

WEBVTT

NOTE duration:"01:23:23"

NOTE recognizability:0.902

NOTE language:en-us

NOTE Confidence: 0.955269236666667

00:00:00.000 --> 00:00:01.836 OK. Good evening. Let's get started.

NOTE Confidence: 0.955269236666667

00:00:01.840 --> 00:00:04.640 Thank you so much for being here.

NOTE Confidence: 0.955269236666667

00:00:04.640 --> 00:00:05.720 My name is Mark Mercurio.

NOTE Confidence: 0.955269236666667

00:00:05.720 --> 00:00:07.005 I'm the director of the

NOTE Confidence: 0.955269236666667

00:00:07.005 --> 00:00:08.033 Program for Biomedical Ethics.

NOTE Confidence: 0.955269236666667

00:00:08.040 --> 00:00:10.440 And on behalf of our leadership,

NOTE Confidence: 0.955269236666667

00:00:10.440 --> 00:00:12.184 that would be Jack Hughes and Sarah Hull

NOTE Confidence: 0.955269236666667

00:00:12.184 --> 00:00:14.496 and Jen Miller and our manager, Karen Kolb.

NOTE Confidence: 0.955269236666667

00:00:14.496 --> 00:00:16.436 I welcome you here tonight.

NOTE Confidence: 0.955269236666667

00:00:16.440 --> 00:00:17.945 I think many of you are aware

NOTE Confidence: 0.955269236666667

00:00:17.945 --> 00:00:19.400 we do this twice a month.

NOTE Confidence: 0.955269236666667

00:00:19.400 --> 00:00:21.000 The schedule is online

NOTE Confidence: 0.955269236666667

00:00:21.000 --> 00:00:22.600 Biomedical Ethics at Yale.

NOTE Confidence: 0.955269236666667

00:00:22.600 --> 00:00:23.600 You can't miss us,
NOTE Confidence: 0.955269236666667

00:00:23.600 --> 00:00:25.884 and you can always just reach out to to
NOTE Confidence: 0.955269236666667

00:00:25.884 --> 00:00:27.592 Karen Colborne myself to fill you in.
NOTE Confidence: 0.955269236666667

00:00:27.600 --> 00:00:28.780 We've been planning this session
NOTE Confidence: 0.955269236666667

00:00:28.780 --> 00:00:29.960 for a while and I'm.
NOTE Confidence: 0.955269236666667

00:00:29.960 --> 00:00:31.118 I'm very happy that it's here.
NOTE Confidence: 0.955269236666667

00:00:31.120 --> 00:00:33.815 I've been wanting to do more for us with
NOTE Confidence: 0.955269236666667

00:00:33.815 --> 00:00:35.440 this group on artificial intelligence,
NOTE Confidence: 0.955269236666667

00:00:35.440 --> 00:00:37.290 specifically the ethics of artificial
NOTE Confidence: 0.955269236666667

00:00:37.290 --> 00:00:39.720 intelligence and its use in medicine.
NOTE Confidence: 0.955269236666667

00:00:39.720 --> 00:00:42.384 And the good news is we have someone with
NOTE Confidence: 0.955269236666667

00:00:42.384 --> 00:00:44.717 expertise in this matter right here at home,
NOTE Confidence: 0.955269236666667

00:00:44.720 --> 00:00:46.960 our own Bonnie Kaplan,
NOTE Confidence: 0.955269236666667

00:00:46.960 --> 00:00:49.837 who who comes to us educated from Cornell,
NOTE Confidence: 0.955269236666667

00:00:49.840 --> 00:00:51.760 as well as her master's and PHDI believe,
NOTE Confidence: 0.955269236666667

00:00:51.760 --> 00:00:53.424 from University of Chicago.

NOTE Confidence: 0.955269236666667
00:00:53.424 --> 00:00:55.920 She's on our faculty in Biostatistics.
NOTE Confidence: 0.955269236666667
00:00:55.920 --> 00:00:57.654 She's involved with ethics at the
NOTE Confidence: 0.955269236666667
00:00:57.654 --> 00:00:59.440 Solomon Center at the law School,
NOTE Confidence: 0.955269236666667
00:00:59.440 --> 00:01:01.640 with the Bioethics Center on the main campus.
NOTE Confidence: 0.955269236666667
00:01:01.640 --> 00:01:01.874 She's,
NOTE Confidence: 0.955269236666667
00:01:01.874 --> 00:01:02.342 of course,
NOTE Confidence: 0.955269236666667
00:01:02.342 --> 00:01:03.980 a member of our affiliated faculty in
NOTE Confidence: 0.955269236666667
00:01:04.028 --> 00:01:05.518 the biomedical ethics program here.
NOTE Confidence: 0.955269236666667
00:01:05.520 --> 00:01:08.552 She's a leader in informatics and
NOTE Confidence: 0.955269236666667
00:01:08.552 --> 00:01:10.112 issues of telemedicine and technology
NOTE Confidence: 0.955269236666667
00:01:10.112 --> 00:01:12.480 on a national and international level.
NOTE Confidence: 0.955269236666667
00:01:12.480 --> 00:01:14.496 And she's been kind enough to connect me
NOTE Confidence: 0.955269236666667
00:01:14.496 --> 00:01:16.638 to some of those folks over the years.
NOTE Confidence: 0.955269236666667
00:01:16.640 --> 00:01:18.158 She also has a particular interest
NOTE Confidence: 0.955269236666667
00:01:18.158 --> 00:01:18.917 in artificial intelligence.
NOTE Confidence: 0.955269236666667

00:01:18.920 --> 00:01:20.747 And so I was so pleased when
NOTE Confidence: 0.955269236666667

00:01:20.747 --> 00:01:22.458 she kindly agreed to spend the
NOTE Confidence: 0.955269236666667

00:01:22.458 --> 00:01:24.198 evening talking to us about that.
NOTE Confidence: 0.955269236666667

00:01:24.200 --> 00:01:25.768 So what we're going to do and the
NOTE Confidence: 0.955269236666667

00:01:25.768 --> 00:01:27.284 many of you are familiar with this
NOTE Confidence: 0.955269236666667

00:01:27.284 --> 00:01:29.079 is for the next 50 minutes or so,
NOTE Confidence: 0.955269236666667

00:01:29.080 --> 00:01:30.319 Bonnie's going to speak to us and
NOTE Confidence: 0.955269236666667

00:01:30.319 --> 00:01:31.880 give us a PowerPoint presentation.
NOTE Confidence: 0.955269236666667

00:01:31.880 --> 00:01:34.078 And after that, we'll have a conversation.
NOTE Confidence: 0.955269236666667

00:01:34.080 --> 00:01:35.538 And folks online as well as
NOTE Confidence: 0.955269236666667

00:01:35.538 --> 00:01:37.320 folks in the room are welcome to
NOTE Confidence: 0.955269236666667

00:01:37.320 --> 00:01:39.216 address questions to Bonnie or to
NOTE Confidence: 0.955269236666667

00:01:39.216 --> 00:01:40.480 have comments and conversation.
NOTE Confidence: 0.955269236666667

00:01:40.480 --> 00:01:42.040 And as you know, as always,
NOTE Confidence: 0.955269236666667

00:01:42.040 --> 00:01:44.786 we will wrap up at 6:30.
NOTE Confidence: 0.955269236666667

00:01:44.786 --> 00:01:46.916 So with no further ado,

NOTE Confidence: 0.955269236666667
00:01:46.920 --> 00:01:48.816 I want to introduce my friend
NOTE Confidence: 0.955269236666667
00:01:48.816 --> 00:01:50.413 and our affiliated faculty, Dr.
NOTE Confidence: 0.955269236666667
00:01:50.413 --> 00:01:51.079 Bonnie Kaplan.
NOTE Confidence: 0.22737272
00:01:58.760 --> 00:01:58.880 And
NOTE Confidence: 0.967323894
00:02:04.950 --> 00:02:06.430 let me say that publicly.
NOTE Confidence: 0.967323894
00:02:06.430 --> 00:02:08.068 Thank you very much, Doctor Mercurio,
NOTE Confidence: 0.967323894
00:02:08.070 --> 00:02:10.534 for inviting me and for that very
NOTE Confidence: 0.967323894
00:02:10.534 --> 00:02:12.510 welcome and generous introduction.
NOTE Confidence: 0.967323894
00:02:12.510 --> 00:02:14.940 Thank you everyone who's here virtually
NOTE Confidence: 0.967323894
00:02:14.940 --> 00:02:18.126 and in person for coming to hear
NOTE Confidence: 0.967323894
00:02:18.126 --> 00:02:20.114 more about artificial intelligence
NOTE Confidence: 0.967323894
00:02:20.120 --> 00:02:22.234 in medicine and some of the ethical,
NOTE Confidence: 0.967323894
00:02:22.240 --> 00:02:24.347 legal and social issues that have come
NOTE Confidence: 0.967323894
00:02:24.347 --> 00:02:26.466 up over the many years we've been
NOTE Confidence: 0.967323894
00:02:26.466 --> 00:02:30.879 using it and are coming up now as well.
NOTE Confidence: 0.967323894

00:02:30.880 --> 00:02:35.638 I have no conflicts of interest to declare,
NOTE Confidence: 0.967323894

00:02:35.640 --> 00:02:37.440 no funding to declare.
NOTE Confidence: 0.969187933809524

00:02:40.520 --> 00:02:42.893 I'm going to meet the objectives of
NOTE Confidence: 0.969187933809524

00:02:42.893 --> 00:02:45.641 this talk that you all saw by raising
NOTE Confidence: 0.969187933809524

00:02:45.641 --> 00:02:48.120 questions and issues to be considered.
NOTE Confidence: 0.969187933809524

00:02:48.120 --> 00:02:50.346 I'm not going to answer them because
NOTE Confidence: 0.969187933809524

00:02:50.346 --> 00:02:52.440 there aren't any easy answers here.
NOTE Confidence: 0.969187933809524

00:02:52.440 --> 00:02:54.456 I'm going to try to separate out
NOTE Confidence: 0.969187933809524

00:02:54.456 --> 00:02:56.160 the ethical and legal issues.
NOTE Confidence: 0.969187933809524

00:02:56.160 --> 00:02:58.480 The social issues run through all of those,
NOTE Confidence: 0.969187933809524

00:02:58.480 --> 00:03:01.168 but all of them are interconnected
NOTE Confidence: 0.969187933809524

00:03:01.168 --> 00:03:04.704 and I am going to focus on now and
NOTE Confidence: 0.969187933809524

00:03:04.704 --> 00:03:07.385 before now instead of the far future
NOTE Confidence: 0.969187933809524

00:03:07.385 --> 00:03:10.569 or maybe not so far future of issues
NOTE Confidence: 0.969187933809524

00:03:10.569 --> 00:03:13.264 having to do with super intelligence
NOTE Confidence: 0.969187933809524

00:03:13.264 --> 00:03:17.146 and moral agency and of various sorts

NOTE Confidence: 0.969187933809524
00:03:17.146 --> 00:03:19.954 of potential artificial intelligences.
NOTE Confidence: 0.969187933809524
00:03:19.960 --> 00:03:22.000 I'm going to focus on clinical.
NOTE Confidence: 0.969187933809524
00:03:22.000 --> 00:03:24.201 There are uses that are not
NOTE Confidence: 0.969187933809524
00:03:24.201 --> 00:03:24.923 entirely clinical.
NOTE Confidence: 0.969187933809524
00:03:24.923 --> 00:03:27.089 I'm not going to talk about
NOTE Confidence: 0.969187933809524
00:03:27.089 --> 00:03:28.717 all of AI in medicine.
NOTE Confidence: 0.969187933809524
00:03:28.720 --> 00:03:31.312 We would be here for the next several years.
NOTE Confidence: 0.969187933809524
00:03:31.320 --> 00:03:34.200 I am not even going to talk therefore about
NOTE Confidence: 0.969187933809524
00:03:34.200 --> 00:03:36.360 all of information technology and medicine,
NOTE Confidence: 0.969187933809524
00:03:36.360 --> 00:03:38.220 although many of the issues
NOTE Confidence: 0.969187933809524
00:03:38.220 --> 00:03:40.080 cross cut all of those.
NOTE Confidence: 0.969187933809524
00:03:40.080 --> 00:03:43.806 So I'm going to survey a lot of different
NOTE Confidence: 0.969187933809524
00:03:43.806 --> 00:03:46.615 things with the goal of encouraging
NOTE Confidence: 0.969187933809524
00:03:46.615 --> 00:03:48.784 and hoping that we'll all be thinking
NOTE Confidence: 0.969187933809524
00:03:48.784 --> 00:03:50.798 much more about these kinds of issues,
NOTE Confidence: 0.969187933809524

00:03:50.800 --> 00:03:52.816 that we will be thinking much
NOTE Confidence: 0.969187933809524

00:03:52.816 --> 00:03:54.582 more broadly than most people
NOTE Confidence: 0.969187933809524

00:03:54.582 --> 00:03:56.357 have been thinking so far.
NOTE Confidence: 0.969187933809524

00:03:56.360 --> 00:03:58.344 And so that we can make wise decisions
NOTE Confidence: 0.969187933809524

00:03:58.344 --> 00:04:00.557 about how it should be used in healthcare.
NOTE Confidence: 0.967020352666667

00:04:03.000 --> 00:04:05.443 A quick review of just where we've
NOTE Confidence: 0.967020352666667

00:04:05.443 --> 00:04:07.967 come over the past seventy years or
NOTE Confidence: 0.967020352666667

00:04:07.967 --> 00:04:10.354 so shows that we've had many, many,
NOTE Confidence: 0.967020352666667

00:04:10.354 --> 00:04:12.524 many ways that artificial intelligence
NOTE Confidence: 0.967020352666667

00:04:12.524 --> 00:04:15.400 is being used in medicine today.
NOTE Confidence: 0.967020352666667

00:04:15.400 --> 00:04:17.276 Those of you who are in practice
NOTE Confidence: 0.967020352666667

00:04:17.276 --> 00:04:18.880 have probably seen some of these,
NOTE Confidence: 0.967020352666667

00:04:18.880 --> 00:04:20.506 those of you who are patients
NOTE Confidence: 0.967020352666667

00:04:20.506 --> 00:04:22.000 have seen some of these.
NOTE Confidence: 0.967020352666667

00:04:22.000 --> 00:04:23.836 So that's pretty much everybody here.
NOTE Confidence: 0.967020352666667

00:04:23.840 --> 00:04:26.084 Even if you don't know that,

NOTE Confidence: 0.967020352666667
00:04:26.084 --> 00:04:27.700 that's what artificial intelligence
NOTE Confidence: 0.967020352666667
00:04:27.700 --> 00:04:30.176 is behind these things because until
NOTE Confidence: 0.967020352666667
00:04:30.176 --> 00:04:33.172 very recently we haven't much called it
NOTE Confidence: 0.967020352666667
00:04:33.172 --> 00:04:36.448 artificial intelligence and except very
NOTE Confidence: 0.967020352666667
00:04:36.448 --> 00:04:39.624 early and what's mainly being called
NOTE Confidence: 0.967020352666667
00:04:39.624 --> 00:04:41.954 now artificial intelligence are the
NOTE Confidence: 0.967020352666667
00:04:41.954 --> 00:04:44.758 machine learning ChatGPT sort of programs.
NOTE Confidence: 0.967020352666667
00:04:44.760 --> 00:04:46.380 But clinical decision support systems
NOTE Confidence: 0.967020352666667
00:04:46.380 --> 00:04:48.520 which we've had being developed over many,
NOTE Confidence: 0.967020352666667
00:04:48.520 --> 00:04:52.120 many years are also artificial intelligence.
NOTE Confidence: 0.967020352666667
00:04:52.120 --> 00:04:54.440 They include algorithmic scoring systems,
NOTE Confidence: 0.967020352666667
00:04:54.440 --> 00:04:56.270 which almost anybody who's doing clinical
NOTE Confidence: 0.967020352666667
00:04:56.270 --> 00:04:58.439 work is going to be familiar with.
NOTE Confidence: 0.967020352666667
00:04:58.440 --> 00:04:59.376 Treatment guidelines,
NOTE Confidence: 0.967020352666667
00:04:59.376 --> 00:05:01.716 drug drug interactions and alerts.
NOTE Confidence: 0.967020352666667

00:05:01.720 --> 00:05:05.000 If you are giving a patient a prescription

NOTE Confidence: 0.967020352666667

00:05:05.000 --> 00:05:07.666 that they may be allergic to reminders,

NOTE Confidence: 0.967020352666667

00:05:07.666 --> 00:05:09.396 they can be very simple,

NOTE Confidence: 0.967020352666667

00:05:09.400 --> 00:05:12.396 like don't forget to vaccinate this patient.

NOTE Confidence: 0.967020352666667

00:05:12.400 --> 00:05:14.104 Or much more sophisticated,

NOTE Confidence: 0.967020352666667

00:05:14.104 --> 00:05:16.234 they could be having to

NOTE Confidence: 0.967020352666667

00:05:16.234 --> 00:05:18.319 do with image analysis.

NOTE Confidence: 0.967020352666667

00:05:18.320 --> 00:05:21.020 Diagnostic image analysis for an

NOTE Confidence: 0.967020352666667

00:05:21.020 --> 00:05:23.560 EKGS on retinal scans, on mammograms,

NOTE Confidence: 0.967020352666667

00:05:23.560 --> 00:05:24.470 on colonoscopies,

NOTE Confidence: 0.967020352666667

00:05:24.470 --> 00:05:28.496 on all kinds of images is going on.

NOTE Confidence: 0.967020352666667

00:05:28.496 --> 00:05:32.384 We have monitoring and alert systems

NOTE Confidence: 0.967020352666667

00:05:32.384 --> 00:05:34.780 where you're monitoring patients

NOTE Confidence: 0.967020352666667

00:05:34.780 --> 00:05:37.732 in the hospital and where you're

NOTE Confidence: 0.967020352666667

00:05:37.732 --> 00:05:39.752 monitoring patients at home through

NOTE Confidence: 0.967020352666667

00:05:39.752 --> 00:05:42.159 various kinds of sensors and machinery.

NOTE Confidence: 0.967020352666667
00:05:42.160 --> 00:05:45.226 We also have devices that do automatic
NOTE Confidence: 0.967020352666667
00:05:45.226 --> 00:05:47.898 monitoring and regulation of things like
NOTE Confidence: 0.967020352666667
00:05:47.898 --> 00:05:50.038 insulin in automatic insulin pumps.
NOTE Confidence: 0.967020352666667
00:05:50.040 --> 00:05:51.000 And this is wonderful.
NOTE Confidence: 0.967020352666667
00:05:51.000 --> 00:05:52.200 Imagine if you're a diabetic,
NOTE Confidence: 0.967020352666667
00:05:52.200 --> 00:05:54.513 you don't have to constantly take your
NOTE Confidence: 0.967020352666667
00:05:54.513 --> 00:05:56.478 sugar levels and make adjustments.
NOTE Confidence: 0.967020352666667
00:05:56.480 --> 00:06:01.376 We have programs that issue TRIG
NOTE Confidence: 0.967020352666667
00:06:01.376 --> 00:06:04.104 alerts such as impending work
NOTE Confidence: 0.967020352666667
00:06:04.104 --> 00:06:06.073 that's or currently done.
NOTE Confidence: 0.967020352666667
00:06:06.073 --> 00:06:09.480 Very promising work on isn't epileptic
NOTE Confidence: 0.967020352666667
00:06:09.480 --> 00:06:15.103 seizure coming or older work that says you,
NOTE Confidence: 0.967020352666667
00:06:15.103 --> 00:06:17.784 Bonnie may be walking into an area
NOTE Confidence: 0.967020352666667
00:06:17.784 --> 00:06:20.317 that's going to trigger your asthma.
NOTE Confidence: 0.967020352666667
00:06:20.320 --> 00:06:22.644 So all kinds of these sorts of
NOTE Confidence: 0.967020352666667

00:06:22.644 --> 00:06:24.843 things are happening and we have
NOTE Confidence: 0.967020352666667

00:06:24.843 --> 00:06:26.447 health behavior counseling programs
NOTE Confidence: 0.967020352666667

00:06:26.447 --> 00:06:28.638 that's been going on a long time.
NOTE Confidence: 0.967020352666667

00:06:28.640 --> 00:06:31.250 They can help the clinicians counsel
NOTE Confidence: 0.967020352666667

00:06:31.250 --> 00:06:33.307 patients by providing guidelines for
NOTE Confidence: 0.967020352666667

00:06:33.307 --> 00:06:35.961 that or they can be directly used by
NOTE Confidence: 0.967020352666667

00:06:35.961 --> 00:06:38.892 patients such as a system I worked on
NOTE Confidence: 0.967020352666667

00:06:38.892 --> 00:06:41.410 which had telephone based AI counseling
NOTE Confidence: 0.967020352666667

00:06:41.410 --> 00:06:44.035 for diet and exercise behavior.
NOTE Confidence: 0.967020352666667

00:06:44.040 --> 00:06:46.440 We have language processing,
NOTE Confidence: 0.967020352666667

00:06:46.440 --> 00:06:48.840 voice recognition for dictation.
NOTE Confidence: 0.967020352666667

00:06:48.840 --> 00:06:50.877 It's gotten better and better and better.
NOTE Confidence: 0.967020352666667

00:06:50.880 --> 00:06:53.514 We've had natural language processing for
NOTE Confidence: 0.967020352666667

00:06:53.514 --> 00:06:56.440 analyzing the text and patient records.
NOTE Confidence: 0.967020352666667

00:06:56.440 --> 00:06:59.670 We have automated scribing so
NOTE Confidence: 0.967020352666667

00:06:59.670 --> 00:07:02.460 that if you're sort of listening

NOTE Confidence: 0.967020352666667
00:07:02.460 --> 00:07:04.600 in on a clinical encounter,
NOTE Confidence: 0.967020352666667
00:07:04.600 --> 00:07:06.620 notes get generated automatically.
NOTE Confidence: 0.967020352666667
00:07:06.620 --> 00:07:09.145 We have resource embed algorithms
NOTE Confidence: 0.967020352666667
00:07:09.145 --> 00:07:11.480 and predictive algorithms for
NOTE Confidence: 0.964215501666667
00:07:13.960 --> 00:07:16.876 doing organ allocation for transplant people
NOTE Confidence: 0.900042448
00:07:20.040 --> 00:07:21.680 and I lost the mouse, excuse me,
NOTE Confidence: 0.893632574444444
00:07:24.640 --> 00:07:27.950 we have ICU bed allocation
NOTE Confidence: 0.893632574444444
00:07:27.950 --> 00:07:30.930 algorithms and that is really
NOTE Confidence: 0.893632574444444
00:07:30.930 --> 00:07:33.240 came to the fore and was very,
NOTE Confidence: 0.893632574444444
00:07:33.240 --> 00:07:35.320 very helpful during the
NOTE Confidence: 0.893632574444444
00:07:35.320 --> 00:07:37.920 peak of the COVID pandemic.
NOTE Confidence: 0.893632574444444
00:07:37.920 --> 00:07:39.840 When you have scarce resources,
NOTE Confidence: 0.893632574444444
00:07:39.840 --> 00:07:41.960 how is the wisest way to allocate them?
NOTE Confidence: 0.893632574444444
00:07:41.960 --> 00:07:42.880 I'm OK, thank you.
NOTE Confidence: 0.8966503768
00:07:45.200 --> 00:07:47.768 Yeah, we have the quantified self
NOTE Confidence: 0.8966503768

00:07:47.768 --> 00:07:50.440 movement that's been going on now
NOTE Confidence: 0.8966503768

00:07:50.440 --> 00:07:53.092 for a while where individuals are
NOTE Confidence: 0.8966503768

00:07:53.092 --> 00:07:55.126 taking responsibility and it's keen
NOTE Confidence: 0.8966503768

00:07:55.126 --> 00:07:57.785 interest in all of their body functions
NOTE Confidence: 0.8966503768

00:07:57.785 --> 00:07:59.341 and monitoring their physiological
NOTE Confidence: 0.8966503768

00:07:59.341 --> 00:08:01.238 science and keeping track of that.
NOTE Confidence: 0.8966503768

00:08:01.240 --> 00:08:03.208 So they're wonderful developments
NOTE Confidence: 0.8966503768

00:08:03.208 --> 00:08:06.160 that are happening that are providing
NOTE Confidence: 0.8966503768

00:08:06.160 --> 00:08:09.000 lots of help and lots of guidance and
NOTE Confidence: 0.8966503768

00:08:09.000 --> 00:08:11.920 lots of improvements in healthcare.
NOTE Confidence: 0.974958164285714

00:08:19.280 --> 00:08:21.275 A lot has been going on recently,
NOTE Confidence: 0.974958164285714

00:08:21.280 --> 00:08:25.634 much more since the introduction of ChatGPT.
NOTE Confidence: 0.974958164285714

00:08:25.640 --> 00:08:27.680 That caused an awful lot of
NOTE Confidence: 0.941828075555555

00:08:29.760 --> 00:08:31.479 excitement. Rightly so.
NOTE Confidence: 0.941828075555555

00:08:31.479 --> 00:08:34.917 It burst on the scene almost
NOTE Confidence: 0.941828075555555

00:08:34.920 --> 00:08:37.240 12 months ago, not quite.

NOTE Confidence: 0.941828075555555
00:08:37.240 --> 00:08:39.208 And there's tremendous amount
NOTE Confidence: 0.941828075555555
00:08:39.208 --> 00:08:42.778 going on here at Yale since then
NOTE Confidence: 0.941828075555555
00:08:42.778 --> 00:08:45.438 that's now called explicitly AI.
NOTE Confidence: 0.941828075555555
00:08:45.440 --> 00:08:47.393 They just had a conference on this
NOTE Confidence: 0.941828075555555
00:08:47.393 --> 00:08:49.754 where a number of the projects were
NOTE Confidence: 0.941828075555555
00:08:49.754 --> 00:08:51.680 highlighted and I've listed them here.
NOTE Confidence: 0.941828075555555
00:08:51.680 --> 00:08:53.800 But the main point is there's a lot going on,
NOTE Confidence: 0.941828075555555
00:08:53.800 --> 00:08:55.840 a lot of programs happening
NOTE Confidence: 0.941828075555555
00:08:55.840 --> 00:08:57.880 all over on many campuses,
NOTE Confidence: 0.941828075555555
00:08:57.880 --> 00:08:59.280 including here.
NOTE Confidence: 0.83799681
00:09:04.760 --> 00:09:06.200 How did we get here?
NOTE Confidence: 0.83799681
00:09:06.200 --> 00:09:08.440 So I want to take a look at what we've
NOTE Confidence: 0.83799681
00:09:08.503 --> 00:09:10.735 seen in the past and a number of the
NOTE Confidence: 0.83799681
00:09:10.735 --> 00:09:12.855 kinds of issues that have come up in
NOTE Confidence: 0.83799681
00:09:12.855 --> 00:09:16.020 the past that are still prevalent today
NOTE Confidence: 0.83799681

00:09:16.020 --> 00:09:18.400 in somewhat different incarnations,
NOTE Confidence: 0.83799681

00:09:18.400 --> 00:09:20.864 and then some of the newer issues
NOTE Confidence: 0.83799681

00:09:20.864 --> 00:09:22.680 that we're seeing coming up.
NOTE Confidence: 0.83799681

00:09:22.680 --> 00:09:28.024 AI has been part of medicine for a long time.
NOTE Confidence: 0.83799681

00:09:28.024 --> 00:09:31.846 Alan Turing's paper from 1950 raised a
NOTE Confidence: 0.83799681

00:09:31.846 --> 00:09:35.080 question of are computers intelligent?
NOTE Confidence: 0.83799681

00:09:35.080 --> 00:09:36.640 They were already out there.
NOTE Confidence: 0.83799681

00:09:36.640 --> 00:09:38.290 They were already being touted
NOTE Confidence: 0.83799681

00:09:38.290 --> 00:09:39.280 as giant brains.
NOTE Confidence: 0.83799681

00:09:39.280 --> 00:09:41.050 And this has been a question
NOTE Confidence: 0.83799681

00:09:41.050 --> 00:09:42.250 we've had all along.
NOTE Confidence: 0.83799681

00:09:42.250 --> 00:09:44.080 They're talking here about digital computers.
NOTE Confidence: 0.83799681

00:09:44.080 --> 00:09:46.205 There were other kinds of
NOTE Confidence: 0.83799681

00:09:46.205 --> 00:09:47.480 computers before that.
NOTE Confidence: 0.83799681

00:09:47.480 --> 00:09:49.211 In the 1950s,
NOTE Confidence: 0.83799681

00:09:49.211 --> 00:09:52.096 there was enough happening in

NOTE Confidence: 0.83799681

00:09:52.096 --> 00:09:55.638 medicine that we had books coming out,

NOTE Confidence: 0.83799681

00:09:55.640 --> 00:09:58.200 compiling various key contributions

NOTE Confidence: 0.83799681

00:09:58.200 --> 00:09:59.480 and papers.

NOTE Confidence: 0.83799681

00:09:59.480 --> 00:10:02.360 At the end of the decade we had a conference,

NOTE Confidence: 0.83799681

00:10:02.360 --> 00:10:05.258 a major conference that included work

NOTE Confidence: 0.83799681

00:10:05.258 --> 00:10:07.701 on artificial intelligence such as

NOTE Confidence: 0.83799681

00:10:07.701 --> 00:10:09.906 image analysis and pattern recognition

NOTE Confidence: 0.83799681

00:10:09.906 --> 00:10:12.440 for pathology and for radiology,

NOTE Confidence: 0.83799681

00:10:12.440 --> 00:10:15.240 and Ledley and Lesstedt's very

NOTE Confidence: 0.83799681

00:10:15.240 --> 00:10:18.510 influential 1959 work on using Bayesian

NOTE Confidence: 0.83799681

00:10:18.510 --> 00:10:20.678 analysis for differential diagnosis.

NOTE Confidence: 0.96155408

00:10:24.760 --> 00:10:26.120 I'm sorry I went backwards.

NOTE Confidence: 0.96155408

00:10:26.120 --> 00:10:28.088 Let's go forwards. OK?

NOTE Confidence: 0.96155408

00:10:28.088 --> 00:10:30.056 Of course I've arbitrarily

NOTE Confidence: 0.96155408

00:10:30.056 --> 00:10:32.080 divided this into decades

NOTE Confidence: 0.933215542142857

00:10:34.320 --> 00:10:36.390 because the work just continues
NOTE Confidence: 0.933215542142857

00:10:36.390 --> 00:10:38.460 all along and takes different
NOTE Confidence: 0.933215542142857

00:10:38.528 --> 00:10:40.360 forms at different periods.
NOTE Confidence: 0.933215542142857

00:10:40.360 --> 00:10:44.488 So by the 1960s we already had built
NOTE Confidence: 0.933215542142857

00:10:44.488 --> 00:10:47.700 in to various sorts of record systems
NOTE Confidence: 0.933215542142857

00:10:47.700 --> 00:10:49.880 what was called computer diagnosis
NOTE Confidence: 0.933215542142857

00:10:49.952 --> 00:10:52.397 and then computer assisted diagnosis.
NOTE Confidence: 0.70682156

00:10:54.520 --> 00:10:57.295 Larry weeds pomr from problem
NOTE Confidence: 0.70682156

00:10:57.295 --> 00:10:58.960 oriented medical record.
NOTE Confidence: 0.70682156

00:10:58.960 --> 00:11:03.022 He which he developed he then made into
NOTE Confidence: 0.70682156

00:11:03.022 --> 00:11:05.488 a computer based system called Promise
NOTE Confidence: 0.70682156

00:11:05.488 --> 00:11:07.679 which included clinical guidelines.
NOTE Confidence: 0.70682156

00:11:07.680 --> 00:11:09.636 The work done at what's now
NOTE Confidence: 0.70682156

00:11:09.640 --> 00:11:11.944 Intermountain Healthcare by Homer
NOTE Confidence: 0.70682156

00:11:11.944 --> 00:11:15.920 Warner also included that sort of work.
NOTE Confidence: 0.70682156

00:11:15.920 --> 00:11:17.858 Very influential projects going on at

NOTE Confidence: 0.70682156

00:11:17.858 --> 00:11:20.160 Stanford in what was called the sumac.

