WEBVTT

1 00:00:00.000 --> 00:00:05.830 Goes into the patient with sleep apnea and we worried about bacteria.

2 00:00:05.830 --> 00:00:14.878 We worried about pollens and dust and we worried about humidity and all of to deal with all of those things.

3 00:00:14.878 --> 00:00:23.370 The machines have built-in filters that really filter the air going into the device.

4 00:00:23.370 --> 00:00:30.160 On the other hand, we have worried but way less about what leaves the patient.

5 00:00:30.160 --> 00:00:33.692 After all, what actually leaves the patient?

6 00:00:33.692 --> 00:00:38.557 What leaves the patient and goes into the environment is air,

7 00:00:38.557 --> 00:00:42.246 which contains carbon dioxide and water vapor,

8 00:00:42.246 --> 00:00:46.820 and that's really all we ever thought about.

9 00:00:46.820 --> 00:00:51.304 Well there are so. In order to deal with with the CO2,

10 00:00:51.304 --> 00:00:58.073 for example, there are two reasons why all conventionals C pap systems have leaks.

11 00:00:58.073 --> 00:01:09.328 They all have built-in leaks and this has been true from Day 1 from 1985 when commercial machines became available and they have a leaks.

12 00:01:09.328 --> 00:01:16.829 In order to wash away exhaled carbon dioxide to reduce the risk of carbon dioxide retention.

13 00:01:16.829 --> 00:01:20.796 And that was the real problem in the early days of of C Pap,

14 00:01:20.796 --> 00:01:28.540 we tried to use peep and other systems and what we did was we made the patient sick with ceiling to retention.

15 00:01:28.540 --> 00:01:35.578 And the other reason to have a built-in leak into the system is that if the Cpac Machine fails,

16 00:01:35.578 --> 00:01:38.659 let's save the electrical power goes off,

17 00:01:38.659 --> 00:01:42.984 or that gets unplugged, or the machine breaks or whatever.

18 00:01:42.984 --> 00:01:44.817 So if the machine fails,

19 00:01:44.817 --> 00:01:53.103 the patient can actually breathe and we really haven't thought much about this leak for 30 five years until now.

20 00:01:53.103 --> 00:01:55.156 With Isco VAT 19 infection.

21 00:01:55.156 --> 00:01:57.650 So I started to worry about this,

22 00:01:57.650 --> 00:02:00.239 so I started to worry about this.

23 00:02:00.239 --> 00:02:07.272 A March 10th, 2020 in it and I actually remember the exact date at that time there were zero cases at Yale,

24 00:02:07.272 --> 00:02:10.985 New Haven Hospital, and I'll talk more about that later,

25 00:02:10.985 --> 00:02:14.379 but I was not the only one who is concerned.

26 00:02:14.379 --> 00:02:22.849 Um, so this is now a from a website from the Kaiser Permanente.

27 00:02:22.849 --> 00:02:26.919 When used for pressure support or as a ventilator path,

28 00:02:26.919 --> 00:02:29.753 they were writing about this official.

29 00:02:29.753 --> 00:02:34.913 Since scientists have known for years that when used with a face mask,

30 00:02:34.913 --> 00:02:42.616 such alternative devices can possibly increase the spread of infectious disease that are by error sizing.

31 00:02:42.616 --> 00:02:47.610 The virus weather used in the hospital or at home.

32 00:02:47.610 --> 00:02:52.444 First responders called to the life care center of Kirkland.

33 00:02:52.444 --> 00:02:57.122 This is in the state of Washington starting February 24th.

34 00:02:57.122 --> 00:03:05.763 Initially used C pap machines to treat residents before it was known that they were infected with the virus.

35 00:03:05.763 --> 00:03:17.969 In other words, the first responders had been using C Pap to support patients and they were really infecting themselves and this is at the very beginning.

36 00:03:17.969 --> 00:03:21.659 Of the epidemic in United States.

37 00:03:21.659 --> 00:03:26.405 So, so here we're looking at Cove it 19 at my hospital.

38 00:03:26.405 --> 00:03:29.116 What happened to the data here?

