WEBVTT

00:00:00.000 --> 00:00:03.780 Support for Yale Cancer Answers comes from

NOTE Confidence: 0.920551240444183

00:00:03.780 --> 00:00:07.035 AstraZeneca, dedicated to advancing options

NOTE Confidence: 0.920551240444183

00:00:07.035 --> 00:00:10.640 and providing hope for people living with

NOTE Confidence: 0.920551240444183

00:00:10.730 --> 00:00:14.140 cancer. More information at astrazeneca-us.com.

NOTE Confidence: 0.920551240444183

00:00:14.140 --> 00:00:16.590 Welcome to Yale Cancer Answers with your

NOTE Confidence: 0.920551240444183

00:00:16.590 --> 00:00:19.388 host doctor Anees Chagpar. Yale Cancer

NOTE Confidence: 0.920551240444183

00:00:19.388 --> 00:00:21.488 Answers features the latest information

NOTE Confidence: 0.920551240444183

00:00:21.488 --> 00:00:23.981 on cancer care by welcoming oncologists

NOTE Confidence: 0.920551240444183

00:00:23.981 --> 00:00:26.780 and specialists who are on the forefront

NOTE Confidence: 0.920551240444183

00:00:26.780 --> 00:00:29.940 of the battle to fight cancer. This week,

NOTE Confidence: 0.920551240444183

00:00:29.940 --> 00:00:31.905 it's a conversation about Cancer

NOTE Confidence: 0.920551240444183

00:00:31.905 --> 00:00:34.290 Research and COVID-19 with Doctor Akiko

NOTE Confidence: 0.920551240444183

00:00:34.290 --> 00:00:36.396 Iwasaki. Doctor Iwasaki is the

NOTE Confidence: 0.920551240444183

00:00:36.396 --> 00:00:38.630 Waldemar Von Zedtwitz Professor of Immunobiology and Molecular, Cellular and Developmental Biology

NOTE Confidence: 0.920551240444183

00:00:38.630 --> 00:00:40.675 and a Professor of molecular cellular

NOTE Confidence: 0.920551240444183

00:00:40.675 --> 00:00:42.720 and developmental biology at the

NOTE Confidence: 0.920551240444183

00:00:42.785 --> 00:00:44.209 Yale School of Medicine

NOTE Confidence: 0.920551240444183

00:00:44.210 --> 00:00:46.802 where doctor Chagpar is a

NOTE Confidence: 0.920551240444183

00:00:46.802 --> 00:00:48.930 professor of surgical oncology.

NOTE Confidence: 0.931548655033112

00:00:48.930 --> 00:00:51.569 Akiko, I know you

NOTE Confidence: 0.931548655033112

00:00:51.569 --> 00:00:54.589 from all of your work in cancer,

NOTE Confidence: 0.931548655033112

00:00:54.590 --> 00:00:57.152 but maybe we can take a step

NOTE Confidence: 0.931548655033112

00:00:57.152 --> 00:01:00.085 back and you can tell us a

NOTE Confidence: 0.931548655033112

00:01:00.085 --> 00:01:02.265 little bit more about yourself

NOTE Confidence: 0.931548655033112

00:01:02.270 --> 00:01:03.479 and your background.

NOTE Confidence: 0.931548655033112

00:01:03.479 --> 00:01:05.494 Sure, I am an immunologist.

NOTE Confidence: 0.931548655033112

00:01:05.500 --> 00:01:07.810 My love has been studying how

NOTE Confidence: 0.931548655033112

00:01:07.810 --> 00:01:09.436 immune responses are generated

NOTE Confidence: 0.931548655033112

00:01:09.436 --> 00:01:11.149 against different viruses.

NOTE Confidence: 0.931548655033112

00:01:11.150 --> 00:01:13.130 So over the years we've learned

NOTE Confidence: 0.931548655033112

00:01:13.130 --> 00:01:15.463 a lot about the immune system

NOTE Confidence: 0.931548655033112

00:01:15.463 --> 00:01:17.343 through studying infection with

NOTE Confidence: 0.931548655033112

00:01:17.343 --> 00:01:19.672 a variety of viruses, including

NOTE Confidence: 0.931548655033112

00:01:19.672 --> 00:01:21.440 herpes virus, influenza virus,

NOTE Confidence: 0.931548655033112

00:01:21.440 --> 00:01:22.340 rhinovirus,

NOTE Confidence: 0.931548655033112

00:01:22.340 --> 00:01:23.690 and many others.

NOTE Confidence: 0.931548655033112

00:01:23.690 --> 00:01:26.651 So what we've been able to do is

NOTE Confidence: 0.931548655033112

00:01:26.651 --> 00:01:29.225 leverage this understanding of

NOTE Confidence: 0.931548655033112

00:01:29.225 --> 00:01:33.140 antiviral immunity to apply it to cancer.

NOTE Confidence: 0.931548655033112

00:01:33.140 --> 00:01:34.840 For example,

NOTE Confidence: 0.931548655033112

00:01:34.840 --> 00:01:36.965 we've been understanding how T

NOTE Confidence: 0.931548655033112

00:01:36.965 --> 00:01:39.402 cells are activated against viruses

NOTE Confidence: 0.931548655033112

00:01:39.402 --> 00:01:41.822 and how they migrate throughout

NOTE Confidence: 0.931548655033112

00:01:41.822 --> 00:01:44.514 the body to fight against viral

NOTE Confidence: 0.931548655033112

00:01:44.514 --> 00:01:46.639 infection and we leverage this

NOTE Confidence: 0.931548655033112

00:01:46.640 --> 00:01:48.945 understanding to apply it to

NOTE Confidence: 0.931548655033112

00:01:48.945 --> 00:01:50.789 a local tumor environment

NOTE Confidence: 0.931548655033112

00:01:50.790 --> 00:01:53.163 where we can trigger T cells to

NOTE Confidence: 0.931548655033112

00:01:53.163 --> 00:01:55.548 be recruited to a particular site,

NOTE Confidence: 0.931548655033112

00:01:55.550 --> 00:01:58.142 in this case a tumor to be able to

NOTE Confidence: 0.931548655033112

00:01:58.142 --> 00:02:00.308 attack the tumor cells better.

NOTE Confidence: 0.943028807640076

00:02:01.310 --> 00:02:03.638 And that really sounds

NOTE Confidence: 0.943028807640076

00:02:03.638 --> 00:02:05.190 a lot like immunotherapy,

NOTE Confidence: 0.943028807640076

00:02:05.190 --> 00:02:07.906 which has been such a huge advance,

00:02:10.790 --> 00:02:13.905 It is a form of immunotherapy.

NOTE Confidence: 0.90007221698761

00:02:13.910 --> 00:02:16.125 So this strategy that I'm

NOTE Confidence: 0.90007221698761

00:02:16.125 --> 00:02:18.820 describing is called Prime and pull.

NOTE Confidence: 0.90007221698761

00:02:18.820 --> 00:02:21.100 A prime describes the fact that

NOTE Confidence: 0.90007221698761

00:02:21.100 --> 00:02:23.784 we are priming T cell response

NOTE Confidence: 0.90007221698761

00:02:23.784 --> 00:02:25.948 against a specific antigen,

NOTE Confidence: 0.90007221698761

00:02:25.950 --> 00:02:28.626 so in this case we are

NOTE Confidence: 0.90007221698761

00:02:28.626 --> 00:02:29.964 targeting tumor antigens.

NOTE Confidence: 0.90007221698761

00:02:29.970 --> 00:02:32.805 And pull refers to the fact that

NOTE Confidence: 0.90007221698761

00:02:32.805 --> 00:02:35.084 we are eliciting TCL recruitment

NOTE Confidence: 0.90007221698761

00:02:35.084 --> 00:02:38.000 to the site using chemo coins,

NOTE Confidence: 0.90007221698761

00:02:38.000 --> 00:02:41.616 so this is a two step vaccination strategy

NOTE Confidence: 0.90007221698761

00:02:41.620 --> 00:02:43.828 to target the immune cells to

NOTE Confidence: 0.90007221698761

00:02:43.828 --> 00:02:46.508 the site of tumor growth and it's

NOTE Confidence: 0.90007221698761

00:02:46.508 --> 00:02:48.764 a little bit more specific than

NOTE Confidence: 0.90007221698761

00:02:48.764 --> 00:02:51.489 a checkpoint inhibitor therapy,

NOTE Confidence: 0.90007221698761

00:02:51.490 --> 00:02:54.100 where we're kind of taking out

NOTE Confidence: 0.90007221698761

00:02:54.100 --> 00:02:56.640 the brake from all T cells.

NOTE Confidence: 0.90007221698761

00:02:56.640 --> 00:02:59.587 But in our case we are targeting

NOTE Confidence: 0.90007221698761

00:02:59.587 --> 00:03:01.326 specific specific antigens that

NOTE Confidence: 0.90007221698761

00:03:01.326 --> 00:03:03.326 the tumors expressed with a

NOTE Confidence: 0.90007221698761

00:03:03.326 --> 00:03:05.640 targeted prime and pull approach,

00:03:06.070 --> 00:03:09.182 How do the viruses play

NOTE Confidence: 0.899768769741058

00:03:09.182 --> 00:03:12.080 into that prime and pull approach?

NOTE Confidence: 0.898379027843475

00:03:12.800 --> 00:03:15.464 Right, we are targeting

NOTE Confidence: 0.898379027843475

00:03:15.464 --> 00:03:18.395 viral induced tumors such as human

NOTE Confidence: 0.898379027843475

00:03:18.395 --> 00:03:21.075 papilloma virus induced cervical tumors,

NOTE Confidence: 0.898379027843475

00:03:21.080 --> 00:03:23.490 and essentially what we're doing

NOTE Confidence: 0.898379027843475

00:03:23.490 --> 00:03:26.490 is to stimulate T cells against

NOTE Confidence: 0.898379027843475

00:03:26.490 --> 00:03:29.484 the virus antigens with the prime

NOTE Confidence: 0.898379027843475

00:03:29.484 --> 00:03:32.280 and pulling them into the site.