NOTE Confidence: 0.70682156

00:11:20.160 --> 00:11:22.278 Same project we had work also

NOTE Confidence: 0.70682156

00:11:22.278 --> 00:11:24.413 going on outside of medicine

NOTE Confidence: 0.70682156

00:11:24.413 --> 00:11:26.357 in artificial intelligence.

NOTE Confidence: 0.70682156

00:11:26.360 --> 00:11:29.062 Just as one example that got brought

NOTE Confidence: 0.70682156

00:11:29.062 --> 00:11:31.770 into medicine is the work that was

NOTE Confidence: 0.70682156

00:11:31.770 --> 00:11:34.711 done by Joseph Weisenbaum at MIT as

NOTE Confidence: 0.70682156

00:11:34.711 --> 00:11:37.501 an AI project to simulate Rogerian

NOTE Confidence: 0.70682156

00:11:37.501 --> 00:11:40.086 psychotherapy and that became promoted

NOTE Confidence: 0.70682156

00:11:40.086 --> 00:11:43.236 for ways to treat psychiatric patients.

NOTE Confidence: 0.70682156

00:11:43.240 --> 00:11:45.560 That's a program you may know as Eliza,

NOTE Confidence: 0.70682156

00:11:45.560 --> 00:11:47.520 you may know as Doctor,

NOTE Confidence: 0.70682156

00:11:47.520 --> 00:11:50.978 and many people have used that program

NOTE Confidence: 0.70682156

00:11:50.978 --> 00:11:53.879 knowing that it's computer based.

NOTE Confidence: 0.70682156

00:11:53.880 --> 00:11:59.192 Now they're using chat bots in the 1970s.

NOTE Confidence: 0.70682156

00:11:59.192 --> 00:12:02.105 We have somewhat of a change in the
NOTE Confidence: 0.70682156

00:12:02.105 --> 00:12:05.052 way the technology is done and the
NOTE Confidence: 0.70682156

00:12:05.052 --> 00:12:07.275 development that of course started
NOTE Confidence: 0.70682156

00:12:07.275 --> 00:12:09.879 in the 60s called expert systems.
NOTE Confidence: 0.70682156

00:12:09.880 --> 00:12:12.022 These are a little bit different because
NOTE Confidence: 0.70682156

00:12:12.022 --> 00:12:14.239 they are in more limited domains.
NOTE Confidence: 0.70682156

00:12:14.240 --> 00:12:18.056 So the very well known mycin system that
NOTE Confidence: 0.70682156

00:12:18.056 --> 00:12:21.413 Ted Shortliffe developed at Stanford in
NOTE Confidence: 0.70682156

00:12:21.413 --> 00:12:25.357 1972 is when it first hit the scene,
NOTE Confidence: 0.70682156

00:12:25.360 --> 00:12:28.480 recommended antibiotics for viral infections,
NOTE Confidence: 0.70682156

00:12:28.480 --> 00:12:31.680 bacterial infections, I'm sorry.
NOTE Confidence: 0.70682156

00:12:31.680 --> 00:12:32.571 Here at Yale,
NOTE Confidence: 0.70682156

00:12:32.571 --> 00:12:35.160 some of you may have known Doctor Miller,
NOTE Confidence: 0.70682156

00:12:35.160 --> 00:12:36.232 Perry Miller.
NOTE Confidence: 0.70682156

00:12:36.232 --> 00:12:38.912 Perry developed the PUFF program
NOTE Confidence: 0.70682156

00:12:38.912 --> 00:12:40.520 for anesthesiology administration.

NOTE Confidence: 0.70682156

00:12:40.520 --> 00:12:41.900 Another expert system.

NOTE Confidence: 0.70682156

00:12:41.900 --> 00:12:44.200 Work in these systems continued

NOTE Confidence: 0.70682156

00:12:44.200 --> 00:12:45.640 for some while.

NOTE Confidence: 0.70682156

00:12:45.640 --> 00:12:47.635 Perry went on to found the Yale

NOTE Confidence: 0.70682156

00:12:47.635 --> 00:12:49.240 Center for Medical Informatics,

NOTE Confidence: 0.70682156

00:12:49.240 --> 00:12:51.516 which I was part of for many, many years.

NOTE Confidence: 0.70682156

00:12:51.516 --> 00:12:54.022 It's now been rolled into the new

NOTE Confidence: 0.70682156

00:12:54.022 --> 00:12:56.180 programs here at Yale under the

NOTE Confidence: 0.70682156

00:12:56.180 --> 00:12:58.562 direction of the new position of the

NOTE Confidence: 0.70682156

00:12:58.562 --> 00:13:01.324 new deanship of Doctor Lucilla Ono

NOTE Confidence: 0.70682156

00:13:01.324 --> 00:13:03.836 Machado in Biomedical Informatics.

NOTE Confidence: 0.70682156

00:13:03.840 --> 00:13:06.600 So we see legacies here,

NOTE Confidence: 0.70682156

00:13:06.600 --> 00:13:09.036 even if you only look locally,

NOTE Confidence: 0.70682156

00:13:09.040 --> 00:13:10.212 but all across international.

NOTE Confidence: 0.70682156

00:13:10.212 --> 00:13:12.280 And I'm only focusing on US here,

NOTE Confidence: 0.70682156

00:13:12.280 --> 00:13:15.313 but this is going on all over many,
NOTE Confidence: 0.70682156

00:13:15.313 --> 00:13:16.019 many places.
NOTE Confidence: 0.70682156

00:13:16.019 --> 00:13:19.519 We also have by the end of this decade,
NOTE Confidence: 0.70682156

00:13:19.520 --> 00:13:21.428 the formation of a number of
NOTE Confidence: 0.70682156

00:13:21.428 --> 00:13:23.548 different journals and a number of
NOTE Confidence: 0.70682156

00:13:23.548 --> 00:13:25.518 different conferences in this field.
NOTE Confidence: 0.70682156

00:13:25.520 --> 00:13:28.285 A number of those verged later into
NOTE Confidence: 0.70682156

00:13:28.285 --> 00:13:31.240 big one big gigantic conference.
NOTE Confidence: 0.70682156

00:13:31.240 --> 00:13:34.038 So they'll be seeing during the time
NOTE Confidence: 0.70682156

00:13:34.038 --> 00:13:36.639 that we'd finally get to the end of the 80s,
NOTE Confidence: 0.70682156

00:13:36.640 --> 00:13:38.752 lots of developments that are now
NOTE Confidence: 0.70682156

00:13:38.752 --> 00:13:41.117 the way we're thinking about the
NOTE Confidence: 0.70682156

00:13:41.117 --> 00:13:43.347 use of information technology and
NOTE Confidence: 0.70682156

00:13:43.347 --> 00:13:45.320 artificial intelligence and medicine.
NOTE Confidence: 0.926464811428571

00:13:47.880 --> 00:13:49.780 Note the change in terminology
NOTE Confidence: 0.926464811428571

00:13:49.780 --> 00:13:51.680 because now they're being called

NOTE Confidence: 0.926464811428571
00:13:51.746 --> 00:13:53.798 clinical decision support systems.
NOTE Confidence: 0.926464811428571
00:13:53.800 --> 00:13:56.176 Those changes in terminology
NOTE Confidence: 0.926464811428571
00:13:56.176 --> 00:13:58.194 have ethical implications that
NOTE Confidence: 0.926464811428571
00:13:58.194 --> 00:13:59.598 you may want to think about.
NOTE Confidence: 0.919745927272727
00:14:01.880 --> 00:14:03.240 Scoring has gotten automated,
NOTE Confidence: 0.919745927272727
00:14:03.240 --> 00:14:06.000 used to not have to be automated.
NOTE Confidence: 0.919745927272727
00:14:06.000 --> 00:14:07.340 We have work from that
NOTE Confidence: 0.919745927272727
00:14:07.340 --> 00:14:08.680 published in the early 80s.
NOTE Confidence: 0.919745927272727
00:14:08.680 --> 00:14:12.397 We have counseling systems and so on.
NOTE Confidence: 0.919745927272727
00:14:12.400 --> 00:14:15.400 I've talked some about those already.
NOTE Confidence: 0.919745927272727
00:14:15.400 --> 00:14:17.560 They come out of this period,
NOTE Confidence: 0.919745927272727
00:14:17.560 --> 00:14:20.759 and we are starting now to now,
NOTE Confidence: 0.919745927272727
00:14:20.760 --> 00:14:23.088 in this period to get more
NOTE Confidence: 0.919745927272727
00:14:23.088 --> 00:14:25.240 attention paid to ethical issues,
NOTE Confidence: 0.919745927272727
00:14:25.240 --> 00:14:28.120 explicitly called out as ethical issues.
NOTE Confidence: 0.919745927272727

00:14:28.120 --> 00:14:29.800 They've been there all along.
NOTE Confidence: 0.919745927272727

00:14:29.800 --> 00:14:31.480 We've known about them all along.
NOTE Confidence: 0.919745927272727

00:14:31.480 --> 00:14:33.358 We've talked about them all along,
NOTE Confidence: 0.919745927272727

00:14:33.360 --> 00:14:34.832 but now they're getting
NOTE Confidence: 0.919745927272727

00:14:34.832 --> 00:14:36.266 labeled ethical issues.
NOTE Confidence: 0.919745927272727

00:14:36.266 --> 00:14:39.997 So we have new books coming out.
NOTE Confidence: 0.919745927272727

00:14:40.000 --> 00:14:42.196 We have new papers coming out.
NOTE Confidence: 0.919745927272727

00:14:42.200 --> 00:14:42.770 Ken Goodman,
NOTE Confidence: 0.919745927272727

00:14:42.770 --> 00:14:45.400 who was here at the beginning of this year,
NOTE Confidence: 0.919745927272727

00:14:45.400 --> 00:14:49.845 put together the first book on ethical
NOTE Confidence: 0.919745927272727

00:14:49.845 --> 00:14:53.808 issues in computing in medicine,
NOTE Confidence: 0.919745927272727

00:14:53.808 --> 00:14:56.671 including on ethical issues having
NOTE Confidence: 0.919745927272727

00:14:56.671 --> 00:14:58.813 to do with clinical decision support
NOTE Confidence: 0.919745927272727

00:14:58.813 --> 00:15:00.956 and algorithmic scoring and so on.
NOTE Confidence: 0.919745927272727

00:15:00.960 --> 00:15:03.354 Ken went on to found the Ethical,
NOTE Confidence: 0.919745927272727

00:15:03.360 --> 00:15:05.190 Legal and Social Issues Working

NOTE Confidence: 0.919745927272727
00:15:05.190 --> 00:15:06.654 Group within the American
NOTE Confidence: 0.919745927272727
00:15:06.654 --> 00:15:08.439 Medical Informatics Association.
NOTE Confidence: 0.919745927272727
00:15:08.440 --> 00:15:10.060 AMIA resulted from the merging
NOTE Confidence: 0.919745927272727
00:15:10.060 --> 00:15:11.356 of all those organizations.
NOTE Confidence: 0.919745927272727
00:15:11.360 --> 00:15:12.468 I told you before,
NOTE Confidence: 0.919745927272727
00:15:12.468 --> 00:15:14.920 it's now one of the premier conferences,
NOTE Confidence: 0.919745927272727
00:15:14.920 --> 00:15:16.560 scientific conferences in the field.
NOTE Confidence: 0.919745927272727
00:15:16.560 --> 00:15:18.408 Thousands of people come and the
NOTE Confidence: 0.919745927272727
00:15:18.408 --> 00:15:20.455 LC Working Group is a respected
NOTE Confidence: 0.919745927272727
00:15:20.455 --> 00:15:21.955 part of that organization,
NOTE Confidence: 0.919745927272727
00:15:21.960 --> 00:15:22.572 and ethical,
NOTE Confidence: 0.919745927272727
00:15:22.572 --> 00:15:24.714 legal and social issues are part of
NOTE Confidence: 0.919745927272727
00:15:24.714 --> 00:15:27.079 the discussion in medical informatics.
NOTE Confidence: 0.919745927272727
00:15:27.080 --> 00:15:29.313 So what are some of those concerns
NOTE Confidence: 0.919745927272727
00:15:29.313 --> 00:15:31.769 that have been there all along and
NOTE Confidence: 0.919745927272727

00:15:31.769 --> 00:15:33.917 how are they getting amplified now?
NOTE Confidence: 0.919745927272727

00:15:33.920 --> 00:15:35.936 And what new concerns do we
NOTE Confidence: 0.919745927272727

00:15:35.936 --> 00:15:37.280 need to think about?
NOTE Confidence: 0.919745927272727

00:15:37.280 --> 00:15:39.560 Well, just as a review,
NOTE Confidence: 0.919745927272727

00:15:39.560 --> 00:15:41.088 we have again many,
NOTE Confidence: 0.919745927272727

00:15:41.088 --> 00:15:42.998 many wonderful things going on.
NOTE Confidence: 0.919745927272727

00:15:43.000 --> 00:15:44.680 Clinical decision support systems have
NOTE Confidence: 0.919745927272727

00:15:44.680 --> 00:15:46.840 been part of the medical records,
NOTE Confidence: 0.919745927272727

00:15:46.840 --> 00:15:48.388 your electronic health record
NOTE Confidence: 0.919745927272727

00:15:48.388 --> 00:15:50.710 systems for some while they were
NOTE Confidence: 0.919745927272727

00:15:50.779 --> 00:15:52.615 mandated to be included in there
NOTE Confidence: 0.919745927272727

00:15:52.615 --> 00:15:55.472 by the High Tech Act of 2009.
NOTE Confidence: 0.919745927272727

00:15:55.472 --> 00:15:59.048 So they're there.
NOTE Confidence: 0.919745927272727

00:15:59.048 --> 00:16:02.725 And AI has had many meanings over the
NOTE Confidence: 0.919745927272727

00:16:02.725 --> 00:16:05.199 years then and many incarnations,
NOTE Confidence: 0.919745927272727

00:16:05.200 --> 00:16:07.958 some of it being used by physicians,

NOTE Confidence: 0.919745927272727
00:16:07.960 --> 00:16:09.920 some of it being used by other
NOTE Confidence: 0.919745927272727
00:16:09.920 --> 00:16:10.480 people clinically,
NOTE Confidence: 0.919745927272727
00:16:10.480 --> 00:16:13.053 some of it being used by patients,
NOTE Confidence: 0.919745927272727
00:16:13.053 --> 00:16:15.318 some of it commercially available,
NOTE Confidence: 0.919745927272727
00:16:15.320 --> 00:16:17.160 some of it only inpatient,
NOTE Confidence: 0.919745927272727
00:16:17.160 --> 00:16:18.520 some of it out there.
NOTE Confidence: 0.919745927272727
00:16:18.520 --> 00:16:23.035 And social media, we're surrounded by it.
NOTE Confidence: 0.919745927272727
00:16:23.040 --> 00:16:24.816 And all along,
NOTE Confidence: 0.919745927272727
00:16:24.816 --> 00:16:27.840 we've had visions that say it's
NOTE Confidence: 0.919745927272727
00:16:27.840 --> 00:16:30.600 going to make medicine more humane.
NOTE Confidence: 0.919745927272727
00:16:30.600 --> 00:16:32.679 It's going to make it more scientific.
NOTE Confidence: 0.919745927272727
00:16:32.680 --> 00:16:34.444 It's going to free physicians so
NOTE Confidence: 0.919745927272727
00:16:34.444 --> 00:16:36.699 that they can spend more time with
NOTE Confidence: 0.919745927272727
00:16:36.699 --> 00:16:38.394 patients and provide better care.
NOTE Confidence: 0.919745927272727
00:16:38.400 --> 00:16:39.880 It's going to reduce costs.
NOTE Confidence: 0.919745927272727

00:16:39.880 --> 00:16:41.720 It's going to improve quality.
NOTE Confidence: 0.919745927272727

00:16:41.720 --> 00:16:43.640 And that will lead to much better care,
NOTE Confidence: 0.919745927272727

00:16:43.640 --> 00:16:45.956 much better outcomes, much better lives,
NOTE Confidence: 0.919745927272727

00:16:45.960 --> 00:16:48.960 and a great new utopian world of medicine.
NOTE Confidence: 0.919745927272727

00:16:48.960 --> 00:16:51.837 And we have had some of that.
NOTE Confidence: 0.919745927272727

00:16:51.840 --> 00:16:54.078 And then we have dystopian views.
NOTE Confidence: 0.919745927272727

00:16:54.080 --> 00:16:55.360 The other side of that,
NOTE Confidence: 0.919745927272727

00:16:55.360 --> 00:16:57.160 it's going to replace the doctor.
NOTE Confidence: 0.919745927272727

00:16:57.160 --> 00:16:58.935 It's going to make medicine
NOTE Confidence: 0.919745927272727

00:16:58.935 --> 00:17:00.000 inhumane and mechanical.
NOTE Confidence: 0.919745927272727

00:17:00.000 --> 00:17:02.280 It's going to lose the art and personal
NOTE Confidence: 0.919745927272727

00:17:02.280 --> 00:17:04.797 touch that are so vital to good health care.
NOTE Confidence: 0.919745927272727

00:17:04.800 --> 00:17:07.200 Some of that has happened.
NOTE Confidence: 0.919745927272727

00:17:07.200 --> 00:17:09.360 So we're getting some of both.
NOTE Confidence: 0.919745927272727

00:17:09.360 --> 00:17:10.566 And we're not going to have
NOTE Confidence: 0.919745927272727

00:17:10.566 --> 00:17:11.800 either of these two extremes,

NOTE Confidence: 0.919745927272727

00:17:11.800 --> 00:17:12.400 I think.

NOTE Confidence: 0.97023782

00:17:14.520 --> 00:17:17.157 But we do need to pay attention to what

NOTE Confidence: 0.97023782

00:17:17.157 --> 00:17:19.752 kinds of issues come up from both of these

NOTE Confidence: 0.97023782

00:17:19.752 --> 00:17:21.600 visions and all the visions in between.

NOTE Confidence: 0.925561598181818

00:17:27.960 --> 00:17:32.736 Hello. OK, so some of what's going on

NOTE Confidence: 0.925561598181818

00:17:32.736 --> 00:17:36.946 since the get is that in the 1950s when you

NOTE Confidence: 0.925561598181818

00:17:36.946 --> 00:17:39.996 already had books coming out in this field,

NOTE Confidence: 0.925561598181818

00:17:40.000 --> 00:17:43.564 you also had a lot of concern coming out

NOTE Confidence: 0.925561598181818

00:17:43.564 --> 00:17:45.808 saying how come we're not using computers

NOTE Confidence: 0.925561598181818

00:17:45.808 --> 00:17:48.000 the way we should be in medicine,

NOTE Confidence: 0.925561598181818

00:17:48.000 --> 00:17:49.518 How come other domains are using

NOTE Confidence: 0.925561598181818

00:17:49.518 --> 00:17:50.919 them much more than we are?

NOTE Confidence: 0.925561598181818

00:17:50.920 --> 00:17:54.320 Why is there a lag in medical computing?

NOTE Confidence: 0.925561598181818

00:17:54.320 --> 00:17:56.714 This has been a concern all along.

NOTE Confidence: 0.925561598181818

00:17:56.720 --> 00:17:59.597 It's been addressed in many different ways.

NOTE Confidence: 0.925561598181818

00:17:59.600 --> 00:18:03.456 And today, the kinds of things
NOTE Confidence: 0.925561598181818

00:18:03.456 --> 00:18:05.100 were being talked about would be
NOTE Confidence: 0.925561598181818

00:18:05.155 --> 00:18:07.000 called the need for explainability,
NOTE Confidence: 0.925561598181818

00:18:07.000 --> 00:18:08.580 the need for trustworthiness,
NOTE Confidence: 0.925561598181818

00:18:08.580 --> 00:18:11.453 issues having to do with how these
NOTE Confidence: 0.925561598181818

00:18:11.453 --> 00:18:14.456 systems are implemented and fit in with
NOTE Confidence: 0.925561598181818

00:18:14.456 --> 00:18:16.289 clinical workflow and what people's
NOTE Confidence: 0.925561598181818

00:18:16.289 --> 00:18:19.060 and how they fit in with what people
NOTE Confidence: 0.925561598181818

00:18:19.060 --> 00:18:21.591 think their jobs are clinically and
NOTE Confidence: 0.925561598181818

00:18:21.591 --> 00:18:24.048 the values that come along with those
NOTE Confidence: 0.925561598181818

00:18:24.048 --> 00:18:26.203 conceptions of what your work is and
NOTE Confidence: 0.925561598181818

00:18:26.203 --> 00:18:27.315 what it should be.
NOTE Confidence: 0.925561598181818

00:18:27.320 --> 00:18:30.136 So let me talk a little bit about
NOTE Confidence: 0.925561598181818

00:18:30.136 --> 00:18:31.570 clinical practice changes here.
NOTE Confidence: 0.925561598181818

00:18:31.570 --> 00:18:33.760 This lag issue has been around,
NOTE Confidence: 0.925561598181818

00:18:33.760 --> 00:18:35.476 as I said, a long time.

NOTE Confidence: 0.925561598181818
00:18:35.480 --> 00:18:39.360 I did my doctoral dissertation looking at it,
NOTE Confidence: 0.925561598181818
00:18:39.360 --> 00:18:42.018 it's still there, only maybe not
NOTE Confidence: 0.925561598181818
00:18:42.018 --> 00:18:44.600 talked about quite the same way.
NOTE Confidence: 0.925561598181818
00:18:44.600 --> 00:18:47.798 For some people,
NOTE Confidence: 0.925561598181818
00:18:47.800 --> 00:18:49.924 clinical guidelines feel mechanical,
NOTE Confidence: 0.925561598181818
00:18:49.924 --> 00:18:52.579 restricting and challenges to their
NOTE Confidence: 0.925561598181818
00:18:52.579 --> 00:18:54.679 professional knowledge and authority.
NOTE Confidence: 0.925561598181818
00:18:54.680 --> 00:18:55.848 For others, they're wonderful.
NOTE Confidence: 0.925561598181818
00:18:55.848 --> 00:18:57.600 They help you give better care.
NOTE Confidence: 0.925561598181818
00:18:57.600 --> 00:18:58.932 They remind you of things you
NOTE Confidence: 0.925561598181818
00:18:58.932 --> 00:19:00.120 might have not thought about.
NOTE Confidence: 0.925561598181818
00:19:00.120 --> 00:19:02.451 They tell you things that you maybe
NOTE Confidence: 0.925561598181818
00:19:02.451 --> 00:19:05.080 didn't know, so you've had all along.
NOTE Confidence: 0.925561598181818
00:19:05.080 --> 00:19:08.836 That kind of balancing between how
NOTE Confidence: 0.925561598181818
00:19:08.836 --> 00:19:11.944 much is science, how much is art,
NOTE Confidence: 0.925561598181818

00:19:11.944 --> 00:19:13.474 how much do we need,
NOTE Confidence: 0.925561598181818

00:19:13.480 --> 00:19:15.840 how much is a dehumanizing,
NOTE Confidence: 0.925561598181818

00:19:15.840 --> 00:19:17.800 how much does it really help us
NOTE Confidence: 0.925561598181818

00:19:17.800 --> 00:19:19.800 provide better, better care?
NOTE Confidence: 0.925561598181818

00:19:19.800 --> 00:19:23.972 The same system has different reactions
NOTE Confidence: 0.925561598181818

00:19:23.972 --> 00:19:26.556 provoked in different people.
NOTE Confidence: 0.925561598181818

00:19:26.560 --> 00:19:29.560 Some of them relate to it one way,
NOTE Confidence: 0.925561598181818

00:19:29.560 --> 00:19:31.840 some of them relate to it another way,
NOTE Confidence: 0.925561598181818

00:19:31.840 --> 00:19:32.800 and a lot of that,
NOTE Confidence: 0.925561598181818

00:19:32.800 --> 00:19:33.195 again,
NOTE Confidence: 0.925561598181818

00:19:33.195 --> 00:19:36.355 depends on how they see their jobs and
NOTE Confidence: 0.925561598181818

00:19:36.355 --> 00:19:39.878 how they put values into what they're doing.
NOTE Confidence: 0.925561598181818

00:19:39.880 --> 00:19:43.120 This cuts across all sorts of clinical work.
NOTE Confidence: 0.925561598181818

00:19:43.120 --> 00:19:45.559 I saw this in a study I did of
NOTE Confidence: 0.925561598181818

00:19:45.559 --> 00:19:47.532 laboratory technologists in the
NOTE Confidence: 0.925561598181818

00:19:47.532 --> 00:19:50.234 1980s when we were putting in a

NOTE Confidence: 0.925561598181818
00:19:50.234 --> 00:19:52.200 laboratory information system.
NOTE Confidence: 0.97024943
00:19:54.360 --> 00:19:56.600 A different issue having to do with
NOTE Confidence: 0.97024943
00:19:56.600 --> 00:19:57.712 clinical practice alert fatigue.
NOTE Confidence: 0.97024943
00:19:57.712 --> 00:19:59.364 I'm sure those of you who are
NOTE Confidence: 0.97024943
00:19:59.364 --> 00:20:00.763 doing clinical practice are well
NOTE Confidence: 0.97024943
00:20:00.763 --> 00:20:02.431 aware of what I'm talking about.
NOTE Confidence: 0.97024943
00:20:02.440 --> 00:20:04.300 Too many alerts. You start to
NOTE Confidence: 0.97024943
00:20:04.300 --> 00:20:06.600 feel like the boy who cried wolf,
NOTE Confidence: 0.97024943
00:20:06.600 --> 00:20:08.553 and you don't pay attention to any of them,
NOTE Confidence: 0.97024943
00:20:08.560 --> 00:20:11.000 including the real important ones,
NOTE Confidence: 0.97024943
00:20:11.000 --> 00:20:12.760 and they're distracting and annoying.
NOTE Confidence: 0.97024943
00:20:12.760 --> 00:20:14.208 And who needs them?
NOTE Confidence: 0.97024943
00:20:14.208 --> 00:20:16.781 So alert fatigue is an issue having
NOTE Confidence: 0.97024943
00:20:16.781 --> 00:20:19.634 to do with how do we make sure that
NOTE Confidence: 0.97024943
00:20:19.715 --> 00:20:22.124 we don't have alerts that are?
NOTE Confidence: 0.97024943

00:20:22.124 --> 00:20:23.477 Not that helpful.
NOTE Confidence: 0.97024943

00:20:23.480 --> 00:20:25.456 And we do have alerts that are so
NOTE Confidence: 0.97024943

00:20:25.456 --> 00:20:27.560 that they really do improve practice.
NOTE Confidence: 0.97024943

00:20:27.560 --> 00:20:29.776 We have workflow issues.
NOTE Confidence: 0.97024943

00:20:29.776 --> 00:20:33.120 How you treat people who do the work,
NOTE Confidence: 0.97024943

00:20:33.120 --> 00:20:36.724 no matter who they are in the clinical
NOTE Confidence: 0.97024943

00:20:36.724 --> 00:20:39.565 hierarchy makes a difference ethically
NOTE Confidence: 0.97024943

00:20:39.565 --> 00:20:42.960 because you want to treat people well.
NOTE Confidence: 0.97024943

00:20:42.960 --> 00:20:44.646 And it certainly makes a difference
NOTE Confidence: 0.97024943

00:20:44.646 --> 00:20:46.862 in the kind of care that's delivered
NOTE Confidence: 0.97024943

00:20:46.862 --> 00:20:49.263 because people who are not feeling well
NOTE Confidence: 0.97024943

00:20:49.326 --> 00:20:51.197 treated are not going to do their best.
NOTE Confidence: 0.972447852

00:20:54.080 --> 00:20:57.302 So there are concerns here and their
NOTE Confidence: 0.972447852

00:20:57.302 --> 00:20:59.457 concerns as well about changing
NOTE Confidence: 0.972447852

00:20:59.457 --> 00:21:01.404 roles and relationships because of
NOTE Confidence: 0.972447852

00:21:01.404 --> 00:21:04.235 all of this that we now have had

NOTE Confidence: 0.972447852

00:21:04.235 --> 00:21:06.759 promoted for maybe 25 years or so.

NOTE Confidence: 0.972447852

00:21:06.760 --> 00:21:10.800 The clinician patient computer partnership.

NOTE Confidence: 0.972447852

00:21:10.800 --> 00:21:13.470 Well, what happens when you introduce

NOTE Confidence: 0.972447852

00:21:13.470 --> 00:21:16.280 the computer into these partnerships?

NOTE Confidence: 0.972447852

00:21:16.280 --> 00:21:19.136 How does that change the relationships

NOTE Confidence: 0.972447852

00:21:19.136 --> 00:21:21.040 between clinicians and clinicians,

NOTE Confidence: 0.972447852

00:21:21.040 --> 00:21:22.750 clinicians and patients?

NOTE Confidence: 0.972447852

00:21:22.750 --> 00:21:26.740 What happens when a patient goes and

NOTE Confidence: 0.972447852

00:21:26.839 --> 00:21:28.800 the only gets to see the back of your

NOTE Confidence: 0.972447852

00:21:28.800 --> 00:21:30.398 head when you're typing in notes?

NOTE Confidence: 0.972447852

00:21:30.400 --> 00:21:35.232 What happens when instead of

NOTE Confidence: 0.972447852

00:21:35.232 --> 00:21:37.080 having radiology conferences,

NOTE Confidence: 0.972447852

00:21:37.080 --> 00:21:40.080 the person who ordered the radiology

NOTE Confidence: 0.972447852

00:21:40.080 --> 00:21:41.665 film is only getting readings

NOTE Confidence: 0.972447852

00:21:41.665 --> 00:21:43.604 coming at them through the computer

NOTE Confidence: 0.972447852

00:21:43.604 --> 00:21:45.634 and you lose the back and forth?

NOTE Confidence: 0.972447852

00:21:45.640 --> 00:21:48.880 That happens with a radiology conference.

NOTE Confidence: 0.972447852

00:21:48.880 --> 00:21:50.840 How did that patient feel on palpation?

NOTE Confidence: 0.972447852

00:21:50.840 --> 00:21:52.920 What were the lab results?

NOTE Confidence: 0.972447852

00:21:52.920 --> 00:21:54.438 What do you think it is?

NOTE Confidence: 0.972447852

00:21:54.440 --> 00:21:56.554 Well, my gut reaction is it's that,

NOTE Confidence: 0.972447852

00:21:56.560 --> 00:21:58.504 but I can't say that because

NOTE Confidence: 0.972447852

00:21:58.504 --> 00:21:59.976 it's not clinically diagnostic.

NOTE Confidence: 0.972447852

00:21:59.976 --> 00:22:02.952 If all the communication is being

NOTE Confidence: 0.972447852

00:22:02.952 --> 00:22:05.678 done through the record or a lot

NOTE Confidence: 0.972447852

00:22:05.678 --> 00:22:06.808 of the communication is being

NOTE Confidence: 0.972447852

00:22:06.808 --> 00:22:07.799 done through the record,

NOTE Confidence: 0.972447852

00:22:07.800 --> 00:22:09.508 you lose those interactions,

NOTE Confidence: 0.972447852

00:22:09.508 --> 00:22:11.643 you lose those valuable encounters

NOTE Confidence: 0.972447852

00:22:11.643 --> 00:22:13.620 and you end up treating the

NOTE Confidence: 0.972447852

00:22:13.620 --> 00:22:16.520 data instead of the patient.