39 00:03:29.116 --> 00:03:32.460 It sort of has vanished.

40 00:03:32.460 --> 00:03:40.384 So basically, uh, in the last month there have been 0 cases at the beginning of the month,

41 00:03:40.384 --> 00:03:45.784 and as of yesterday I don't know why this is not moving here.

42 00:03:45.784 --> 00:03:51.689 Let me just. So that's what you should be looking at right now.

43 00:03:51.689 --> 00:03:54.240 Can you see that?

44 00:03:54.240 --> 00:03:58.080 Yes, OK. For some reason the there we go,

45 00:03:58.080 --> 00:04:00.459 the graph just showed up.

46 00:04:00.459 --> 00:04:11.981 So about a month ago they were like 0 cases and there was not not a real issue and this is what has happened until yesterday.

47 00:04:11.981 --> 00:04:15.823 So by yesterday we went from zero to 328,

48 00:04:15.823 --> 00:04:25.060 admitted patients in our hospital and 58 patients were on ventilators yesterday and so this has been.

49 00:04:25.060 --> 00:04:29.466 Dramatic change and all of a sudden you know Cove.

50 00:04:29.466 --> 00:04:32.490 It has really overtaken all of us,

51 00:04:32.490 --> 00:04:38.797 so when we think about patients with an infection or any patient at all,

52 00:04:38.797 --> 00:04:43.029 patients produce two types of potential airborne.

53 00:04:43.029 --> 00:04:49.762 Um carriers virus carriers. One are droplets and the droplets are produced by coughing.

54 00:04:49.762 --> 00:05:02.918 Sneezing droplets are relatively large and they really dropped quickly and I'll give you some data on that later and they also produce what are called bio aerosols and the

55 00:05:02.918 --> 00:05:06.132 these aerosols are produced by breathing,

56 00:05:06.132 --> 00:05:09.110 for example, when you go out.

57 00:05:09.110 --> 00:05:14.607 An an in very cold weather and you see steam emanating from your body.

58 00:05:14.607 --> 00:05:17.702 Those are really aerosols and speaking,

59 00:05:17.702 --> 00:05:26.259 and these bio aerosols are much smaller and they can remain suspended for much longer periods of time.

60 00:05:26.259 --> 00:05:29.394 So looking at particle size is OK,

61 00:05:29.394 --> 00:05:38.980 so these are the kinds of particle size is that have to do with the respire Tori system in our discussion.

62 00:05:38.980 --> 00:05:45.341 So viruses that are really on the bottom left of this are quite small.

63 00:05:45.341 --> 00:05:56.269 Their extremely small and this slide here shows how long it takes for a particle of different sizes to settle to drop and.

64 00:05:56.269 --> 00:06:03.901 This is a study that looks at how quickly they will settled by 5 feet,

65 00:06:03.901 --> 00:06:10.350 so an extremely small particle of a hot half a micro meter.

66 00:06:10.350 --> 00:06:14.221 It can stay suspended for 41 hours.

67 00:06:14.221 --> 00:06:27.120 You know that's a long time and one micro Micron up to 12 hours to drop by 5 feet and this is data that comes from OSHA.

68 00:06:27.120 --> 00:06:35.298 And So what we're talking about are particles that can potentially hang around for a long period of time.

69 00:06:35.298 --> 00:06:36.762 So if you look at,

70 00:06:36.762 --> 00:06:41.005 for example, the droplets, which would be much bigger,

71 00:06:41.005 --> 00:06:46.483 they actually will hang around for somewhere between 5 and 10 seconds.

72 00:06:46.483 --> 00:06:49.954 So basically things coming from the patient,

73 00:06:49.954 --> 00:06:55.278 things coming out of the see pap machine are going to be in the air.

74 00:06:55.278 --> 00:07:02.137 Depending on their size. So here's what we're going to talk about in the next hour.

75 00:07:02.137 --> 00:07:04.853 I'm going to present a case of,

76 00:07:04.853 --> 00:07:18.771 uh, of a sleep apnea patients who was infected with COVID-19 and then Robert Thomas is going to present the problems of treating these patients and then at the end

77 00:07:18.771 --> 00:07:25.901 of this, I hope to have a wide open discussion and you'll be able to ask questions.