NOTE Confidence: 0.898379027843475

00:03:32.280 --> 00:03:35.458 In this case, the cervix, using chemokine

NOTE Confidence: 0.898379027843475

00:03:35.458 --> 00:03:38.119 or a chemokine inducing agent,

NOTE Confidence: 0.898379027843475

00:03:38.120 --> 00:03:41.529 so that's where the virus comes in.

NOTE Confidence: 0.898379027843475

00:03:41.530 --> 00:03:43.274 Viruses actually cause

NOTE Confidence: 0.898379027843475

00:03:43.274 --> 00:03:45.454 many different types of tumors,

NOTE Confidence: 0.898379027843475

00:03:45.460 --> 00:03:46.705 including cervical cancer,

NOTE Confidence: 0.898379027843475

00:03:46.705 --> 00:03:50.303 and we're kind of using virus as a tag

NOTE Confidence: 0.898379027843475

00:03:50.303 --> 00:03:52.775 to be able to stimulate the specific T

NOTE Confidence: 0.898379027843475

00:03:52.854 --> 00:03:55.596 cell immunity against those tumor cells.

NOTE Confidence: 0.917973577976227

00:03:55.600 --> 00:03:58.702 That's kind of interesting.

NOTE Confidence: 0.917973577976227

00:03:58.702 --> 00:04:01.678 You take these T cells and

NOTE Confidence: 0.917973577976227

00:04:01.678 --> 00:04:04.744 you prime them to this virus so that

NOTE Confidence: 0.917973577976227

00:04:04.744 --> 00:04:07.687 you can kind of attack the cancer.

NOTE Confidence: 0.917973577976227

00:04:07.690 --> 00:04:09.510 But recently your research has

NOTE Confidence: 0.917973577976227

00:04:09.510 --> 00:04:11.828 kind of shifted now that we're

NOTE Confidence: 0.917973577976227

00:04:11.828 --> 00:04:13.978 all thinking about another virus,

NOTE Confidence: 0.917973577976227

00:04:13.980 --> 00:04:18.444 being COVID-19, so tell us how that pivot

NOTE Confidence: 0.917085528373718

00:04:18.450 --> 00:04:21.810 happened.

NOTE Confidence: 0.917085528373718

00:04:21.810 --> 00:04:24.908 When the news about COVID-19 started to emerge,

NOTE Confidence: 0.917085528373718

00:04:24.910 --> 00:04:28.207 we quickly reorganize the laboratory so that

NOTE Confidence: 0.917085528373718

00:04:28.207 --> 00:04:32.367 we can all focus on the COVID-19 research.

NOTE Confidence: 0.917085528373718

00:04:32.370 --> 00:04:35.226 So I remember having a lab meeting

NOTE Confidence: 0.917085528373718

00:04:35.226 --> 00:04:38.038 asking the lab members if anybody's

NOTE Confidence: 0.917085528373718

00:04:38.038 --> 00:04:40.538 interested in working on COVID-19

NOTE Confidence: 0.917085528373718

00:04:40.538 --> 00:04:43.954 and to help with the COVID-19

NOTE Confidence: 0.917085528373718

00:04:43.954 --> 00:04:46.286 testing throughout the community.

NOTE Confidence: 0.917085528373718

00:04:46.290 --> 00:04:48.070 And virtually everybody stepped

NOTE Confidence: 0.917085528373718

00:04:48.070 --> 00:04:49.850 up to the challenge.

NOTE Confidence: 0.917085528373718

00:04:49.850 --> 00:04:51.955 So essentially everyone you know

NOTE Confidence: 0.917085528373718

00:04:51.955 --> 00:04:55.054 just sort of one day stop doing

NOTE Confidence: 0.917085528373718

00:04:55.054 --> 00:04:57.319 their other research to focus

NOTE Confidence: 0.917085528373718

00:04:57.319 --> 00:04:59.640 on COVID-19 very quickly.

NOTE Confidence: 0.922693490982056

00:04:59.640 --> 00:05:02.440 And you were previously

NOTE Confidence: 0.922693490982056

00:05:02.440 --> 00:05:04.861 studying things like cancer related

NOTE Confidence: 0.922693490982056

00:05:04.861 --> 00:05:08.100 viruses, HPV and and so on.

NOTE Confidence: 0.922693490982056

00:05:08.100 --> 00:05:10.770 How is COVID-19 similar versus different?

NOTE Confidence: 0.922693490982056

00:05:10.770 --> 00:05:14.095 And how could you

NOTE Confidence: 0.922693490982056

00:05:14.095 --> 00:05:16.680 focus on another virus?

NOTE Confidence: 0.927830755710602

00:05:16.680 --> 00:05:18.930 The advantage of what we've

NOTE Confidence: 0.927830755710602

00:05:18.930 --> 00:05:21.479 been doing is that we weren't

NOTE Confidence: 0.927830755710602

00:05:21.479 --> 00:05:23.889 focusing on any particular virus.

NOTE Confidence: 0.927830755710602

00:05:23.890 --> 00:05:26.440 So as I mentioned,

NOTE Confidence: 0.927830755710602

00:05:26.440 --> 00:05:28.460 we've been studying genital herpes

NOTE Confidence: 0.927830755710602

00:05:28.460 --> 00:05:31.100 influenza virus causing the flu symptoms,

NOTE Confidence: 0.927830755710602

00:05:31.100 --> 00:05:32.844 rhinoviruses in the nose,

NOTE Confidence: 0.927830755710602

00:05:32.844 --> 00:05:35.024 and so we were pretty

NOTE Confidence: 0.927830755710602

00:05:35.024 --> 00:05:36.610 versatile to begin with,

NOTE Confidence: 0.927830755710602

00:05:36.610 --> 00:05:39.626 so we were able to quickly focus on

NOTE Confidence: 0.927830755710602

00:05:39.626 --> 00:05:41.877 COVID-19 because of our expertise

NOTE Confidence: 0.927830755710602

00:05:41.877 --> 00:05:44.237 in the respiratory virus infection,

NOTE Confidence: 0.927830755710602

00:05:44.240 --> 00:05:48.510 and it wasn't that much of a leap for us

NOTE Confidence: 0.927830755710602

00:05:48.510 --> 00:05:50.570 to pivot to COVID-19.

NOTE Confidence: 0.927830755710602

00:05:50.570 --> 00:05:52.218 Is COVID-19 like every

NOTE Confidence: 0.915232539176941

00:05:52.220 --> 00:05:55.508 other virus, though?

00:05:59.630 --> 00:06:02.306 Many of us have experienced

NOTE Confidence: 0.915232539176941

00:06:02.306 --> 00:06:04.090 rhinovirus, the virus

NOTE Confidence: 0.915232539176941

00:06:04.168 --> 00:06:06.654 that gives us the common cold,

NOTE Confidence: 0.915232539176941

00:06:06.654 --> 00:06:09.622 but it doesn't have the impact

NOTE Confidence: 0.915232539176941

00:06:09.622 --> 00:06:11.170 that COVID-19 has had,

NOTE Confidence: 0.915232539176941

00:06:11.170 --> 00:06:14.047 so in terms of the virus itself,

NOTE Confidence: 0.915232539176941

00:06:14.050 --> 00:06:15.289 are they different?

NOTE Confidence: 0.921551108360291

00:06:16.050 --> 00:06:18.828 Oh yes, every virus is very

NOTE Confidence: 0.921551108360291

00:06:18.828 --> 00:06:21.090 different in

NOTE Confidence: 0.921551108360291

00:06:21.090 --> 00:06:23.676 its unique way of evading the

NOTE Confidence: 0.921551108360291

00:06:23.676 --> 00:06:25.976 immune system and to transmit

NOTE Confidence: 0.921551108360291

00:06:25.976 --> 00:06:28.416 from one host to another.

NOTE Confidence: 0.921551108360291

00:06:28.420 --> 00:06:31.168 And so even though we were

NOTE Confidence: 0.921551108360291

00:06:31.168 --> 00:06:33.000 studying other respiratory viruses,

NOTE Confidence: 0.921551108360291

00:06:33.000 --> 00:06:36.199 COVID-19 is by far the most severe

NOTE Confidence: 0.921551108360291

00:06:36.200 --> 00:06:38.490 and contagious virus

NOTE Confidence: 0.921551108360291

00:06:38.490 --> 00:06:40.925 we have shifted to studying

NOTE Confidence: 0.921551108360291

00:06:40.925 --> 00:06:44.735 and part of it has to do with

NOTE Confidence: 0.921551108360291

00:06:44.735 --> 00:06:47.696 the fact that none of us had

NOTE Confidence: 0.921551108360291

00:06:47.700 --> 00:06:51.400 any pre existing immunity to this virus.

NOTE Confidence: 0.92548406124115

00:06:51.400 --> 00:06:54.529 I would imagine

NOTE Confidence: 0.92548406124115

00:06:54.529 --> 00:06:57.140 that when this pandemic hit and

NOTE Confidence: 0.92548406124115

00:06:57.223 --> 00:06:59.593 many researchers like yourself and

NOTE Confidence: 0.92548406124115

00:06:59.593 --> 00:07:03.073 people in your lab started to try to

NOTE Confidence: 0.92548406124115

00:07:03.073 --> 00:07:05.467 figure out in a very rapid fashion

NOTE Confidence: 0.92548406124115

00:07:05.470 --> 00:07:08.284 what was going on with this virus,

NOTE Confidence: 0.92548406124115

00:07:08.290 --> 00:07:11.474 I mean, the fact that you were

NOTE Confidence: 0.92548406124115

00:07:11.474 --> 00:07:13.543 actually studying immunity in terms

NOTE Confidence: 0.92548406124115

00:07:13.543 --> 00:07:16.329 of viruses and how you could get

NOTE Confidence: 0.92548406124115

00:07:16.330 --> 00:07:18.766 your immune system to attack

NOTE Confidence: 0.92548406124115

00:07:18.766 --> 00:07:21.588 seems to be really relevant because

NOTE Confidence: 0.92548406124115

00:07:21.590 --> 00:07:24.005 as we try to figure out how

NOTE Confidence: 0.92548406124115

00:07:24.005 --> 00:07:25.959 can people resist this virus,

NOTE Confidence: 0.92548406124115

00:07:25.960 --> 00:07:28.504 which is completely novel to all of our

NOTE Confidence: 0.92548406124115

00:07:28.504 --> 00:07:30.426 immune systems and potentially develop

NOTE Confidence: 0.92548406124115

00:07:30.426 --> 00:07:32.862 a vaccine, that is really interesting.