NOTE Confidence: 0.972447852

00:22:16.520 --> 00:22:18.120 And sometimes that's a

NOTE Confidence: 0.972447852

00:22:18.120 --> 00:22:20.120 very helpful thing to see,

NOTE Confidence: 0.972447852

00:22:20.120 --> 00:22:22.360 and sometimes it's really detrimental.

NOTE Confidence: 0.971863456363636

00:22:25.080 --> 00:22:26.466 You have the same kinds of

NOTE Confidence: 0.971863456363636

00:22:26.466 --> 00:22:27.800 problems with the scoring systems.

NOTE Confidence: 0.971863456363636

00:22:27.800 --> 00:22:29.755 You want to pay attention

NOTE Confidence: 0.971863456363636

00:22:29.755 --> 00:22:31.711 not just to the outputs,

NOTE Confidence: 0.971863456363636

00:22:31.711 --> 00:22:34.839 but to how they relate to this particular

NOTE Confidence: 0.971863456363636

00:22:34.839 --> 00:22:37.600 patient in these particular circumstances.

NOTE Confidence: 0.971863456363636

00:22:37.600 --> 00:22:38.815 Your knowledge clinically,

NOTE Confidence: 0.971863456363636

00:22:38.815 --> 00:22:40.840 if you are a clinician,

NOTE Confidence: 0.971863456363636

00:22:40.840 --> 00:22:42.760 your values, if you're a patient,

NOTE Confidence: 0.971863456363636

00:22:42.760 --> 00:22:45.784 should all be incorporated into the kinds

NOTE Confidence: 0.971863456363636

00:22:45.784 --> 00:22:48.718 of decisions and care that's provided.

NOTE Confidence: 0.971863456363636

00:22:48.720 --> 00:22:50.592 Again, patients see different

NOTE Confidence: 0.971863456363636

00:22:50.592 --> 00:22:53.120 systems differently too. I'm sorry.
NOTE Confidence: 0.971863456363636

00:22:53.120 --> 00:22:55.360 Same systems differently too.
NOTE Confidence: 0.971863456363636

00:22:55.360 --> 00:22:57.838 So some may consider getting reminders.
NOTE Confidence: 0.971863456363636

00:22:57.840 --> 00:23:00.520 Take your medicine as well.
NOTE Confidence: 0.971863456363636

00:23:00.520 --> 00:23:01.600 That's really helpful.
NOTE Confidence: 0.971863456363636

00:23:01.600 --> 00:23:03.400 I would have forgotten otherwise,
NOTE Confidence: 0.971863456363636

00:23:03.400 --> 00:23:05.451 or boy, I don't want to kindly
NOTE Confidence: 0.971863456363636

00:23:05.451 --> 00:23:06.960 be reminded that I'm sick.
NOTE Confidence: 0.971863456363636

00:23:06.960 --> 00:23:09.319 I wish it would leave me alone.
NOTE Confidence: 0.971863456363636

00:23:09.320 --> 00:23:11.006 And we've seen those kinds of
NOTE Confidence: 0.971863456363636

00:23:11.006 --> 00:23:12.719 results on studies over the years.
NOTE Confidence: 0.967127154

00:23:16.960 --> 00:23:18.688 All of this development,
NOTE Confidence: 0.967127154

00:23:18.688 --> 00:23:21.744 all of what's going on in machine
NOTE Confidence: 0.967127154

00:23:21.744 --> 00:23:24.708 learning and big data come from
NOTE Confidence: 0.967127154

00:23:24.708 --> 00:23:27.478 tremendous amounts of data collection.
NOTE Confidence: 0.967127154

00:23:27.480 --> 00:23:29.352 So I want to turn now to some of

NOTE Confidence: 0.967127154

00:23:29.352 --> 00:23:31.357 the data issues that have come up.

NOTE Confidence: 0.967127154

00:23:31.360 --> 00:23:32.752 We've had widespread data

NOTE Confidence: 0.967127154

00:23:32.752 --> 00:23:34.840 collection for over 20 years now.

NOTE Confidence: 0.967127154

00:23:34.840 --> 00:23:37.150 Concern about data collection going back to

NOTE Confidence: 0.967127154

00:23:37.150 --> 00:23:40.280 the at least the 1960s and large databases,

NOTE Confidence: 0.967127154

00:23:40.280 --> 00:23:42.376 important legal work being

NOTE Confidence: 0.967127154

00:23:42.376 --> 00:23:44.472 done that motivated eventually

NOTE Confidence: 0.967127154

00:23:44.472 --> 00:23:46.240 the development of HIPAA,

NOTE Confidence: 0.967127154

00:23:46.240 --> 00:23:47.554 businesses, healthcare,

NOTE Confidence: 0.967127154

00:23:47.554 --> 00:23:48.868 government researchers.

NOTE Confidence: 0.967127154

00:23:48.868 --> 00:23:50.839 Everybody's collecting data,

NOTE Confidence: 0.967127154

00:23:50.840 --> 00:23:52.600 they are aggregating this data,

NOTE Confidence: 0.967127154

00:23:52.600 --> 00:23:54.040 they are selling this data,

NOTE Confidence: 0.967127154

00:23:54.040 --> 00:23:55.846 they're putting it together in all

NOTE Confidence: 0.967127154

00:23:55.846 --> 00:23:57.602 kinds of interesting ways and doing

NOTE Confidence: 0.967127154

00:23:57.602 --> 00:23:59.352 all sorts of analysis on this data.
NOTE Confidence: 0.967127154

00:23:59.360 --> 00:24:01.852 And these analysis are proving to be
NOTE Confidence: 0.967127154

00:24:01.852 --> 00:24:04.364 very valuable and helpful in a number
NOTE Confidence: 0.967127154

00:24:04.364 --> 00:24:06.804 of ways and they're also proving to
NOTE Confidence: 0.967127154

00:24:06.804 --> 00:24:08.995 be problematic in a number of ways.
NOTE Confidence: 0.967127154

00:24:09.000 --> 00:24:10.596 So this is the reason why we
NOTE Confidence: 0.967127154

00:24:10.596 --> 00:24:12.039 have the cost of the value.
NOTE Confidence: 0.967127154

00:24:12.040 --> 00:24:14.878 You can have various government programs.
NOTE Confidence: 0.967127154

00:24:14.880 --> 00:24:17.260 We're collecting data, NIH,
NOTE Confidence: 0.967127154

00:24:17.260 --> 00:24:20.760 big data to knowledge or all
NOTE Confidence: 0.967127154

00:24:20.760 --> 00:24:23.000 of us collecting data.
NOTE Confidence: 0.967127154

00:24:23.000 --> 00:24:24.375 We have the National Health
NOTE Confidence: 0.967127154

00:24:24.375 --> 00:24:25.200 Service doing this.
NOTE Confidence: 0.967127154

00:24:25.200 --> 00:24:25.800 As I said,
NOTE Confidence: 0.967127154

00:24:25.800 --> 00:24:27.000 I'm focusing on the United States,
NOTE Confidence: 0.967127154

00:24:27.000 --> 00:24:29.436 but this is going on all over.

NOTE Confidence: 0.967127154

00:24:29.440 --> 00:24:30.886 All of the things I'm talking

NOTE Confidence: 0.967127154

00:24:30.886 --> 00:24:32.359 about are going on all over.

NOTE Confidence: 0.967127154

00:24:32.360 --> 00:24:35.072 And we have data being collected

NOTE Confidence: 0.967127154

00:24:35.072 --> 00:24:36.880 by social media companies.

NOTE Confidence: 0.967127154

00:24:36.880 --> 00:24:39.580 We have data being extracted

NOTE Confidence: 0.967127154

00:24:39.580 --> 00:24:41.824 from your mobile phones.

NOTE Confidence: 0.967127154

00:24:41.824 --> 00:24:45.232 We have data everywhere and all

NOTE Confidence: 0.967127154

00:24:45.232 --> 00:24:48.716 of this is getting put together

NOTE Confidence: 0.967127154

00:24:48.716 --> 00:24:51.536 and used by partnerships between

NOTE Confidence: 0.967127154

00:24:51.536 --> 00:24:54.356 health tech companies and healthcare

NOTE Confidence: 0.967127154

00:24:54.356 --> 00:24:56.224 organizations or companies that

NOTE Confidence: 0.967127154

00:24:56.224 --> 00:24:58.274 want to get into healthcare.

NOTE Confidence: 0.967127154

00:24:58.280 --> 00:25:00.976 And some of it is giving us really

NOTE Confidence: 0.967127154

00:25:00.976 --> 00:25:02.200 interesting important results,

NOTE Confidence: 0.967127154

00:25:02.200 --> 00:25:04.102 such as being able to identify

NOTE Confidence: 0.967127154

00:25:04.102 --> 00:25:05.743 various biomarkers that we might
NOTE Confidence: 0.967127154

00:25:05.743 --> 00:25:07.318 not have known about before.
NOTE Confidence: 0.967127154

00:25:07.320 --> 00:25:08.600 And that's very valuable.
NOTE Confidence: 0.958872651428571

00:25:14.200 --> 00:25:16.916 Some of it is raising other problems.
NOTE Confidence: 0.958872651428571

00:25:16.920 --> 00:25:19.758 When we have real world data,
NOTE Confidence: 0.958872651428571

00:25:19.760 --> 00:25:22.280 as this is now called,
NOTE Confidence: 0.958872651428571

00:25:22.280 --> 00:25:25.520 you can easily, more easily look
NOTE Confidence: 0.958872651428571

00:25:25.520 --> 00:25:27.120 at social determinants of health.
NOTE Confidence: 0.958872651428571

00:25:27.120 --> 00:25:29.400 You can figure out connections that
NOTE Confidence: 0.958872651428571

00:25:29.400 --> 00:25:31.559 are really important for trying to
NOTE Confidence: 0.958872651428571

00:25:31.560 --> 00:25:34.560 address whatever this patient's issues
NOTE Confidence: 0.958872651428571

00:25:34.560 --> 00:25:37.920 and problems and diseases may be.
NOTE Confidence: 0.958872651428571

00:25:37.920 --> 00:25:41.800 But it also makes all data health data.
NOTE Confidence: 0.958872651428571

00:25:41.800 --> 00:25:44.878 And that raises the question of
NOTE Confidence: 0.958872651428571

00:25:44.880 --> 00:25:47.029 do we always want to not have
NOTE Confidence: 0.958872651428571

00:25:47.029 --> 00:25:48.720 a division between the vision,

NOTE Confidence: 0.958872651428571
00:25:48.720 --> 00:25:49.632 illness and health?
NOTE Confidence: 0.958872651428571
00:25:49.632 --> 00:25:52.482 How much do you want to think in terms
NOTE Confidence: 0.958872651428571
00:25:52.482 --> 00:25:54.792 of their sickness along a big spectrum?
NOTE Confidence: 0.958872651428571
00:25:54.800 --> 00:25:59.424 Here The data, of course,
NOTE Confidence: 0.958872651428571
00:25:59.424 --> 00:26:00.756 is decontextualized.
NOTE Confidence: 0.958872651428571
00:26:00.760 --> 00:26:02.440 We don't know under what circumstances
NOTE Confidence: 0.958872651428571
00:26:02.440 --> 00:26:03.560 it's all been collected.
NOTE Confidence: 0.958872651428571
00:26:03.560 --> 00:26:05.180 We don't know what else is going on in
NOTE Confidence: 0.958872651428571
00:26:05.180 --> 00:26:06.920 that person's life that may be important.
NOTE Confidence: 0.958872651428571
00:26:06.920 --> 00:26:08.460 We don't know why they did Whatever
NOTE Confidence: 0.958872651428571
00:26:08.460 --> 00:26:09.718 it is that's in the data,
NOTE Confidence: 0.958872651428571
00:26:09.720 --> 00:26:11.896 we just don't know an awful lot of
NOTE Confidence: 0.958872651428571
00:26:11.896 --> 00:26:13.799 things that could be very relevant
NOTE Confidence: 0.958872651428571
00:26:13.800 --> 00:26:16.680 for trying to understand that data.
NOTE Confidence: 0.958872651428571
00:26:16.680 --> 00:26:18.913 This leads to all sorts of issues
NOTE Confidence: 0.958872651428571

00:26:18.913 --> 00:26:21.199 having to do with data quality.
NOTE Confidence: 0.958872651428571

00:26:21.200 --> 00:26:24.238 Even assuming that we knew all that,
NOTE Confidence: 0.958872651428571

00:26:24.240 --> 00:26:25.518 which we don't,
NOTE Confidence: 0.958872651428571

00:26:25.518 --> 00:26:28.848 we do know that is under reporting,
NOTE Confidence: 0.958872651428571

00:26:28.848 --> 00:26:31.920 people who are concerned about stigma
NOTE Confidence: 0.958872651428571

00:26:31.920 --> 00:26:34.335 are going to be more careful about
NOTE Confidence: 0.958872651428571

00:26:34.335 --> 00:26:36.425 data and so will clinical people
NOTE Confidence: 0.958872651428571

00:26:36.425 --> 00:26:38.560 be more careful about that data.
NOTE Confidence: 0.958872651428571

00:26:38.560 --> 00:26:40.884 We have up coding and down coding
NOTE Confidence: 0.958872651428571

00:26:40.884 --> 00:26:41.880 for billing purposes.
NOTE Confidence: 0.958872651428571

00:26:41.880 --> 00:26:42.640 We have
NOTE Confidence: 0.95604385625

00:26:44.960 --> 00:26:47.280 people who are not included in the data.
NOTE Confidence: 0.95604385625

00:26:47.280 --> 00:26:49.320 Not everybody goes for healthcare.
NOTE Confidence: 0.95604385625

00:26:49.320 --> 00:26:51.318 Not everybody has a mobile device.
NOTE Confidence: 0.95604385625

00:26:51.320 --> 00:26:53.824 Not everybody's using Facebook,
NOTE Confidence: 0.95604385625

00:26:53.824 --> 00:26:55.076 thank goodness.

NOTE Confidence: 0.95604385625

00:26:55.080 --> 00:26:58.260 So we certainly don't have

NOTE Confidence: 0.95604385625

00:26:58.260 --> 00:26:59.880 everybody in the data.

NOTE Confidence: 0.95604385625

00:26:59.880 --> 00:27:02.928 We have data that is affected

NOTE Confidence: 0.95604385625

00:27:02.928 --> 00:27:04.960 by what's called workarounds.

NOTE Confidence: 0.95604385625

00:27:04.960 --> 00:27:08.208 This is where if you encounter in

NOTE Confidence: 0.95604385625

00:27:08.208 --> 00:27:10.720 whatever computer system you're using,

NOTE Confidence: 0.95604385625

00:27:10.720 --> 00:27:12.256 something, that won't let you get

NOTE Confidence: 0.95604385625

00:27:12.256 --> 00:27:14.164 past a certain point unless you put

NOTE Confidence: 0.95604385625

00:27:14.164 --> 00:27:15.554 in certain kinds of information.

NOTE Confidence: 0.95604385625

00:27:15.560 --> 00:27:18.440 So for example, in another study that I did,

NOTE Confidence: 0.95604385625

00:27:18.440 --> 00:27:21.440 I watched as physicians sat there

NOTE Confidence: 0.95604385625

00:27:21.440 --> 00:27:24.172 and looked and said, you know,

NOTE Confidence: 0.95604385625

00:27:24.172 --> 00:27:26.368 it's telling me that my diagnosis

NOTE Confidence: 0.95604385625

00:27:26.368 --> 00:27:27.999 doesn't match the symptoms.

NOTE Confidence: 0.95604385625

00:27:28.000 --> 00:27:31.520 Well, I know this patient has this diagnosis,

NOTE Confidence: 0.95604385625

00:27:31.520 --> 00:27:33.332 but there's only four of these
NOTE Confidence: 0.95604385625

00:27:33.332 --> 00:27:34.840 symptoms that the patient has
NOTE Confidence: 0.95604385625

00:27:34.840 --> 00:27:36.316 instead of all five of them.
NOTE Confidence: 0.95604385625

00:27:36.320 --> 00:27:38.144 So I'll just put in the fifth one
NOTE Confidence: 0.95604385625

00:27:38.144 --> 00:27:40.038 because I can't get past this point.
NOTE Confidence: 0.95604385625

00:27:40.040 --> 00:27:41.668 OK, That's a workaround.
NOTE Confidence: 0.95604385625

00:27:41.668 --> 00:27:43.296 It says something about
NOTE Confidence: 0.95604385625

00:27:43.296 --> 00:27:45.280 how you design systems.
NOTE Confidence: 0.95604385625

00:27:45.280 --> 00:27:46.736 It says something about
NOTE Confidence: 0.95604385625

00:27:46.736 --> 00:27:48.556 the quality of the data.
NOTE Confidence: 0.95604385625

00:27:48.560 --> 00:27:50.402 It says something about the ethics
NOTE Confidence: 0.95604385625

00:27:50.402 --> 00:27:52.186 of that design and the ethics
NOTE Confidence: 0.95604385625

00:27:52.186 --> 00:27:53.540 of the physician's behavior.
NOTE Confidence: 0.95604385625

00:27:53.540 --> 00:27:56.120 So a number of issues here,
NOTE Confidence: 0.95604385625

00:27:56.120 --> 00:27:56.580 OK,
NOTE Confidence: 0.95604385625

00:27:56.580 --> 00:27:59.340 we have billing codes being used

NOTE Confidence: 0.95604385625

00:27:59.340 --> 00:28:02.137 for analysis for clinical purposes

NOTE Confidence: 0.95604385625

00:28:02.137 --> 00:28:04.797 instead of diagnostic codes.

NOTE Confidence: 0.95604385625

00:28:04.800 --> 00:28:06.150 We have errors.

NOTE Confidence: 0.95604385625

00:28:06.150 --> 00:28:08.400 Of course everybody makes mistakes,

NOTE Confidence: 0.95604385625

00:28:08.400 --> 00:28:11.060 so you'd expect there to be mistakes

NOTE Confidence: 0.95604385625

00:28:11.060 --> 00:28:14.260 in the data too when you train systems.

NOTE Confidence: 0.95604385625

00:28:14.260 --> 00:28:16.435 This is happening in machine

NOTE Confidence: 0.95604385625

00:28:16.435 --> 00:28:17.520 learning systems.

NOTE Confidence: 0.95604385625

00:28:17.520 --> 00:28:18.844 On all that data,

NOTE Confidence: 0.95604385625

00:28:18.844 --> 00:28:21.959 you may be amplifying some of these problems,

NOTE Confidence: 0.95604385625

00:28:21.960 --> 00:28:23.106 leading to inaccuracies,

NOTE Confidence: 0.95604385625

00:28:23.106 --> 00:28:25.398 leading to biases and so on,

NOTE Confidence: 0.95604385625

00:28:25.400 --> 00:28:27.182 because you keep reusing the results

NOTE Confidence: 0.95604385625

00:28:27.182 --> 00:28:29.039 over and over and over again.

NOTE Confidence: 0.95604385625

00:28:29.040 --> 00:28:30.915 And that makes the problems

NOTE Confidence: 0.95604385625

00:28:30.915 --> 00:28:33.160 there even more than it was.
NOTE Confidence: 0.9674250933333333

00:28:37.560 --> 00:28:40.116 So having tech companies do this,
NOTE Confidence: 0.9674250933333333

00:28:40.120 --> 00:28:41.656 having researchers do this,
NOTE Confidence: 0.9674250933333333

00:28:41.656 --> 00:28:44.680 is it a treasure trove for research?
NOTE Confidence: 0.9674250933333333

00:28:44.680 --> 00:28:47.718 It is. Is it a privacy nightmare?
NOTE Confidence: 0.9674250933333333

00:28:47.720 --> 00:28:51.675 It is. And that again gets into
NOTE Confidence: 0.9674250933333333

00:28:51.675 --> 00:28:54.719 how do you judge which of these
NOTE Confidence: 0.9674250933333333

00:28:54.720 --> 00:28:57.336 is a problem and which of these is
NOTE Confidence: 0.9674250933333333

00:28:57.336 --> 00:29:00.372 helpful and what you want to go here?
NOTE Confidence: 0.9674250933333333

00:29:00.372 --> 00:29:02.716 Data is readily available.
NOTE Confidence: 0.9674250933333333

00:29:02.720 --> 00:29:04.576 Anyone can see it.
NOTE Confidence: 0.9674250933333333

00:29:04.576 --> 00:29:07.360 It's valuable on the black market.
NOTE Confidence: 0.9674250933333333

00:29:07.360 --> 00:29:09.568 It raises all sorts of issues
NOTE Confidence: 0.9674250933333333

00:29:09.568 --> 00:29:11.040 of consent and control.
NOTE Confidence: 0.93736966

00:29:13.760 --> 00:29:18.000 Ownership and who controls data is not clear.
NOTE Confidence: 0.93637189

00:29:20.320 --> 00:29:22.637 Data is sold and resold and sold

NOTE Confidence: 0.93637189

00:29:22.637 --> 00:29:24.640 again and aggregated and sold again.

NOTE Confidence: 0.93637189

00:29:24.640 --> 00:29:27.360 And by the time, even when it's collected,

NOTE Confidence: 0.93637189

00:29:27.360 --> 00:29:28.404 the ownership isn't clear.

NOTE Confidence: 0.93637189

00:29:28.404 --> 00:29:29.970 But by the time and the

NOTE Confidence: 0.93637189

00:29:30.030 --> 00:29:31.598 control certainly isn't clear.

NOTE Confidence: 0.93637189

00:29:31.600 --> 00:29:33.640 By the time you get down this chain,

NOTE Confidence: 0.93637189

00:29:33.640 --> 00:29:37.679 who knows? OK, how widely should

NOTE Confidence: 0.93637189

00:29:37.679 --> 00:29:39.677 we be collecting all this data?

NOTE Confidence: 0.93637189

00:29:39.680 --> 00:29:43.520 What should we do about consenting?

NOTE Confidence: 0.93637189

00:29:43.520 --> 00:29:46.440 How much should patients know about all this?

NOTE Confidence: 0.93637189

00:29:46.440 --> 00:29:47.760 How much can they know?

NOTE Confidence: 0.93637189

00:29:47.760 --> 00:29:48.976 Because who knows what's

NOTE Confidence: 0.93637189

00:29:48.976 --> 00:29:50.800 happening with that down the Pike,

NOTE Confidence: 0.93637189

00:29:50.800 --> 00:29:53.080 or what happened tomorrow when it gets sold,

NOTE Confidence: 0.93637189

00:29:53.080 --> 00:29:55.012 or the company goes out of business

NOTE Confidence: 0.93637189

00:29:55.012 --> 00:29:57.118 and the data's out there or whatever.
NOTE Confidence: 0.93637189

00:29:57.120 --> 00:30:00.280 So how do we deal with consenting issues?
NOTE Confidence: 0.93637189

00:30:00.280 --> 00:30:03.366 How do we deal with even consenting?
NOTE Confidence: 0.93637189

00:30:03.366 --> 00:30:04.681 Whether this data should be
NOTE Confidence: 0.93637189

00:30:04.681 --> 00:30:05.880 used for this purpose?
NOTE Confidence: 0.93637189

00:30:05.880 --> 00:30:07.232 To develop an algorithm?
NOTE Confidence: 0.93637189

00:30:07.232 --> 00:30:09.960 Maybe I find that current purpose recognized.
NOTE Confidence: 0.93637189

00:30:09.960 --> 00:30:12.220 Maybe I want to contribute
NOTE Confidence: 0.93637189

00:30:12.220 --> 00:30:14.480 to science in this way.
NOTE Confidence: 0.93637189

00:30:14.480 --> 00:30:17.020 Nobody's asking me as a patient is
NOTE Confidence: 0.93637189

00:30:17.020 --> 00:30:19.100 it right to just assume that when I
NOTE Confidence: 0.93637189

00:30:19.100 --> 00:30:21.240 sign blanket consent for treatment,
NOTE Confidence: 0.93637189

00:30:21.240 --> 00:30:23.382 it's OK to say I should give
NOTE Confidence: 0.93637189

00:30:23.382 --> 00:30:24.936 blanket consent for whatever use
NOTE Confidence: 0.93637189

00:30:24.936 --> 00:30:27.120 of my data it wants to be?
NOTE Confidence: 0.93637189

00:30:27.120 --> 00:30:29.381 The same is happening with the non

NOTE Confidence: 0.93637189

00:30:29.381 --> 00:30:31.584 clinical data as well and I'm come

NOTE Confidence: 0.93637189

00:30:31.584 --> 00:30:33.720 back to that under the legal part.

NOTE Confidence: 0.901628686470588

00:30:35.800 --> 00:30:38.720 We know from a study I'm doing now

NOTE Confidence: 0.901628686470588

00:30:38.720 --> 00:30:41.852 that we have a paper in review for

NOTE Confidence: 0.901628686470588

00:30:41.852 --> 00:30:45.115 that data is widely quote shared

NOTE Confidence: 0.901628686470588

00:30:45.115 --> 00:30:47.403 by healthcare institutions that

NOTE Confidence: 0.901628686470588

00:30:47.403 --> 00:30:50.781 they vary in what their policies

NOTE Confidence: 0.901628686470588

00:30:50.781 --> 00:30:54.078 and procedures are for doing this,

NOTE Confidence: 0.901628686470588

00:30:54.080 --> 00:30:55.910 that those policies and procedures may

NOTE Confidence: 0.901628686470588

00:30:55.910 --> 00:30:58.791 not even be known by the people who are

NOTE Confidence: 0.901628686470588

00:30:58.791 --> 00:31:00.396 responsible for making the decisions.

NOTE Confidence: 0.901628686470588

00:31:00.400 --> 00:31:02.320 We found that in our interviews

NOTE Confidence: 0.901628686470588

00:31:02.320 --> 00:31:04.312 they were all very concerned about

NOTE Confidence: 0.901628686470588

00:31:04.312 --> 00:31:05.640 privacy and protecting patients,

NOTE Confidence: 0.901628686470588

00:31:05.640 --> 00:31:08.108 but they may not know how their

NOTE Confidence: 0.901628686470588

00:31:08.108 --> 00:31:09.878 institution is actually doing that
NOTE Confidence: 0.901628686470588

00:31:09.880 --> 00:31:13.200 and certainly patients don't know.
NOTE Confidence: 0.901628686470588

00:31:13.200 --> 00:31:15.832 So we have reason to think more
NOTE Confidence: 0.901628686470588

00:31:15.832 --> 00:31:18.539 about these kinds of policies and
NOTE Confidence: 0.901628686470588

00:31:18.539 --> 00:31:20.516 procedures and what they should
NOTE Confidence: 0.901628686470588

00:31:20.516 --> 00:31:22.361 be and what our institutional
NOTE Confidence: 0.901628686470588

00:31:22.361 --> 00:31:23.840 responsibilities are in that regard.
NOTE Confidence: 0.773452136923077

00:31:25.960 --> 00:31:27.984 HIPAA RE identification is
NOTE Confidence: 0.773452136923077

00:31:27.984 --> 00:31:30.008 getting easier and easier
NOTE Confidence: 0.773452136923077

00:31:30.008 --> 00:31:32.800 as data is getting combined.
NOTE Confidence: 0.773452136923077

00:31:32.800 --> 00:31:35.300 De identifying data doesn't
NOTE Confidence: 0.773452136923077

00:31:35.300 --> 00:31:37.800 require consent to share.
NOTE Confidence: 0.773452136923077

00:31:37.800 --> 00:31:39.660 So you've got issues there about
NOTE Confidence: 0.773452136923077

00:31:39.660 --> 00:31:41.496 what happens when it gets re
NOTE Confidence: 0.773452136923077

00:31:41.496 --> 00:31:43.110 identified and how easy is it
NOTE Confidence: 0.773452136923077

00:31:43.110 --> 00:31:44.759 going to be to re identify.

