.932 \longrightarrow 00:25:08.627$  traditional open approach as well.

 $00{:}25{:}10.570 \dashrightarrow 00{:}25{:}13.006$  Do all hospitals have robotic

NOTE Confidence: 0.8563883

 $00:25:13.006 \longrightarrow 00:25:15.863$  surgery or when we

NOTE Confidence: 0.8563883

 $00:25:15.863 \longrightarrow 00:25:19.100$  were talking about VATS you had kind of

NOTE Confidence: 0.8563883

 $00:25:19.100 \longrightarrow 00:25:21.938$  mentioned that this is pretty ubiquitous.

00:25:21.940 --> 00:25:24.892 Most people have trained in vats and

NOTE Confidence: 0.8563883

 $00:25:24.892 \longrightarrow 00:25:28.468$  so it would be something that would be

NOTE Confidence: 0.8563883

 $00:25:28.468 \longrightarrow 00:25:31.619$  very amenable no matter where you were.

NOTE Confidence: 0.8563883

00:25:31.620 --> 00:25:34.038 It doesn't sound like that's necessarily

NOTE Confidence: 0.8563883

 $00:25:34.038 \longrightarrow 00:25:36.250$  the case for robotic surgery.

 $00:25:36.670 \longrightarrow 00:25:39.256$  Is that right?

NOTE Confidence: 0.8563883

 $00:25:39.256 \longrightarrow 00:25:41.650$  Not all hospital systems have the Davinci

NOTE Confidence: 0.8563883

 $00:25:41.650 \longrightarrow 00:25:44.655$  technology this is something

NOTE Confidence: 0.8563883

 $00{:}25{:}44.655 \dashrightarrow 00{:}25{:}48.325$  that is becoming more common and

NOTE Confidence: 0.8563883

00:25:48.325 --> 00:25:51.140 my understanding from a financial

NOTE Confidence: 0.8563883

 $00:25:51.140 \longrightarrow 00:25:54.026$  standpoint is that the company

NOTE Confidence: 0.8563883

 $00:25:54.026 \longrightarrow 00:25:57.764$  does work with the hospital in the

NOTE Confidence: 0.8563883

00:25:57.764 --> 00:26:01.370 health system to come up with a

NOTE Confidence: 0.8563883

 $00{:}26{:}01.370 \dashrightarrow 00{:}26{:}05.331$  suitable plan so that they can offer

NOTE Confidence: 0.8563883

00:26:05.331 --> 00:26:08.611 the robotic technology to their

NOTE Confidence: 0.8563883

 $00:26:08.611 \longrightarrow 00:26:12.650$  patients and to save on the cost.

00:26:12.650 --> 00:26:16.154 And that cost savings,

NOTE Confidence: 0.8563883

 $00{:}26{:}16.160 \dashrightarrow 00{:}26{:}17.912$  hopefully does get passed

NOTE Confidence: 0.8563883

 $00:26:17.912 \longrightarrow 00:26:20.102$  on to the patient as

NOTE Confidence: 0.849295560000001

 $00:26:20.110 \longrightarrow 00:26:23.166$  well, and you had

NOTE Confidence: 0.849295560000001

00:26:23.166 --> 00:26:25.960 talked about kind of deciding between

NOTE Confidence: 0.849295560000001

 $00:26:25.960 \longrightarrow 00:26:28.882$  vats versus robotic surgery you

NOTE Confidence: 0.849295560000001

 $00:26:28.971 \longrightarrow 00:26:31.981$  really mentioned that it had to do

NOTE Confidence: 0.849295560000001

 $00{:}26{:}31.981 \dashrightarrow 00{:}26{:}34.230$  primarily with the surgeons comfort.

NOTE Confidence: 0.849295560000001

 $00{:}26{:}34.230 \dashrightarrow 00{:}26{:}37.080$  If surgeons are comfortable with both

NOTE Confidence: 0.849295560000001

 $00:26:37.080 \longrightarrow 00:26:39.869$  techniques and have been trained in both,

NOTE Confidence: 0.849295560000001

 $00{:}26{:}39.870 \dashrightarrow 00{:}26{:}41.774$  are there particular patient

NOTE Confidence: 0.849295560000001

 $00:26:41.774 \longrightarrow 00:26:43.678$  characteristics that would lean

NOTE Confidence: 0.849295560000001

00:26:43.678 --> 00:26:46.007 you more one way or another?