NOTE Confidence: 0.92548406124115

00:07:32.870 --> 00:07:35.180 Tell us a little bit more

NOTE Confidence: 0.92548406124115

00:07:35.180 --> 00:07:37.825 about what you did in your lab

NOTE Confidence: 0.92548406124115

00:07:37.825 --> 00:07:39.790 to move that research forward.

NOTE Confidence: 0.933424234390259

00:07:40.950 --> 00:07:43.350 Yeah, so as you say,

NOTE Confidence: 0.933424234390259

00:07:43.350 --> 00:07:46.278 we were very fortunate to be in a

NOTE Confidence: 0.933424234390259

00:07:46.278 --> 00:07:49.701 position we were because of our previous

NOTE Confidence: 0.933424234390259

00:07:49.701 --> 00:07:52.306 experience as well as understanding

NOTE Confidence: 0.933424234390259

00:07:52.389 --> 00:07:55.319 in general about antiviral immunity

NOTE Confidence: 0.933424234390259

00:07:55.320 --> 00:07:58.267 to be able to quickly tackle some

NOTE Confidence: 0.933424234390259

00:07:58.267 --> 00:08:01.550 of the key aspects of COVID-19.

NOTE Confidence: 0.933424234390259

00:08:01.550 --> 00:08:04.476 So for instance we are studying in

NOTE Confidence: 0.933424234390259

00:08:04.476 --> 00:08:07.953 real time in response to COVID-19 from

NOTE Confidence: 0.933424234390259

00:08:07.953 --> 00:08:11.151 patients that enroll in our study

NOTE Confidence: 0.933424234390259

00:08:11.160 --> 00:08:14.280 and trying to figure out what type

NOTE Confidence: 0.933424234390259

00:08:14.280 --> 00:08:17.126 of immune responses confer protection in

NOTE Confidence: 0.933424234390259

00:08:17.126 --> 00:08:20.570 recovery versus which of those

NOTE Confidence: 0.933424234390259

00:08:20.570 --> 00:08:22.362 responses lead to wars,

NOTE Confidence: 0.933424234390259

00:08:22.362 --> 00:08:25.132 disease outcome, and even to death.

NOTE Confidence: 0.933424234390259

00:08:25.132 --> 00:08:28.482 So we were able to mobilize the

NOTE Confidence: 0.933424234390259

00:08:28.482 --> 00:08:31.978 team to be able to look at these

NOTE Confidence: 0.933424234390259

00:08:31.978 --> 00:08:35.027 issues and the fact that we were

NOTE Confidence: 0.933424234390259

00:08:35.027 --> 00:08:38.970 able to do this also has to do with

NOTE Confidence: 0.933424234390259

00:08:38.970 --> 00:08:42.110 collaborators, we have a large,

NOTE Confidence: 0.933424234390259

00:08:42.110 --> 00:08:45.848 large network of collaborators who are

NOTE Confidence: 0.933424234390259

00:08:45.848 --> 00:08:49.667 recruiting patients into the study who

NOTE Confidence: 0.933424234390259

00:08:49.667 --> 00:08:52.766 are collecting samples, archiving samples,

NOTE Confidence: 0.933424234390259

00:08:52.766 --> 00:08:55.020 analyzing clinical data sets,

NOTE Confidence: 0.933424234390259

00:08:55.020 --> 00:08:57.980 and just a whole variety of tasks that

NOTE Confidence: 0.933424234390259

00:08:57.980 --> 00:09:01.027 are needed to happen in order for us

NOTE Confidence: 0.933424234390259

00:09:01.027 --> 00:09:03.879 to study our response to COVID-19.

NOTE Confidence: 0.933424234390259

00:09:03.880 --> 00:09:06.298 So we're very fortunate to be

NOTE Confidence: 0.933424234390259

00:09:06.298 --> 00:09:08.180 in a place where we can do this.

NOTE Confidence: 0.93791264295578

00:09:08.180 --> 00:09:11.010 And what have you found so far?

00:09:11.710 --> 00:09:14.632 We're finding,

NOTE Confidence: 0.924811482429504

00:09:14.632 --> 00:09:17.128 as I mentioned in real time,

NOTE Confidence: 0.924811482429504

00:09:17.130 --> 00:09:20.049 some patients that come in the hospital,

NOTE Confidence: 0.924811482429504

00:09:20.050 --> 00:09:22.234 do well and they

NOTE Confidence: 0.924811482429504

00:09:22.234 --> 00:09:24.640 recover and they get discharged.

NOTE Confidence: 0.924811482429504

00:09:24.640 --> 00:09:27.752 And others go on to develop worst

NOTE Confidence: 0.924811482429504

00:09:27.752 --> 00:09:30.472 disease and what we're finding is

NOTE Confidence: 0.924811482429504

00:09:30.472 --> 00:09:32.787 that the immune response during

NOTE Confidence: 0.924811482429504

00:09:32.787 --> 00:09:35.999 the first 10 to 12 days of symptom

NOTE Confidence: 0.924811482429504

00:09:35.999 --> 00:09:38.401 onset can really inform us about

NOTE Confidence: 0.924811482429504

00:09:38.401 --> 00:09:41.320 how they might do in the future.

NOTE Confidence: 0.924811482429504

00:09:41.320 --> 00:09:44.309 So it's almost like we can predict

NOTE Confidence: 0.924811482429504

00:09:44.310 --> 00:09:46.842 the disease trajectory of patients based

NOTE Confidence: 0.924811482429504

00:09:46.842 --> 00:09:49.711 on the very early immune signatures

NOTE Confidence: 0.924811482429504

00:09:49.711 --> 00:09:52.950 that we're detecting from patients.

NOTE Confidence: 0.914561450481415

00:09:52.950 --> 00:09:56.086 That seems to make

NOTE Confidence: 0.914561450481415

00:09:56.086 --> 00:09:59.125 sense because we know that people

NOTE Confidence: 0.914561450481415

00:09:59.125 --> 00:10:01.835 who are immunodeficient or immuno

NOTE Confidence: 0.914561450481415

00:10:01.835 --> 00:10:04.427 compromised tend to have more

NOTE Confidence: 0.914561450481415

00:10:04.427 --> 00:10:06.387 severe illness with COVID-19.

NOTE Confidence: 0.914561450481415

00:10:06.390 --> 00:10:08.790 But aside from NOTE Confidence: 0.914561450481415

00:10:08.790 --> 00:10:11.190 not having an immunodeficiency,

NOTE Confidence: 0.914561450481415

00:10:11.190 --> 00:10:14.070 do we know in normal people?

NOTE Confidence: 0.914561450481415

00:10:14.070 --> 00:10:17.479 I mean we've heard on the news

NOTE Confidence: 0.914561450481415

00:10:17.480 --> 00:10:20.217 people who are otherwise perfectly

NOTE Confidence: 0.914561450481415

00:10:20.217 --> 00:10:22.624 healthy succumbing to COVID-19.

NOTE Confidence: 0.914561450481415

00:10:22.624 --> 00:10:25.615 Do we know what it is about their

NOTE Confidence: 0.914561450481415

00:10:25.615 --> 00:10:28.485 immune system that puts them more at

NOTE Confidence: 0.914561450481415

00:10:28.485 --> 00:10:31.448 risk and perhaps more importantly,

NOTE Confidence: 0.914561450481415

00:10:31.450 --> 00:10:34.362 do we know what we can do to

NOTE Confidence: 0.914561450481415

00:10:34.362 --> 00:10:37.232 mitigate that to ramp up people's

NOTE Confidence: 0.914561450481415

00:10:37.232 --> 00:10:39.792 immune systems to potentially give

NOTE Confidence: 0.914561450481415

00:10:39.792 --> 00:10:43.098 them a boost or a test to make

NOTE Confidence: 0.914561450481415

00:10:43.098 --> 00:10:45.424 sure that their immune system is

NOTE Confidence: 0.914561450481415

00:10:45.424 --> 00:10:47.890 strong enough to fight this virus?

NOTE Confidence: 0.930115342140198

00:10:53.130 --> 00:10:54.894 I think we're getting there.

NOTE Confidence: 0.930115342140198

00:10:54.894 --> 00:10:58.863 I would say we're not there yet, but we are

NOTE Confidence: 0.930115342140198

00:10:58.863 --> 00:11:01.509 understanding a lot

NOTE Confidence: 0.930115342140198

00:11:01.510 --> 00:11:05.038 at least with respect to the immune response,

NOTE Confidence: 0.930115342140198

00:11:05.040 --> 00:11:07.917 how patients are responding to this virus

NOTE Confidence: 0.930115342140198

00:11:07.917 --> 00:11:11.078 and what that does to viral clearance

NOTE Confidence: 0.930115342140198

00:11:11.078 --> 00:11:13.856 versus disease such as cytokine storm.

NOTE Confidence: 0.930115342140198

00:11:13.860 --> 00:11:17.068 And to get back to your question about

NOTE Confidence: 0.930115342140198

00:11:17.068 --> 00:11:19.855 some people who are otherwise very

NOTE Confidence: 0.930115342140198

00:11:19.855 --> 00:11:22.699 healthy or have gotten COVID-19

NOTE Confidence: 0.930115342140198

00:11:22.700 --> 00:11:25.318 and did very poorly with this disease,

NOTE Confidence: 0.930115342140198

00:11:25.320 --> 00:11:29.060 part of it has to do with the viral exposure.