NOTE Confidence: 0.9524012011111111
00:31:48.480 --> 00:31:49.632 What about data breaches,
NOTE Confidence: 0.9524012011111111
00:31:49.632 --> 00:31:51.072 of course that you know,
NOTE Confidence: 0.9524012011111111
00:31:51.080 --> 00:31:53.798 we certainly need attention to cybersecurity.
NOTE Confidence: 0.9524012011111111
00:31:53.800 --> 00:31:57.166 Everybody agrees HIPAA needs updating or
NOTE Confidence: 0.9524012011111111
00:31:57.166 --> 00:32:00.199 cybersecurity measures need to be there.
NOTE Confidence: 0.9524012011111111
00:32:00.200 --> 00:32:02.036 We've known this for many years.
NOTE Confidence: 0.9524012011111111
00:32:02.040 --> 00:32:04.196 It's been debated for many years and
NOTE Confidence: 0.9524012011111111
00:32:04.196 --> 00:32:05.920 there isn't agreement on what to do,
NOTE Confidence: 0.9524012011111111
00:32:05.920 --> 00:32:08.600 so it just stays the way it is.
NOTE Confidence: 0.9524012011111111
00:32:08.600 --> 00:32:13.586 And that's problematic on data
NOTE Confidence: 0.9524012011111111
00:32:13.586 --> 00:32:15.316 that's not covered by HIPAA.
NOTE Confidence: 0.9524012011111111
00:32:15.320 --> 00:32:18.434 Data on your mobile apps, for instance.
NOTE Confidence: 0.9524012011111111
00:32:18.434 --> 00:32:21.719 Data on your social media?
NOTE Confidence: 0.9524012011111111
00:32:21.720 --> 00:32:24.824 That data is governed by the end user
NOTE Confidence: 0.9524012011111111
00:32:24.824 --> 00:32:27.000 agreements that you click through.
NOTE Confidence: 0.9524012011111111

00:32:27.000 --> 00:32:29.676 Who reads an end user agreement?
NOTE Confidence: 0.9524012011111111

00:32:29.680 --> 00:32:31.048 How many of you have ever
NOTE Confidence: 0.9524012011111111

00:32:31.048 --> 00:32:32.560 read an end User Agreement?
NOTE Confidence: 0.9524012011111111

00:32:32.560 --> 00:32:33.968 A few of you.
NOTE Confidence: 0.9524012011111111

00:32:33.968 --> 00:32:35.680 OK, And if you read it,
NOTE Confidence: 0.9524012011111111

00:32:35.680 --> 00:32:37.920 you'd find it's incredibly long.
NOTE Confidence: 0.9524012011111111

00:32:37.920 --> 00:32:40.880 Like Hamlet, the privacy policy,
NOTE Confidence: 0.9524012011111111

00:32:40.880 --> 00:32:42.080 if it's there at all,
NOTE Confidence: 0.9524012011111111

00:32:42.080 --> 00:32:45.000 is buried in some place, who knows where.
NOTE Confidence: 0.9524012011111111

00:32:45.000 --> 00:32:47.080 It is extremely expansive,
NOTE Confidence: 0.9524012011111111

00:32:47.080 --> 00:32:49.636 and it's often not even followed.
NOTE Confidence: 0.9524012011111111

00:32:49.640 --> 00:32:52.400 So that becomes a problem too.
NOTE Confidence: 0.9524012011111111

00:32:52.400 --> 00:32:55.200 And if you want to use that app,
NOTE Confidence: 0.9524012011111111

00:32:55.200 --> 00:32:57.440 you click through it,
NOTE Confidence: 0.9524012011111111

00:32:57.440 --> 00:32:58.000 right?
NOTE Confidence: 0.9524012011111111

00:32:58.000 --> 00:33:00.328 The Federal Trade Commission

NOTE Confidence: 0.9524012011111111
00:33:00.328 --> 00:33:04.080 regulates how well companies comply
NOTE Confidence: 0.9524012011111111
00:33:04.080 --> 00:33:08.660 with those end user agreements,
NOTE Confidence: 0.9524012011111111
00:33:08.660 --> 00:33:12.028 and you have to bring a case for
NOTE Confidence: 0.9524012011111111
00:33:12.028 --> 00:33:13.344 them to even know that there may
NOTE Confidence: 0.9524012011111111
00:33:13.344 --> 00:33:15.001 be an issue which you cannot do
NOTE Confidence: 0.9524012011111111
00:33:15.001 --> 00:33:16.231 if there's a HIPAA violation.
NOTE Confidence: 0.9524012011111111
00:33:16.240 --> 00:33:16.968 Incidentally,
NOTE Confidence: 0.9524012011111111
00:33:16.968 --> 00:33:19.880 individuals cannot sue if
NOTE Confidence: 0.9524012011111111
00:33:19.880 --> 00:33:22.792 there's a HIPAA violation.
NOTE Confidence: 0.9524012011111111
00:33:22.800 --> 00:33:25.250 We're developing more and more ways of
NOTE Confidence: 0.9524012011111111
00:33:25.250 --> 00:33:27.959 protecting some of this data technologically.
NOTE Confidence: 0.9524012011111111
00:33:27.960 --> 00:33:30.285 It also has problems for
NOTE Confidence: 0.9524012011111111
00:33:30.285 --> 00:33:31.680 data quality because,
NOTE Confidence: 0.9524012011111111
00:33:31.680 --> 00:33:32.546 for instance,
NOTE Confidence: 0.9524012011111111
00:33:32.546 --> 00:33:35.144 data segmentation to keep the stigmatizing
NOTE Confidence: 0.9524012011111111

00:33:35.144 --> 00:33:37.923 data out of the sharing may remove
NOTE Confidence: 0.9524012011111111

00:33:37.923 --> 00:33:39.847 really important clinical information
NOTE Confidence: 0.9524012011111111

00:33:39.847 --> 00:33:42.199 that's needed for that patient.
NOTE Confidence: 0.9524012011111111

00:33:42.200 --> 00:33:45.440 So again, you're protecting privacy,
NOTE Confidence: 0.9524012011111111

00:33:45.440 --> 00:33:49.280 but you're possibly impairing care.
NOTE Confidence: 0.9524012011111111

00:33:49.280 --> 00:33:50.960 Some data has to be identified.
NOTE Confidence: 0.9524012011111111

00:33:50.960 --> 00:33:52.994 If you want to do clinical studies on it,
NOTE Confidence: 0.9524012011111111

00:33:53.000 --> 00:33:55.440 you need to know who the patients are.
NOTE Confidence: 0.9524012011111111

00:33:55.440 --> 00:33:58.200 So there are all sorts of
NOTE Confidence: 0.9524012011111111

00:33:58.200 --> 00:34:00.040 fraught privacy issues here.
NOTE Confidence: 0.9524012011111111

00:34:00.040 --> 00:34:02.777 There are issues having to do with
NOTE Confidence: 0.9524012011111111

00:34:02.777 --> 00:34:05.258 not only harming the individual,
NOTE Confidence: 0.9524012011111111

00:34:05.258 --> 00:34:07.416 but also harming anybody
NOTE Confidence: 0.9524012011111111

00:34:07.416 --> 00:34:09.240 connected with that individual.
NOTE Confidence: 0.9524012011111111

00:34:09.240 --> 00:34:11.277 Whatever people are included in the group,
NOTE Confidence: 0.9524012011111111

00:34:11.280 --> 00:34:13.210 that person is classified into

NOTE Confidence: 0.9524012011111111
00:34:13.210 --> 00:34:14.754 by these various algorithms.
NOTE Confidence: 0.9524012011111111
00:34:14.760 --> 00:34:16.727 Whatever people are in the home when
NOTE Confidence: 0.9524012011111111
00:34:16.727 --> 00:34:18.480 you have sensors collecting data.
NOTE Confidence: 0.9524012011111111
00:34:18.480 --> 00:34:21.120 So there are important privacy issues,
NOTE Confidence: 0.9524012011111111
00:34:21.120 --> 00:34:23.316 not just for the patient involved,
NOTE Confidence: 0.9524012011111111
00:34:23.320 --> 00:34:25.816 but also for many other people
NOTE Confidence: 0.9524012011111111
00:34:25.816 --> 00:34:27.480 connected with the patient.
NOTE Confidence: 0.9524012011111111
00:34:27.480 --> 00:34:30.400 What about consent for them?
NOTE Confidence: 0.9524012011111111
00:34:30.400 --> 00:34:32.890 Whoever asks them?
NOTE Confidence: 0.9524012011111111
00:34:32.890 --> 00:34:33.720 OK,
NOTE Confidence: 0.9524012011111111
00:34:33.720 --> 00:34:36.096 so another consenting issue has to
NOTE Confidence: 0.9524012011111111
00:34:36.096 --> 00:34:39.200 do with as we're getting more and
NOTE Confidence: 0.9524012011111111
00:34:39.200 --> 00:34:41.639 more concerned about how these data
NOTE Confidence: 0.9524012011111111
00:34:41.639 --> 00:34:43.637 are collected and used in privacy,
NOTE Confidence: 0.9524012011111111
00:34:43.640 --> 00:34:46.284 people are losing confidence.
NOTE Confidence: 0.9524012011111111

00:34:46.284 --> 00:34:46.766 Again,
NOTE Confidence: 0.9524012011111111

00:34:46.766 --> 00:34:50.140 we've seen studies on this over at
NOTE Confidence: 0.9524012011111111

00:34:50.227 --> 00:34:52.888 least the past 20 years that you
NOTE Confidence: 0.9524012011111111

00:34:52.888 --> 00:34:54.520 don't have clinical confidentiality.
NOTE Confidence: 0.9524012011111111

00:34:54.520 --> 00:34:57.334 How much can you trust that your
NOTE Confidence: 0.9524012011111111

00:34:57.334 --> 00:34:59.839 information is going to be protected?
NOTE Confidence: 0.9524012011111111

00:34:59.840 --> 00:35:02.526 That affects what you tell a
NOTE Confidence: 0.9524012011111111

00:35:02.526 --> 00:35:04.156 doctor if you're a patient,
NOTE Confidence: 0.9524012011111111

00:35:04.160 --> 00:35:05.882 it affects what you might put in
NOTE Confidence: 0.9524012011111111

00:35:05.882 --> 00:35:07.639 the record if you're the doctor.
NOTE Confidence: 0.9524012011111111

00:35:07.640 --> 00:35:10.065 And that affects certainly the
NOTE Confidence: 0.9524012011111111

00:35:10.065 --> 00:35:12.498 care that's given if you don't
NOTE Confidence: 0.9524012011111111

00:35:12.498 --> 00:35:13.476 have good information.
NOTE Confidence: 0.9524012011111111

00:35:13.480 --> 00:35:15.520 And it affects the quality of
NOTE Confidence: 0.9524012011111111

00:35:15.520 --> 00:35:17.475 the data on which subsequent
NOTE Confidence: 0.9524012011111111

00:35:17.475 --> 00:35:19.559 analysis and research and

NOTE Confidence: 0.968414948

00:35:19.560 --> 00:35:21.408 algorithms are developed.

NOTE Confidence: 0.968414948

00:35:21.408 --> 00:35:23.906 So again, lots of potential

NOTE Confidence: 0.968414948

00:35:23.906 --> 00:35:25.594 interactions of issues here.

NOTE Confidence: 0.947086972857143

00:35:33.080 --> 00:35:36.356 These issues cut across all of AI,

NOTE Confidence: 0.947086972857143

00:35:36.360 --> 00:35:38.012 not just in healthcare.

NOTE Confidence: 0.947086972857143

00:35:38.012 --> 00:35:40.077 I'm using healthcare as examples,

NOTE Confidence: 0.947086972857143

00:35:40.080 --> 00:35:41.389 and I want to call out now

NOTE Confidence: 0.947086972857143

00:35:41.389 --> 00:35:42.798 some of the kinds of issues,

NOTE Confidence: 0.9711464583333333

00:35:45.360 --> 00:35:48.240 some of which I just did and

NOTE Confidence: 0.9675538275

00:35:53.570 --> 00:35:56.330 some of which come up in other applications.

NOTE Confidence: 0.963461246

00:36:01.720 --> 00:36:04.376 OK, automation bias comes

NOTE Confidence: 0.963461246

00:36:04.376 --> 00:36:06.192 up all over the place.

NOTE Confidence: 0.963461246

00:36:06.192 --> 00:36:07.632 If the computer says it,

NOTE Confidence: 0.963461246

00:36:07.640 --> 00:36:09.716 it must be true. Of course,

NOTE Confidence: 0.963461246

00:36:09.720 --> 00:36:12.520 you've got bias in the other direction also,

NOTE Confidence: 0.963461246

00:36:12.520 --> 00:36:16.438 so you don't want either of those.
NOTE Confidence: 0.963461246

00:36:16.440 --> 00:36:18.438 What kinds of values are embedded
NOTE Confidence: 0.963461246

00:36:18.438 --> 00:36:20.280 in the models we're seeing?
NOTE Confidence: 0.963461246

00:36:20.280 --> 00:36:22.130 Do you want to prioritize
NOTE Confidence: 0.963461246

00:36:22.130 --> 00:36:23.240 efficiency in healthcare?
NOTE Confidence: 0.963461246

00:36:23.240 --> 00:36:25.592 Do you want to prioritize time
NOTE Confidence: 0.963461246

00:36:25.592 --> 00:36:27.160 personally spent with patients?
NOTE Confidence: 0.963461246

00:36:27.160 --> 00:36:29.365 Do you want to prioritize resources?
NOTE Confidence: 0.963461246

00:36:29.365 --> 00:36:31.190 There's a lot of possible
NOTE Confidence: 0.963461246

00:36:31.190 --> 00:36:33.359 values that could go into this,
NOTE Confidence: 0.963461246

00:36:33.360 --> 00:36:36.965 and which ones should go there and
NOTE Confidence: 0.963461246

00:36:36.965 --> 00:36:39.960 which ones are being decided on and
NOTE Confidence: 0.963461246

00:36:39.960 --> 00:36:42.360 how are those decisions being made?
NOTE Confidence: 0.963461246

00:36:42.360 --> 00:36:45.312 You have ethical issues having to do with
NOTE Confidence: 0.963461246

00:36:45.312 --> 00:36:47.880 what happens when you commodify data.
NOTE Confidence: 0.963461246

00:36:47.880 --> 00:36:49.440 You're commodifying information

NOTE Confidence: 0.963461246

00:36:49.440 --> 00:36:53.320 about me and you and you and you.

NOTE Confidence: 0.963461246

00:36:53.320 --> 00:36:56.560 You are reducing a person to the data.

NOTE Confidence: 0.963461246

00:36:56.560 --> 00:36:58.840 This is rather reductionist.

NOTE Confidence: 0.963461246

00:36:58.840 --> 00:37:01.690 It's objectifying the data at

NOTE Confidence: 0.963461246

00:37:01.690 --> 00:37:04.836 the expense of the real person.

NOTE Confidence: 0.963461246

00:37:04.840 --> 00:37:09.185 And that has implications for patient

NOTE Confidence: 0.963461246

00:37:09.185 --> 00:37:12.618 care because you end up at times

NOTE Confidence: 0.963461246

00:37:12.618 --> 00:37:15.719 treating your patients not as patients,

NOTE Confidence: 0.963461246

00:37:15.720 --> 00:37:16.920 not as people,

NOTE Confidence: 0.963461246

00:37:16.920 --> 00:37:19.470 but the data representations of them.

NOTE Confidence: 0.963461246

00:37:19.470 --> 00:37:21.720 Even if you're doing telemedicine,

NOTE Confidence: 0.963461246

00:37:21.720 --> 00:37:24.438 you're getting some sort of curated

NOTE Confidence: 0.963461246

00:37:24.440 --> 00:37:26.648 transmission of certain kinds of things

NOTE Confidence: 0.963461246

00:37:26.648 --> 00:37:28.920 and not others about the patient.

NOTE Confidence: 0.963461246

00:37:28.920 --> 00:37:30.995 Although telemedicine again has been

NOTE Confidence: 0.963461246

00:37:30.995 --> 00:37:34.352 a great boon to people who otherwise

NOTE Confidence: 0.963461246

00:37:34.352 --> 00:37:38.560 would not easily be able to get care,

NOTE Confidence: 0.963461246

00:37:38.560 --> 00:37:41.560 we have issues having to do

NOTE Confidence: 0.963461246

00:37:41.560 --> 00:37:43.560 with self fulfilling prophecies.

NOTE Confidence: 0.963461246

00:37:43.560 --> 00:37:45.880 Oh, she'll never walk again?

NOTE Confidence: 0.963461246

00:37:45.880 --> 00:37:47.760 All right, I give up.

NOTE Confidence: 0.963461246

00:37:47.760 --> 00:37:50.076 Or no, I'm not giving up.

NOTE Confidence: 0.963461246

00:37:50.080 --> 00:37:51.328 I'm really going to make sure

NOTE Confidence: 0.963461246

00:37:51.328 --> 00:37:52.160 that I walk again

NOTE Confidence: 0.840540072857143

00:37:56.680 --> 00:37:59.450 all kinds of possible self

NOTE Confidence: 0.840540072857143

00:37:59.450 --> 00:38:00.558 fulfilling prophecies.

NOTE Confidence: 0.840540072857143

00:38:00.560 --> 00:38:03.185 My life expectancy is coming

NOTE Confidence: 0.840540072857143

00:38:03.185 --> 00:38:05.900 out really low according to all

NOTE Confidence: 0.840540072857143

00:38:05.900 --> 00:38:07.640 these predictive algorithms. OK,

NOTE Confidence: 0.91836621

00:38:11.480 --> 00:38:13.166 why should I pay any attention

NOTE Confidence: 0.91836621

00:38:13.166 --> 00:38:14.840 then to all the clinical

NOTE Confidence: 0.91836621

00:38:14.840 --> 00:38:17.396 suggestions for taking care of me?

NOTE Confidence: 0.91836621

00:38:17.400 --> 00:38:19.080 What's the point? I may as well

NOTE Confidence: 0.91836621

00:38:19.080 --> 00:38:21.268 go out and enjoy what I have or,

NOTE Confidence: 0.91836621

00:38:21.268 --> 00:38:23.836 oh, I'm going to die anyway.

NOTE Confidence: 0.91836621

00:38:23.840 --> 00:38:25.680 All right, let me die.

NOTE Confidence: 0.91836621

00:38:25.680 --> 00:38:28.074 So how much do these affect people?

NOTE Confidence: 0.91836621

00:38:28.080 --> 00:38:29.760 And they're going to affect

NOTE Confidence: 0.91836621

00:38:29.760 --> 00:38:31.440 different people in different ways,

NOTE Confidence: 0.91836621

00:38:31.440 --> 00:38:33.342 and they're going to affect clinical

NOTE Confidence: 0.91836621

00:38:33.342 --> 00:38:35.080 people in different ways as well.

NOTE Confidence: 0.91836621

00:38:35.080 --> 00:38:37.880 What decisions you as a clinician make

NOTE Confidence: 0.91836621

00:38:37.880 --> 00:38:42.596 will be influenced by these predictions.

NOTE Confidence: 0.91836621

00:38:42.600 --> 00:38:45.960 What about what the patient wants here?

NOTE Confidence: 0.91836621

00:38:45.960 --> 00:38:48.025 How do those values come

NOTE Confidence: 0.91836621

00:38:48.025 --> 00:38:49.677 in to those decisions?

NOTE Confidence: 0.91836621

00:38:49.680 --> 00:38:52.177 They're not built into the predictions.
NOTE Confidence: 0.91836621

00:38:52.177 --> 00:38:55.833 You need to take account of them somehow.
NOTE Confidence: 0.91836621

00:38:55.840 --> 00:38:58.560 Some patients will prefer this,
NOTE Confidence: 0.91836621

00:38:58.560 --> 00:39:00.560 some patients will prefer that.
NOTE Confidence: 0.972235205714286

00:39:03.400 --> 00:39:05.955 Those decisions need to be made together.
NOTE Confidence: 0.917130081538462

00:39:08.960 --> 00:39:10.756 It's certainly changing relationships.
NOTE Confidence: 0.917130081538462

00:39:10.756 --> 00:39:14.680 That's one of the ways what I just described.
NOTE Confidence: 0.917130081538462

00:39:14.680 --> 00:39:17.278 But there are other relationships too.
NOTE Confidence: 0.917130081538462

00:39:17.280 --> 00:39:19.512 Patients have access to far more
NOTE Confidence: 0.917130081538462

00:39:19.512 --> 00:39:21.520 information than they had before.
NOTE Confidence: 0.917130081538462

00:39:21.520 --> 00:39:23.884 We've reduced the power asymmetries by
NOTE Confidence: 0.917130081538462

00:39:23.884 --> 00:39:26.120 having all that information available.
NOTE Confidence: 0.917130081538462

00:39:26.120 --> 00:39:29.788 Doctors have access to far more
NOTE Confidence: 0.917130081538462

00:39:29.788 --> 00:39:31.273 information than they had before,
NOTE Confidence: 0.917130081538462

00:39:31.280 --> 00:39:34.079 even if they're off in the middle of nowhere.
NOTE Confidence: 0.917130081538462

00:39:34.080 --> 00:39:37.158 So we've reduced those power asymmetries.

NOTE Confidence: 0.917130081538462
00:39:37.160 --> 00:39:40.275 We have much better access to knowledge.
NOTE Confidence: 0.917130081538462
00:39:40.280 --> 00:39:43.076 We have much more empowerment of
NOTE Confidence: 0.917130081538462
00:39:43.076 --> 00:39:45.760 all the parties involved for this,
NOTE Confidence: 0.917130081538462
00:39:45.760 --> 00:39:47.720 but it also puts a burden on us to have
NOTE Confidence: 0.917130081538462
00:39:47.779 --> 00:39:49.381 to know more about the technologies
NOTE Confidence: 0.917130081538462
00:39:49.381 --> 00:39:51.612 and how they work and how to assess
NOTE Confidence: 0.917130081538462
00:39:51.612 --> 00:39:52.997 all that information and whether
NOTE Confidence: 0.917130081538462
00:39:52.997 --> 00:39:54.995 it's true and whether it's valuable
NOTE Confidence: 0.917130081538462
00:39:54.995 --> 00:39:57.637 and what it means for me and so on.
NOTE Confidence: 0.97329662
00:40:00.080 --> 00:40:01.400 We have, as I mentioned,
NOTE Confidence: 0.97329662
00:40:01.400 --> 00:40:03.640 effects on the work and labor force,
NOTE Confidence: 0.97329662
00:40:03.640 --> 00:40:07.040 upskilling, downskilling,
NOTE Confidence: 0.97329662
00:40:07.040 --> 00:40:09.158 guidance that's being given for people
NOTE Confidence: 0.97329662
00:40:09.158 --> 00:40:11.950 who do not have the kind of expertise
NOTE Confidence: 0.97329662
00:40:11.950 --> 00:40:14.440 that used to be required for giving.
NOTE Confidence: 0.97329662

00:40:14.440 --> 00:40:17.800 Clinical care and giving guidance, we have
NOTE Confidence: 0.961252701538462

00:40:20.320 --> 00:40:22.553 systems that can see what's invisible in
NOTE Confidence: 0.961252701538462

00:40:22.553 --> 00:40:25.000 images to the betterment of diagnosis.
NOTE Confidence: 0.961252701538462

00:40:25.000 --> 00:40:27.155 So that we're doing some
NOTE Confidence: 0.961252701538462

00:40:27.155 --> 00:40:28.879 remarkable things in diagnosis.
NOTE Confidence: 0.961252701538462

00:40:28.880 --> 00:40:32.770 And we're also finding that the
NOTE Confidence: 0.961252701538462

00:40:32.770 --> 00:40:35.240 systems can see things in images
NOTE Confidence: 0.961252701538462

00:40:35.240 --> 00:40:38.215 that you can't see that are totally
NOTE Confidence: 0.961252701538462

00:40:38.215 --> 00:40:40.155 irrelevant and skewing diagnosis,
NOTE Confidence: 0.961252701538462

00:40:40.160 --> 00:40:42.986 such as artifacts that came from
NOTE Confidence: 0.961252701538462

00:40:42.986 --> 00:40:44.399 that particular institution,
NOTE Confidence: 0.961252701538462

00:40:44.400 --> 00:40:45.768 as has happened and got discovered
NOTE Confidence: 0.961252701538462

00:40:45.768 --> 00:40:47.411 when you try to move the system
NOTE Confidence: 0.961252701538462

00:40:47.411 --> 00:40:48.779 somewhere else and all of a
NOTE Confidence: 0.961252701538462

00:40:48.779 --> 00:40:50.238 sudden it's not accurate anymore.
NOTE Confidence: 0.961252701538462

00:40:50.240 --> 00:40:52.536 We need to be paying attention to

NOTE Confidence: 0.961252701538462
00:40:52.536 --> 00:40:54.472 those kinds of issues that may
NOTE Confidence: 0.961252701538462
00:40:54.472 --> 00:40:57.040 come up when we use these systems.
NOTE Confidence: 0.961252701538462
00:40:57.040 --> 00:41:02.304 That's then says that we have many,
NOTE Confidence: 0.961252701538462
00:41:02.304 --> 00:41:04.744 many suggestions that have been
NOTE Confidence: 0.961252701538462
00:41:04.744 --> 00:41:06.970 promulgated all across the world
NOTE Confidence: 0.961252701538462
00:41:06.970 --> 00:41:08.920 for how to improve AI,
NOTE Confidence: 0.961252701538462
00:41:08.920 --> 00:41:10.696 how to make sure the AI is doing
NOTE Confidence: 0.961252701538462
00:41:10.696 --> 00:41:12.617 what it needs to do in ways
NOTE Confidence: 0.961252701538462
00:41:12.617 --> 00:41:14.032 that are ethical and important.
NOTE Confidence: 0.9638168
00:41:16.120 --> 00:41:19.279 We will get to those in just a moment.
NOTE Confidence: 0.9638168
00:41:19.280 --> 00:41:21.639 The other issue I want to raise
NOTE Confidence: 0.9638168
00:41:21.639 --> 00:41:23.502 first is the resource issue.
NOTE Confidence: 0.9638168
00:41:23.502 --> 00:41:25.078 It's another ethical issue.
NOTE Confidence: 0.9638168
00:41:25.080 --> 00:41:26.920 It's not peculiar to medicine,
NOTE Confidence: 0.9638168
00:41:26.920 --> 00:41:30.238 but it's certainly here in medicine.
NOTE Confidence: 0.9638168

00:41:30.240 --> 00:41:33.350 The AI systems are extremely
NOTE Confidence: 0.9638168

00:41:33.350 --> 00:41:35.680 legally intensive. I'm sorry,
NOTE Confidence: 0.9638168

00:41:35.680 --> 00:41:37.840 They're extremely resource intensive.
NOTE Confidence: 0.9638168

00:41:37.840 --> 00:41:38.928 They're legally intensive too.
NOTE Confidence: 0.9638168

00:41:38.928 --> 00:41:40.560 And I'll get to that shortly.
NOTE Confidence: 0.9638168

00:41:40.560 --> 00:41:44.680 OK, so they require a lot of power.
NOTE Confidence: 0.9638168

00:41:44.680 --> 00:41:46.984 They require a lot of minerals
NOTE Confidence: 0.9638168

00:41:46.984 --> 00:41:48.520 to manufacture the components.
NOTE Confidence: 0.9638168

00:41:48.520 --> 00:41:50.760 They require a lot of cheap labor to
NOTE Confidence: 0.9638168

00:41:50.760 --> 00:41:52.612 label things that are going to go
NOTE Confidence: 0.9638168

00:41:52.612 --> 00:41:54.759 into the data that are being analyzed.
NOTE Confidence: 0.9638168

00:41:54.760 --> 00:41:56.350 A lot of that labor may
NOTE Confidence: 0.9638168

00:41:56.350 --> 00:41:58.524 be from poor countries.
NOTE Confidence: 0.9638168

00:41:58.524 --> 00:42:02.634 They require tremendous computing facilities.
NOTE Confidence: 0.9638168

00:42:02.640 --> 00:42:05.215 They require a huge expenditure
NOTE Confidence: 0.9638168

00:42:05.215 --> 00:42:07.275 that only some companies,

NOTE Confidence: 0.9638168

00:42:07.280 --> 00:42:08.524 some organizations,

NOTE Confidence: 0.9638168

00:42:08.524 --> 00:42:11.634 some governments can pay for.

NOTE Confidence: 0.9638168

00:42:11.640 --> 00:42:14.000 Is this the best use of those resources?

NOTE Confidence: 0.968094007692308

00:42:16.760 --> 00:42:19.376 Maybe some of those government programs

NOTE Confidence: 0.968094007692308

00:42:19.376 --> 00:42:22.480 would be better spent on improving water

NOTE Confidence: 0.968094007692308

00:42:22.480 --> 00:42:26.232 or food or medication prices or all

NOTE Confidence: 0.968094007692308

00:42:26.232 --> 00:42:29.340 kinds of things instead of putting it

NOTE Confidence: 0.968094007692308

00:42:29.340 --> 00:42:31.368 into the new technologies. Maybe not.

NOTE Confidence: 0.968094007692308

00:42:31.368 --> 00:42:33.760 Maybe it's going to vary by where you are.

NOTE Confidence: 0.968094007692308

00:42:33.760 --> 00:42:36.798 So important issues to be considered here.

NOTE Confidence: 0.9699451075

00:42:43.240 --> 00:42:45.200 So let me get to some of the

NOTE Confidence: 0.9699451075

00:42:45.200 --> 00:42:50.320 AI legal issues I mentioned.

NOTE Confidence: 0.9699451075

00:42:50.320 --> 00:42:53.060 First of all, all of the promulgation

NOTE Confidence: 0.9699451075

00:42:53.060 --> 00:42:55.274 of various sorts of guidelines

NOTE Confidence: 0.9699451075

00:42:55.274 --> 00:42:57.490 for ethical systems called

NOTE Confidence: 0.9699451075

00:42:57.490 --> 00:42:59.920 Trustworthy AI, Responsible AI,
NOTE Confidence: 0.946520002857143

00:43:02.200 --> 00:43:03.148 Ethical AI.
NOTE Confidence: 0.946520002857143

00:43:03.148 --> 00:43:05.518 Many organizations have done this,
NOTE Confidence: 0.946520002857143

00:43:05.520 --> 00:43:08.480 including the World Medical Association,
NOTE Confidence: 0.946520002857143

00:43:08.480 --> 00:43:09.972 the World Health Organization,
NOTE Confidence: 0.946520002857143

00:43:09.972 --> 00:43:12.238 the AMA, the federal government,
NOTE Confidence: 0.946520002857143

00:43:12.238 --> 00:43:14.956 the European Union, all kinds of places.
NOTE Confidence: 0.946520002857143

00:43:14.956 --> 00:43:16.750 So a lot of overlap in
NOTE Confidence: 0.946520002857143

00:43:16.821 --> 00:43:18.558 these various principles.
NOTE Confidence: 0.946520002857143

00:43:18.560 --> 00:43:20.640 The principles are extremely
NOTE Confidence: 0.946520002857143

00:43:20.640 --> 00:43:22.020 hard to operationalize.
NOTE Confidence: 0.946520002857143

00:43:22.020 --> 00:43:24.600 Let me give you an example.
NOTE Confidence: 0.946520002857143

00:43:24.600 --> 00:43:27.280 Fairness, transparency, and so on.
NOTE Confidence: 0.946520002857143

00:43:27.280 --> 00:43:28.965 I'll talk more about transparency
NOTE Confidence: 0.946520002857143

00:43:28.965 --> 00:43:30.313 and the legal issues.
NOTE Confidence: 0.946520002857143

00:43:30.320 --> 00:43:32.960 Fairness, what's fair?

NOTE Confidence: 0.946520002857143
00:43:32.960 --> 00:43:36.160 The organ allocation algorithm
NOTE Confidence: 0.946520002857143
00:43:36.160 --> 00:43:39.520 was updated not that long ago
NOTE Confidence: 0.946520002857143
00:43:39.520 --> 00:43:42.280 because of concerns about fairness.
NOTE Confidence: 0.946520002857143
00:43:42.280 --> 00:43:43.992 How should organs for
NOTE Confidence: 0.946520002857143
00:43:43.992 --> 00:43:45.276 transplant be allocated?
NOTE Confidence: 0.946520002857143
00:43:45.280 --> 00:43:46.212 What's fair?
NOTE Confidence: 0.946520002857143
00:43:46.212 --> 00:43:50.528 Do you do this to ensure equitable
NOTE Confidence: 0.946520002857143
00:43:50.528 --> 00:43:52.160 geographic distribution?
NOTE Confidence: 0.946520002857143
00:43:52.160 --> 00:43:55.666 Do you do it based on the age
NOTE Confidence: 0.946520002857143
00:43:55.666 --> 00:43:57.718 of the potential recipient?
NOTE Confidence: 0.946520002857143
00:43:57.720 --> 00:44:00.448 Do you do it based on the severity
NOTE Confidence: 0.946520002857143
00:44:00.448 --> 00:44:03.022 of illness as predicted by some
NOTE Confidence: 0.946520002857143
00:44:03.022 --> 00:44:04.872 algorithm of the potential recipient?
NOTE Confidence: 0.946520002857143
00:44:04.872 --> 00:44:07.735 Do you do it according to how many
NOTE Confidence: 0.946520002857143
00:44:07.735 --> 00:44:10.333 dependents the the recipient may have?
NOTE Confidence: 0.946520002857143

00:44:10.333 --> 00:44:14.345 Do you do it according to how long the
NOTE Confidence: 0.946520002857143

00:44:14.345 --> 00:44:16.235 person's been on the waiting list?
NOTE Confidence: 0.946520002857143

00:44:16.240 --> 00:44:17.734 All kinds of issues can come
NOTE Confidence: 0.946520002857143

00:44:17.734 --> 00:44:19.559 up here as to what's there,
NOTE Confidence: 0.946520002857143

00:44:19.560 --> 00:44:22.276 and there's not universal agreement on that.
NOTE Confidence: 0.946520002857143

00:44:22.280 --> 00:44:24.492 So who should make these decisions and
NOTE Confidence: 0.946520002857143

00:44:24.492 --> 00:44:26.598 how should these decisions get made?
NOTE Confidence: 0.929954390625

00:44:28.840 --> 00:44:30.008 There's some very interesting
NOTE Confidence: 0.929954390625

00:44:30.008 --> 00:44:32.112 study that's been done of how that
NOTE Confidence: 0.929954390625

00:44:32.112 --> 00:44:33.597 was done with organ allocation,
NOTE Confidence: 0.929954390625

00:44:33.600 --> 00:44:35.190 But these kinds of issues come
NOTE Confidence: 0.929954390625

00:44:35.190 --> 00:44:37.007 up over and over and over
NOTE Confidence: 0.929954390625

00:44:37.007 --> 00:44:38.399 again about almost anything.
NOTE Confidence: 0.970108644444444

00:44:42.160 --> 00:44:45.520 Some of the other kinds of
NOTE Confidence: 0.970108644444444

00:44:45.520 --> 00:44:47.200 guidelines include transparency.
NOTE Confidence: 0.970108644444444

00:44:47.200 --> 00:44:51.160 That's going to get me to legal issues in AI,

NOTE Confidence: 0.970108644444444
00:44:51.160 --> 00:44:53.520 privacy I've already talked about.
NOTE Confidence: 0.970108644444444
00:44:53.520 --> 00:44:55.995 But I want to add one other thing here.
NOTE Confidence: 0.970108644444444
00:44:56.000 --> 00:44:57.780 There is no omnibus privacy
NOTE Confidence: 0.970108644444444
00:44:57.780 --> 00:44:59.560 regulation in the United States.
NOTE Confidence: 0.970108644444444
00:44:59.560 --> 00:45:02.092 It's regulated by sector,
NOTE Confidence: 0.970108644444444
00:45:02.092 --> 00:45:05.152 and in healthcare that sector is
NOTE Confidence: 0.970108644444444
00:45:05.152 --> 00:45:07.840 regulated by HIPAA for clinical care,
NOTE Confidence: 0.970108644444444
00:45:07.840 --> 00:45:10.600 and it's regulated by the Common
NOTE Confidence: 0.970108644444444
00:45:10.600 --> 00:45:12.440 Rule for Clinical Research,
NOTE Confidence: 0.970108644444444
00:45:12.440 --> 00:45:14.760 Human Subject Clinical Research. OK.
NOTE Confidence: 0.947937882857143
00:45:16.800 --> 00:45:19.194 Data is being used in many ways.
NOTE Confidence: 0.947937882857143
00:45:19.200 --> 00:45:21.536 Data included from patient
NOTE Confidence: 0.947937882857143
00:45:21.536 --> 00:45:24.379 records for credit scoring,
NOTE Confidence: 0.947937882857143
00:45:24.379 --> 00:45:26.638 for insurance decisions,
NOTE Confidence: 0.947937882857143
00:45:26.640 --> 00:45:28.539 for employment decisions,
NOTE Confidence: 0.947937882857143

00:45:28.539 --> 00:45:30.438 for bail decisions,
NOTE Confidence: 0.947937882857143

00:45:30.440 --> 00:45:31.880 for all kinds of things.
NOTE Confidence: 0.947937882857143

00:45:31.880 --> 00:45:34.142 You may want to think about
NOTE Confidence: 0.947937882857143

00:45:34.142 --> 00:45:35.942 that when you're thinking
NOTE Confidence: 0.947937882857143

00:45:35.942 --> 00:45:37.838 about data and privacy,
NOTE Confidence: 0.947937882857143

00:45:37.840 --> 00:45:39.316 Should it be used those ways?
NOTE Confidence: 0.971131505714286

00:45:41.960 --> 00:45:45.278 What about how good the systems are?
NOTE Confidence: 0.971131505714286

00:45:45.280 --> 00:45:50.080 Well, the FDA regulates medications
NOTE Confidence: 0.971131505714286

00:45:50.080 --> 00:45:53.200 and it regulates what's called medical
NOTE Confidence: 0.971131505714286

00:45:53.200 --> 00:45:56.320 devices for safety and efficacy.
NOTE Confidence: 0.971131505714286

00:45:56.320 --> 00:45:58.504 Electronic health record systems are not
NOTE Confidence: 0.971131505714286

00:45:58.504 --> 00:46:00.880 medications and they're not medical devices.
NOTE Confidence: 0.971131505714286

00:46:00.880 --> 00:46:04.462 They're not regulated software is
NOTE Confidence: 0.971131505714286

00:46:04.462 --> 00:46:06.499 a medical device has a whole bunch
NOTE Confidence: 0.971131505714286

00:46:06.499 --> 00:46:08.891 of criteria it has to meet in order
NOTE Confidence: 0.971131505714286

00:46:08.891 --> 00:46:10.840 to be considered a medical device.