78 00:07:25.901 --> 00:07:28.641 Bye bye. At the bottom of your screen,

79 00:07:28.641 --> 00:07:38.403 it should be able. It should say chat and if you have a question the the chat will allow you to ask a question or if there aren't the Zillion

80 00:07:38.403 --> 00:07:42.184 people we can have, you actually speak your questions.

81 00:07:42.184 --> 00:07:46.170 So here are going to be the rules of engagement for this.

82 00:07:46.170 --> 00:07:49.538 Uh, no recording or photographing the interview.

83 00:07:49.538 --> 00:07:57.649 You will be shown I'm going to show you an interview of a patient and he has given both written and verbal permission.

84 00:07:57.649 --> 00:07:59.958 For us to be used in this session,

85 00:07:59.958 --> 00:08:01.737 and while we're, you know,

86 00:08:01.737 --> 00:08:09.980 during the session itself, I'd like you to mute your microphone and then identify yourself when you are speaking.

87 00:08:09.980 --> 00:08:12.014 So I bought a month ago.

88 00:08:12.014 --> 00:08:18.199 Um, I. I received notification from Yale that I was to work at home.

89 00:08:18.199 --> 00:08:28.879 And this is my new office for a variety of reasons I had to set up in the dining room because Yale wanted the background of my what the patient

90 00:08:28.879 --> 00:08:30.956 saw to look sort of normal.

91 00:08:30.956 --> 00:08:38.076 Where's my own office? Upstairs is a total disaster with books all over the place and so forth.

92 00:08:38.076 --> 00:08:39.706 So this is my office.

93 00:08:39.706 --> 00:08:43.933 So in order to have this office on my dining room table,

94 00:08:43.933 --> 00:08:47.197 I actually resurrected an 11 year old iMac,

95 00:08:47.197 --> 00:08:49.200 which to my great surprise.

96 00:08:49.200 --> 00:08:53.649 Actually still work, although I couldn't update a damn thing on it.

97 00:08:53.649 --> 00:08:57.091 And I also had an iPad running Kanton.

98 00:08:57.091 --> 00:09:10.419 Ocanto is the program that connects to epic in our system and this is where I see the patient and the patient sees me because all of our visitors have

99 00:09:10.419 --> 00:09:17.480 becomes telemedicine visits, and I'm guessing that's true for many of you here.

100 00:09:17.480 --> 00:09:23.659 So, so I've been doing telemedicine visits for several weeks and then.

101 00:09:23.659 --> 00:09:32.618 This patient shows up on my schedule and how did it come about so the patient was set up for a face to face visit?

102 00:09:32.618 --> 00:09:36.746 Because because he had not been compliant with Cpac.

103 00:09:36.746 --> 00:09:48.354 Now, for those of you who are not familiar with with insurance companies and see Ms if a patient does not compliant sometime between 31 and 90 days,

104 00:09:48.354 --> 00:09:51.703 there's a threat to take away the machine.

105 00:09:51.703 --> 00:09:54.539 But there's much more to the story.

106 00:09:54.539 --> 00:09:57.279 So this is our patient.

107 00:09:57.279 --> 00:09:59.813 He's a 40 year old that I saw.

108 00:09:59.813 --> 00:10:03.493 I saw him literally a bottle week ago today.

109 00:10:03.493 --> 00:10:09.870 Actually 6 days ago, a 40 year old male patient web designer who in November,

110 00:10:09.870 --> 00:10:12.976 November 20th presented with snoring,

111 00:10:12.976 --> 00:10:16.409 sleepiness and obesity. January the 13th.

112 00:10:16.409 --> 00:10:26.440 He had a home sleep test which showed he had moderate obstructive apnea with the respire Tori event index of 16.9.

113 00:10:26.440 --> 00:10:31.254 With an 8 year auction saturation of 81%

114 00:10:31.254 --> 00:10:39.860 and he was prescribed C Pap of between 5 and 15 on auto pap 5 to 50.