NOTE Confidence: 0.930115342140198

00:11:29.060 --> 00:11:32.068 Iff you're being

NOTE Confidence: 0.930115342140198

00:11:32.068 --> 00:11:34.667 exposed to a large dose of virus,

NOTE Confidence: 0.930115342140198

00:11:34.670 --> 00:11:36.908 and if you're inhaling that virus

NOTE Confidence: 0.930115342140198

00:11:36.908 --> 00:11:38.780 into the deep respiratory area,

NOTE Confidence: 0.930115342140198

00:11:38.780 --> 00:11:41.496 then that might cause a different type

NOTE Confidence: 0.930115342140198

00:11:41.496 --> 00:11:44.144 of disease than if you were getting

NOTE Confidence: 0.930115342140198

00:11:44.144 --> 00:11:46.698 just a few viral particles up your

NOTE Confidence: 0.930115342140198

00:11:46.698 --> 00:11:49.260 nose and they're just sort of remaining

NOTE Confidence: 0.930115342140198

00:11:49.260 --> 00:11:51.104 in the upper respiratory tract,

NOTE Confidence: 0.930115342140198

00:11:51.104 --> 00:11:54.144 and so one has to do with the

NOTE Confidence: 0.930115342140198

00:11:54.144 --> 00:11:56.049 viral exposure in the dose,

NOTE Confidence: 0.930115342140198

00:11:56.050 --> 00:11:59.090 and the other has to do with what I was

NOTE Confidence: 0.930115342140198

00:11:59.169 --> 00:12:02.253 talking about the person's propensity to

NOTE Confidence: 0.930115342140198

00:12:02.253 --> 00:12:05.639 develop different types of immune response.

NOTE Confidence: 0.930115342140198

00:12:05.640 --> 00:12:06.807 So for instance,

NOTE Confidence: 0.930115342140198

00:12:06.807 --> 00:12:09.530 though people who are doing well with

NOTE Confidence: 0.930115342140198

00:12:09.607 --> 00:12:12.199 this disease appear to focus their

NOTE Confidence: 0.930115342140198

00:12:12.199 --> 00:12:14.800 response in tissue repair mechanisms,

NOTE Confidence: 0.930115342140198

00:12:14.800 --> 00:12:17.434 so people who can secrete growth

NOTE Confidence: 0.930115342140198

00:12:17.434 --> 00:12:20.115 factors to repair the damage in

NOTE Confidence: 0.930115342140198

00:12:20.115 --> 00:12:22.205 the lung are doing better,

NOTE Confidence: 0.930115342140198

00:12:22.210 --> 00:12:25.269 while those people who are initiating more

NOTE Confidence: 0.930115342140198

00:12:25.269 --> 00:12:28.400 of the cytokine storm type of response,

NOTE Confidence: 0.930115342140198

00:12:28.400 --> 00:12:30.385 even early during the infection

NOTE Confidence: 0.930115342140198

00:12:30.385 --> 00:12:31.973 tend to do worse,

NOTE Confidence: 0.930115342140198

00:12:31.980 --> 00:12:34.700 so I think a lot has to do

NOTE Confidence: 0.930115342140198

00:12:34.700 --> 00:12:36.759 with viral dose exposure.

NOTE Confidence: 0.930115342140198

00:12:36.760 --> 00:12:38.710 The route of exposure as well

NOTE Confidence: 0.930115342140198

00:12:38.710 --> 00:12:40.584 as the propensity of developing

NOTE Confidence: 0.930115342140198

00:12:40.584 --> 00:12:43.129 different types of immune responses.

00:12:43.920 --> 00:12:47.104 Tell us a little bit more about this

NOTE Confidence: 0.919521629810333

00:12:47.110 --> 00:12:50.286 cytokine storm response. What is that exactly?

NOTE Confidence: 0.91875296831131

00:12:53.085 --> 00:12:54.905 You often hear about the cytokine storm.

NOTE Confidence: 0.91875296831131

00:12:54.910 --> 00:12:57.470 It's essentially what happens when

NOTE Confidence: 0.91875296831131

00:12:57.470 --> 00:13:00.911 the immune system is triggered by the

NOTE Confidence: 0.91875296831131

00:13:00.911 --> 00:13:03.317 virus infection in a matter without

NOTE Confidence: 0.91875296831131

00:13:03.317 --> 00:13:05.858 having any brakes.

NOTE Confidence: 0.91875296831131

00:13:05.860 --> 00:13:08.185 So usually what happens during

NOTE Confidence: 0.91875296831131

00:13:08.185 --> 00:13:11.003 an infection with a virus is

NOTE Confidence: 0.91875296831131

00:13:11.003 --> 00:13:13.048 that the viruses meet rigorous

NOTE Confidence: 0.91875296831131

00:13:13.048 --> 00:13:15.889 cytokine response,

NOTE Confidence: 0.91875296831131

00:13:15.890 --> 00:13:18.692 but quickly the innate and adaptive

NOTE Confidence: 0.91875296831131

00:13:18.692 --> 00:13:21.070 immune response contains that virus.

NOTE Confidence: 0.91875296831131

00:13:21.070 --> 00:13:23.460 So that the response is

NOTE Confidence: 0.91875296831131

00:13:23.460 --> 00:13:25.840 tapered down within

NOTE Confidence: 0.91875296831131

00:13:25.840 --> 00:13:28.230 a few days,

NOTE Confidence: 0.91875296831131

00:13:28.230 --> 00:13:31.086 whereas in this case of COVID-19,

NOTE Confidence: 0.91875296831131

00:13:31.090 --> 00:13:33.868 some patients are having this very

NOTE Confidence: 0.91875296831131

00:13:33.868 --> 00:13:36.330 prolonged and uncontrolled cytokine release.

NOTE Confidence: 0.91875296831131

00:13:36.330 --> 00:13:39.108 And when that happens the cytokines

NOTE Confidence: 0.91875296831131

00:13:39.108 --> 00:13:41.421 themselves could have toxic impact

NOTE Confidence: 0.91875296831131

00:13:41.421 --> 00:13:43.707 on delicate tissues such as the

NOTE Confidence: 0.91875296831131

00:13:43.707 --> 00:13:45.562 lung and the microvasculature

NOTE Confidence: 0.91875296831131

00:13:45.562 --> 00:13:48.737 that are surrounding the Alveolae.

NOTE Confidence: 0.91875296831131

00:13:48.740 --> 00:13:51.590 So it's really having a negative

NOTE Confidence: 0.91875296831131

00:13:51.590 --> 00:13:54.480 impact rather than trying to contain

NOTE Confidence: 0.91875296831131

00:13:54.480 --> 00:13:56.960 the virus and so one of the key

NOTE Confidence: 0.91875296831131

00:13:56.960 --> 00:13:59.018 hallmarks of disease progression appears

NOTE Confidence: 0.91875296831131

00:13:59.018 --> 00:14:02.196 to be having these kind of cytokine

NOTE Confidence: 0.91875296831131

00:14:02.276 --> 00:14:04.726 storms even during early infection.

NOTE Confidence: 0.91875296831131

00:14:04.730 --> 00:14:06.780 So it will be

NOTE Confidence: 0.923844397068024

00:14:06.780 --> 00:14:08.680 important to understand which

NOTE Confidence: 0.923844397068024

00:14:08.680 --> 00:14:11.530 people have which kind of response

NOTE Confidence: 0.923844397068024

00:14:11.606 --> 00:14:13.993 so that we can kind of predict

NOTE Confidence: 0.923844397068024

00:14:13.993 --> 00:14:16.209 how people will do to COVID-19.

NOTE Confidence: 0.923844397068024

00:14:16.210 --> 00:14:18.664 We're going to learn more about

NOTE Confidence: 0.923844397068024

00:14:18.664 --> 00:14:21.584 that right after we take a short

NOTE Confidence: 0.923844397068024

00:14:21.584 --> 00:14:23.589 break for a medical minute.

NOTE Confidence: 0.923844397068024

00:14:23.590 --> 00:14:25.645 Please stay tuned to learn

NOTE Confidence: 0.923844397068024

00:14:25.645 --> 00:14:27.700 more about COVID-19 and cancer

NOTE Confidence: 0.923844397068024

00:14:27.700 --> 00:14:31.180 with my guest doctor Akiko Iwasaki.

NOTE Confidence: 0.902874410152435

00:14:31.180 --> 00:14:34.512 Support for Yale Cancer Answers comes from

NOTE Confidence: 0.902874410152435

00:14:34.512 --> 00:14:37.561 AstraZeneca, working to change how cancer

NOTE Confidence: 0.902874410152435

00:14:37.561 --> 00:14:40.126 is treated with personalized medicine.

NOTE Confidence: 0.902874410152435

00:14:40.130 --> 00:14:44.010 Learn more at astrazeneca-us.com.

NOTE Confidence: 0.902874410152435

00:14:44.010 --> 00:14:46.090 This is a medical minute

NOTE Confidence: 0.902874410152435

00:14:46.090 --> 00:14:47.338 about colorectal cancer.

NOTE Confidence: 0.902874410152435

00:14:47.340 --> 00:14:48.588 When detected early,

NOTE Confidence: 0.902874410152435

00:14:48.588 --> 00:14:50.668 colorectal cancer is easily treated

NOTE Confidence: 0.902874410152435

00:14:50.670 --> 00:14:53.575 and highly curable and as a result,

NOTE Confidence: 0.902874410152435

00:14:53.580 --> 00:14:55.818 it's recommended that men and women

NOTE Confidence: 0.902874410152435

00:14:55.818 --> 00:14:58.749 over the age of 50 have regular

NOTE Confidence: 0.902874410152435

00:14:58.749 --> 00:15:01.479 colonoscopies to screen for the disease.

NOTE Confidence: 0.902874410152435

00:15:01.480 --> 00:15:03.585 Tumor gene analysis has helped

NOTE Confidence: 0.902874410152435

00:15:03.585 --> 00:15:05.269 improve management of colorectal

NOTE Confidence: 0.902874410152435

00:15:05.269 --> 00:15:07.389 cancer by identifying the patients

NOTE Confidence: 0.902874410152435

00:15:07.389 --> 00:15:09.434 most likely to benefit from

NOTE Confidence: 0.902874410152435

00:15:09.434 --> 00:15:11.469 chemotherapy and newer targeted agents,

NOTE Confidence: 0.902874410152435

00:15:11.470 --> 00:15:13.242 resulting in more patient

NOTE Confidence: 0.902874410152435

00:15:13.242 --> 00:15:14.128 specific treatments.

NOTE Confidence: 0.902874410152435

00:15:14.130 --> 00:15:16.210 More information is available

NOTE Confidence: 0.902874410152435

00:15:16.210 --> 00:15:17.250 at yalecancercenter.org.

NOTE Confidence: 0.902874410152435

00:15:17.250 --> 00:15:21.900 You're listening to Connecticut public radio.