NOTE Confidence: 0.971131505714286
00:46:10.840 --> 00:46:12.628 And then there's lots of different
NOTE Confidence: 0.971131505714286
00:46:12.628 --> 00:46:14.237 kinds of medical device classifications
NOTE Confidence: 0.971131505714286
00:46:14.237 --> 00:46:16.037 with different levels of how
NOTE Confidence: 0.971131505714286
00:46:16.037 --> 00:46:18.640 much they're regulated.
NOTE Confidence: 0.971131505714286
00:46:18.640 --> 00:46:21.384 One of the things that means is that
NOTE Confidence: 0.971131505714286
00:46:21.384 --> 00:46:25.000 they're not vetted by the FDA. OK.
NOTE Confidence: 0.971131505714286
00:46:25.000 --> 00:46:27.020 Certainly if they're commercial,
NOTE Confidence: 0.971131505714286
00:46:27.020 --> 00:46:29.040 they're not medical devices.
NOTE Confidence: 0.971131505714286
00:46:29.040 --> 00:46:31.040 I mean, commercially available to all of us.
NOTE Confidence: 0.971131505714286
00:46:31.040 --> 00:46:33.140 I don't mean commercially
NOTE Confidence: 0.971131505714286
00:46:33.140 --> 00:46:34.715 available to hospitals.
NOTE Confidence: 0.971131505714286
00:46:34.720 --> 00:46:38.228 And those aren't vetted either.
NOTE Confidence: 0.971131505714286
00:46:38.228 --> 00:46:40.113 The Federal Trade Commission again,
NOTE Confidence: 0.971131505714286
00:46:40.120 --> 00:46:41.662 makes sure that the devices do
NOTE Confidence: 0.971131505714286
00:46:41.662 --> 00:46:42.880 what they're supposed to do,
NOTE Confidence: 0.971131505714286

00:46:42.880 --> 00:46:45.200 the apps do what they claim to do and so on.

NOTE Confidence: 0.971131505714286

00:46:45.200 --> 00:46:47.639 But who's watching?

NOTE Confidence: 0.971131505714286

00:46:47.640 --> 00:46:48.567 OK, so again,

NOTE Confidence: 0.971131505714286

00:46:48.567 --> 00:46:50.730 you have issues having to do with

NOTE Confidence: 0.971131505714286

00:46:50.802 --> 00:46:53.238 accuracy about these sorts of things.

NOTE Confidence: 0.940769552857143

00:46:56.560 --> 00:47:00.235 Who's liable then if things don't work,

NOTE Confidence: 0.940769552857143

00:47:00.240 --> 00:47:02.600 or if they are problematic?

NOTE Confidence: 0.940769552857143

00:47:02.600 --> 00:47:06.064 The developer? The vendor?

NOTE Confidence: 0.940769552857143

00:47:06.064 --> 00:47:08.656 The purchaser? The clinician?

NOTE Confidence: 0.940769552857143

00:47:08.656 --> 00:47:10.796 The people who install it?

NOTE Confidence: 0.940769552857143

00:47:10.800 --> 00:47:12.400 The people who use it?

NOTE Confidence: 0.956708328

00:47:14.720 --> 00:47:17.280 This is legally rather unclear.

NOTE Confidence: 0.956708328

00:47:17.280 --> 00:47:18.844 What isn't unclear, though,

NOTE Confidence: 0.956708328

00:47:18.844 --> 00:47:20.799 is that the contracts that

NOTE Confidence: 0.956708328

00:47:20.799 --> 00:47:22.895 are written, for instance for

NOTE Confidence: 0.956708328

00:47:22.895 --> 00:47:24.355 electronic health record systems

NOTE Confidence: 0.9425991811111111

00:47:26.840 --> 00:47:27.994 disavow liability.

NOTE Confidence: 0.9425991811111111

00:47:27.994 --> 00:47:32.033 We've known this for over 20 years.

NOTE Confidence: 0.9425991811111111

00:47:32.040 --> 00:47:34.672 It's not easy to find out because the

NOTE Confidence: 0.9425991811111111

00:47:34.672 --> 00:47:36.878 contracts are not publicly available.

NOTE Confidence: 0.9425991811111111

00:47:36.880 --> 00:47:39.680 But some of the contracts we've seen,

NOTE Confidence: 0.9425991811111111

00:47:39.680 --> 00:47:42.650 we know, have clauses in them

NOTE Confidence: 0.9425991811111111

00:47:42.650 --> 00:47:44.978 that say you're a clinician,

NOTE Confidence: 0.9425991811111111

00:47:44.978 --> 00:47:46.316 you're a pharmacist,

NOTE Confidence: 0.9425991811111111

00:47:46.320 --> 00:47:47.724 you're a radiologist,

NOTE Confidence: 0.9425991811111111

00:47:47.724 --> 00:47:49.596 you're a General practitioner,

NOTE Confidence: 0.9425991811111111

00:47:49.600 --> 00:47:51.730 You're supposed to know you

NOTE Confidence: 0.9425991811111111

00:47:51.730 --> 00:47:53.434 are a learned intermediary.

NOTE Confidence: 0.9425991811111111

00:47:53.440 --> 00:47:55.197 You are an expert in this area.

NOTE Confidence: 0.9425991811111111

00:47:55.200 --> 00:47:57.240 And because you are a quote

NOTE Confidence: 0.9425991811111111

00:47:57.240 --> 00:47:57.920 learned intermediary,

NOTE Confidence: 0.9425991811111111

00:47:57.920 --> 00:47:59.300 you are responsible for
NOTE Confidence: 0.9425991811111111

00:47:59.300 --> 00:48:00.680 any decisions you make,
NOTE Confidence: 0.9425991811111111

00:48:00.680 --> 00:48:02.516 even if you are making those
NOTE Confidence: 0.9425991811111111

00:48:02.516 --> 00:48:04.169 decisions based on wrong information
NOTE Confidence: 0.9425991811111111

00:48:04.169 --> 00:48:05.999 coming out of our systems.
NOTE Confidence: 0.9425991811111111

00:48:06.000 --> 00:48:10.680 OK, So you are responsible.
NOTE Confidence: 0.9425991811111111

00:48:10.680 --> 00:48:13.280 That means you have to be paying attention.
NOTE Confidence: 0.9425991811111111

00:48:13.280 --> 00:48:15.160 You have to be there.
NOTE Confidence: 0.9425991811111111

00:48:15.160 --> 00:48:16.819 I think it's one of the reasons
NOTE Confidence: 0.9425991811111111

00:48:16.819 --> 00:48:18.850 you have the human in the loop
NOTE Confidence: 0.9425991811111111

00:48:18.850 --> 00:48:20.114 criteria for ethical systems.
NOTE Confidence: 0.9425991811111111

00:48:20.120 --> 00:48:21.660 But you can't always have
NOTE Confidence: 0.9425991811111111

00:48:21.660 --> 00:48:23.200 a human in the loop.
NOTE Confidence: 0.9425991811111111

00:48:23.200 --> 00:48:24.358 Where's the human in the loop?
NOTE Confidence: 0.9425991811111111

00:48:24.360 --> 00:48:27.320 On an automated insulin pump,
NOTE Confidence: 0.9425991811111111

00:48:27.320 --> 00:48:30.008 just as one example,

NOTE Confidence: 0.9425991811111111
00:48:30.008 --> 00:48:30.680 OK.
NOTE Confidence: 0.9425991811111111
00:48:30.680 --> 00:48:35.318 We have then also issues about
NOTE Confidence: 0.9425991811111111
00:48:35.320 --> 00:48:38.136 transparency built into these
NOTE Confidence: 0.9425991811111111
00:48:38.136 --> 00:48:40.811 contracts because the contracts
NOTE Confidence: 0.9425991811111111
00:48:40.811 --> 00:48:42.782 themselves are protected
NOTE Confidence: 0.9425991811111111
00:48:42.782 --> 00:48:44.753 as intellectual property.
NOTE Confidence: 0.9425991811111111
00:48:44.760 --> 00:48:46.268 The screenshots are protected
NOTE Confidence: 0.9425991811111111
00:48:46.268 --> 00:48:47.399 as intellectual property.
NOTE Confidence: 0.9425991811111111
00:48:47.400 --> 00:48:49.640 So you can't show them to somebody else,
NOTE Confidence: 0.9425991811111111
00:48:49.640 --> 00:48:51.368 particularly outside your organization.
NOTE Confidence: 0.9425991811111111
00:48:51.368 --> 00:48:54.400 The errors you might think are there,
NOTE Confidence: 0.9425991811111111
00:48:54.400 --> 00:48:56.420 you can't tell people outside
NOTE Confidence: 0.9425991811111111
00:48:56.420 --> 00:48:58.036 your organization because that's
NOTE Confidence: 0.9425991811111111
00:48:58.036 --> 00:49:00.158 all prevented by the contracts.
NOTE Confidence: 0.972752212857143
00:49:02.440 --> 00:49:05.555 How the algorithms work, we don't know.
NOTE Confidence: 0.972752212857143

00:49:05.560 --> 00:49:07.240 That's also protected by
NOTE Confidence: 0.972752212857143

00:49:07.240 --> 00:49:08.080 intellectual property,
NOTE Confidence: 0.972752212857143

00:49:08.080 --> 00:49:09.620 whether it's in electronic N
NOTE Confidence: 0.972752212857143

00:49:09.620 --> 00:49:11.160 record systems or anywhere else.
NOTE Confidence: 0.972752212857143

00:49:11.160 --> 00:49:12.396 We don't know how they're trained.
NOTE Confidence: 0.972752212857143

00:49:12.400 --> 00:49:14.040 We don't know what data they're trained on.
NOTE Confidence: 0.972752212857143

00:49:14.040 --> 00:49:16.236 We don't know how they work.
NOTE Confidence: 0.972752212857143

00:49:16.240 --> 00:49:17.920 We don't know how they reach decisions.
NOTE Confidence: 0.972752212857143

00:49:17.920 --> 00:49:19.635 We don't know how accurate they are.
NOTE Confidence: 0.972752212857143

00:49:19.640 --> 00:49:21.872 We don't know very much about them at all.
NOTE Confidence: 0.953024

00:49:27.130 --> 00:49:32.386 So having transparency becomes very
NOTE Confidence: 0.953024

00:49:32.386 --> 00:49:34.598 difficult on liability and malpractice
NOTE Confidence: 0.953024

00:49:34.598 --> 00:49:36.333 standards of care are changing
NOTE Confidence: 0.953024

00:49:36.333 --> 00:49:38.368 as these systems are being used.
NOTE Confidence: 0.953024

00:49:38.370 --> 00:49:42.078 So that affects also your responsibilities
NOTE Confidence: 0.953024

00:49:42.078 --> 00:49:44.605 as clinicians and what you may be

NOTE Confidence: 0.953024

00:49:44.605 --> 00:49:46.640 found liable for and what you may not.

NOTE Confidence: 0.953024

00:49:46.640 --> 00:49:49.839 And right now, based on what limited

NOTE Confidence: 0.953024

00:49:49.840 --> 00:49:51.758 evidence we have from the legal system,

NOTE Confidence: 0.953024

00:49:51.760 --> 00:49:52.996 you're damned if you do and

NOTE Confidence: 0.953024

00:49:52.996 --> 00:49:54.120 you're damned if you don't.

NOTE Confidence: 0.865988235

00:49:59.920 --> 00:50:03.493 So I think there's things we can do and

NOTE Confidence: 0.865988235

00:50:03.493 --> 00:50:05.824 should be paying attention to or more

NOTE Confidence: 0.865988235

00:50:05.824 --> 00:50:08.040 attention than you're already paying to.

NOTE Confidence: 0.865988235

00:50:08.040 --> 00:50:11.400 We as bioethicists, we as clinicians,

NOTE Confidence: 0.865988235

00:50:11.400 --> 00:50:14.795 we as patients, we as IR BS,

NOTE Confidence: 0.865988235

00:50:14.800 --> 00:50:17.638 we as people who make policy,

NOTE Confidence: 0.865988235

00:50:17.640 --> 00:50:20.420 everybody needs to understand better

NOTE Confidence: 0.865988235

00:50:20.420 --> 00:50:24.773 some of these issues and some of the

NOTE Confidence: 0.865988235

00:50:24.773 --> 00:50:28.120 technology that is related to these issues.

NOTE Confidence: 0.865988235

00:50:28.120 --> 00:50:29.360 The legal and risk departments

NOTE Confidence: 0.865988235

00:50:29.360 --> 00:50:30.352 need to know that.
NOTE Confidence: 0.865988235

00:50:30.360 --> 00:50:32.304 My understanding from the legal people
NOTE Confidence: 0.865988235

00:50:32.304 --> 00:50:34.689 I know is that the legal departments
NOTE Confidence: 0.865988235

00:50:34.689 --> 00:50:37.879 don't have a clue about a lot of this.
NOTE Confidence: 0.865988235

00:50:37.880 --> 00:50:40.448 We need there for better education
NOTE Confidence: 0.865988235

00:50:40.448 --> 00:50:42.160 all across the board.
NOTE Confidence: 0.865988235

00:50:42.160 --> 00:50:44.236 That's always going on in medicine.
NOTE Confidence: 0.865988235

00:50:44.240 --> 00:50:45.398 We have to learn about new
NOTE Confidence: 0.97240395625

00:50:47.640 --> 00:50:49.560 treatments. We have to learn about new drugs,
NOTE Confidence: 0.97240395625

00:50:49.560 --> 00:50:51.555 We have to learn about new guidelines.
NOTE Confidence: 0.97240395625

00:50:51.560 --> 00:50:53.240 We have to always keep learning.
NOTE Confidence: 0.97240395625

00:50:53.240 --> 00:50:54.976 And now we also have to include
NOTE Confidence: 0.97240395625

00:50:54.976 --> 00:50:56.988 this in what we have to keep
NOTE Confidence: 0.97240395625

00:50:56.988 --> 00:50:58.200 knowing and learning about,
NOTE Confidence: 0.97240395625

00:50:58.200 --> 00:51:01.656 including the ethical and legal and
NOTE Confidence: 0.97240395625

00:51:01.656 --> 00:51:04.986 social issues that accompany it. To me,

NOTE Confidence: 0.97240395625

00:51:04.986 --> 00:51:07.317 that means also we need better studies.

NOTE Confidence: 0.97240395625

00:51:07.320 --> 00:51:09.959 We need better information to know how

NOTE Confidence: 0.97240395625

00:51:09.959 --> 00:51:12.400 do these systems work in real life?

NOTE Confidence: 0.97240395625

00:51:12.400 --> 00:51:14.480 How do they work in real practice settings?

NOTE Confidence: 0.97240395625

00:51:14.480 --> 00:51:16.076 How do they work in the home?

NOTE Confidence: 0.97240395625

00:51:16.080 --> 00:51:19.237 How do they work in the clinic?

NOTE Confidence: 0.97240395625

00:51:19.240 --> 00:51:21.280 And to do those studies well,

NOTE Confidence: 0.97240395625

00:51:21.280 --> 00:51:23.140 we need multidisciplinary methods

NOTE Confidence: 0.97240395625

00:51:23.140 --> 00:51:25.000 and approaches and questions.

NOTE Confidence: 0.971327318181818

00:51:27.040 --> 00:51:28.760 It's important to do those

NOTE Confidence: 0.971327318181818

00:51:28.760 --> 00:51:31.040 studies not only at the outset,

NOTE Confidence: 0.971327318181818

00:51:31.040 --> 00:51:32.800 but with ongoing periodic

NOTE Confidence: 0.971327318181818

00:51:32.800 --> 00:51:34.560 evaluation of these systems,

NOTE Confidence: 0.971327318181818

00:51:34.560 --> 00:51:36.720 not just how effective they are,

NOTE Confidence: 0.971327318181818

00:51:36.720 --> 00:51:38.000 not just the outcomes that

NOTE Confidence: 0.971327318181818

00:51:38.000 --> 00:51:39.280 are coming out of them,
NOTE Confidence: 0.971327318181818

00:51:39.280 --> 00:51:42.106 but what sorts of ethical and
NOTE Confidence: 0.971327318181818

00:51:42.106 --> 00:51:43.990 patient centeredness issues may
NOTE Confidence: 0.971327318181818

00:51:44.071 --> 00:51:46.075 be coming up here as well.
NOTE Confidence: 0.971327318181818

00:51:46.080 --> 00:51:48.376 For that we need much more patient
NOTE Confidence: 0.971327318181818

00:51:48.376 --> 00:51:49.973 and community involvement so
NOTE Confidence: 0.971327318181818

00:51:49.973 --> 00:51:53.038 that the values of everybody
NOTE Confidence: 0.971327318181818

00:51:53.040 --> 00:51:54.720 are taken into account of,
NOTE Confidence: 0.971327318181818

00:51:54.720 --> 00:51:56.967 so that we try to accommodate as
NOTE Confidence: 0.971327318181818

00:51:56.967 --> 00:51:59.760 best we can all the differences all
NOTE Confidence: 0.971327318181818

00:51:59.760 --> 00:52:04.050 across the way people are and these
NOTE Confidence: 0.971327318181818

00:52:04.050 --> 00:52:06.960 kinds of questions and issues and
NOTE Confidence: 0.971327318181818

00:52:06.960 --> 00:52:09.787 considerations are common to all
NOTE Confidence: 0.971327318181818

00:52:09.787 --> 00:52:12.155 information technologies in healthcare.
NOTE Confidence: 0.971327318181818

00:52:12.160 --> 00:52:14.845 They are common to information
NOTE Confidence: 0.971327318181818

00:52:14.845 --> 00:52:16.993 technologies outside of healthcare.

NOTE Confidence: 0.971327318181818
00:52:17.000 --> 00:52:19.065 And what we can learn from other
NOTE Confidence: 0.971327318181818
00:52:19.065 --> 00:52:20.519 fields is important here too.
NOTE Confidence: 0.971327318181818
00:52:20.520 --> 00:52:22.050 And what we can teach other
NOTE Confidence: 0.971327318181818
00:52:22.050 --> 00:52:23.320 fields is important here too.
NOTE Confidence: 0.949806995238095
00:52:26.240 --> 00:52:28.242 The common issues that have come up
NOTE Confidence: 0.949806995238095
00:52:28.242 --> 00:52:30.495 over and over and over again within
NOTE Confidence: 0.949806995238095
00:52:30.495 --> 00:52:32.160 medical informatics and now more
NOTE Confidence: 0.949806995238095
00:52:32.160 --> 00:52:35.144 in bioethics are privacy, consent.
NOTE Confidence: 0.949806995238095
00:52:35.144 --> 00:52:36.820 More recently, bias.
NOTE Confidence: 0.949806995238095
00:52:36.820 --> 00:52:39.520 Bias is built into the way the data is
NOTE Confidence: 0.949806995238095
00:52:39.596 --> 00:52:41.678 collected, the way the data is analyzed,
NOTE Confidence: 0.949806995238095
00:52:41.680 --> 00:52:44.080 the way the data is trained, and so on.
NOTE Confidence: 0.949806995238095
00:52:44.080 --> 00:52:46.080 And quality of care issues.
NOTE Confidence: 0.949806995238095
00:52:46.080 --> 00:52:47.676 There are more issues than that.
NOTE Confidence: 0.949806995238095
00:52:47.680 --> 00:52:49.556 I've touched on a bunch of them.
NOTE Confidence: 0.949806995238095

00:52:49.560 --> 00:52:52.648 There are more I'm sure that are coming up,
NOTE Confidence: 0.949806995238095

00:52:52.648 --> 00:52:55.478 that have come up and that will come up.
NOTE Confidence: 0.949806995238095

00:52:55.480 --> 00:52:59.200 So I think we're going to end up
NOTE Confidence: 0.949806995238095

00:52:59.200 --> 00:53:02.920 again with visions that are utopian,
NOTE Confidence: 0.949806995238095

00:53:02.920 --> 00:53:04.096 visions that are dystopian,
NOTE Confidence: 0.949806995238095

00:53:04.096 --> 00:53:06.280 will end up somewhere in the middle.
NOTE Confidence: 0.949806995238095

00:53:06.280 --> 00:53:08.212 I think it's up to us where
NOTE Confidence: 0.949806995238095

00:53:08.212 --> 00:53:09.918 the middle is going to be.
NOTE Confidence: 0.949806995238095

00:53:09.920 --> 00:53:11.845 And that may be different
NOTE Confidence: 0.949806995238095

00:53:11.845 --> 00:53:13.000 for different people.
NOTE Confidence: 0.949806995238095

00:53:13.000 --> 00:53:15.156 And I hope I have inspired you
NOTE Confidence: 0.949806995238095

00:53:15.156 --> 00:53:17.965 then to think about how to get to
NOTE Confidence: 0.949806995238095

00:53:17.965 --> 00:53:20.705 those wonderful possibilities that
NOTE Confidence: 0.949806995238095

00:53:20.705 --> 00:53:24.186 we have and improve healthcare,
NOTE Confidence: 0.949806995238095

00:53:24.186 --> 00:53:26.994 treat patients as people,
NOTE Confidence: 0.949806995238095

00:53:27.000 --> 00:53:29.240 not as representations by data,

NOTE Confidence: 0.949806995238095
00:53:29.240 --> 00:53:32.480 not as sources of data to be monetized.
NOTE Confidence: 0.949806995238095
00:53:32.480 --> 00:53:34.196 How we deal with the data,
NOTE Confidence: 0.949806995238095
00:53:34.200 --> 00:53:35.676 how we deal with the records,
NOTE Confidence: 0.949806995238095
00:53:35.680 --> 00:53:37.888 how we deal with the technologies
NOTE Confidence: 0.949806995238095
00:53:37.888 --> 00:53:39.360 is up to us.
NOTE Confidence: 0.949806995238095
00:53:39.360 --> 00:53:41.730 And I will be delighted to
NOTE Confidence: 0.949806995238095
00:53:41.730 --> 00:53:42.915 continue this discussion.
NOTE Confidence: 0.949806995238095
00:53:42.920 --> 00:53:44.516 There's a lot more to be said,
NOTE Confidence: 0.949806995238095
00:53:44.520 --> 00:53:46.480 a lot of questions to be raised,
NOTE Confidence: 0.949806995238095
00:53:46.480 --> 00:53:48.080 a lot of ideas here.
NOTE Confidence: 0.949806995238095
00:53:48.080 --> 00:53:50.080 We need all of you to do that.
NOTE Confidence: 0.949806995238095
00:53:50.080 --> 00:53:53.920 And if you want CME credit for this,
NOTE Confidence: 0.949806995238095
00:53:53.920 --> 00:53:55.640 the number is right there.
NOTE Confidence: 0.949806995238095
00:53:55.640 --> 00:53:58.160 And how to reach me is right there too.
NOTE Confidence: 0.949806995238095
00:53:58.160 --> 00:53:58.452 Thank you.
NOTE Confidence: 0.949806995238095

00:53:58.452 --> 00:53:58.598 Do
NOTE Confidence: 0.9739854

00:54:03.880 --> 00:54:05.754 you want to want to have a seat up there?
NOTE Confidence: 0.9739854

00:54:05.760 --> 00:54:10.760 And I'm sure up there is fine. So.
NOTE Confidence: 0.9041277683333333

00:54:10.760 --> 00:54:13.824 So what we'll do next is Karen
NOTE Confidence: 0.9041277683333333

00:54:13.824 --> 00:54:15.360 or actually Sarah, volunteered.
NOTE Confidence: 0.9041277683333333

00:54:15.360 --> 00:54:16.277 Sarah, if you want to do this,
NOTE Confidence: 0.9041277683333333

00:54:16.280 --> 00:54:17.320 this will be very kind.
NOTE Confidence: 0.887466465

00:54:22.000 --> 00:54:23.773 Here we go. So I would ask you to
NOTE Confidence: 0.887466465

00:54:23.773 --> 00:54:25.364 raise your hand and Please wait
NOTE Confidence: 0.887466465

00:54:25.364 --> 00:54:27.159 until Sarah gets there with the mic.
NOTE Confidence: 0.887466465

00:54:27.160 --> 00:54:27.840 And as you know Sir,
NOTE Confidence: 0.887466465

00:54:27.840 --> 00:54:29.560 I try and mix it up so various.
NOTE Confidence: 0.887466465

00:54:29.560 --> 00:54:32.096 So I'll let you know who who looks like
NOTE Confidence: 0.887466465

00:54:32.096 --> 00:54:33.680 they shouldn't be allowed to speak.
NOTE Confidence: 0.887466465

00:54:33.680 --> 00:54:34.496 But I don't think we have
NOTE Confidence: 0.887466465

00:54:34.496 --> 00:54:35.040 anything like that here.

NOTE Confidence: 0.887466465
00:54:35.040 --> 00:54:36.936 So we'll we'll try and hear
NOTE Confidence: 0.887466465
00:54:36.936 --> 00:54:38.200 from many different folks.
NOTE Confidence: 0.887466465
00:54:38.200 --> 00:54:39.964 I wanted to take the prerogative
NOTE Confidence: 0.887466465
00:54:39.964 --> 00:54:42.280 to to take the first question and
NOTE Confidence: 0.887466465
00:54:42.280 --> 00:54:44.080 let it be kind of a big vague one.
NOTE Confidence: 0.887466465
00:54:44.080 --> 00:54:44.880 This was, this was.
NOTE Confidence: 0.887466465
00:54:44.880 --> 00:54:47.245 I mean, I was sitting here taking
NOTE Confidence: 0.887466465
00:54:47.245 --> 00:54:48.632 notes because there's so much
NOTE Confidence: 0.887466465
00:54:48.632 --> 00:54:50.120 this that I want to understand.
NOTE Confidence: 0.887466465
00:54:50.120 --> 00:54:51.885 So we talked about bioethics
NOTE Confidence: 0.887466465
00:54:51.885 --> 00:54:53.978 and how bioethics kind of looks
NOTE Confidence: 0.887466465
00:54:53.978 --> 00:54:55.588 at AI and AI capabilities,
NOTE Confidence: 0.887466465
00:54:55.588 --> 00:54:57.273 things like privacy and consent.
NOTE Confidence: 0.8986881856
00:54:59.560 --> 00:55:01.002 I want to look for a minute
NOTE Confidence: 0.8986881856
00:55:01.002 --> 00:55:02.517 about what AI has to offer
NOTE Confidence: 0.8986881856

00:55:02.517 --> 00:55:03.922 specifically to bioethics and get
NOTE Confidence: 0.8986881856

00:55:03.922 --> 00:55:05.598 your take on that a little bit.
NOTE Confidence: 0.8986881856

00:55:05.600 --> 00:55:07.238 And here's to give you a specific,
NOTE Confidence: 0.8986881856

00:55:07.240 --> 00:55:09.520 concrete question.
NOTE Confidence: 0.8986881856

00:55:09.520 --> 00:55:11.356 As I understand it a layman's
NOTE Confidence: 0.8986881856

00:55:11.356 --> 00:55:12.600 understanding about this one
NOTE Confidence: 0.8986881856

00:55:12.600 --> 00:55:14.160 could have a system right
NOTE Confidence: 0.8986881856

00:55:14.160 --> 00:55:15.560 that is capable of reading
NOTE Confidence: 0.6547014425

00:55:18.480 --> 00:55:20.118 and and the context I want to ask my
NOTE Confidence: 0.6547014425

00:55:20.118 --> 00:55:21.717 question is with a bioethics console right,
NOTE Confidence: 0.6547014425

00:55:21.720 --> 00:55:22.728 medical clinical ethics console,
NOTE Confidence: 0.6547014425

00:55:22.728 --> 00:55:24.240 what should we do in this
NOTE Confidence: 0.6547014425

00:55:24.287 --> 00:55:25.679 particular clinical ethics case.
NOTE Confidence: 0.6547014425

00:55:25.680 --> 00:55:28.128 So what happens is it comes up to
NOTE Confidence: 0.6547014425

00:55:28.128 --> 00:55:29.540 individuals and a group of two
NOTE Confidence: 0.6547014425

00:55:29.540 --> 00:55:30.640 or three individuals or three

NOTE Confidence: 0.6547014425

00:55:30.688 --> 00:55:32.554 or four individuals sit here,

NOTE Confidence: 0.6547014425

00:55:32.554 --> 00:55:34.542 the information get information

NOTE Confidence: 0.6547014425

00:55:34.542 --> 00:55:35.811 from the patient's record,

NOTE Confidence: 0.6547014425

00:55:35.811 --> 00:55:37.096 but primarily from here's the

NOTE Confidence: 0.6547014425

00:55:37.096 --> 00:55:38.537 patient tells the story or the

NOTE Confidence: 0.6547014425

00:55:38.537 --> 00:55:39.637 patient's family tells the story,

NOTE Confidence: 0.6547014425

00:55:39.640 --> 00:55:41.014 then the clinicians tell their story

NOTE Confidence: 0.6547014425

00:55:41.014 --> 00:55:42.653 and then the other have a conversation

NOTE Confidence: 0.6547014425

00:55:42.653 --> 00:55:44.228 with these people and then come up

NOTE Confidence: 0.6547014425

00:55:44.274 --> 00:55:45.773 with some recommendations. Right.