115 00:10:39.860 --> 00:10:50.472 So January the 30th, he phones up and leaves a message saying that he had been using the machine for six days and it feels like he's suffocating and just

116 00:10:50.472 --> 00:10:52.816 that he's not getting enough air.

117 00:10:52.816 --> 00:10:56.260 So we changed the pressure to 10 to 20 auto path,

118 00:10:56.260 --> 00:11:00.947 10 to 20 and then he had on March the second he had an acclimation,

119 00:11:00.947 --> 00:11:09.423 visited our clinic and finally they were able to get a pressure that he was comfortable with and the mask was comfortable.

120 00:11:09.423 --> 00:11:11.559 And here exactly a month later.

121 00:11:11.559 --> 00:11:18.389 He's on my video visit schedule because he has not been compliant.

122 00:11:18.389 --> 00:11:26.977 So here's the interview and I just wanted to let you know that I received permission from the patient to do this interview.

123 00:11:26.977 --> 00:11:28.293 How did I do this?

124 00:11:28.293 --> 00:11:30.580 So as I mentioned, I had my iPad.

125 00:11:30.580 --> 00:11:34.063 Can't on my iPad I could see the patient.

126 00:11:34.063 --> 00:11:46.177 I could speak to the patient and I just used my cell phone to actually take a picture of the patient while I was chatting with him and let's just

127 00:11:46.177 --> 00:11:57.432 see if this works. Afternoon Mr Hobart This is Doctor Krieger from the sleep disorder center and I just want to make sure that I have permission to use this

128 00:11:57.432 --> 00:12:08.682 interview for teaching purposes 'cause I think you have a story to tell that people would find very helpful in this crisis so I'm just going to begin to front

129 00:12:08.682 --> 00:12:12.856 end here. You were diagnosed with sleep apnea in December.

130 00:12:12.856 --> 00:12:15.403 We stop breathing 16 times an hour.

131 00:12:15.403 --> 00:12:17.879 We started you on C Pap and by the.

132 00:12:17.879 --> 00:12:21.868 And we end by the time you got a Mass that work.

133 00:12:21.868 --> 00:12:26.587 Shortly thereafter, you developed a pretty bad situation.

134 00:12:26.587 --> 00:12:28.865 Can you tell us about that?

135 00:12:28.865 --> 00:12:31.878 What happened November not November,

136 00:12:31.878 --> 00:12:34.460 March 12.

137 00:12:34.460 --> 00:12:40.769 Yeah, absolutely. March the 12th I believe was the day I contracted the Chrome virus.

138 00:12:40.769 --> 00:12:45.666 Um? I I don't know if that was the exact day,

139 00:12:45.666 --> 00:12:53.628 but I believe it was my friend who I had on my safe list basically of friends that I was at that time.

140 00:12:53.628 --> 00:13:04.062 They were telling us we could say for being groups of 10 I think it was as long as we were keeping group small and I was with a friend

141 00:13:04.062 --> 00:13:07.899 that was on my safe list who was later diagnosed.

142 00:13:07.899 --> 00:13:11.970 A few days after that with the virus.

143 00:13:11.970 --> 00:13:16.381 The day that he had called me with his results,

144 00:13:16.381 --> 00:13:19.047 I started feeling the first,

145 00:13:19.047 --> 00:13:22.355 the first symptoms of the provirus,

146 00:13:22.355 --> 00:13:25.240 and that was on that Sunday.

147 00:13:25.240 --> 00:13:27.743 Let me get that exact page for you here.

148 00:13:27.743 --> 00:13:33.440 That was Sunday. Uh the 15th.

149 00:13:33.440 --> 00:13:37.423 Send the first symptom was the shortest threat,

150 00:13:37.423 --> 00:13:45.679 so you became short of breath and did you continue to use the see pap at that time?

151 00:13:45.679 --> 00:13:49.820 I did not and why was that?

152 00:13:49.820 --> 00:14:00.260 Just just because I was scared and I just didn't know what to expect and I in that night on the 15th actually didn't sleep at all.

153 00:14:00.260 --> 00:14:02.572 Not even, not even a minute,

154 00:14:02.572 --> 00:14:06.557 because I I couldn't bring myself to fall asleep.