00:15:22.270 --> 00:15:24.140 Welcome back to Yale Cancer Answers.

NOTE Confidence: 0.932593524456024

00:15:24.140 --> 00:15:26.144 This is doctor in East shag

NOTE Confidence: 0.932593524456024

00:15:26.144 --> 00:15:28.393 part and I'm joined tonight by

NOTE Confidence: 0.932593524456024

00:15:28.393 --> 00:15:30.478 my guest Doctor Akiko Iwasaki.

NOTE Confidence: 0.932593524456024

00:15:30.480 --> 00:15:32.742 We're talking about her research looking

NOTE Confidence: 0.932593524456024

00:15:32.742 --> 00:15:35.329 into COVID-19 an right before the break.

NOTE Confidence: 0.932593524456024

00:15:35.330 --> 00:15:37.778 Akiko, you were talking about how

NOTE Confidence: 0.932593524456024

00:15:37.778 --> 00:15:40.278 you were really looking at the

NOTE Confidence: 0.932593524456024

00:15:40.278 --> 00:15:42.642 immune response and using this to

NOTE Confidence: 0.932593524456024

00:15:42.642 --> 00:15:45.012 predict who is going to do

NOTE Confidence: 0.932593524456024

00:15:45.012 --> 00:15:47.561 well versus who was not going to do

NOTE Confidence: 0.932593524456024

00:15:47.561 --> 00:15:49.643 well after a COVID-19 infection and

NOTE Confidence: 0.932593524456024

00:15:49.643 --> 00:15:52.067 one of the things you mentioned was

NOTE Confidence: 0.932593524456024

00:15:52.067 --> 00:15:54.800 that there was a difference between

NOTE Confidence: 0.932593524456024

00:15:54.800 --> 00:15:57.356 people who mounted an immune response

NOTE Confidence: 0.932593524456024

00:15:57.356 --> 00:15:59.899 that was really localized where they

NOTE Confidence: 0.932593524456024

00:15:59.899 --> 00:16:02.594 had an ability to repair tissues versus

NOTE Confidence: 0.932593524456024

00:16:02.594 --> 00:16:04.807 people whose immune response was

NOTE Confidence: 0.932593524456024

00:16:04.810 --> 00:16:07.792 this quote cytokine storm kind where

NOTE Confidence: 0.932593524456024

00:16:07.792 --> 00:16:10.403 their immune system went crazy

NOTE Confidence: 0.932593524456024

00:16:10.403 --> 00:16:12.917 and started attacking all kinds of

NOTE Confidence: 0.932593524456024

00:16:12.917 --> 00:16:15.648 things and those people did less well.

NOTE Confidence: 0.932593524456024

00:16:15.650 --> 00:16:19.097 So my question to you is, do we know

NOTE Confidence: 0.932593524456024

00:16:19.097 --> 00:16:21.909 which kind of people are which?

NOTE Confidence: 0.932593524456024

00:16:24.830 --> 00:16:28.711 Am I going to be the kind of person who

NOTE Confidence: 0.932593524456024

00:16:28.711 --> 00:16:32.008 is going to have a localized response,

NOTE Confidence: 0.932593524456024

00:16:32.010 --> 00:16:34.810 or whether my immune system will goes crazy.

00:16:35.546 --> 00:16:37.754 Are there factors that predict that?

NOTE Confidence: 0.932593524456024

00:16:37.754 --> 00:16:40.262 Either my medical history

NOTE Confidence: 0.932593524456024

00:16:40.262 --> 00:16:42.382 if I have autoimmune conditions,

NOTE Confidence: 0.932593524456024

00:16:42.390 --> 00:16:45.180 for example, race, gender, age?

NOTE Confidence: 0.932593524456024

00:16:45.180 --> 00:16:48.556 What goes into that? Do we know?

NOTE Confidence: 0.920757472515106

00:16:49.150 --> 00:16:52.342 We're starting to find out that there

NOTE Confidence: 0.920757472515106

00:16:52.342 --> 00:16:54.997 are certain factors. a host of factors

NOTE Confidence: 0.920757472515106

00:16:54.997 --> 00:16:58.149 that affect how people respond in a

NOTE Confidence: 0.920757472515106

00:16:58.149 --> 00:17:00.585 matter of protective versus

NOTE Confidence: 0.920757472515106

00:17:00.585 --> 00:17:03.486 non protective and harmful and

NOTE Confidence: 0.920757472515106

00:17:03.486 --> 00:17:06.431 one of the factors that we're finding

NOTE Confidence: 0.920757472515106

00:17:06.431 --> 00:17:09.581 is that women tend to do better with

NOTE Confidence: 0.920757472515106

00:17:09.665 --> 00:17:12.545 COVID-19 disease than men and this

NOTE Confidence: 0.920757472515106

00:17:12.545 --> 00:17:15.324 has been reported throughout the world

NOTE Confidence: 0.920757472515106

00:17:15.324 --> 00:17:18.740 and we are honing in on why that is.

NOTE Confidence: 0.920757472515106

00:17:18.740 --> 00:17:21.183 Why sex makes a difference in our

NOTE Confidence: 0.920757472515106

00:17:21.183 --> 00:17:23.629 ability to fight off this infection,

NOTE Confidence: 0.920757472515106

00:17:23.630 --> 00:17:26.129 and one of the things

NOTE Confidence: 0.920757472515106

00:17:26.129 --> 00:17:28.139 coming out from this study,

NOTE Confidence: 0.920757472515106

00:17:28.140 --> 00:17:30.396 which is supported by Women's

NOTE Confidence: 0.920757472515106

00:17:30.396 --> 00:17:31.900 Health research at Yale,

NOTE Confidence: 0.920757472515106

00:17:31.900 --> 00:17:34.532 is the fact that women make better

NOTE Confidence: 0.920757472515106

00:17:34.532 --> 00:17:35.660 T cell response,

NOTE Confidence: 0.920757472515106

00:17:35.660 --> 00:17:37.736 while men tend to make these

NOTE Confidence: 0.920757472515106

00:17:37.736 --> 00:17:39.800 cytokine storm type of response,

NOTE Confidence: 0.920757472515106

00:17:39.800 --> 00:17:41.300 especially as they age.

NOTE Confidence: 0.921513259410858

00:17:42.090 --> 00:17:43.404 That's really interesting.

NOTE Confidence: 0.921513259410858

00:17:43.404 --> 00:17:46.032 Do we know why that is?

NOTE Confidence: 0.921513259410858

00:17:46.040 --> 00:17:48.665 I mean, does that have something to

NOTE Confidence: 0.921513259410858

00:17:48.665 --> 00:17:51.310 do with estrogen versus testosterone?

NOTE Confidence: 0.921513259410858

00:17:51.310 --> 00:17:53.932 Mind you, we would

NOTE Confidence: 0.921513259410858

00:17:53.932 --> 00:17:56.140 expect that as women age,

NOTE Confidence: 0.921513259410858

00:17:56.140 --> 00:17:58.330 their estrogen levels go down,

NOTE Confidence: 0.921513259410858

00:17:58.330 --> 00:18:00.964 so what might be the

NOTE Confidence: 0.921513259410858

00:18:00.964 --> 00:18:02.720 underlying mechanism of that?

NOTE Confidence: 0.931726932525635

00:18:03.280 --> 00:18:05.540 That's a great question.

NOTE Confidence: 0.931726932525635

00:18:05.540 --> 00:18:08.504 We don't know whether sex hormones

NOTE Confidence: 0.931726932525635

00:18:08.504 --> 00:18:10.946 like testosterone or estrogen can

NOTE Confidence: 0.931726932525635

00:18:10.946 --> 00:18:13.648 be the only answer to this question.

NOTE Confidence: 0.931726932525635

00:18:13.650 --> 00:18:16.947 And especially as you say we're looking

NOTE Confidence: 0.931726932525635

00:18:16.947 --> 00:18:19.969 at patients in the age group of

NOTE Confidence: 0.931726932525635

00:18:19.970 --> 00:18:22.670 70s, eighties, 90s

NOTE Confidence: 0.931726932525635

00:18:22.670 --> 00:18:25.526 and these sex hormones may not be

NOTE Confidence: 0.931726932525635

00:18:25.526 --> 00:18:28.756 playing a big role and so the

NOTE Confidence: 0.931726932525635

00:18:28.756 --> 00:18:30.672 molecular underpinning of why

NOTE Confidence: 0.931726932525635

00:18:30.672 --> 00:18:33.848 women do better is still unclear.

NOTE Confidence: 0.931726932525635

00:18:33.850 --> 00:18:36.778 But what we do know is that if

NOTE Confidence: 0.931726932525635

00:18:36.778 --> 00:18:40.047 you plot age and T cell response

NOTE Confidence: 0.931726932525635

00:18:40.047 --> 00:18:42.487 in the different sex groups,

NOTE Confidence: 0.931726932525635

00:18:42.490 --> 00:18:45.143 women tend to age better in terms

NOTE Confidence: 0.931726932525635

00:18:45.143 --> 00:18:47.814 of T cell immunity that even

NOTE Confidence: 0.931726932525635

00:18:47.814 --> 00:18:50.694 older women are able to mount

NOTE Confidence: 0.931726932525635

00:18:50.700 --> 00:18:52.860 a pretty robust response

NOTE Confidence: 0.931726932525635

00:18:52.860 --> 00:18:54.588 during this COVID-19 infection.

NOTE Confidence: 0.931726932525635

00:18:54.590 --> 00:18:57.966 Whereas men who age in the

NOTE Confidence: 0.931726932525635

00:18:57.966 --> 00:19:01.070 older group tend to really be poor

NOTE Confidence: 0.931726932525635

00:19:01.070 --> 00:19:03.250 inducers of T cell response

NOTE Confidence: 0.931726932525635

00:19:03.250 --> 00:19:04.994 and that correlates with

NOTE Confidence: 0.931726932525635

00:19:05.000 --> 00:19:07.088 their poor prognosis

NOTE Confidence: 0.931726932525635

00:19:07.088 --> 00:19:09.176 in the future,

NOTE Confidence: 0.931726932525635

00:19:09.180 --> 00:19:13.348 so it really is painting a picture that

NOTE Confidence: 0.931726932525635

00:19:13.348 --> 00:19:17.527 women tend to age better with the immune

NOTE Confidence: 0.901148209969203

00:19:17.530 --> 00:19:20.938 response.