NOTE Confidence: 0.8922881

 $00:26:46.900 \longrightarrow 00:26:51.870$  Yeah, for the robotic approach

NOTE Confidence: 0.8922881

 $00:26:51.870 \longrightarrow 00:26:55.266$  the instruments tend to be longer

 $00:26:55.266 \longrightarrow 00:26:58.150$  and sturdier than the vats

NOTE Confidence: 0.8922881

 $00{:}26{:}58.150 \dashrightarrow 00{:}27{:}01.010$  instruments and so for patients

NOTE Confidence: 0.8922881

00:27:01.010 --> 00:27:04.322 for example, who might be morbidly

NOTE Confidence: 0.8922881

 $00:27:04.322 \longrightarrow 00:27:07.859$  obese

NOTE Confidence: 0.8922881

 $00:27:07.860 \longrightarrow 00:27:12.765$  it would be easier for the surgeon to do

NOTE Confidence: 0.8922881

 $00{:}27{:}12.765 \to 00{:}27{:}17.769$  the surgery robotically versus by vats.

NOTE Confidence: 0.8922881

 $00:27:17.770 \longrightarrow 00:27:21.225$  And there are other scenarios

NOTE Confidence: 0.8922881

 $00:27:21.225 \longrightarrow 00:27:25.430$  from a tumor standpoint as well.

NOTE Confidence: 0.8922881

 $00:27:25.430 \longrightarrow 00:27:27.934$  With the robotic approach,

NOTE Confidence: 0.8922881

 $00:27:27.934 \longrightarrow 00:27:31.690$  the ability to do very fine

NOTE Confidence: 0.8922881

 $00:27:31.808 \longrightarrow 00:27:34.776$  detailed dissection and surgery

NOTE Confidence: 0.8922881

 $00{:}27{:}34.776 \dashrightarrow 00{:}27{:}39.228$  is enhanced compared to the vats

NOTE Confidence: 0.8922881

 $00:27:39.345 \longrightarrow 00:27:43.515$  approach due to the improved camera,

NOTE Confidence: 0.8922881

 $00{:}27{:}43.520 \dashrightarrow 00{:}27{:}47.786$  improved ergonomics and the ability

NOTE Confidence: 0.8922881

 $00:27:47.790 \longrightarrow 00:27:50.225$  for the robotic instrumentation to

NOTE Confidence: 0.8922881

 $00:27:50.225 \longrightarrow 00:27:52.660$  have greater degrees of freedom

 $00:27:52.735 \longrightarrow 00:27:54.580$  with the instrumentation,

NOTE Confidence: 0.8922881

 $00{:}27{:}54.580 \dashrightarrow 00{:}27{:}58.748$  so for those types of tumors as well,

NOTE Confidence: 0.8922881

 $00:27:58.750 \longrightarrow 00:28:01.170$  those are

NOTE Confidence: 0.8922881

 $00:28:01.170 \longrightarrow 00:28:05.226$  better performed with robotic versus vats.

NOTE Confidence: 0.8610148

 $00{:}28{:}05.870 \dashrightarrow 00{:}28{:}08.120$  Doctor Andrew Dhanasopon is an

NOTE Confidence: 0.8610148

 $00:28:08.120 \longrightarrow 00:28:09.620$  assistant professor of thoracic

NOTE Confidence: 0.8610148

 $00:28:09.681 \longrightarrow 00:28:12.040$  surgery at the Yale School of Medicine.

NOTE Confidence: 0.8610148

00:28:12.040 --> 00:28:13.496 If you have questions,

NOTE Confidence: 0.8610148

 $00:28:13.496 \longrightarrow 00:28:14.952$  the address is canceranswers@yale.edu

NOTE Confidence: 0.8610148

 $00:28:14.952 \longrightarrow 00:28:16.963$  and past editions of the program

NOTE Confidence: 0.8610148

00:28:16.963 --> 00:28:18.799 are available in audio and written

NOTE Confidence: 0.8610148

 $00:28:18.857 \longrightarrow 00:28:20.390$  form at yale cancercenter.org.

NOTE Confidence: 0.8610148

 $00{:}28{:}20.390 \dashrightarrow 00{:}28{:}22.790$  We hope you'll join us next week to

NOTE Confidence: 0.8610148

 $00:28:22.790 \longrightarrow 00:28:25.136$  learn more about the fight against

NOTE Confidence: 0.8610148

 $00:28:25.136 \longrightarrow 00:28:27.644$  cancer here on Connecticut Public Radio.