155 00:14:06.557 --> 00:14:09.985 So I felt as if I wasn't getting up there.

156 00:14:09.985 --> 00:14:14.019 So I just sat up and basically watch TV all night.

157 00:14:14.019 --> 00:14:18.639 And then what happened in with your symptoms?

158 00:14:18.639 --> 00:14:20.807 Well then they got worse.

159 00:14:20.807 --> 00:14:27.975 The cost started to develop the next day and receiver started develop the next night.

160 00:14:27.975 --> 00:14:32.059 I remember taking my temperature was already 2.7.

161 00:14:32.059 --> 00:14:35.894 And I didn't sleep that next night,

162 00:14:35.894 --> 00:14:40.120 but not with the see Pap Machine.

163 00:14:40.120 --> 00:14:42.850 And sleep is terrible at night too.

164 00:14:42.850 --> 00:14:44.293 But I did wake up,

165 00:14:44.293 --> 00:14:46.796 uh, probably two or three times.

166 00:14:46.796 --> 00:14:54.200 Very dehydrated. And uh, and the Fever remained for the next.

167 00:14:54.200 --> 00:14:58.090 Next, slide five or six days.

168 00:14:58.090 --> 00:15:05.100 He's very complicated. Did anybody else in your home develop?

169 00:15:05.100 --> 00:15:13.360 Um coronavirus infection. Yes, I believe everyone in the in my home.

170 00:15:13.360 --> 00:15:15.316 Just been through it now.

171 00:15:15.316 --> 00:15:19.980 The only other one, only one that has the actual test results.

172 00:15:19.980 --> 00:15:24.409 My wife. Uh, and push she was positive.

173 00:15:24.409 --> 00:15:27.985 Uh, but it took a long time to get the test.

174 00:15:27.985 --> 00:15:34.980 I think it was almost Seven days before she heard back from her doctor with the results.

175 00:15:34.980 --> 00:15:43.525 It actually told me as long as I was OK recovering at home to just remain at home and not to get tested.

176 00:15:43.525 --> 00:15:48.769 Actually you can. And why was your wife tested?

177 00:15:48.769 --> 00:15:51.384 She's just I guess you know,

178 00:15:51.384 --> 00:15:55.623 neurotic in a way, and in some ways with that.

179 00:15:55.623 --> 00:15:57.787 But she really had. No,

180 00:15:57.787 --> 00:16:04.340 she she called. Uh, I remember spending the better part of the day on the phone.

181 00:16:04.340 --> 00:16:07.519 Different doctors to try to.

182 00:16:07.519 --> 00:16:15.039 Try to get that text and she finally was able to get the test edit drive thru locations.

183 00:16:15.039 --> 00:16:17.996 I think in in Westport or go walk.

184 00:16:17.996 --> 00:16:26.470 Maybe it works and you have two kids and you think they have the infection as well.

185 00:16:26.470 --> 00:16:28.918 I'm leaving having as well yeah,

186 00:16:28.918 --> 00:16:31.145 they like I mentioned before,

187 00:16:31.145 --> 00:16:38.289 they they were both. Don't seem to recover quicker than immediate they had.

188 00:16:38.289 --> 00:16:42.440 Fever, cough, shortness of breath.

189 00:16:42.440 --> 00:16:50.980 Symptoms were not not as intense with them and only lasted for two or three days.

190 00:16:50.980 --> 00:16:55.570 And they have not been tested.

191 00:16:55.570 --> 00:17:07.690 There are no no. The situation now is that you are getting better and can you tell us how you know that you're getting better?

192 00:17:07.690 --> 00:17:15.530 Well. Here I mean. Like I said yesterday,

193 00:17:15.530 --> 00:17:23.051 there was there was a moment that it was almost a clearly defined moment when I felt the virus just gonna leave.

194 00:17:23.051 --> 00:17:25.119 My body was almost a.

195 00:17:25.119 --> 00:17:28.295 Spiritual experience, but if you will it was.

196 00:17:28.295 --> 00:17:34.730 It was really weird. It just left my body and I knew it was over a new at that moment.