NOTE Confidence: 0.901148209969203

00:19:20.940 --> 00:19:22.611 I wonder too,

NOTE Confidence: 0.901148209969203

00:19:22.611 --> 00:19:25.953 there are certain autoimmune

NOTE Confidence: 0.901148209969203

00:19:25.960 --> 00:19:28.232 conditions, so things like

NOTE Confidence: 0.901148209969203

00:19:28.232 --> 00:19:29.936 Hashimoto's thyroiditis for

NOTE Confidence: 0.901148209969203

00:19:29.936 --> 00:19:32.668 example where your immune system

NOTE Confidence: 0.901148209969203

00:19:32.668 --> 00:19:35.512 attacks your thyroid that are more

NOTE Confidence: 0.901148209969203

00:19:35.512 --> 00:19:37.870 prevalent in women versus men.

NOTE Confidence: 0.901148209969203

00:19:37.870 --> 00:19:40.978 So is it that women have

NOTE Confidence: 0.901148209969203

00:19:40.978 --> 00:19:43.050 a stronger immune system?

NOTE Confidence: 0.901148209969203

00:19:43.050 --> 00:19:46.466 Or is it that their immune system just

NOTE Confidence: 0.901148209969203

00:19:46.466 --> 00:19:49.808 tends to be better regulated against

NOTE Confidence: 0.901148209969203

00:19:49.808 --> 00:19:53.402 COVID-19 because men have more likely

NOTE Confidence: 0.901148209969203

00:19:53.410 --> 00:19:56.040 this cytokine storm condition.

00:19:57.450 --> 00:20:00.888 Yes, so it is true that many auto immune

NOTE Confidence: 0.893938004970551

00:20:00.888 --> 00:20:04.646 diseases have female prevalence,

NOTE Confidence: 0.893938004970551

00:20:04.650 --> 00:20:07.858 and it's also true

NOTE Confidence: 0.893938004970551

00:20:07.858 --> 00:20:11.277 that for other viruses women do

NOTE Confidence: 0.893938004970551

00:20:11.277 --> 00:20:14.730 tend to make better immune response.

NOTE Confidence: 0.893938004970551

00:20:14.730 --> 00:20:16.538 Even for flu vaccines,

NOTE Confidence: 0.893938004970551

00:20:16.538 --> 00:20:20.346 it's been shown that women mount a better

NOTE Confidence: 0.893938004970551

00:20:20.346 --> 00:20:23.370 antibody response to vaccines,

NOTE Confidence: 0.893938004970551

00:20:23.370 --> 00:20:26.250 so it may be that women,

NOTE Confidence: 0.893938004970551

00:20:26.250 --> 00:20:28.150 because of their capacity

NOTE Confidence: 0.893938004970551

00:20:28.150 --> 00:20:31.000 to mount a better immune response,

NOTE Confidence: 0.893938004970551

00:20:31.000 --> 00:20:33.300 they're doing better with this

NOTE Confidence: 0.893938004970551

00:20:33.300 --> 00:20:35.136 COVID-19 disease, whereas men,

NOTE Confidence: 0.893938004970551

00:20:35.136 --> 00:20:36.968 especially as they age,

NOTE Confidence: 0.893938004970551

00:20:36.970 --> 00:20:39.270 they fail to mount a

NOTE Confidence: 0.893938004970551

00:20:39.270 --> 00:20:42.018 very good adaptive immune response,

NOTE Confidence: 0.893938004970551

00:20:42.020 --> 00:20:44.792 and therefore they are secreting

NOTE Confidence: 0.893938004970551

00:20:44.792 --> 00:20:47.171 more cytokine because of their

NOTE Confidence: 0.893938004970551

00:20:47.171 --> 00:20:49.406 inability to kill the infected

NOTE Confidence: 0.893938004970551

00:20:49.406 --> 00:20:51.660 cells and control the virus

NOTE Confidence: 0.917247414588928

00:20:51.660 --> 00:20:54.408 better.

NOTE Confidence: 0.917247414588928

00:20:56.710 --> 00:20:59.452 Do we know

NOTE Confidence: 0.917247414588928

00:20:59.452 --> 00:21:01.686 for women, what are predisposing

NOTE Confidence: 0.917247414588928

00:21:01.686 --> 00:21:04.338 factors that make women do worse?

NOTE Confidence: 0.917247414588928

00:21:04.340 --> 00:21:07.094 So are there other factors

NOTE Confidence: 0.917247414588928

00:21:07.094 --> 00:21:10.424 than gender that may play a role

NOTE Confidence: 0.917247414588928

00:21:10.424 --> 00:21:13.232 or that may interact that would

NOTE Confidence: 0.917247414588928

00:21:13.232 --> 00:21:15.692 predispose one woman to do well

NOTE Confidence: 0.917247414588928

00:21:15.692 --> 00:21:19.310 versus some women to do poorly?

NOTE Confidence: 0.920899510383606

00:21:19.310 --> 00:21:21.570 That's a really good question.

NOTE Confidence: 0.920899510383606

00:21:21.570 --> 00:21:24.432 We don't really know what other

NOTE Confidence: 0.920899510383606

00:21:24.432 --> 00:21:26.831 factors influence how women tend

NOTE Confidence: 0.920899510383606

00:21:26.831 --> 00:21:29.255 to do worse with this disease.

NOTE Confidence: 0.920899510383606

00:21:29.260 --> 00:21:32.876 One of the things that we obtained from

NOTE Confidence: 0.920899510383606

00:21:32.876 --> 00:21:35.634 this particular study is that women

NOTE Confidence: 0.920899510383606

00:21:35.634 --> 00:21:38.292 who tend to make cytokine response

NOTE Confidence: 0.920899510383606

00:21:38.382 --> 00:21:41.040 like the cytokine storm type of

NOTE Confidence: 0.920899510383606

00:21:41.040 --> 00:21:43.658 response do worse with this disease.

NOTE Confidence: 0.920899510383606

00:21:43.658 --> 00:21:46.591 So even if they are able to

NOTE Confidence: 0.920899510383606

00:21:46.591 --> 00:21:49.247 mount a robust immunity

NOTE Confidence: 0.920899510383606

00:21:49.250 --> 00:21:52.729 if there are also triggering the cytokine

NOTE Confidence: 0.920899510383606

00:21:52.729 --> 00:21:55.800 response then they tend to do poorly,

NOTE Confidence: 0.920899510383606

00:21:55.800 --> 00:21:58.140 so it's really a balance

NOTE Confidence: 0.920899510383606

00:21:58.140 --> 00:22:00.480 between their ability to Mount,

NOTE Confidence: 0.920899510383606

00:22:00.480 --> 00:22:02.332 regulate the cytokine response

NOTE Confidence: 0.920899510383606

00:22:02.332 --> 00:22:05.598 at the same time as mounting a

NOTE Confidence: 0.920899510383606

00:22:05.598 --> 00:22:08.398 robust T cell response that tend to

NOTE Confidence: 0.920899510383606

00:22:08.398 --> 00:22:10.780 dictate their disease trajectory,

NOTE Confidence: 0.920899510383606

00:22:10.780 --> 00:22:12.178 but we don't

NOTE Confidence: 0.909550905227661

00:22:12.180 --> 00:22:14.052 know aside from gender,

NOTE Confidence: 0.909550905227661

00:22:14.052 --> 00:22:15.924 what really causes people.

NOTE Confidence: 0.909550905227661

00:22:15.930 --> 00:22:18.906 Some people to have more of

NOTE Confidence: 0.909550905227661

00:22:18.906 --> 00:22:21.540 a cytokine storm response. Is

NOTE Confidence: 0.879921668767929

00:22:21.540 --> 00:22:25.488 not. Right, so the one thing other

NOTE Confidence: 0.879921668767929

00:22:25.488 --> 00:22:29.148 than the age, which is a very

NOTE Confidence: 0.879921668767929

00:22:29.148 --> 00:22:32.100 clear sort of disease risk factor.

NOTE Confidence: 0.879921668767929

00:22:32.100 --> 00:22:34.565 The other thing that came

NOTE Confidence: 0.879921668767929

00:22:34.565 --> 00:22:38.000 out of this study is the BMI.

NOTE Confidence: 0.879921668767929

00:22:38.000 --> 00:22:41.255 So especially man who tended to do

NOTE Confidence: 0.879921668767929

00:22:41.255 --> 00:22:44.889 worse with this disease had higher BMI.

NOTE Confidence: 0.879921668767929

00:22:44.890 --> 00:22:47.350 So yeah, obesity is contributing

NOTE Confidence: 0.879921668767929

00:22:47.350 --> 00:22:48.826 to disease progression,

NOTE Confidence: 0.879921668767929

00:22:48.830 --> 00:22:52.774 especially in men, not so much in women.

NOTE Confidence: 0.879921668767929

00:22:52.780 --> 00:22:55.115 So what makes women suffer

NOTE Confidence: 0.879921668767929

00:22:55.115 --> 00:22:56.983 from worst disease outcome?

NOTE Confidence: 0.879921668767929

00:22:56.990 --> 00:22:58.858 It is still unclear.

NOTE Confidence: 0.92318719625473

00:22:58.860 --> 00:23:02.226 And so in men, is it that their BMI

NOTE Confidence: 0.92318719625473

00:23:02.226 --> 00:23:04.866 actually changes their immune response

NOTE Confidence: 0.92318719625473

00:23:04.866 --> 00:23:08.130 such that higher BMI is associated

NOTE Confidence: 0.92318719625473

00:23:08.222 --> 00:23:11.030 with more of this cytokine storm?

NOTE Confidence: 0.92318719625473

00:23:11.030 --> 00:23:13.370 Or is it working through

NOTE Confidence: 0.92318719625473

00:23:13.370 --> 00:23:14.780 another independent pathway?

NOTE Confidence: 0.92318719625473

00:23:14.780 --> 00:23:17.120 Yeah, another really great question.

NOTE Confidence: 0.92318719625473

00:23:17.120 --> 00:23:19.245 That's something that we are

NOTE Confidence: 0.92318719625473

00:23:19.245 --> 00:23:22.260 planning to look at more carefully.