NOTE Confidence: 0.6547014425

00:55:45.773 --> 00:55:47.838 That's how ethics consults work.

NOTE Confidence: 0.6547014425

00:55:47.840 --> 00:55:49.721 Most of you know some of you are have

NOTE Confidence: 0.6547014425

00:55:49.721 --> 00:55:51.678 been involved in those for a long time.

NOTE Confidence: 0.6547014425

00:55:51.680 --> 00:55:52.342 Of interest,

NOTE Confidence: 0.6547014425

00:55:52.342 --> 00:55:54.659 a question now we hope that the

NOTE Confidence: 0.6547014425

00:55:54.659 --> 00:55:56.708 consults are only as good as the
NOTE Confidence: 0.6547014425

00:55:56.708 --> 00:55:59.045 moral compass of and to some extent
NOTE Confidence: 0.6547014425

00:55:59.045 --> 00:56:01.000 expertise of those ethics consults.
NOTE Confidence: 0.6547014425

00:56:01.000 --> 00:56:04.598 So imagine a system that has read
NOTE Confidence: 0.6547014425

00:56:04.600 --> 00:56:06.400 all of the Greek philosophers,
NOTE Confidence: 0.6547014425

00:56:06.400 --> 00:56:09.480 that has read all of the modern philosophers,
NOTE Confidence: 0.6547014425

00:56:09.480 --> 00:56:12.640 right? And that has read, you know,
NOTE Confidence: 0.6547014425

00:56:12.640 --> 00:56:15.040 that six volume encyclopedia of bioethics.
NOTE Confidence: 0.6547014425

00:56:15.040 --> 00:56:16.020 Read all of that.
NOTE Confidence: 0.6547014425

00:56:16.020 --> 00:56:16.755 It's all there.
NOTE Confidence: 0.6547014425

00:56:16.760 --> 00:56:18.480 This system has this has
NOTE Confidence: 0.6547014425

00:56:18.480 --> 00:56:20.200 access to far more learning,
NOTE Confidence: 0.6547014425

00:56:20.200 --> 00:56:22.559 if you will have far more information
NOTE Confidence: 0.6547014425

00:56:22.560 --> 00:56:25.560 than does any human ethics consultant.
NOTE Confidence: 0.6547014425

00:56:25.560 --> 00:56:27.516 That doesn't necessarily speak to judgement,
NOTE Confidence: 0.6547014425

00:56:27.520 --> 00:56:28.450 but nevertheless,

NOTE Confidence: 0.6547014425

00:56:28.450 --> 00:56:31.468 is there a setting in which it

NOTE Confidence: 0.6547014425

00:56:31.468 --> 00:56:32.836 could happen where one could ask,

NOTE Confidence: 0.6547014425

00:56:32.840 --> 00:56:34.560 And I'm not saying to fly automatic pilot,

NOTE Confidence: 0.6547014425

00:56:34.560 --> 00:56:36.486 imagine that Jack Hughes is doing

NOTE Confidence: 0.6547014425

00:56:36.486 --> 00:56:38.120 an ethics console next week.

NOTE Confidence: 0.6547014425

00:56:38.120 --> 00:56:39.478 OK, we're going with the gold standards.

NOTE Confidence: 0.6547014425

00:56:39.480 --> 00:56:40.878 We got Jack Hughes up here.

NOTE Confidence: 0.6547014425

00:56:40.880 --> 00:56:42.080 So Jack is doing an ethics

NOTE Confidence: 0.6547014425

00:56:42.080 --> 00:56:43.105 console and he says, well,

NOTE Confidence: 0.6547014425

00:56:43.105 --> 00:56:44.680 I'm not putting all this stuff together,

NOTE Confidence: 0.6547014425

00:56:44.680 --> 00:56:48.120 but why not also ask the Kaplan device?

NOTE Confidence: 0.6547014425

00:56:48.120 --> 00:56:49.898 Because the Kaplan device could maybe come

NOTE Confidence: 0.6547014425

00:56:49.898 --> 00:56:51.956 up with some things I hadn't thought of.

NOTE Confidence: 0.6547014425

00:56:51.960 --> 00:56:52.664 The Kaplan device, say?

NOTE Confidence: 0.6547014425

00:56:52.664 --> 00:56:52.840 Well,

NOTE Confidence: 0.6547014425

00:56:52.840 --> 00:56:53.354 of course,
NOTE Confidence: 0.6547014425

00:56:53.354 --> 00:56:54.896 in that in that landmark case
NOTE Confidence: 0.6547014425

00:56:54.896 --> 00:56:56.400 from 1962 of the logus versus
NOTE Confidence: 0.6547014425

00:56:56.400 --> 00:56:57.976 the bogus and Jack saying she's
NOTE Confidence: 0.6547014425

00:56:57.976 --> 00:56:59.638 didn't even know about that case.
NOTE Confidence: 0.6547014425

00:56:59.640 --> 00:57:01.143 But the Kaplan device knows about
NOTE Confidence: 0.6547014425

00:57:01.143 --> 00:57:02.709 that case because the Captain Rice
NOTE Confidence: 0.6547014425

00:57:02.709 --> 00:57:04.395 has read a lot more than Jack has.
NOTE Confidence: 0.6547014425

00:57:04.400 --> 00:57:05.104 So Jack,
NOTE Confidence: 0.6547014425

00:57:05.104 --> 00:57:06.864 while can bring forward years
NOTE Confidence: 0.6547014425

00:57:06.864 --> 00:57:08.686 of experience and judgment and
NOTE Confidence: 0.6547014425

00:57:08.686 --> 00:57:10.436 a great deal of expertise,
NOTE Confidence: 0.6547014425

00:57:10.440 --> 00:57:11.334 perhaps would say,
NOTE Confidence: 0.6547014425

00:57:11.334 --> 00:57:11.632 well,
NOTE Confidence: 0.6547014425

00:57:11.632 --> 00:57:13.122 why not augment my expertise
NOTE Confidence: 0.6547014425

00:57:13.122 --> 00:57:14.680 and maybe even my judgment.

NOTE Confidence: 0.6547014425

00:57:14.680 --> 00:57:17.528 Let's see what the Kaplan device has

NOTE Confidence: 0.6547014425

00:57:17.528 --> 00:57:19.245 to say about this because it might

NOTE Confidence: 0.6547014425

00:57:19.245 --> 00:57:20.877 actually have insights that I lack.

NOTE Confidence: 0.6547014425

00:57:20.880 --> 00:57:21.880 Do we have that ability?

NOTE Confidence: 0.6547014425

00:57:21.880 --> 00:57:23.760 Should we pursue it?

NOTE Confidence: 0.9719826

00:57:24.120 --> 00:57:25.720 We do have that ability.

NOTE Confidence: 0.9719826

00:57:25.720 --> 00:57:26.808 We should pursue it.

NOTE Confidence: 0.9719826

00:57:26.808 --> 00:57:29.279 But you need to pursue it with caveats.

NOTE Confidence: 0.9719826

00:57:29.280 --> 00:57:31.688 I didn't talk about the important issue

NOTE Confidence: 0.9719826

00:57:31.688 --> 00:57:34.439 of how you benchmark these systems.

NOTE Confidence: 0.9719826

00:57:34.440 --> 00:57:37.725 So, for example, Jack has a lot of clinical

NOTE Confidence: 0.9719826

00:57:37.725 --> 00:57:40.438 expertise and a lot of bioethics expertise.

NOTE Confidence: 0.9719826

00:57:40.440 --> 00:57:44.400 As you do, and as many of the people here do,

NOTE Confidence: 0.9719826

00:57:44.400 --> 00:57:47.280 do you want to benchmark the system against

NOTE Confidence: 0.9719826

00:57:47.280 --> 00:57:51.678 experts like you in ideal circumstances?

NOTE Confidence: 0.9719826

00:57:51.680 --> 00:57:54.216 Do you want to benchmark your systems against

NOTE Confidence: 0.9719826

00:57:54.216 --> 00:57:56.358 most clinical people who are not experts?

NOTE Confidence: 0.9719826

00:57:56.360 --> 00:57:57.668 In ideal situations?

NOTE Confidence: 0.9719826

00:57:57.668 --> 00:58:00.720 Do you want to benchmark them against?

NOTE Confidence: 0.9719826

00:58:00.720 --> 00:58:01.760 Maybe. This is a resource.

NOTE Confidence: 0.9719826

00:58:01.760 --> 00:58:03.698 Poor area and we don't have

NOTE Confidence: 0.9719826

00:58:03.698 --> 00:58:05.320 much expertise here at all.

NOTE Confidence: 0.9719826

00:58:05.320 --> 00:58:07.849 So one way is you have to think about

NOTE Confidence: 0.9719826

00:58:07.849 --> 00:58:10.408 how do you want to build these systems

NOTE Confidence: 0.9719826

00:58:10.408 --> 00:58:12.956 in terms of how they're going to be used.

NOTE Confidence: 0.9719826

00:58:12.960 --> 00:58:14.648 Another thing, of course,

NOTE Confidence: 0.9719826

00:58:14.648 --> 00:58:17.644 is we know already from a lot of experience

NOTE Confidence: 0.9719826

00:58:17.644 --> 00:58:19.679 over the past year that you get all

NOTE Confidence: 0.9719826

00:58:19.679 --> 00:58:20.995 sorts of interesting fabrications,

NOTE Confidence: 0.9719826

00:58:21.000 --> 00:58:22.746 hallucinations, false references.

NOTE Confidence: 0.9719826

00:58:22.746 --> 00:58:27.400 Your bogus court case may actually be bogus.

NOTE Confidence: 0.9719826

00:58:27.400 --> 00:58:30.280 You have to check, OK?

NOTE Confidence: 0.9719826

00:58:30.280 --> 00:58:34.796 And no matter how much you've read,

NOTE Confidence: 0.9719826

00:58:34.800 --> 00:58:36.984 you have this patient with this

NOTE Confidence: 0.9719826

00:58:36.984 --> 00:58:38.920 family right here, right now.

NOTE Confidence: 0.9719826

00:58:38.920 --> 00:58:41.440 Decisions that have to get made.

NOTE Confidence: 0.9719826

00:58:41.440 --> 00:58:43.872 And I think the parts that you bring

NOTE Confidence: 0.9719826

00:58:43.872 --> 00:58:46.206 to that is caring, humane people,

NOTE Confidence: 0.9719826

00:58:46.206 --> 00:58:49.587 as well as expert clinicians and ethicists

NOTE Confidence: 0.9719826

00:58:49.587 --> 00:58:53.238 are really important as part of that input.

NOTE Confidence: 0.9719826

00:58:53.240 --> 00:58:56.026 But why not take advantage of Morax

NOTE Confidence: 0.9719826

00:58:56.026 --> 00:58:58.079 information that may be helpful?

NOTE Confidence: 0.9719826

00:58:58.080 --> 00:58:59.480 I think it would not.

NOTE Confidence: 0.9719826

00:58:59.480 --> 00:59:01.478 This is another issue about patient

NOTE Confidence: 0.9719826

00:59:01.478 --> 00:59:03.520 consent to there's been argument in

NOTE Confidence: 0.9719826

00:59:03.520 --> 00:59:05.809 the field over should patients have to

NOTE Confidence: 0.9719826

00:59:05.809 --> 00:59:08.035 consent to the use of these systems or

NOTE Confidence: 0.9719826

00:59:08.035 --> 00:59:10.240 should patients have to be told that

NOTE Confidence: 0.9719826

00:59:10.240 --> 00:59:12.413 they're not being used and consent

NOTE Confidence: 0.9719826

00:59:12.413 --> 00:59:14.633 to that because sometimes the systems

NOTE Confidence: 0.9719826

00:59:14.702 --> 00:59:17.712 are better than the doctors are.

NOTE Confidence: 0.9719826

00:59:17.712 --> 00:59:19.840 So you've got a number of really

NOTE Confidence: 0.9719826

00:59:19.908 --> 00:59:21.399 interesting issues here,

NOTE Confidence: 0.9719826

00:59:21.400 --> 00:59:23.050 but my gut sense is certainly

NOTE Confidence: 0.9719826

00:59:23.050 --> 00:59:24.712 take advantage of whatever you can

NOTE Confidence: 0.9719826

00:59:24.712 --> 00:59:27.880 take advantage of. Why not?

NOTE Confidence: 0.9719826

00:59:27.880 --> 00:59:28.120 Thank

NOTE Confidence: 0.884137874

00:59:28.120 --> 00:59:30.080 you. Thank you. And Jack,

NOTE Confidence: 0.884137874

00:59:30.080 --> 00:59:31.760 thanks for playing along. Yeah.

NOTE Confidence: 0.884137874

00:59:31.760 --> 00:59:33.664 And good job with that, That, this, this.

NOTE Confidence: 0.884137874

00:59:33.664 --> 00:59:35.520 I think we started a whole new we.

NOTE Confidence: 0.884137874

00:59:35.520 --> 00:59:37.030 We've got a whole new genre of

NOTE Confidence: 0.884137874

00:59:37.030 --> 00:59:38.680 possible scenarios with Jack syndrome.

NOTE Confidence: 0.733941540833333

00:59:38.800 --> 00:59:40.816 I could ask Jack GPT to write this

NOTE Confidence: 0.733941540833333

00:59:40.816 --> 00:59:44.280 talk for me too, but I didn't. So Jack,

NOTE Confidence: 0.733941540833333

00:59:44.280 --> 00:59:46.198 what would you do in that situation?

NOTE Confidence: 0.733941540833333

00:59:46.200 --> 00:59:49.440 Would you consult some sort of AI system? I'd

NOTE Confidence: 0.723530094285714

00:59:50.200 --> 00:59:51.902 be delighted. I I would be delighted, Yeah.

NOTE Confidence: 0.723530094285714

00:59:51.902 --> 00:59:54.293 What I would do with it, I don't know.

NOTE Confidence: 0.723530094285714

00:59:54.293 --> 00:59:56.040 It depends on whether I liked the response.

NOTE Confidence: 0.723530094285714

00:59:56.040 --> 00:59:58.560 So. But it couldn't hurt to look

NOTE Confidence: 0.723530094285714

00:59:58.560 --> 01:00:00.000 and see what it had to say exactly,

NOTE Confidence: 0.772973938

01:00:00.240 --> 01:00:02.000 right. It may, it may change

NOTE Confidence: 0.772973938

01:00:02.000 --> 01:00:02.960 your thinking some way.

NOTE Confidence: 0.621834063333333

01:00:04.520 --> 01:00:06.356 Thank you. Atta oh, Atta's point

NOTE Confidence: 0.621834063333333

01:00:06.356 --> 01:00:07.680 in that way. There we go. I

NOTE Confidence: 0.75457998

01:00:07.960 --> 01:00:08.920 just want to follow on.

NOTE Confidence: 0.955418763157895

01:00:09.360 --> 01:00:11.288 I love that you said it depends if
NOTE Confidence: 0.955418763157895

01:00:11.288 --> 01:00:13.720 I like the response because I think
NOTE Confidence: 0.955418763157895

01:00:13.720 --> 01:00:15.860 there's something about human gut,
NOTE Confidence: 0.955418763157895

01:00:15.860 --> 01:00:18.400 human gut reactions that's not
NOTE Confidence: 0.955418763157895

01:00:18.400 --> 01:00:20.800 accounted for in these systems.
NOTE Confidence: 0.955418763157895

01:00:20.800 --> 01:00:22.726 And so that's why I really
NOTE Confidence: 0.955418763157895

01:00:22.726 --> 01:00:24.440 like how you added that.
NOTE Confidence: 0.955418763157895

01:00:24.440 --> 01:00:25.830 Peace, because that's not something
NOTE Confidence: 0.955418763157895

01:00:25.830 --> 01:00:27.900 you're going to get out of the
NOTE Confidence: 0.955418763157895

01:00:27.900 --> 01:00:29.156 clinical decision support system.
NOTE Confidence: 0.955418763157895

01:00:29.160 --> 01:00:31.080 Kaplan Incorporated, whatever.
NOTE Confidence: 0.785648420833333

01:00:31.440 --> 01:00:32.864 Odd. I'm going to stand up because I
NOTE Confidence: 0.785648420833333

01:00:32.864 --> 01:00:34.280 can't see you otherwise. Thank you.
NOTE Confidence: 0.861463

01:00:35.360 --> 01:00:36.837 Thank you. Someone over here had a question.
NOTE Confidence: 0.888448486666667

01:00:36.840 --> 01:00:37.239 There we go.
NOTE Confidence: 0.940124914375

01:00:37.880 --> 01:00:40.240 Can you talk a little bit about the

NOTE Confidence: 0.940124914375

01:00:40.240 --> 01:00:42.469 argument that the existing system

NOTE Confidence: 0.940124914375

01:00:42.469 --> 01:00:44.038 perpetuates existing inequities?

NOTE Confidence: 0.940124914375

01:00:44.040 --> 01:00:45.622 And so we have like, the moral

NOTE Confidence: 0.940124914375

01:00:45.622 --> 01:00:47.477 imperative to try something different.

NOTE Confidence: 0.940124914375

01:00:47.480 --> 01:00:49.088 So like, are we moving too

NOTE Confidence: 0.940124914375

01:00:49.088 --> 01:00:51.279 fast or are we moving too slow?

NOTE Confidence: 0.940124914375

01:00:51.280 --> 01:00:51.820 Bradley speaking.

NOTE Confidence: 0.940124914375

01:00:51.820 --> 01:00:53.440 And if I can be selfish,

NOTE Confidence: 0.940124914375

01:00:53.440 --> 01:00:54.676 I'll stack on a second question,

NOTE Confidence: 0.940124914375

01:00:54.680 --> 01:00:56.689 which is to ask you to talk

NOTE Confidence: 0.940124914375

01:00:56.689 --> 01:00:57.550 about international differences

NOTE Confidence: 0.940124914375

01:00:57.602 --> 01:00:59.157 and ethics and legal frameworks.

NOTE Confidence: 0.95648957375

01:00:59.760 --> 01:01:02.600 OK, let me take the second part first,

NOTE Confidence: 0.95648957375

01:01:02.600 --> 01:01:06.560 because there are different value

NOTE Confidence: 0.95648957375

01:01:06.560 --> 01:01:08.600 systems at play internationally.

NOTE Confidence: 0.95648957375

01:01:08.600 --> 01:01:10.880 The US is very individualistic,
NOTE Confidence: 0.95648957375

01:01:10.880 --> 01:01:13.340 focused and prioritizes
NOTE Confidence: 0.95648957375

01:01:13.340 --> 01:01:15.800 autonomy and individualism.
NOTE Confidence: 0.95648957375

01:01:15.800 --> 01:01:17.480 It's not quite so human rights
NOTE Confidence: 0.95648957375

01:01:17.480 --> 01:01:19.027 focused as you have, say,
NOTE Confidence: 0.95648957375

01:01:19.027 --> 01:01:21.589 in Europe, or much more collective
NOTE Confidence: 0.95648957375

01:01:21.589 --> 01:01:24.277 values that you may have in Asia.
NOTE Confidence: 0.95648957375

01:01:24.280 --> 01:01:26.280 And I'm not trying to
NOTE Confidence: 0.95648957375

01:01:26.280 --> 01:01:27.480 isolate various countries.
NOTE Confidence: 0.95648957375

01:01:27.480 --> 01:01:29.576 I'm trying to point out that you get
NOTE Confidence: 0.95648957375

01:01:29.576 --> 01:01:31.434 different kinds of values that are
NOTE Confidence: 0.95648957375

01:01:31.434 --> 01:01:32.718 prioritized in different places.
NOTE Confidence: 0.95648957375

01:01:32.720 --> 01:01:34.658 That needs to be taken account
NOTE Confidence: 0.95648957375

01:01:34.658 --> 01:01:36.640 of when these systems are built.
NOTE Confidence: 0.95648957375

01:01:36.640 --> 01:01:38.600 They need to be taken account of when
NOTE Confidence: 0.95648957375

01:01:38.600 --> 01:01:40.397 they're moved from one place to another.

NOTE Confidence: 0.95648957375
01:01:40.400 --> 01:01:42.398 They need to be taken account
NOTE Confidence: 0.95648957375
01:01:42.398 --> 01:01:43.840 of when you're assessing,
NOTE Confidence: 0.95648957375
01:01:43.840 --> 01:01:46.040 should we have this system,
NOTE Confidence: 0.95648957375
01:01:46.040 --> 01:01:48.035 should we should Jack follow this advice?
NOTE Confidence: 0.95648957375
01:01:48.040 --> 01:01:50.098 Maybe this advice is based on a
NOTE Confidence: 0.95648957375
01:01:50.098 --> 01:01:52.360 set of values that are not local
NOTE Confidence: 0.937813023
01:01:54.480 --> 01:01:56.140 and I've used internationally,
NOTE Confidence: 0.937813023
01:01:56.140 --> 01:01:58.215 but certainly localities to different
NOTE Confidence: 0.937813023
01:01:58.215 --> 01:02:00.405 communities here have different ways of
NOTE Confidence: 0.937813023
01:02:00.405 --> 01:02:02.120 thinking about and approaching things.
NOTE Confidence: 0.937813023
01:02:02.120 --> 01:02:05.312 The biases are built in and we need to
NOTE Confidence: 0.937813023
01:02:05.312 --> 01:02:07.368 be aware of that and we need to try
NOTE Confidence: 0.937813023
01:02:07.368 --> 01:02:09.000 to counteract that in various ways.
NOTE Confidence: 0.937813023
01:02:09.000 --> 01:02:10.596 And there's all sorts of techniques
NOTE Confidence: 0.937813023
01:02:10.596 --> 01:02:12.450 for trying to do that that
NOTE Confidence: 0.937813023

01:02:12.450 --> 01:02:13.918 sometimes cause different biases.
NOTE Confidence: 0.937813023

01:02:13.920 --> 01:02:15.540 But it's something that needs
NOTE Confidence: 0.937813023

01:02:15.540 --> 01:02:16.836 a lot more attention,
NOTE Confidence: 0.937813023

01:02:16.840 --> 01:02:18.988 especially when you're amplifying
NOTE Confidence: 0.937813023

01:02:18.988 --> 01:02:23.160 them by using previous data to take
NOTE Confidence: 0.937813023

01:02:23.160 --> 01:02:27.000 outputs to build more inputs on,
NOTE Confidence: 0.937813023

01:02:27.000 --> 01:02:29.247 to make more outputs that are even
NOTE Confidence: 0.937813023

01:02:29.247 --> 01:02:31.130 more biased because now you have
NOTE Confidence: 0.937813023

01:02:31.130 --> 01:02:32.834 even more biased sets of data.
NOTE Confidence: 0.937813023

01:02:32.840 --> 01:02:34.502 So those are important issues and
NOTE Confidence: 0.937813023

01:02:34.502 --> 01:02:36.359 they've been coming up a fair amount.
NOTE Confidence: 0.937813023

01:02:36.360 --> 01:02:38.616 It's one of the newer issues that we're
NOTE Confidence: 0.937813023

01:02:38.616 --> 01:02:40.281 seeing because there wasn't a whole
NOTE Confidence: 0.937813023

01:02:40.281 --> 01:02:42.234 lot of attention paid this to this
NOTE Confidence: 0.937813023

01:02:42.234 --> 01:02:44.537 before until we started to have this
NOTE Confidence: 0.937813023

01:02:44.537 --> 01:02:46.448 tremendous burgeoning of AI systems.

NOTE Confidence: 0.937813023
01:02:46.448 --> 01:02:49.360 I think you asked me something else,
NOTE Confidence: 0.937813023
01:02:49.360 --> 01:02:51.600 but I'm not certain what it was.
NOTE Confidence: 0.897388439285714
01:02:54.040 --> 01:02:55.951 I guess it was just like whether
NOTE Confidence: 0.897388439285714
01:02:55.951 --> 01:02:57.720 we're moving too fast or too slow
NOTE Confidence: 0.897388439285714
01:02:57.720 --> 01:03:00.594 and then like maybe how the way
NOTE Confidence: 0.897388439285714
01:03:00.594 --> 01:03:02.673 that these tools scale in a way
NOTE Confidence: 0.897388439285714
01:03:02.673 --> 01:03:05.469 that like the bias intrinsic in one
NOTE Confidence: 0.897388439285714
01:03:05.469 --> 01:03:07.360 individual human doctor might not
NOTE Confidence: 0.8701763111111111
01:03:09.440 --> 01:03:11.357 in terms of moving too fast or too slow,
NOTE Confidence: 0.8701763111111111
01:03:11.360 --> 01:03:12.960 It depends who you are.
NOTE Confidence: 0.8701763111111111
01:03:12.960 --> 01:03:16.398 There is clearly a arms war
NOTE Confidence: 0.8701763111111111
01:03:16.400 --> 01:03:19.000 going on here that's important
NOTE Confidence: 0.8701763111111111
01:03:19.000 --> 01:03:21.080 strategically for national purposes,
NOTE Confidence: 0.8701763111111111
01:03:21.080 --> 01:03:22.904 national strategic purposes.
NOTE Confidence: 0.8701763111111111
01:03:22.904 --> 01:03:25.336 It's important strategically for
NOTE Confidence: 0.8701763111111111

01:03:25.336 --> 01:03:28.840 various businesses and it's important
NOTE Confidence: 0.8701763111111111

01:03:28.840 --> 01:03:31.054 strategically for healthcare systems
NOTE Confidence: 0.8701763111111111

01:03:31.054 --> 01:03:33.483 that are also businesses and want to
NOTE Confidence: 0.8701763111111111

01:03:33.483 --> 01:03:35.481 attract patients with the best possible
NOTE Confidence: 0.8701763111111111

01:03:35.481 --> 01:03:37.864 care they could give at the least
NOTE Confidence: 0.8701763111111111

01:03:37.864 --> 01:03:40.072 possible price they could produce it
NOTE Confidence: 0.8701763111111111

01:03:40.080 --> 01:03:42.159 with the most access you could acquire,
NOTE Confidence: 0.8701763111111111

01:03:42.160 --> 01:03:45.305 which of course are all in some ways
NOTE Confidence: 0.8701763111111111

01:03:45.305 --> 01:03:47.195 competing with each other as values.
NOTE Confidence: 0.8701763111111111

01:03:47.200 --> 01:03:49.160 So it's not an easy question to answer
NOTE Confidence: 0.8701763111111111

01:03:49.160 --> 01:03:51.085 and it's going to depend on who's
NOTE Confidence: 0.8701763111111111

01:03:51.085 --> 01:03:54.200 making that judgment as to answer it.
NOTE Confidence: 0.8701763111111111

01:03:54.200 --> 01:03:56.622 We know that it's very difficult for
NOTE Confidence: 0.8701763111111111

01:03:56.622 --> 01:03:58.884 regulation to keep up with technology
NOTE Confidence: 0.8701763111111111

01:03:58.884 --> 01:04:01.188 that whatever you do regulatorily is
NOTE Confidence: 0.8701763111111111

01:04:01.188 --> 01:04:03.623 going to change by the time it's passed

NOTE Confidence: 0.8701763111111111
01:04:03.623 --> 01:04:05.896 in terms of where the technology is.
NOTE Confidence: 0.8701763111111111
01:04:05.896 --> 01:04:08.020 So that's not going to be
NOTE Confidence: 0.8701763111111111
01:04:08.098 --> 01:04:09.798 an easy solution either.
NOTE Confidence: 0.8701763111111111
01:04:09.800 --> 01:04:11.645 But I think in some of the advocacy work
NOTE Confidence: 0.8701763111111111
01:04:11.645 --> 01:04:13.298 and some of the attention we're paying
NOTE Confidence: 0.8701763111111111
01:04:13.298 --> 01:04:15.288 and some of the ways you can influence
NOTE Confidence: 0.8701763111111111
01:04:15.288 --> 01:04:17.159 decisions to get made where you are,
NOTE Confidence: 0.8701763111111111
01:04:17.159 --> 01:04:20.031 those are some of the kinds of things
NOTE Confidence: 0.8701763111111111
01:04:20.031 --> 01:04:23.358 you could do to help shape where it goes.
NOTE Confidence: 0.8701763111111111
01:04:23.360 --> 01:04:25.040 We've seen this already with things like,
NOTE Confidence: 0.8701763111111111
01:04:25.040 --> 01:04:28.280 you know, user protests on Facebook.
NOTE Confidence: 0.8701763111111111
01:04:28.280 --> 01:04:29.492 Facebook does all kinds of things
NOTE Confidence: 0.8701763111111111
01:04:29.492 --> 01:04:31.077 that every once in a while people say,
NOTE Confidence: 0.8701763111111111
01:04:31.080 --> 01:04:33.900 hey, that's enough,
NOTE Confidence: 0.8701763111111111
01:04:33.900 --> 01:04:34.840 OK,
NOTE Confidence: 0.8701763111111111

01:04:34.840 --> 01:04:36.840 So you're not powerless
NOTE Confidence: 0.817377076666667

01:04:38.920 --> 01:04:41.320 and where that's going to go.
NOTE Confidence: 0.817377076666667

01:04:41.320 --> 01:04:43.108 What I'm hoping for by doing
NOTE Confidence: 0.817377076666667

01:04:43.108 --> 01:04:45.639 talks like this is that it goes in
NOTE Confidence: 0.817377076666667

01:04:45.639 --> 01:04:47.224 directions that we're all going
NOTE Confidence: 0.817377076666667

01:04:47.224 --> 01:04:49.200 to find valuable and we can try.
NOTE Confidence: 0.9719799

01:04:51.080 --> 01:04:56.600 Thank you so much. Next question, Sir.
NOTE Confidence: 0.86907014

01:04:58.800 --> 01:05:03.140 So you mentioned sort of how like
NOTE Confidence: 0.86907014

01:05:03.140 --> 01:05:04.880 United States has certain values
NOTE Confidence: 0.86907014

01:05:04.880 --> 01:05:06.744 in other countries or other areas
NOTE Confidence: 0.86907014

01:05:06.744 --> 01:05:08.340 would have different values and we
NOTE Confidence: 0.86907014

01:05:08.387 --> 01:05:09.713 have to create these systems with
NOTE Confidence: 0.86907014

01:05:09.713 --> 01:05:11.319 a sort of value based approach.
NOTE Confidence: 0.86907014

01:05:11.320 --> 01:05:15.176 But do you see a future where since
NOTE Confidence: 0.86907014

01:05:15.176 --> 01:05:16.960 the like even the distribution of
NOTE Confidence: 0.86907014

01:05:16.960 --> 01:05:18.919 like values in this room is probably

NOTE Confidence: 0.86907014
01:05:18.920 --> 01:05:21.920 so different that we end up creating
NOTE Confidence: 0.86907014
01:05:21.920 --> 01:05:24.000 systems that are making clinical
NOTE Confidence: 0.86907014
01:05:24.000 --> 01:05:26.060 decisions without any regard to the
NOTE Confidence: 0.86907014
01:05:26.060 --> 01:05:27.677 diversity of values that exist like
NOTE Confidence: 0.86907014
01:05:27.677 --> 01:05:30.080 within a given population? Well,
NOTE Confidence: 0.932494731428571
01:05:30.080 --> 01:05:31.968 that was part of why I was saying
NOTE Confidence: 0.932494731428571
01:05:31.968 --> 01:05:33.679 you need more than the system.
NOTE Confidence: 0.932494731428571
01:05:33.680 --> 01:05:35.708 You need more than whatever the
NOTE Confidence: 0.932494731428571
01:05:35.708 --> 01:05:37.441 algorithm puts out because people
NOTE Confidence: 0.932494731428571
01:05:37.441 --> 01:05:39.639 are going to be using those systems.
NOTE Confidence: 0.932494731428571
01:05:39.640 --> 01:05:41.182 People are going to be affected
NOTE Confidence: 0.932494731428571
01:05:41.182 --> 01:05:42.896 by the systems, and that's where
NOTE Confidence: 0.932494731428571
01:05:42.896 --> 01:05:45.080 also some of the values come in.
NOTE Confidence: 0.932494731428571
01:05:45.080 --> 01:05:46.886 Of course, the systems are built
NOTE Confidence: 0.932494731428571
01:05:46.886 --> 01:05:48.718 with certain values built in as well.
NOTE Confidence: 0.932494731428571

01:05:48.720 --> 01:05:50.876 And if you know what those are,
NOTE Confidence: 0.932494731428571

01:05:50.880 --> 01:05:52.560 then you can try to take account
NOTE Confidence: 0.932494731428571

01:05:52.560 --> 01:05:54.479 of them for better and for worse.
NOTE Confidence: 0.932494731428571

01:05:54.480 --> 01:05:56.680 In terms of the decisions that you make,
NOTE Confidence: 0.932494731428571

01:05:56.680 --> 01:05:59.440 I do not think one-size-fits-all.
NOTE Confidence: 0.932494731428571

01:05:59.440 --> 01:06:00.640 You have many.
NOTE Confidence: 0.932494731428571

01:06:00.640 --> 01:06:02.640 Many variations in all sorts
NOTE Confidence: 0.932494731428571

01:06:02.640 --> 01:06:03.440 of circumstances,
NOTE Confidence: 0.932494731428571

01:06:03.440 --> 01:06:05.554 and that's part of why I'm saying
NOTE Confidence: 0.932494731428571

01:06:05.554 --> 01:06:07.717 there's a problem here when you're
NOTE Confidence: 0.932494731428571

01:06:07.717 --> 01:06:09.702 treating only data and basing
NOTE Confidence: 0.932494731428571

01:06:09.702 --> 01:06:11.380 recommendations only on AI outputs
NOTE Confidence: 0.932494731428571

01:06:11.380 --> 01:06:13.480 or any other kind of outputs.
NOTE Confidence: 0.918092634

01:06:14.960 --> 01:06:16.632 I have a quick question for the audience
NOTE Confidence: 0.918092634

01:06:16.632 --> 01:06:18.158 and then I have a question online.
NOTE Confidence: 0.918092634

01:06:18.160 --> 01:06:20.036 So the the question for the audience.