197 00:17:34.730 --> 00:17:38.285 Then I was better and then like I said before,

198 00:17:38.285 --> 00:17:40.478 it was emotional too for me.

199 00:17:40.478 --> 00:17:45.990 But it was. I didn't need a test that you need any doctor,

200 00:17:45.990 --> 00:17:47.765 tell me I was better.

201 00:17:47.765 --> 00:17:51.473 I I knew I had that warm feeling back inside.

202 00:17:51.473 --> 00:17:53.732 I got hollow, empty, heavy,

203 00:17:53.732 --> 00:17:55.910 just sick feeling was gone.

204 00:17:55.910 --> 00:17:58.828 So in terms of of your sleep apnea,

205 00:17:58.828 --> 00:18:03.140 what I'm gonna recommend is for the time being.

206 00:18:03.140 --> 00:18:11.655 For you not to go back onto your cpac machine and the reason is we don't know whether your children actually,

207 00:18:11.655 --> 00:18:16.300 whether they had a cold or whether they had something else.

208 00:18:16.300 --> 00:18:24.730 And the problem with C Pap is that with the circuits it might actually spread the virus in your home.

209 00:18:24.730 --> 00:18:26.843 So for the time being,

210 00:18:26.843 --> 00:18:29.599 because you're asking is mile.

211 00:18:29.599 --> 00:18:37.644 Stay off of the see Pap Machine and hopefully everybody is going to recover a example here.

212 00:18:37.644 --> 00:18:40.180 Well on the road to recovery.

213 00:18:40.180 --> 00:18:45.385 So that's what we're going to recommend at this time,

214 00:18:45.385 --> 00:18:48.086 and if anything gets worse,

215 00:18:48.086 --> 00:18:52.520 make sure you instantly contact your doctors,

216 00:18:52.520 --> 00:18:55.373 OK? Alright, Yeah so so.

217 00:18:55.373 --> 00:19:01.794 Anyways, thank you for letting me a video tape this and your story.

218 00:19:01.794 --> 00:19:07.339 I think people will find very educational.

219 00:19:07.339 --> 00:19:11.488 So thanks. Thank you very much Mr.

220 00:19:11.488 --> 00:19:13.730 Hobart bye bye.

221 00:19:13.730 --> 00:19:18.151 Thank you so so I hope you can hear me now.

222 00:19:18.151 --> 00:19:21.467 So I spoke to the patient today.

223 00:19:21.467 --> 00:19:25.989 He's better. His wife isn't quite cured yet.

224 00:19:25.989 --> 00:19:32.319 The children are 100% back to normal and his wife is maybe 80%

225 00:19:32.319 --> 00:19:35.736 normal so that was the interview.

226 00:19:35.736 --> 00:19:38.449 Now. Now on April the 1st.

227 00:19:38.449 --> 00:19:44.880 So we're talking about roughly the date that I saw this patient.

228 00:19:44.880 --> 00:19:47.864 This came out from the National Academies of Sciences,

229 00:19:47.864 --> 00:19:59.707 engineering, and Madison. And this this national resort resource was asked to talk about whether or not patients are infectious.

230 00:19:59.707 --> 00:20:03.901 And so I've highlighted parts of the report.

231 00:20:03.901 --> 00:20:08.279 So this is a letter that went to the president.

232 00:20:08.279 --> 00:20:22.369 The task force currently available research suggests the possibility that the virus could be spread by bio aerosols generated directly by patients exhalation.

233 00:20:22.369 --> 00:20:26.289 And further on it goes and it gives some data.

234 00:20:26.289 --> 00:20:42.079 A recent study of the of the Kovid Air socialization at University of Nebraska Medical Center showed widespread presence of viral RNA in isolation rooms where patients with SARS.

235 00:20:42.079 --> 00:20:51.112 Over two were receiving care of note air collectors positioned more than six feet from each of the two patients,

236 00:20:51.112 --> 00:20:54.480 yielded samples positive for RNA.

237 00:20:54.480 --> 00:20:57.980 And it's also worth mentioning that they were positive,

238 00:20:57.980 --> 00:21:01.190 even though the patients were not coughing.