NOTE Confidence: 0.92318719625473

00:23:22.260 --> 00:23:25.110 So our first study is currently

NOTE Confidence: 0.92318719625473

00:23:25.110 --> 00:23:26.262 posted

NOTE Confidence: 0.92318719625473

00:23:28.566 --> 00:23:31.229 and we've done this first analysis.

NOTE Confidence: 0.92318719625473

00:23:31.230 --> 00:23:34.107 But there are a lot of questions

NOTE Confidence: 0.92318719625473

00:23:34.107 --> 00:23:36.940 that we want to dig into, one,

NOTE Confidence: 0.92318719625473

00:23:36.940 --> 00:23:39.810 including the BMI question and the other

NOTE Confidence: 0.92318719625473

00:23:39.810 --> 00:23:42.295 including whether a sex hormone or

NOTE Confidence: 0.92318719625473

00:23:42.295 --> 00:23:44.285 other parameters are associated.

NOTE Confidence: 0.92318719625473

00:23:44.290 --> 00:23:46.738 Women can explain some of the

NOTE Confidence: 0.92318719625473

00:23:46.738 --> 00:23:48.770 features that we're seeing.

NOTE Confidence: 0.921059489250183

00:23:48.770 --> 00:23:51.170 And I guess the other question

NOTE Confidence: 0.921059489250183

00:23:51.170 --> 00:23:53.670 that I have is

NOTE Confidence: 0.921059489250183

00:23:53.670 --> 00:23:56.238 sadly we can't do much about

NOTE Confidence: 0.921059489250183

00:23:56.240 --> 00:24:02.176 the gender that we're born with,

NOTE Confidence: 0.921059489250183

00:24:02.180 --> 00:24:04.790 but in terms of

NOTE Confidence: 0.921059489250183

00:24:09.940 --> 00:24:12.748 people who are transgendered,

NOTE Confidence: 0.921059489250183

00:24:12.750 --> 00:24:15.090 people that have changed their gender,

NOTE Confidence: 0.921059489250183

00:24:15.090 --> 00:24:16.958 what happens to their

NOTE Confidence: 0.921059489250183

00:24:16.958 --> 00:24:18.826 immunity and therefore their

NOTE Confidence: 0.932114899158478

00:24:18.830 --> 00:24:21.638 risk in terms of COVID-19?

NOTE Confidence: 0.932114899158478

00:24:21.638 --> 00:24:23.510 Another really great question.

NOTE Confidence: 0.932114899158478

00:24:23.510 --> 00:24:23.967 Unfortunately,

NOTE Confidence: 0.932114899158478

00:24:23.967 --> 00:24:26.709 because of the number of patients

NOTE Confidence: 0.932114899158478

00:24:26.709 --> 00:24:28.660 recruited being rather limited,

NOTE Confidence: 0.932114899158478

00:24:28.660 --> 00:24:31.000 it's less than 100 patients,

NOTE Confidence: 0.932114899158478

00:24:31.000 --> 00:24:33.850 we didn't have enough to

NOTE Confidence: 0.932114899158478

00:24:33.850 --> 00:24:35.710 dissect what happens to

NOTE Confidence: 0.932114899158478

00:24:35.710 --> 00:24:38.035 transgendered people in our cohort,

NOTE Confidence: 0.932114899158478

00:24:38.040 --> 00:24:40.280 but that's something we would

NOTE Confidence: 0.932114899158478

00:24:40.280 --> 00:24:43.620 love to get into in the future,

NOTE Confidence: 0.932114899158478

00:24:43.620 --> 00:24:46.380 especially once we understand better the

NOTE Confidence: 0.932114899158478

00:24:46.380 --> 00:24:49.659 molecular basis for the differences in sex

NOTE Confidence: 0.932114899158478

00:24:49.660 --> 00:24:51.895 we can actually attract those

NOTE Confidence: 0.932114899158478

00:24:51.895 --> 00:24:54.724 molecules to see what happens in

NOTE Confidence: 0.932114899158478

00:24:54.724 --> 00:24:56.784 transgender settings and whether

NOTE Confidence: 0.932114899158478

00:24:56.784 --> 00:24:59.359 that would dictate their ability

NOTE Confidence: 0.932114899158478

00:24:59.440 --> 00:25:01.942 to mount a protective immunity or

NOTE Confidence: 0.932114899158478

00:25:01.942 --> 00:25:04.080 a more harmful immune response.

NOTE Confidence: 0.915105164051056

00:25:04.110 --> 00:25:06.343 Yeah, I mean I think it's going

NOTE Confidence: 0.915105164051056

00:25:06.343 --> 00:25:09.372 to tie in as well to your studies

NOTE Confidence: 0.915105164051056

00:25:09.372 --> 00:25:11.990 that you're planning in the future.

NOTE Confidence: 0.915105164051056

00:25:11.990 --> 00:25:13.067 Looking at hormones,

NOTE Confidence: 0.915105164051056

00:25:13.067 --> 00:25:15.221 and certainly people who

NOTE Confidence: 0.915105164051056

00:25:15.221 --> 00:25:17.569 have to take exogeneous hormones as

NOTE Confidence: 0.915105164051056

00:25:17.569 --> 00:25:19.489 they are transitioning that may

NOTE Confidence: 0.915105164051056

00:25:19.490 --> 00:25:22.017 certainly play a role and

NOTE Confidence: 0.915105164051056

00:25:22.017 --> 00:25:25.110 then I guess the other question is OK,

NOTE Confidence: 0.915105164051056

00:25:25.110 --> 00:25:26.985 let's suppose that you have

NOTE Confidence: 0.915105164051056

00:25:26.985 --> 00:25:28.485 whatever immunity you have,

NOTE Confidence: 0.915105164051056

00:25:28.490 --> 00:25:30.370 and let's suppose that you

NOTE Confidence: 0.915105164051056

00:25:30.370 --> 00:25:32.989 there is a way to know

NOTE Confidence: 0.915105164051056

00:25:32.990 --> 00:25:34.442 for example,

NOTE Confidence: 0.915105164051056

00:25:34.442 --> 00:25:37.346 could you take a blood

NOTE Confidence: 0.915105164051056

00:25:37.350 --> 00:25:39.480 specimen from me and tell me,

NOTE Confidence: 0.915105164051056

00:25:39.480 --> 00:25:41.865 you're more likely to

NOTE Confidence: 0.915105164051056

00:25:41.865 --> 00:25:44.090 have a cytokine storm reaction

NOTE Confidence: 0.915105164051056

00:25:44.090 --> 00:25:46.752 versus you're more likely to have

NOTE Confidence: 0.915105164051056

00:25:46.752 --> 00:25:48.827 an adaptive response.

NOTE Confidence: 0.915105164051056

00:25:48.830 --> 00:25:49.570 I mean,

NOTE Confidence: 0.915105164051056

00:25:49.570 --> 00:25:52.160 is there a way to tell that

NOTE Confidence: 0.915105164051056

00:25:52.160 --> 00:25:54.570 just in people in general?

NOTE Confidence: 0.932136297225952

00:25:55.240 --> 00:25:57.760 Yeah, so that would be the

NOTE Confidence: 0.932136297225952

00:25:57.760 --> 00:26:00.019 next step.

NOTE Confidence: 0.932136297225952

00:26:00.020 --> 00:26:01.640 Right now we're focusing on

NOTE Confidence: 0.932136297225952

00:26:01.640 --> 00:26:03.891 infected people to try to understand

NOTE Confidence: 0.932136297225952

00:26:03.891 --> 00:26:05.589 these seeming differences,

NOTE Confidence: 0.932136297225952

00:26:05.590 --> 00:26:07.612 but ultimately what we want to

NOTE Confidence: 0.932136297225952

00:26:07.612 --> 00:26:10.897 do is to be able to predict

NOTE Confidence: 0.932136297225952

00:26:10.897 --> 00:26:12.745 before the infection

NOTE Confidence: 0.932136297225952

00:26:12.750 --> 00:26:15.036 whether a person might do better

NOTE Confidence: 0.932136297225952

00:26:15.036 --> 00:26:17.361 or worse from this disease and

NOTE Confidence: 0.932136297225952

00:26:17.361 --> 00:26:19.515 what we can do to intervene

NOTE Confidence: 0.932136297225952

00:26:19.515 --> 00:26:21.510 with the disease process.

NOTE Confidence: 0.932136297225952

00:26:21.510 --> 00:26:23.510 So another element that we're

NOTE Confidence: 0.932136297225952

00:26:23.510 --> 00:26:25.510 looking into is the genetics.

NOTE Confidence: 0.932136297225952

00:26:25.510 --> 00:26:27.130 Are there genetic differences

NOTE Confidence: 0.932136297225952

00:26:27.130 --> 00:26:29.560 between people who do worse versus

NOTE Confidence: 0.932136297225952

00:26:29.629 --> 00:26:31.529 who recovers from this disease?

NOTE Confidence: 0.932136297225952

00:26:31.530 --> 00:26:33.530 Even accounting for all the

NOTE Confidence: 0.932136297225952

00:26:33.530 --> 00:26:35.130 other parameters we discussed,

NOTE Confidence: 0.932136297225952

00:26:35.130 --> 00:26:38.133 such as aging and BMI or their

NOTE Confidence: 0.932136297225952

00:26:38.133 --> 00:26:40.129 genetic differences that we can

NOTE Confidence: 0.932136297225952

00:26:40.129 --> 00:26:42.625 look into and that may be able to

NOTE Confidence: 0.932136297225952

00:26:42.707 --> 00:26:45.377 play into this prediction

NOTE Confidence: 0.932136297225952

00:26:45.377 --> 00:26:47.962 of whether a person might do worse

NOTE Confidence: 0.932136297225952

00:26:47.962 --> 00:26:49.967 or better with this disease.

00:26:52.380 --> 00:26:55.050 Have you found any racial

NOTE Confidence: 0.917884528636932

00:26:55.050 --> 00:26:57.265 differences that might give you

NOTE Confidence: 0.917884528636932

00:26:57.265 --> 00:27:00.490 a glimmer into genetics?