NOTE Confidence: 0.918092634
01:06:20.040 --> 01:06:21.832 This I am getting back to the
NOTE Confidence: 0.918092634
01:06:21.832 --> 01:06:23.240 initial scenario about when we have
NOTE Confidence: 0.918092634
01:06:23.240 --> 01:06:24.640 AI giving us one set of advice.
NOTE Confidence: 0.918092634
01:06:24.640 --> 01:06:25.880 Perhaps our human intuition
NOTE Confidence: 0.918092634
01:06:25.880 --> 01:06:27.120 tells us another right?
NOTE Confidence: 0.918092634
01:06:27.120 --> 01:06:28.755 Our human tuition informed by
NOTE Confidence: 0.918092634
01:06:28.755 --> 01:06:31.040 our values as well as our bias.
NOTE Confidence: 0.918092634
01:06:31.040 --> 01:06:33.356 Any pilots in the room? No.
NOTE Confidence: 0.918092634
01:06:33.356 --> 01:06:34.760 So I I come from a family of pilots.
NOTE Confidence: 0.918092634
01:06:34.760 --> 01:06:35.240 I'm not a pilot.
NOTE Confidence: 0.918092634
01:06:35.240 --> 01:06:35.840 I come from a family.
NOTE Confidence: 0.918092634
01:06:35.840 --> 01:06:37.215 And I learned my brothers
NOTE Confidence: 0.918092634
01:06:37.215 --> 01:06:38.315 as teenagers became pilots.
NOTE Confidence: 0.918092634
01:06:38.320 --> 01:06:40.624 And in a nutshell and in a nutshell
NOTE Confidence: 0.918092634
01:06:40.624 --> 01:06:42.864 if you're flying over the water and
NOTE Confidence: 0.918092634

01:06:42.864 --> 01:06:45.315 you can't see any lights anywhere and
NOTE Confidence: 0.918092634

01:06:45.315 --> 01:06:46.965 what they learned pretty early on
NOTE Confidence: 0.918092634

01:06:46.965 --> 01:06:49.094 and you know for a fact that you're
NOTE Confidence: 0.918092634

01:06:49.094 --> 01:06:50.479 right side up and the instruments
NOTE Confidence: 0.918092634

01:06:50.479 --> 01:06:51.757 tell you that you're upside down,
NOTE Confidence: 0.918092634

01:06:51.760 --> 01:06:55.675 what do you think you're upside down?
NOTE Confidence: 0.918092634

01:06:55.675 --> 01:06:58.237 And so you know so in terms of whether
NOTE Confidence: 0.918092634

01:06:58.237 --> 01:07:00.512 whether or not we don't trust technology,
NOTE Confidence: 0.918092634

01:07:00.520 --> 01:07:01.955 you know some things we ask the
NOTE Confidence: 0.918092634

01:07:01.955 --> 01:07:03.392 technology to do is to tell us is
NOTE Confidence: 0.918092634

01:07:03.392 --> 01:07:04.492 this or is this not necrotizing
NOTE Confidence: 0.918092634

01:07:04.492 --> 01:07:05.907 enterocolitis that I'm looking at
NOTE Confidence: 0.918092634

01:07:05.907 --> 01:07:07.516 on this X-ray that's very different
NOTE Confidence: 0.918092634

01:07:07.516 --> 01:07:09.182 than is the judgment here that we
NOTE Confidence: 0.918092634

01:07:09.182 --> 01:07:10.572 should favor the father's opinion
NOTE Confidence: 0.918092634

01:07:10.572 --> 01:07:11.676 or the mother's opinion.

NOTE Confidence: 0.918092634

01:07:11.680 --> 01:07:13.426 But but that interface of our

NOTE Confidence: 0.918092634

01:07:13.426 --> 01:07:14.800 judgment which carries with it.

NOTE Confidence: 0.918092634

01:07:14.800 --> 01:07:16.840 It's our biases with the with the computer.

NOTE Confidence: 0.918092634

01:07:16.840 --> 01:07:17.800 I think it's a fascinating one.

NOTE Confidence: 0.918092634

01:07:17.800 --> 01:07:20.230 But let me let me read a question to

NOTE Confidence: 0.918092634

01:07:20.230 --> 01:07:22.240 you from oh oh that's good because I just.

NOTE Confidence: 0.918092634

01:07:22.240 --> 01:07:22.490 Karen,

NOTE Confidence: 0.918092634

01:07:22.490 --> 01:07:24.240 you want to come up here and

NOTE Confidence: 0.918092634

01:07:24.240 --> 01:07:25.808 then Apple listening back.

NOTE Confidence: 0.918092634

01:07:25.808 --> 01:07:26.200 Meantime,

NOTE Confidence: 0.918092634

01:07:26.200 --> 01:07:26.960 Sarah's got something to say

NOTE Confidence: 0.652936627272727

01:07:27.480 --> 01:07:27.999 follow. Oh, sorry.

NOTE Confidence: 0.652936627272727

01:07:27.999 --> 01:07:29.440 I had a follow up comment to that,

NOTE Confidence: 0.652936627272727

01:07:29.440 --> 01:07:31.554 which I I think is really apartment,

NOTE Confidence: 0.652936627272727

01:07:31.560 --> 01:07:32.480 which is just, you know,

NOTE Confidence: 0.652936627272727

01:07:32.480 --> 01:07:34.349 this discussion sort of reminded me of
NOTE Confidence: 0.652936627272727

01:07:34.349 --> 01:07:36.805 the fact that I think too often we tend
NOTE Confidence: 0.652936627272727

01:07:36.805 --> 01:07:38.440 to conflate knowledge with expertise.
NOTE Confidence: 0.652936627272727

01:07:38.440 --> 01:07:40.608 And so you know the comment about whether
NOTE Confidence: 0.652936627272727

01:07:40.608 --> 01:07:42.359 you're right side up or upside down,
NOTE Confidence: 0.652936627272727

01:07:42.360 --> 01:07:44.240 you know that's one simple,
NOTE Confidence: 0.652936627272727

01:07:44.240 --> 01:07:48.440 presumably easily verifiable fact.
NOTE Confidence: 0.652936627272727

01:07:48.440 --> 01:07:50.030 Whereas a lot of clinical decisions
NOTE Confidence: 0.652936627272727

01:07:50.030 --> 01:07:51.900 are made based on probabilities and
NOTE Confidence: 0.652936627272727

01:07:51.900 --> 01:07:53.828 risk versus benefit, there often
NOTE Confidence: 0.652936627272727

01:07:53.828 --> 01:07:55.798 isn't one objectively right answer.
NOTE Confidence: 0.652936627272727

01:07:55.800 --> 01:07:57.040 It's very dependent on
NOTE Confidence: 0.652936627272727

01:07:57.040 --> 01:07:58.280 patient goals and values.
NOTE Confidence: 0.652936627272727

01:07:58.280 --> 01:08:01.637 And you know, even from my my own experience,
NOTE Confidence: 0.652936627272727

01:08:01.640 --> 01:08:03.808 for example, I, you know, I obviously I,
NOTE Confidence: 0.652936627272727

01:08:03.808 --> 01:08:05.180 you know, I'm a cardiologist,

NOTE Confidence: 0.652936627272727
01:08:05.180 --> 01:08:06.480 I went to medical school.
NOTE Confidence: 0.652936627272727
01:08:06.480 --> 01:08:07.836 I did an internal medicine residency.
NOTE Confidence: 0.652936627272727
01:08:07.840 --> 01:08:09.390 But I haven't practiced internal
NOTE Confidence: 0.652936627272727
01:08:09.390 --> 01:08:12.007 medicine for 10 years and I I certainly
NOTE Confidence: 0.652936627272727
01:08:12.007 --> 01:08:13.692 don't have expertise in internal
NOTE Confidence: 0.652936627272727
01:08:13.692 --> 01:08:15.727 medicine anymore and I would not
NOTE Confidence: 0.652936627272727
01:08:15.727 --> 01:08:17.035 feel comfortable practicing that.
NOTE Confidence: 0.652936627272727
01:08:17.040 --> 01:08:18.918 I can draw on my knowledge.
NOTE Confidence: 0.652936627272727
01:08:18.920 --> 01:08:21.340 I can Google a lot and I can probably sound
NOTE Confidence: 0.652936627272727
01:08:21.405 --> 01:08:23.720 reasonably intelligent speaking about it.
NOTE Confidence: 0.652936627272727
01:08:23.720 --> 01:08:26.084 You know maybe not terribly unlike
NOTE Confidence: 0.652936627272727
01:08:26.084 --> 01:08:28.142 an AI hallucination perhaps but I
NOTE Confidence: 0.652936627272727
01:08:28.142 --> 01:08:29.696 don't think I don't have any business
NOTE Confidence: 0.652936627272727
01:08:29.696 --> 01:08:30.907 for seeing internal medicine anymore
NOTE Confidence: 0.652936627272727
01:08:30.907 --> 01:08:32.912 which is why I let my boards lapse
NOTE Confidence: 0.652936627272727

01:08:32.912 --> 01:08:34.317 for for medicine not cardiology.
NOTE Confidence: 0.652936627272727

01:08:34.320 --> 01:08:37.533 But so you know and I and I think
NOTE Confidence: 0.652936627272727

01:08:37.533 --> 01:08:41.020 it's very telling the fact that these
NOTE Confidence: 0.652936627272727

01:08:41.020 --> 01:08:43.970 AI systems for example will sort of
NOTE Confidence: 0.652936627272727

01:08:43.970 --> 01:08:45.720 decline any liabilities as well.
NOTE Confidence: 0.652936627272727

01:08:45.720 --> 01:08:47.490 You know we they're they're sort
NOTE Confidence: 0.652936627272727

01:08:47.490 --> 01:08:48.854 of they're almost admitting that
NOTE Confidence: 0.652936627272727

01:08:48.854 --> 01:08:50.696 they're a little bit weak sauce
NOTE Confidence: 0.652936627272727

01:08:50.696 --> 01:08:52.599 compared with with clinical judgement.
NOTE Confidence: 0.652936627272727

01:08:52.600 --> 01:08:54.224 And I and I think that you know
NOTE Confidence: 0.652936627272727

01:08:54.224 --> 01:08:55.450 there's there's fact based knowledge
NOTE Confidence: 0.652936627272727

01:08:55.450 --> 01:08:56.730 where you know there's there's
NOTE Confidence: 0.652936627272727

01:08:56.730 --> 01:08:58.238 a clear right or wrong answer.
NOTE Confidence: 0.652936627272727

01:08:58.240 --> 01:09:00.000 Are you right side up or upside down?
NOTE Confidence: 0.652936627272727

01:09:00.000 --> 01:09:02.240 But often in clinical medicine
NOTE Confidence: 0.652936627272727

01:09:02.240 --> 01:09:03.836 the answers are a lot murkier.

NOTE Confidence: 0.652936627272727
01:09:03.840 --> 01:09:05.484 And so you know,
NOTE Confidence: 0.652936627272727
01:09:05.484 --> 01:09:07.568 I know that AI will probably be
NOTE Confidence: 0.652936627272727
01:09:07.568 --> 01:09:09.160 way more advanced even in 10 years,
NOTE Confidence: 0.652936627272727
01:09:09.160 --> 01:09:10.440 but I, you know,
NOTE Confidence: 0.652936627272727
01:09:10.440 --> 01:09:12.540 I I think now it's the argument's
NOTE Confidence: 0.652936627272727
01:09:12.540 --> 01:09:13.440 pretty clear that it's a,
NOTE Confidence: 0.652936627272727
01:09:13.440 --> 01:09:14.898 it's a supplement and it's not
NOTE Confidence: 0.652936627272727
01:09:14.898 --> 01:09:16.560 going to replace us anytime soon.
NOTE Confidence: 0.652936627272727
01:09:16.560 --> 01:09:16.640 So,
NOTE Confidence: 0.866842526111111
01:09:17.080 --> 01:09:20.410 Sarah, where we're seeing results coming
NOTE Confidence: 0.866842526111111
01:09:20.410 --> 01:09:25.021 out that EKG analysis by AI is much better
NOTE Confidence: 0.866842526111111
01:09:25.021 --> 01:09:27.400 than most physicians that that also.
NOTE Confidence: 0.866842526111111
01:09:27.400 --> 01:09:28.520 Yeah, I was going to that depends
NOTE Confidence: 0.866842526111111
01:09:28.520 --> 01:09:30.320 on the indication though, right?
NOTE Confidence: 0.866842526111111
01:09:30.320 --> 01:09:31.839 Yeah. How would you work with that?
NOTE Confidence: 0.937272177777778

01:09:32.040 --> 01:09:34.386 So we've actually been using EKG
NOTE Confidence: 0.937272177777778

01:09:34.386 --> 01:09:36.651 computer analysis for years and I
NOTE Confidence: 0.937272177777778

01:09:36.651 --> 01:09:38.553 think it's a really helpful tool.
NOTE Confidence: 0.937272177777778

01:09:38.560 --> 01:09:40.477 But again, we always use it as a supplement.
NOTE Confidence: 0.937272177777778

01:09:40.480 --> 01:09:41.785 And actually I'm teaching the
NOTE Confidence: 0.937272177777778

01:09:41.785 --> 01:09:43.439 cardiology course right now to the Ms.
NOTE Confidence: 0.937272177777778

01:09:43.440 --> 01:09:44.959 ones and I even tell them look
NOTE Confidence: 0.937272177777778

01:09:44.959 --> 01:09:46.868 like you don't need to be able to
NOTE Confidence: 0.937272177777778

01:09:46.868 --> 01:09:48.073 calculate the exact heart rate.
NOTE Confidence: 0.937272177777778

01:09:48.080 --> 01:09:48.968 The computer is going to be
NOTE Confidence: 0.937272177777778

01:09:48.968 --> 01:09:49.879 able to do that for you.
NOTE Confidence: 0.937272177777778

01:09:49.880 --> 01:09:51.689 But you do want to make sure you can
NOTE Confidence: 0.937272177777778

01:09:51.689 --> 01:09:53.037 roughly estimate the heart rate.
NOTE Confidence: 0.937272177777778

01:09:53.040 --> 01:09:55.952 So if the computer is saying the heart
NOTE Confidence: 0.937272177777778

01:09:55.952 --> 01:09:58.600 rate is 180 because it's double counting,
NOTE Confidence: 0.937272177777778

01:09:58.600 --> 01:10:00.280 the QRS is in the T waves,

NOTE Confidence: 0.937272177777778
01:10:00.280 --> 01:10:02.840 but actually the heart rate is only 90.
NOTE Confidence: 0.937272177777778
01:10:02.840 --> 01:10:04.176 Like you need to be able to know
NOTE Confidence: 0.937272177777778
01:10:04.176 --> 01:10:05.351 that because you know that treatment
NOTE Confidence: 0.937272177777778
01:10:05.351 --> 01:10:06.551 is going to be very different.
NOTE Confidence: 0.937272177777778
01:10:06.560 --> 01:10:08.480 So but the computer can sometimes
NOTE Confidence: 0.937272177777778
01:10:08.480 --> 01:10:10.122 pick up subtle things sometimes
NOTE Confidence: 0.937272177777778
01:10:10.122 --> 01:10:11.916 you know when I read EKGS,
NOTE Confidence: 0.937272177777778
01:10:11.920 --> 01:10:13.936 I'll do my own read and then I'll
NOTE Confidence: 0.937272177777778
01:10:13.936 --> 01:10:16.048 see what the the computer spits
NOTE Confidence: 0.937272177777778
01:10:16.048 --> 01:10:17.973 out and usually there's there's
NOTE Confidence: 0.937272177777778
01:10:17.973 --> 01:10:19.212 agreement most of the time.
NOTE Confidence: 0.937272177777778
01:10:19.212 --> 01:10:20.812 If I if you know there's something
NOTE Confidence: 0.937272177777778
01:10:20.812 --> 01:10:22.924 that the computer calls I can see why
NOTE Confidence: 0.937272177777778
01:10:22.924 --> 01:10:24.799 they called it but they misread some
NOTE Confidence: 0.937272177777778
01:10:24.799 --> 01:10:26.740 noise in the signal and so the signal
NOTE Confidence: 0.937272177777778

01:10:26.740 --> 01:10:28.440 to noise ratio is always an issue.
NOTE Confidence: 0.937272177777778

01:10:28.440 --> 01:10:30.222 There's still a lot of artifacts
NOTE Confidence: 0.937272177777778

01:10:30.222 --> 01:10:32.000 but in terms of predicting things
NOTE Confidence: 0.937272177777778

01:10:32.000 --> 01:10:33.837 like risk of cardiomyopathy in the
NOTE Confidence: 0.937272177777778

01:10:33.837 --> 01:10:35.357 future much more abstract things,
NOTE Confidence: 0.937272177777778

01:10:35.360 --> 01:10:37.520 EKG does really outperform clinicians.
NOTE Confidence: 0.937272177777778

01:10:37.520 --> 01:10:39.878 So I think again recognizing our
NOTE Confidence: 0.937272177777778

01:10:39.878 --> 01:10:41.450 mutual limitations and recognizing
NOTE Confidence: 0.937272177777778

01:10:41.510 --> 01:10:43.622 that it's a supplement rather than
NOTE Confidence: 0.937272177777778

01:10:43.622 --> 01:10:45.712 than replacing us because I've I've
NOTE Confidence: 0.937272177777778

01:10:45.712 --> 01:10:47.578 seen mistakes made with over reliance
NOTE Confidence: 0.937272177777778

01:10:47.578 --> 01:10:49.220 on on AI interpretation alone.
NOTE Confidence: 0.937272177777778

01:10:49.220 --> 01:10:49.560 So
NOTE Confidence: 0.798940454285714

01:10:49.560 --> 01:10:51.611 you know we asked that exact same
NOTE Confidence: 0.798940454285714

01:10:51.611 --> 01:10:53.256 question to some computers that
NOTE Confidence: 0.798940454285714

01:10:53.256 --> 01:10:55.170 read eggs and and what they told

NOTE Confidence: 0.798940454285714
01:10:55.170 --> 01:10:57.855 us is we see the cardiologist as a
NOTE Confidence: 0.798940454285714
01:10:57.855 --> 01:10:59.541 necessary supplement to our reading.
NOTE Confidence: 0.798940454285714
01:10:59.541 --> 01:11:01.960 I want to read a comment to you please,
NOTE Confidence: 0.798940454285714
01:11:01.960 --> 01:11:03.916 Bonnie and then a specific question.
NOTE Confidence: 0.798940454285714
01:11:03.920 --> 01:11:06.060 So the comment is this from from
NOTE Confidence: 0.798940454285714
01:11:06.060 --> 01:11:07.680 one of our Zoom folks here.
NOTE Confidence: 0.798940454285714
01:11:07.680 --> 01:11:09.176 As with Diagnostic Laboratory,
NOTE Confidence: 0.798940454285714
01:11:09.176 --> 01:11:11.046 test clinicians must ultimately weigh
NOTE Confidence: 0.798940454285714
01:11:11.046 --> 01:11:12.992 and integrate information from AI
NOTE Confidence: 0.798940454285714
01:11:12.992 --> 01:11:14.887 expert systems into their overall
NOTE Confidence: 0.798940454285714
01:11:14.887 --> 01:11:16.780 knowledge and understanding of the
NOTE Confidence: 0.798940454285714
01:11:16.780 --> 01:11:18.600 patient in crafting medical decisions.
NOTE Confidence: 0.798940454285714
01:11:18.600 --> 01:11:20.476 Other changes in the pacing and delivery
NOTE Confidence: 0.798940454285714
01:11:20.476 --> 01:11:22.544 of medical care have frayed the
NOTE Confidence: 0.798940454285714
01:11:22.544 --> 01:11:24.160 traditional physician patient relationship.
NOTE Confidence: 0.798940454285714

01:11:24.160 --> 01:11:24.520 Nevertheless,
NOTE Confidence: 0.798940454285714

01:11:24.520 --> 01:11:26.320 Peabody's dictum stands the secret
NOTE Confidence: 0.798940454285714

01:11:26.320 --> 01:11:28.819 of the care of the patient isn't
NOTE Confidence: 0.798940454285714

01:11:28.819 --> 01:11:30.155 caring for the patient.
NOTE Confidence: 0.798940454285714

01:11:30.160 --> 01:11:34.199 No AI system can replace that connection.
NOTE Confidence: 0.798940454285714

01:11:34.200 --> 01:11:34.824 I would just comment.
NOTE Confidence: 0.798940454285714

01:11:34.824 --> 01:11:35.760 Then if you want to come,
NOTE Confidence: 0.798940454285714

01:11:35.760 --> 01:11:36.720 I would just comment.
NOTE Confidence: 0.798940454285714

01:11:36.720 --> 01:11:36.960 Also,
NOTE Confidence: 0.798940454285714

01:11:36.960 --> 01:11:38.704 the AI system is less likely to say
NOTE Confidence: 0.798940454285714

01:11:38.704 --> 01:11:40.360 I'm going to favor this guy over
NOTE Confidence: 0.798940454285714

01:11:40.360 --> 01:11:41.819 that guy because this guy looks
NOTE Confidence: 0.798940454285714

01:11:41.819 --> 01:11:43.520 more like my family than that guy.
NOTE Confidence: 0.798940454285714

01:11:43.520 --> 01:11:46.103 The AI system is less likely to
NOTE Confidence: 0.798940454285714

01:11:46.103 --> 01:11:48.637 do that than I am or you are.
NOTE Confidence: 0.798940454285714

01:11:48.640 --> 01:11:49.973 Here's a question for you, please.

NOTE Confidence: 0.798940454285714
01:11:49.973 --> 01:11:52.691 There are many groups working to
NOTE Confidence: 0.798940454285714
01:11:52.691 --> 01:11:54.599 create ethical frameworks for AI.
NOTE Confidence: 0.798940454285714
01:11:54.600 --> 01:11:56.784 Many conferences, AI for good,
NOTE Confidence: 0.798940454285714
01:11:56.784 --> 01:11:57.440 UN UNESCO,
NOTE Confidence: 0.798940454285714
01:11:57.440 --> 01:11:58.860 and there's other government
NOTE Confidence: 0.798940454285714
01:11:58.860 --> 01:12:00.280 ones that are mentioned.
NOTE Confidence: 0.798940454285714
01:12:00.280 --> 01:12:02.450 The hallucinations and bias can be a
NOTE Confidence: 0.798940454285714
01:12:02.450 --> 01:12:04.559 real big problem to rewrite history.
NOTE Confidence: 0.798940454285714
01:12:04.560 --> 01:12:06.752 Do you have one or two agencies you
NOTE Confidence: 0.798940454285714
01:12:06.752 --> 01:12:08.121 recommend watching for guidelines
NOTE Confidence: 0.798940454285714
01:12:08.121 --> 01:12:09.276 for ethical guidelines?
NOTE Confidence: 0.798940454285714
01:12:09.280 --> 01:12:11.359 I believe in making AI part of the team,
NOTE Confidence: 0.798940454285714
01:12:11.360 --> 01:12:13.604 but it's not the whole team, Is there?
NOTE Confidence: 0.798940454285714
01:12:13.604 --> 01:12:14.814 Is there a particular place
NOTE Confidence: 0.798940454285714
01:12:14.814 --> 01:12:15.720 you recommend we go?
NOTE Confidence: 0.918475717142857

01:12:16.200 --> 01:12:18.025 There is not any particular
NOTE Confidence: 0.918475717142857

01:12:18.025 --> 01:12:20.662 place at this point that I would
NOTE Confidence: 0.918475717142857

01:12:20.662 --> 01:12:22.140 recommend for guidelines that
NOTE Confidence: 0.918475717142857

01:12:22.140 --> 01:12:23.990 you really should pay attention
NOTE Confidence: 0.918475717142857

01:12:23.990 --> 01:12:25.999 to and not anybody else.
NOTE Confidence: 0.918475717142857

01:12:26.000 --> 01:12:27.800 So there's a lot of
NOTE Confidence: 0.918475717142857

01:12:27.800 --> 01:12:28.960 overlapping guidelines. But
NOTE Confidence: 0.971410741666667

01:12:31.160 --> 01:12:33.078 again, I think they're going to vary
NOTE Confidence: 0.971410741666667

01:12:33.078 --> 01:12:34.440 with different kinds of places.
NOTE Confidence: 0.971410741666667

01:12:34.440 --> 01:12:36.876 They're going to vary with the mission
NOTE Confidence: 0.971410741666667

01:12:36.876 --> 01:12:39.052 of those agencies and they're going to
NOTE Confidence: 0.971410741666667

01:12:39.052 --> 01:12:41.598 vary with the degree to which you can
NOTE Confidence: 0.971410741666667

01:12:41.598 --> 01:12:43.182 actually operationalize the guidelines
NOTE Confidence: 0.971410741666667

01:12:43.182 --> 01:12:45.560 versus how much they're aspirational.
NOTE Confidence: 0.971410741666667

01:12:45.560 --> 01:12:49.044 And again, I'm going to take the
NOTE Confidence: 0.971410741666667

01:12:49.044 --> 01:12:50.880 stance of the more you can learn,

NOTE Confidence: 0.971410741666667
01:12:50.880 --> 01:12:52.644 the more sets of guidelines you have
NOTE Confidence: 0.971410741666667
01:12:52.644 --> 01:12:54.638 out there that you can learn from that.
NOTE Confidence: 0.971410741666667
01:12:54.640 --> 01:12:56.920 This one complements that one.
NOTE Confidence: 0.971410741666667
01:12:56.920 --> 01:12:58.194 That's where I think we are now,
NOTE Confidence: 0.971410741666667
01:12:58.200 --> 01:13:00.416 and that's where I think we need to
NOTE Confidence: 0.971410741666667
01:13:00.416 --> 01:13:02.957 be now as we work more on developing
NOTE Confidence: 0.971410741666667
01:13:02.960 --> 01:13:05.795 what really makes the most sense here.
NOTE Confidence: 0.971410741666667
01:13:05.800 --> 01:13:08.440 We've had a lot of experience with AI,
NOTE Confidence: 0.971410741666667
01:13:08.440 --> 01:13:10.610 but one of the things that's different
NOTE Confidence: 0.971410741666667
01:13:10.610 --> 01:13:12.478 with what's happening now with the
NOTE Confidence: 0.971410741666667
01:13:12.478 --> 01:13:14.065 large language models is that there's
NOTE Confidence: 0.971410741666667
01:13:14.065 --> 01:13:15.475 a lot more attention being paid.
NOTE Confidence: 0.971410741666667
01:13:15.480 --> 01:13:17.468 So there's a lot more great minds
NOTE Confidence: 0.971410741666667
01:13:17.468 --> 01:13:18.320 working on it.
NOTE Confidence: 0.971410741666667
01:13:18.320 --> 01:13:19.568 And there's also,
NOTE Confidence: 0.971410741666667

01:13:19.568 --> 01:13:22.480 it used to be that you needed
NOTE Confidence: 0.971410741666667

01:13:22.575 --> 01:13:25.525 clinical expertise to develop the
NOTE Confidence: 0.971410741666667

01:13:25.525 --> 01:13:27.998 models that were being used for AI.
NOTE Confidence: 0.971410741666667

01:13:28.000 --> 01:13:30.784 You had to have people clinically
NOTE Confidence: 0.971410741666667

01:13:30.784 --> 01:13:32.640 knowledgeable who were working
NOTE Confidence: 0.971410741666667

01:13:32.713 --> 01:13:34.957 with the developers to do that.
NOTE Confidence: 0.971410741666667

01:13:34.960 --> 01:13:36.440 You don't have that anymore.
NOTE Confidence: 0.971410741666667

01:13:36.440 --> 01:13:39.280 You're going off the data.
NOTE Confidence: 0.971410741666667

01:13:39.280 --> 01:13:41.919 That's a big difference and the clinical
NOTE Confidence: 0.971410741666667

01:13:41.919 --> 01:13:44.200 expertise needs to be there somehow.
NOTE Confidence: 0.971410741666667

01:13:44.200 --> 01:13:46.517 So that's another piece to think about.
NOTE Confidence: 0.971410741666667

01:13:46.520 --> 01:13:48.473 But this is a much more general
NOTE Confidence: 0.971410741666667

01:13:48.473 --> 01:13:50.318 question because it's not just medicine.
NOTE Confidence: 0.971410741666667

01:13:50.320 --> 01:13:53.440 You have exactly the same issues
NOTE Confidence: 0.971410741666667

01:13:53.440 --> 01:13:55.570 in all the kinds of uses that this
NOTE Confidence: 0.971410741666667

01:13:55.570 --> 01:13:56.679 data is being put to.