NOTE Confidence: 0.913648426532745

00:27:01.140 --> 00:27:03.564 Those types of studies

NOTE Confidence: 0.913648426532745

00:27:03.564 --> 00:27:05.720 really require thousands of agents,

NOTE Confidence: 0.913648426532745

00:27:05.720 --> 00:27:07.785 and currently this particular study

NOTE Confidence: 0.913648426532745

00:27:07.785 --> 00:27:10.710 is focused on a handful,

NOTE Confidence: 0.913648426532745

00:27:10.710 --> 00:27:12.039 about 100 patients,

NOTE Confidence: 0.913648426532745

00:27:12.039 --> 00:27:14.697 and so the genetic studies that's

NOTE Confidence: 0.913648426532745

00:27:14.697 --> 00:27:17.225 ongoing at Yale

NOTE Confidence: 0.913648426532745

00:27:17.225 --> 00:27:19.440 are really in recruiting

NOTE Confidence: 0.913648426532745

00:27:19.440 --> 00:27:21.480 thousands of patients

NOTE Confidence: 0.913648426532745

00:27:21.480 --> 00:27:24.803 to be able to look at these issues

NOTE Confidence: 0.913648426532745

00:27:24.803 --> 00:27:27.603 and so I'm hopeful that those

NOTE Confidence: 0.913648426532745

00:27:27.684 --> 00:27:30.430 answers will be forthcoming.

NOTE Confidence: 0.914053976535797

00:27:30.430 --> 00:27:34.118 I realize that

NOTE Confidence: 0.914053976535797

00:27:34.118 --> 00:27:37.300 probably the next step is

NOTE Confidence: 0.914053976535797

00:27:37.300 --> 00:27:39.230 how exactly do you intervene?

NOTE Confidence: 0.914053976535797

00:27:39.230 --> 00:27:41.594 I mean, because regardless of whether

NOTE Confidence: 0.914053976535797

00:27:41.594 --> 00:27:44.248 you could tell me that

NOTE Confidence: 0.914053976535797

00:27:44.250 --> 00:27:46.945 I'm more likely to have a cytokine

NOTE Confidence: 0.914053976535797

00:27:46.945 --> 00:27:49.264 storm response, or I'm more likely

NOTE Confidence: 0.914053976535797

00:27:49.264 --> 00:27:51.194 to have an adaptive response,

NOTE Confidence: 0.914053976535797

00:27:51.200 --> 00:27:53.895 are there ways that we can intervene

NOTE Confidence: 0.914053976535797

00:27:53.900 --> 00:27:55.994 that would help us to

NOTE Confidence: 0.914053976535797

00:27:55.994 --> 00:27:58.140 have a better immune response,

NOTE Confidence: 0.914053976535797

00:27:58.140 --> 00:28:01.268 whether to COVID-19 or anything else

NOTE Confidence: 0.914053976535797

00:28:01.270 --> 00:28:04.390 whether that intervention is a

NOTE Confidence: 0.914053976535797

00:28:04.390 --> 00:28:08.234 drug or some sort of

NOTE Confidence: 0.914053976535797

00:28:08.234 --> 00:28:10.474 intervention like that or whether

NOTE Confidence: 0.914053976535797

00:28:10.474 --> 00:28:12.898 it would be something like

NOTE Confidence: 0.914053976535797

00:28:12.900 --> 00:28:14.970 a particular dietary

NOTE Confidence: 0.914053976535797

00:28:14.970 --> 00:28:17.040 intervention or getting more exercise,

NOTE Confidence: 0.914053976535797

00:28:17.040 --> 00:28:19.833 which seems to be the cure all

NOTE Confidence: 0.914053976535797

00:28:19.833 --> 00:28:21.960 for everything these days and

NOTE Confidence: 0.914053976535797

00:28:21.960 --> 00:28:24.486 certainly would help with the BMI,

NOTE Confidence: 0.914053976535797

00:28:24.490 --> 00:28:26.980 at least in men,

NOTE Confidence: 0.914053976535797

00:28:26.980 --> 00:28:29.050 do we have a sense

NOTE Confidence: 0.914053976535797

00:28:29.050 --> 00:28:31.906 either from your current work or from

NOTE Confidence: 0.914053976535797

00:28:31.906 --> 00:28:34.728 your previous work of what things might

NOTE Confidence: 0.914053976535797

00:28:34.728 --> 00:28:37.740 actually be helpful in terms of changing,

NOTE Confidence: 0.914053976535797

00:28:37.740 --> 00:28:40.224 or even is it possible to

NOTE Confidence: 0.914053976535797

00:28:40.224 --> 00:28:41.466 change people's innate

NOTE Confidence: 0.914053976535797

00:28:41.470 --> 00:28:43.325 immune response from one that

NOTE Confidence: 0.914053976535797

00:28:43.325 --> 00:28:46.160 is a cytokine storm to being a

NOTE Confidence: 0.914053976535797

00:28:46.160 --> 00:28:47.968 more adaptive immune response.

NOTE Confidence: 0.91178023815155

00:28:48.660 --> 00:28:51.936 Yes, there are ways to intervene.

NOTE Confidence: 0.91178023815155

00:28:51.940 --> 00:28:54.754 For instance, I mentioned that men

NOTE Confidence: 0.91178023815155

00:28:54.754 --> 00:28:57.164 who developed cell immunity

NOTE Confidence: 0.91178023815155

00:28:57.164 --> 00:28:59.888 tend to do worse from COVID-19.

NOTE Confidence: 0.91178023815155

00:28:59.890 --> 00:29:03.877 What this tells us is that we should be

NOTE Confidence: 0.91178023815155

00:29:03.877 --> 00:29:06.968 enhancing their T cell response in order

NOTE Confidence: 0.91178023815155

00:29:06.968 --> 00:29:11.117 for older men to fight this disease better.

NOTE Confidence: 0.91178023815155

00:29:11.120 --> 00:29:15.701 So a vaccine that might stimulate good T cell

NOTE Confidence: 0.91178023815155

00:29:15.701 --> 00:29:19.604 response might be a way to at least prevent

NOTE Confidence: 0.91178023815155

00:29:19.610 --> 00:29:22.070 future infection

NOTE Confidence: 0.91178023815155

00:29:22.070 --> 00:29:24.530 and disease in older men,

NOTE Confidence: 0.91178023815155

00:29:24.530 --> 00:29:27.548 and similarly women who have these

NOTE Confidence: 0.91178023815155

00:29:27.548 --> 00:29:30.429 cytokine storms tend to do worse

NOTE Confidence: 0.91178023815155

00:29:30.430 --> 00:29:34.366 even if they had good T cell immunity.

NOTE Confidence: 0.91178023815155

00:29:34.370 --> 00:29:36.950 So this means that interventions

NOTE Confidence: 0.91178023815155

00:29:36.950 --> 00:29:39.530 such as monoclonal antibodies to

NOTE Confidence: 0.91178023815155

00:29:39.618 --> 00:29:42.096 block cytokines might be a good

NOTE Confidence: 0.91178023815155

00:29:42.096 --> 00:29:44.923 option for women who already exhibit

NOTE Confidence: 0.91178023815155

00:29:44.923 --> 00:29:47.648 early levels of these cytokines,

NOTE Confidence: 0.91178023815155

00:29:47.650 --> 00:29:50.620 and getting back to other interventions,

NOTE Confidence: 0.91178023815155

00:29:50.620 --> 00:29:53.210 non hospital interventions,

NOTE Confidence: 0.91178023815155

00:29:53.210 --> 00:29:55.820 obviously getting exercise and getting

NOTE Confidence: 0.91178023815155

00:29:55.820 --> 00:29:59.013 enough sleep and reducing

NOTE Confidence: 0.91178023815155

00:29:59.013 --> 00:30:02.019 stress is in general very helpful,

NOTE Confidence: 0.91178023815155

00:30:02.020 --> 00:30:05.128 but we've also done a study

NOTE Confidence: 0.91178023815155

00:30:05.128 --> 00:30:07.200 where we fed animals

NOTE Confidence: 0.91178023815155

00:30:07.200 --> 00:30:09.835 ketogenic diets and ketogenic diets

NOTE Confidence: 0.91178023815155

00:30:09.835 --> 00:30:13.040 protected these mice from disease that

NOTE Confidence: 0.91178023815155

00:30:13.040 --> 00:30:14.992 happened after influenza infection

NOTE Confidence: 0.91178023815155

00:30:14.992 --> 00:30:18.567 and what the impact it had was

NOTE Confidence: 0.91178023815155

00:30:18.567 --> 00:30:21.207 interesting because it increased these

NOTE Confidence: 0.91178023815155

00:30:21.210 --> 00:30:22.596 innate like lymphocytes,

NOTE Confidence: 0.91178023815155

00:30:22.596 --> 00:30:25.830 the Gamma Delta T cells in the

NOTE Confidence: 0.91178023815155

00:30:25.920 --> 00:30:28.368 lung and they were better able

NOTE Confidence: 0.91178023815155

00:30:28.368 --> 00:30:30.362 to fight off influenza infection,

NOTE Confidence: 0.91178023815155

00:30:30.362 --> 00:30:32.784 so there may be a dietary way

NOTE Confidence: 0.91178023815155

00:30:32.784 --> 00:30:34.991 of preventing severe diseases

NOTE Confidence: 0.91178023815155

00:30:34.991 --> 00:30:36.785 from respiratory infections.

NOTE Confidence: 0.936154901981354

00:30:47.240 --> 00:30:49.991 If you have questions the address is

NOTE Confidence: 0.936154901981354

00:30:49.991 --> 00:30:51.566 canceranswers@yale.edu and past editions

NOTE Confidence: 0.936154901981354

00:30:51.566 --> 00:30:54.246 of the program are available in audio and

NOTE Confidence: 0.936154901981354

00:30:54.246 --> 00:30:56.320 written form at Yalecancercenter.org.

NOTE Confidence: 0.936154901981354

00:30:56.320 --> 00:30:58.976 We hope you'll join us next week to

NOTE Confidence: 0.936154901981354

00:30:58.976 --> 00:31:01.542 learn more about the fight against

NOTE Confidence: 0.936154901981354

00:31:01.542 --> 00:31:05.088 cancer here on Connecticut public radio.