NOTE Confidence: 0.971410741666667
01:13:56.680 --> 01:13:58.120 Targeted advertising,
NOTE Confidence: 0.971410741666667
01:13:58.120 --> 01:14:01.000 bail decisions, insurance sales,
NOTE Confidence: 0.971410741666667
01:14:01.000 --> 01:14:03.624 credit scoring, mortgage decisions,
NOTE Confidence: 0.971410741666667
01:14:03.624 --> 01:14:05.150 employment, hiring decisions.
NOTE Confidence: 0.971410741666667
01:14:05.150 --> 01:14:08.195 I mean all kinds of things that
NOTE Confidence: 0.971410741666667
01:14:08.195 --> 01:14:10.834 are being done with AI that bring
NOTE Confidence: 0.971410741666667
01:14:10.834 --> 01:14:12.238 up the same kind of issues.
NOTE Confidence: 0.89331136
01:14:13.160 --> 01:14:15.576 So would you say that that the the
NOTE Confidence: 0.89331136
01:14:15.576 --> 01:14:17.482 cars that drive themselves fall
NOTE Confidence: 0.89331136
01:14:17.482 --> 01:14:19.856 into that same fall into that same
NOTE Confidence: 0.89331136
01:14:19.856 --> 01:14:21.864 bigger category when they take in all
NOTE Confidence: 0.89331136
01:14:21.864 --> 01:14:23.551 much data from all around and then
NOTE Confidence: 0.89331136
01:14:23.551 --> 01:14:25.600 make a decision about when to turn,
NOTE Confidence: 0.89331136
01:14:25.600 --> 01:14:26.640 how fast to go, etcetera,
NOTE Confidence: 0.824422422
01:14:26.640 --> 01:14:28.040 etcetera. And not only that,
NOTE Confidence: 0.824422422

01:14:28.040 --> 01:14:30.840 they're also monitoring you as
NOTE Confidence: 0.824422422

01:14:30.840 --> 01:14:32.812 you're driving or if they're not
NOTE Confidence: 0.824422422

01:14:32.812 --> 01:14:35.520 yet doing all of that, they will.
NOTE Confidence: 0.824422422

01:14:35.520 --> 01:14:38.070 So that if you seem like
NOTE Confidence: 0.824422422

01:14:38.070 --> 01:14:40.520 maybe you're a little sleepy,
NOTE Confidence: 0.824422422

01:14:40.520 --> 01:14:41.780 you shouldn't be driving.
NOTE Confidence: 0.824422422

01:14:41.780 --> 01:14:43.040 They may automatically lock.
NOTE Confidence: 0.824422422

01:14:43.040 --> 01:14:44.750 If you have gone somewhere
NOTE Confidence: 0.824422422

01:14:44.750 --> 01:14:46.118 where the rental company,
NOTE Confidence: 0.824422422

01:14:46.120 --> 01:14:47.560 the agreement says you shouldn't go,
NOTE Confidence: 0.824422422

01:14:47.560 --> 01:14:50.600 they may lock the data that's being sent.
NOTE Confidence: 0.824422422

01:14:50.600 --> 01:14:52.572 Monitoring your physiological signs
NOTE Confidence: 0.824422422

01:14:52.572 --> 01:14:55.500 can be sent all over. I mean,
NOTE Confidence: 0.824422422

01:14:55.500 --> 01:14:56.880 it's being transmitted back and forth,
NOTE Confidence: 0.824422422

01:14:56.880 --> 01:15:00.280 so it's lots of opportunities for
NOTE Confidence: 0.824422422

01:15:00.280 --> 01:15:02.080 it being intercepted and collected.

NOTE Confidence: 0.824422422

01:15:02.080 --> 01:15:03.480 It can be used by the police.

NOTE Confidence: 0.824422422

01:15:03.480 --> 01:15:05.316 It could be used for all kinds of things.

NOTE Confidence: 0.824422422

01:15:05.320 --> 01:15:07.007 So you've got a hope that's a

NOTE Confidence: 0.824422422

01:15:07.007 --> 01:15:08.811 nice example of the same kinds of

NOTE Confidence: 0.824422422

01:15:08.811 --> 01:15:10.353 all these kinds of issues keep

NOTE Confidence: 0.824422422

01:15:10.407 --> 01:15:11.955 coming up all over the place.

NOTE Confidence: 0.824422422

01:15:11.960 --> 01:15:13.718 And if we think about cars,

NOTE Confidence: 0.824422422

01:15:13.720 --> 01:15:16.024 we may get some insights into

NOTE Confidence: 0.824422422

01:15:16.024 --> 01:15:17.560 medicine and vice versa.

NOTE Confidence: 0.824422422

01:15:17.560 --> 01:15:17.840 Thank

NOTE Confidence: 0.876127176666667

01:15:17.840 --> 01:15:19.118 you. Question please.

NOTE Confidence: 0.652234613333333

01:15:19.400 --> 01:15:21.365 Yeah, yes. Speaking about the

NOTE Confidence: 0.652234613333333

01:15:21.365 --> 01:15:23.200 cross cultural perspectives,

NOTE Confidence: 0.652234613333333

01:15:23.200 --> 01:15:27.118 I had taken a medical anthropology.

NOTE Confidence: 0.652234613333333

01:15:27.120 --> 01:15:29.196 Yes, I had taken a medical

NOTE Confidence: 0.652234613333333

01:15:29.196 --> 01:15:30.880 anthropology class several years ago.
NOTE Confidence: 0.6522346133333333

01:15:30.880 --> 01:15:33.272 We talked about why biomedical
NOTE Confidence: 0.6522346133333333

01:15:33.272 --> 01:15:35.480 medicine actually works.
NOTE Confidence: 0.6522346133333333

01:15:35.480 --> 01:15:38.477 One of it is the belief in the medicine,
NOTE Confidence: 0.6522346133333333

01:15:38.480 --> 01:15:40.600 the trust in the clinician.
NOTE Confidence: 0.6522346133333333

01:15:40.600 --> 01:15:42.520 Some say the placebo effect,
NOTE Confidence: 0.6522346133333333

01:15:42.520 --> 01:15:44.171 but then there and and the fact
NOTE Confidence: 0.6522346133333333

01:15:44.171 --> 01:15:45.473 that it really just does work.
NOTE Confidence: 0.6522346133333333

01:15:45.480 --> 01:15:47.755 This drug will lower your blood pressure,
NOTE Confidence: 0.6522346133333333

01:15:47.760 --> 01:15:49.038 lower your cholesterol.
NOTE Confidence: 0.9414392

01:15:49.880 --> 01:15:51.352 But then there was something else that
NOTE Confidence: 0.9414392

01:15:51.352 --> 01:15:53.640 they identified and called factor X
NOTE Confidence: 0.9429870266666667

01:15:53.920 --> 01:15:55.036 and they said we don't know
NOTE Confidence: 0.9429870266666667

01:15:55.036 --> 01:15:56.800 what it is, it just works.
NOTE Confidence: 0.9429870266666667

01:15:56.800 --> 01:15:59.880 And I think that speaks to a lot about this.
NOTE Confidence: 0.9429870266666667

01:15:59.880 --> 01:16:02.933 A is capability of not taking into

NOTE Confidence: 0.942987026666667
01:16:02.933 --> 01:16:05.133 account everything that we don't know.
NOTE Confidence: 0.942987026666667
01:16:05.133 --> 01:16:08.200 There is some factor X, you know,
NOTE Confidence: 0.942987026666667
01:16:08.200 --> 01:16:10.472 some distinction between one
NOTE Confidence: 0.942987026666667
01:16:10.472 --> 01:16:13.312 individual's belief system and another.
NOTE Confidence: 0.942987026666667
01:16:13.320 --> 01:16:16.360 My concern is not so much AI in
NOTE Confidence: 0.942987026666667
01:16:16.360 --> 01:16:19.496 assisting the clinician to give a better
NOTE Confidence: 0.942987026666667
01:16:19.496 --> 01:16:22.039 diagnosis or better treatment plan,
NOTE Confidence: 0.942987026666667
01:16:22.040 --> 01:16:23.386 but what happens when the
NOTE Confidence: 0.942987026666667
01:16:23.386 --> 01:16:25.116 insurance company says, you know,
NOTE Confidence: 0.942987026666667
01:16:25.120 --> 01:16:27.388 there's a disparity here between what AI
NOTE Confidence: 0.942987026666667
01:16:27.388 --> 01:16:30.040 is telling us and what you're telling us?
NOTE Confidence: 0.942987026666667
01:16:30.040 --> 01:16:31.335 We're going to go with AI and
NOTE Confidence: 0.942987026666667
01:16:31.335 --> 01:16:32.599 we're not going to approve this.
NOTE Confidence: 0.968682388333333
01:16:34.400 --> 01:16:36.020 I wonder if that's happening yet. Bonnie,
NOTE Confidence: 0.968682388333333
01:16:36.020 --> 01:16:38.120 do you know specifically the the point?
NOTE Confidence: 0.968682388333333

01:16:38.120 --> 01:16:39.200 That's a wonderful point. Thank you.

NOTE Confidence: 0.968682388333333

01:16:39.200 --> 01:16:40.560 But the question specifically

NOTE Confidence: 0.968682388333333

01:16:40.560 --> 01:16:41.920 about the insurance companies,

NOTE Confidence: 0.968682388333333

01:16:41.920 --> 01:16:43.390 I mean I've, I've been in situations

NOTE Confidence: 0.968682388333333

01:16:43.390 --> 01:16:44.742 perhaps you have where my physician

NOTE Confidence: 0.968682388333333

01:16:44.742 --> 01:16:45.872 says clearly the data suggests

NOTE Confidence: 0.968682388333333

01:16:45.872 --> 01:16:47.400 this is the drug you should be on.

NOTE Confidence: 0.968682388333333

01:16:47.400 --> 01:16:48.640 But no, the insurance company

NOTE Confidence: 0.968682388333333

01:16:48.640 --> 01:16:49.880 says it's not enough data.

NOTE Confidence: 0.968682388333333

01:16:49.880 --> 01:16:52.000 So you don't get it. Yeah.

NOTE Confidence: 0.95046013

01:16:52.040 --> 01:16:53.210 You don't need AI to have

NOTE Confidence: 0.95046013

01:16:53.210 --> 01:16:53.840 that problem, but but

NOTE Confidence: 0.89530608

01:16:59.880 --> 01:17:01.250 there are ways to sort of

NOTE Confidence: 0.89530608

01:17:01.250 --> 01:17:02.728 start prevent that as well.

NOTE Confidence: 0.89530608

01:17:02.728 --> 01:17:06.360 You know when you can as as you said, as

NOTE Confidence: 0.813732313333333

01:17:06.360 --> 01:17:07.758 you had mentioned, you know it,

NOTE Confidence: 0.813732313333333
01:17:07.760 --> 01:17:10.286 if if the diagnostic 5 diagnostic
NOTE Confidence: 0.813732313333333
01:17:10.286 --> 01:17:12.360 criteria is only four met,
NOTE Confidence: 0.813732313333333
01:17:12.360 --> 01:17:14.220 we can kind of circumvent
NOTE Confidence: 0.813732313333333
01:17:14.220 --> 01:17:16.080 that by adding the 5th.
NOTE Confidence: 0.813732313333333
01:17:16.080 --> 01:17:17.494 And that I think happens all the
NOTE Confidence: 0.813732313333333
01:17:17.494 --> 01:17:18.893 time in a clinical setting where
NOTE Confidence: 0.813732313333333
01:17:18.893 --> 01:17:20.615 you say we need to keep this
NOTE Confidence: 0.813732313333333
01:17:20.664 --> 01:17:22.159 individual a little bit longer,
NOTE Confidence: 0.813732313333333
01:17:22.160 --> 01:17:26.040 say their anxieties up or whatever.
NOTE Confidence: 0.813732313333333
01:17:26.040 --> 01:17:28.392 And also that raises another
NOTE Confidence: 0.813732313333333
01:17:28.392 --> 01:17:31.440 question about its use in psychiatry
NOTE Confidence: 0.813732313333333
01:17:31.440 --> 01:17:34.398 and fields where there's so much
NOTE Confidence: 0.813732313333333
01:17:34.398 --> 01:17:37.280 more than just diagnostic numbers.
NOTE Confidence: 0.9602708155
01:17:39.040 --> 01:17:41.008 I'm going to add one other issue here
NOTE Confidence: 0.9602708155
01:17:41.008 --> 01:17:43.072 about the data quality that also has to
NOTE Confidence: 0.9602708155

01:17:43.072 --> 01:17:45.271 do with the gaming and the insurance.
NOTE Confidence: 0.9602708155

01:17:45.271 --> 01:17:48.550 How many diagnosis do I have in order
NOTE Confidence: 0.9602708155

01:17:48.550 --> 01:17:51.490 for medical insurance to pay for lab
NOTE Confidence: 0.9602708155

01:17:51.490 --> 01:17:54.717 tests when I don't have those diagnosis?
NOTE Confidence: 0.9602708155

01:17:54.720 --> 01:17:58.760 OK. So it's happening for me.
NOTE Confidence: 0.9602708155

01:17:58.760 --> 01:18:00.152 It's happening for everybody.
NOTE Confidence: 0.9602708155

01:18:00.152 --> 01:18:02.240 And all that data is there
NOTE Confidence: 0.94187885

01:18:03.760 --> 01:18:04.880 and once it's there,
NOTE Confidence: 0.94187885

01:18:04.880 --> 01:18:07.290 it's there, it's it's there.
NOTE Confidence: 0.94187885

01:18:07.290 --> 01:18:09.515 As, as we've all learned,
NOTE Confidence: 0.94187885

01:18:09.520 --> 01:18:11.116 as we've learned, it doesn't forget.
NOTE Confidence: 0.94187885

01:18:11.120 --> 01:18:12.394 You know, the privacy stuff seems to
NOTE Confidence: 0.94187885

01:18:12.394 --> 01:18:13.759 stand out as a particular concern,
NOTE Confidence: 0.94187885

01:18:13.760 --> 01:18:14.712 doesn't it? I mean,
NOTE Confidence: 0.94187885

01:18:14.712 --> 01:18:16.759 I have to say that that I know it.
NOTE Confidence: 0.94187885

01:18:16.760 --> 01:18:19.336 It wasn't long ago that I saw

NOTE Confidence: 0.94187885

01:18:19.336 --> 01:18:21.040 a physician and she said I want

NOTE Confidence: 0.94187885

01:18:21.040 --> 01:18:22.235 you to know that everything you

NOTE Confidence: 0.94187885

01:18:22.235 --> 01:18:23.357 say here is just between us.

NOTE Confidence: 0.94187885

01:18:23.360 --> 01:18:25.398 And I thought not a chance I

NOTE Confidence: 0.94187885

01:18:25.398 --> 01:18:27.306 thought that everything I say here

NOTE Confidence: 0.94187885

01:18:27.306 --> 01:18:29.280 anybody can find you know I mean

NOTE Confidence: 0.94187885

01:18:29.280 --> 01:18:30.714 it's you know how many times do

NOTE Confidence: 0.94187885

01:18:30.714 --> 01:18:32.431 we hear about how the our medical

NOTE Confidence: 0.94187885

01:18:32.431 --> 01:18:33.876 records have been invaded etcetera.

NOTE Confidence: 0.94187885

01:18:33.880 --> 01:18:35.189 So even you know even if it's

NOTE Confidence: 0.94187885

01:18:35.189 --> 01:18:35.920 not invaded just so.

NOTE Confidence: 0.94187885

01:18:35.920 --> 01:18:37.656 So the idea that this is confidential

NOTE Confidence: 0.94187885

01:18:37.656 --> 01:18:39.249 between me and my physician that's

NOTE Confidence: 0.94187885

01:18:39.249 --> 01:18:41.118 it's really hard to buy that privacy

NOTE Confidence: 0.904752505

01:18:41.120 --> 01:18:43.520 has been there all along as an issue.

NOTE Confidence: 0.904752505

01:18:43.520 --> 01:18:46.040 One of my gripes is that it's
NOTE Confidence: 0.904752505

01:18:46.040 --> 01:18:47.996 predominated as the issue for many,
NOTE Confidence: 0.904752505

01:18:48.000 --> 01:18:49.830 many, many years without sufficient
NOTE Confidence: 0.904752505

01:18:49.830 --> 01:18:52.120 attention to all these other issues.
NOTE Confidence: 0.904752505

01:18:52.120 --> 01:18:55.660 And it's still a big issue Despite that.
NOTE Confidence: 0.904752505

01:18:55.660 --> 01:18:57.640 But I don't think we should
NOTE Confidence: 0.904752505

01:18:57.640 --> 01:18:59.718 only be focusing on privacy.
NOTE Confidence: 0.904752505

01:18:59.720 --> 01:19:01.477 I think there are many other concerns
NOTE Confidence: 0.904752505

01:19:01.477 --> 01:19:03.516 and issues we need to focus on as well,
NOTE Confidence: 0.904752505

01:19:03.520 --> 01:19:04.870 and we certainly need to be
NOTE Confidence: 0.904752505

01:19:04.870 --> 01:19:06.160 paying more attention to privacy.
NOTE Confidence: 0.904752505

01:19:06.160 --> 01:19:07.316 That, as I said,
NOTE Confidence: 0.904752505

01:19:07.316 --> 01:19:09.521 is one of the effects that the
NOTE Confidence: 0.904752505

01:19:09.521 --> 01:19:11.506 large language models have brought
NOTE Confidence: 0.904752505

01:19:11.506 --> 01:19:13.840 to even more general attention.
NOTE Confidence: 0.904752505

01:19:13.840 --> 01:19:14.200 Thank you,

NOTE Confidence: 0.90231824

01:19:15.360 --> 01:19:16.476 Sir. In the back there please.

NOTE Confidence: 0.8825556

01:19:19.920 --> 01:19:21.902 Hi, I wanted to know do you think

NOTE Confidence: 0.8825556

01:19:21.902 --> 01:19:24.342 there is some field of medicine that

NOTE Confidence: 0.8825556

01:19:24.342 --> 01:19:26.955 should be sanctuarised against even the

NOTE Confidence: 0.8825556

01:19:26.955 --> 01:19:29.475 the capability of AI to block AI from

NOTE Confidence: 0.8825556

01:19:29.480 --> 01:19:32.318 accessing it in the sense that you want

NOTE Confidence: 0.8825556

01:19:32.318 --> 01:19:35.000 to to keep the human practice active.

NOTE Confidence: 0.8825556

01:19:35.000 --> 01:19:36.200 First of all I was thinking

NOTE Confidence: 0.8825556

01:19:36.200 --> 01:19:37.320 about surgery for instance.

NOTE Confidence: 0.8825556

01:19:37.320 --> 01:19:39.444 If you are like starting to rely more

NOTE Confidence: 0.8825556

01:19:39.444 --> 01:19:41.460 and more on AI to practice surgery

NOTE Confidence: 0.8825556

01:19:41.460 --> 01:19:43.600 and then you lose expertise over time,

NOTE Confidence: 0.8825556

01:19:43.600 --> 01:19:44.620 should should this field kind

NOTE Confidence: 0.8825556

01:19:44.620 --> 01:19:45.640 of be sanctuaries like blocked?

NOTE Confidence: 0.8825556

01:19:45.640 --> 01:19:47.206 Even if AI perform better than

NOTE Confidence: 0.8825556

01:19:47.206 --> 01:19:49.061 humans just to preserve kind of the
NOTE Confidence: 0.8825556

01:19:49.061 --> 01:19:50.573 knowledge over time like for sport
NOTE Confidence: 0.8825556

01:19:50.573 --> 01:19:52.266 let's say in 50 years suddenly we
NOTE Confidence: 0.8825556

01:19:52.266 --> 01:19:54.080 we don't have access to AI anymore
NOTE Confidence: 0.8825556

01:19:54.080 --> 01:19:56.476 for some reasons like as you said
NOTE Confidence: 0.8825556

01:19:56.476 --> 01:19:58.448 it's it might not be sustainable to
NOTE Confidence: 0.8825556

01:19:58.448 --> 01:20:00.236 to entertain over these long times.
NOTE Confidence: 0.8825556

01:20:00.240 --> 01:20:01.626 Do you think at that time you you could
NOTE Confidence: 0.8825556

01:20:01.626 --> 01:20:02.879 have a risk of dropping completely?
NOTE Confidence: 0.8825556

01:20:02.880 --> 01:20:04.658 We we don't have any more practitioner
NOTE Confidence: 0.8825556

01:20:04.658 --> 01:20:06.134 that can practice surgery at that
NOTE Confidence: 0.8825556

01:20:06.134 --> 01:20:07.688 time because you you rely so much
NOTE Confidence: 0.8825556

01:20:07.737 --> 01:20:08.910 on AI at that time, that's.
NOTE Confidence: 0.8825556

01:20:08.910 --> 01:20:10.440 You don't have the capacity anymore.
NOTE Confidence: 0.8825556

01:20:10.440 --> 01:20:10.840 I'm saying.
NOTE Confidence: 0.8825556

01:20:10.840 --> 01:20:12.424 I'm thinking about like crises that

NOTE Confidence: 0.8825556

01:20:12.424 --> 01:20:14.198 could arise for the pull over time

NOTE Confidence: 0.8825556

01:20:14.198 --> 01:20:15.745 that you could lose kind of the

NOTE Confidence: 0.8825556

01:20:15.797 --> 01:20:17.300 surgical capacity of of a society,

NOTE Confidence: 0.8825556

01:20:17.300 --> 01:20:17.813 for instance.

NOTE Confidence: 0.8825556

01:20:17.813 --> 01:20:19.440 But maybe it's a large scale question.

NOTE Confidence: 0.95129506

01:20:20.240 --> 01:20:22.893 I wouldn't make a blanket prohibition

NOTE Confidence: 0.95129506

01:20:22.893 --> 01:20:25.877 in any field against the use of AI.

NOTE Confidence: 0.95129506

01:20:25.880 --> 01:20:27.994 It depends on how it's being used.

NOTE Confidence: 0.95129506

01:20:28.000 --> 01:20:30.120 What's it being used for?

NOTE Confidence: 0.95129506

01:20:30.120 --> 01:20:31.656 All the kinds of considerations I

NOTE Confidence: 0.95129506

01:20:31.656 --> 01:20:33.518 brought up and you have brought up.

NOTE Confidence: 0.95129506

01:20:33.520 --> 01:20:36.340 There are already ways in

NOTE Confidence: 0.95129506

01:20:36.340 --> 01:20:39.160 which AI is improving surgery.

NOTE Confidence: 0.95129506

01:20:39.160 --> 01:20:41.976 You've got robotics going on that

NOTE Confidence: 0.95129506

01:20:41.976 --> 01:20:45.550 do much better at various aspects

NOTE Confidence: 0.95129506

01:20:45.550 --> 01:20:47.925 of very fine manipulations and
NOTE Confidence: 0.95129506

01:20:47.925 --> 01:20:49.919 surgery than anybody can do,
NOTE Confidence: 0.95129506

01:20:49.920 --> 01:20:52.440 not because people are inept,
NOTE Confidence: 0.95129506

01:20:52.440 --> 01:20:53.940 but because you just can't
NOTE Confidence: 0.95129506

01:20:53.940 --> 01:20:56.160 do that as a as a person.
NOTE Confidence: 0.95129506

01:20:56.160 --> 01:20:59.840 That's one example modeling of
NOTE Confidence: 0.95129506

01:20:59.840 --> 01:21:02.258 possible ways you can perform the
NOTE Confidence: 0.95129506

01:21:02.258 --> 01:21:04.480 surgery where the surgical site is.
NOTE Confidence: 0.95129506

01:21:04.480 --> 01:21:06.279 So they're all kinds of things that
NOTE Confidence: 0.95129506

01:21:06.279 --> 01:21:08.278 I think it could be helpful for.
NOTE Confidence: 0.95129506

01:21:08.280 --> 01:21:11.514 But that doesn't mean that you should
NOTE Confidence: 0.95129506

01:21:11.520 --> 01:21:14.397 take any possible use and use it.
NOTE Confidence: 0.95129506

01:21:14.400 --> 01:21:15.864 And it doesn't mean you should
NOTE Confidence: 0.95129506

01:21:15.864 --> 01:21:16.840 prohibit any possible use.
NOTE Confidence: 0.95129506

01:21:16.840 --> 01:21:19.255 You need to think about and assess
NOTE Confidence: 0.95129506

01:21:19.255 --> 01:21:21.436 that as to what are the advantages,

NOTE Confidence: 0.95129506

01:21:21.440 --> 01:21:22.560 what are the disadvantages,

NOTE Confidence: 0.95129506

01:21:22.560 --> 01:21:23.680 what are the implications?

NOTE Confidence: 0.95129506

01:21:23.680 --> 01:21:25.157 How is it going to affect things?

NOTE Confidence: 0.95129506

01:21:25.160 --> 01:21:26.399 How does it fit what we do?

NOTE Confidence: 0.95129506

01:21:26.400 --> 01:21:27.074 I mean,

NOTE Confidence: 0.95129506

01:21:27.074 --> 01:21:28.422 all kinds of considerations

NOTE Confidence: 0.95129506

01:21:28.422 --> 01:21:30.160 that I've just listed here.

NOTE Confidence: 0.6516893875

01:21:30.480 --> 01:21:32.200 Oh, Bonnie, I think you just one more,

NOTE Confidence: 0.6516893875

01:21:32.200 --> 01:21:33.370 one more quick question and then

NOTE Confidence: 0.6516893875

01:21:33.370 --> 01:21:34.600 we're we're gonna wrap it up, please.

NOTE Confidence: 0.6516893875

01:21:34.600 --> 01:21:36.404 I'm not quite sure you got the

NOTE Confidence: 0.6516893875

01:21:36.404 --> 01:21:38.280 interesting aspect of what he was asking,

NOTE Confidence: 0.6516893875

01:21:38.280 --> 01:21:40.737 which was the danger of the human

NOTE Confidence: 0.6516893875

01:21:40.737 --> 01:21:41.800 capacities atrophying, essentially,

NOTE Confidence: 0.6516893875

01:21:41.800 --> 01:21:43.600 because you've started to rely

NOTE Confidence: 0.6516893875

01:21:43.600 --> 01:21:47.880 too much on AI. Yes, agreed.
NOTE Confidence: 0.792102784285714

01:21:49.000 --> 01:21:50.465 So what do we do about it? Do, do we?
NOTE Confidence: 0.792102784285714

01:21:50.465 --> 01:21:51.635 How do we protect against that?
NOTE Confidence: 0.792102784285714

01:21:51.640 --> 01:21:52.810 But it's certainly not specifically
NOTE Confidence: 0.792102784285714

01:21:52.810 --> 01:21:54.173 and only in medicine that how
NOTE Confidence: 0.792102784285714

01:21:54.173 --> 01:21:55.365 many of you guys can read a map
NOTE Confidence: 0.792102784285714

01:21:55.365 --> 01:21:56.600 the way you could 10 years ago.
NOTE Confidence: 0.792102784285714

01:21:56.600 --> 01:21:58.064 Which one you can do can do a
NOTE Confidence: 0.792102784285714

01:21:58.064 --> 01:21:59.297 long division when you have a
NOTE Confidence: 0.792102784285714

01:21:59.297 --> 01:22:00.600 calculator that will do it, yes.
NOTE Confidence: 0.91178564

01:22:01.080 --> 01:22:03.112 But remember, you're responsible
NOTE Confidence: 0.91178564

01:22:03.112 --> 01:22:04.636 for those calculations.
NOTE Confidence: 0.91178564

01:22:04.640 --> 01:22:06.360 When you're treating a patient,
NOTE Confidence: 0.91178564

01:22:06.360 --> 01:22:09.664 whether or not you're using a computer
NOTE Confidence: 0.91178564

01:22:09.664 --> 01:22:12.800 system or a calculator or pen and paper,
NOTE Confidence: 0.91178564

01:22:12.800 --> 01:22:14.400 you have to know whether it makes sense.

NOTE Confidence: 0.91178564

01:22:14.400 --> 01:22:15.510 If you get something that's

NOTE Confidence: 0.91178564

01:22:15.510 --> 01:22:16.398 orders of magnitude off,

NOTE Confidence: 0.91178564

01:22:16.400 --> 01:22:17.920 you ought to be able to recognize that.

NOTE Confidence: 0.15560009

01:22:20.920 --> 01:22:22.720 Bonnie, I'm going to because our time is up.

NOTE Confidence: 0.764334624285714

01:22:22.720 --> 01:22:25.588 I'm going to ask if you have a final

NOTE Confidence: 0.764334624285714

01:22:25.588 --> 01:22:27.256 thought that I just have a word

NOTE Confidence: 0.764334624285714

01:22:27.256 --> 01:22:30.238 or two at the end. But. But no,

NOTE Confidence: 0.608140752

01:22:29.120 --> 01:22:31.880 go ahead with your word. OK

NOTE Confidence: 0.617267155

01:22:30.240 --> 01:22:31.520 Well, my word's all about you, kid. I

NOTE Confidence: 0.628160728

01:22:31.880 --> 01:22:33.320 I enjoyed all of this.

NOTE Confidence: 0.628160728

01:22:33.320 --> 01:22:34.640 This is my word. Lovely.

NOTE Confidence: 0.628160728

01:22:34.640 --> 01:22:36.280 Lovely having this discussion and

NOTE Confidence: 0.628160728

01:22:36.280 --> 01:22:37.880 I love these discussions, this

NOTE Confidence: 0.9508171175

01:22:37.880 --> 01:22:39.374 program. I'm so pleased and and

NOTE Confidence: 0.9508171175

01:22:39.374 --> 01:22:41.420 proud of the people we bring in from

NOTE Confidence: 0.9508171175

01:22:41.420 --> 01:22:42.914 all over the country and overseas.
NOTE Confidence: 0.9508171175

01:22:42.920 --> 01:22:44.192 And I hope you guys have
NOTE Confidence: 0.9508171175

01:22:44.192 --> 01:22:45.040 enjoyed those as well.
NOTE Confidence: 0.9508171175

01:22:45.040 --> 01:22:47.722 But this is such a wonderful reminder of the
NOTE Confidence: 0.9508171175

01:22:47.722 --> 01:22:49.878 strength we have right here in New Haven.
NOTE Confidence: 0.9508171175

01:22:49.880 --> 01:22:51.512 I mean, this has just been a fantastic
NOTE Confidence: 0.9508171175

01:22:51.512 --> 01:22:52.920 session, but we all learned so much.
NOTE Confidence: 0.9508171175

01:22:52.920 --> 01:22:54.520 This was a terrific presentation
NOTE Confidence: 0.9508171175

01:22:54.520 --> 01:22:55.800 and a terrific conversation.
NOTE Confidence: 0.9508171175

01:22:55.800 --> 01:22:56.960 Thank you for being here.
NOTE Confidence: 0.9508171175

01:22:56.960 --> 01:22:58.285 And Bonnie especially thank you
NOTE Confidence: 0.9508171175

01:22:58.285 --> 01:22:59.610 for putting this together and
NOTE Confidence: 0.9508171175

01:22:59.657 --> 01:23:00.966 given the time to help us move
NOTE Confidence: 0.9508171175

01:23:00.966 --> 01:23:02.440 along in our understanding of AI.
NOTE Confidence: 0.9508171175

01:23:02.440 --> 01:23:03.404 Thank you so much.
NOTE Confidence: 0.9508171175

01:23:03.404 --> 01:23:05.560 And we have various Yale swag here for you.

NOTE Confidence: 0.4436658

01:23:08.040 --> 01:23:10.432 Here you go. Put down all sorts of stuff

NOTE Confidence: 0.4436658

01:23:10.432 --> 01:23:13.079 in here for you to take home and enjoy.

NOTE Confidence: 0.4436658

01:23:13.080 --> 01:23:15.194 All right. All right. Thank you guys.

NOTE Confidence: 0.627144936

01:23:16.200 --> 01:23:17.320 Thank you Mark. This was

NOTE Confidence: 0.652132461428572

01:23:17.320 --> 01:23:18.208 really good. This was,

NOTE Confidence: 0.652132461428572

01:23:18.208 --> 01:23:19.560 this was true. Thank you so much.