239 00:21:01.190 --> 00:21:09.282 So anecdotally, the highest airborne RNA concentrations were recorded by personal samplers,

240 00:21:09.282 --> 00:21:14.738 while a patient was receiving oxygen through a nasal cannula.

241 00:21:14.738 --> 00:21:21.510 In other words, the nasal cannulas seemed to be spreading the virus as well.

242 00:21:21.510 --> 00:21:31.539 So here's a chronology of how we got to finally talk about this and that takes us to the rest of the presentation.

243 00:21:31.539 --> 00:21:41.972 So on March the 11th I started to think about and inquire about pack circuits that could reduce shedding a virus,

244 00:21:41.972 --> 00:21:45.634 an amazingly it couldn't find anything.

245 00:21:45.634 --> 00:21:50.210 I contacted a bunch of of Artie's representatives.

246 00:21:50.210 --> 00:21:57.810 Several manufacturers I see all of a path company and this is something that everybody was concerned about.

247 00:21:57.810 --> 00:22:02.079 What they really weren't a whole bunch of answers.

248 00:22:02.079 --> 00:22:04.010 By March 24th eye contact,

249 00:22:04.010 --> 00:22:15.460 I contacted the doctor Robert Thomas and we discussed the issue and we decided to work on a document highlighting the issue and and a proposed solution.

250 00:22:15.460 --> 00:22:20.722 So this is a terrific picture of Doctor Thomas and and he's,

251 00:22:20.722 --> 00:22:22.621 uh, and I'm going to.

252 00:22:22.621 --> 00:22:29.092 I'm going to stop my share and hopefully doctor Thomas is gonna take over,

253 00:22:29.092 --> 00:22:34.009 and Doctor Thomas is an associate professor of Medicine,

254 00:22:34.009 --> 00:22:45.726 Harvard Medical School and. I'm going to pass the baton to him and I'm going to stop the share if I can get my mouse to go into that whole

255 00:22:45.726 --> 00:22:49.105 thing there, OK? So Robert,

256 00:22:49.105 --> 00:22:50.900 it's all yours.

257 00:22:50.900 --> 00:22:58.349

258 00:22:58.349 --> 00:23:01.539 OK, you might have to unmute yourself.

259 00:23:01.539 --> 00:23:08.930 Robert, can you unmute yourself?

260 00:23:08.930 --> 00:23:18.930

261 00:23:18.930 --> 00:23:22.140 Can you hear me now?

262 00:23:22.140 --> 00:23:28.789 Perfectly now yeah. OK. So you go ahead.

263 00:23:28.789 --> 00:23:37.986 OK. So. Oh I made the.

264 00:23:37.986 --> 00:23:41.147 I'm not sure I would call a mistake,

265 00:23:41.147 --> 00:23:43.980 but I took a chance and.

266 00:23:43.980 --> 00:23:46.218 Sent out a message on patient site,

267 00:23:46.218 --> 00:23:49.250 which is our patient gateway to about.

268 00:23:49.250 --> 00:23:52.549 2000 patients of mine.

269 00:23:52.549 --> 00:23:55.309 Trying to give them some.

270 00:23:55.309 --> 00:24:01.028 I was only getting some emails about what to do if I get kernel iris and such.

271 00:24:01.028 --> 00:24:09.759 So I sent out an email with my thoughts of that time which roughly similar to what I will share with you now.

272 00:24:09.759 --> 00:24:14.380 And of course, I gotta avalanche of return emails.

273 00:24:14.380 --> 00:24:17.449 Um? Made me regret transiently,

274 00:24:17.449 --> 00:24:21.349 anyway, why did that, but ultimately it was useful in.

275 00:24:21.349 --> 00:24:25.090 Um, preventing further anxieties in the group,

276 00:24:25.090 --> 00:24:29.859 as well as giving some ideas as to what folks where.

277 00:24:29.859 --> 00:24:36.950 Concerned about and what what possibilities can be offered for such a patience?

278 00:24:36.950 --> 00:24:43.569 If I can do my slide right so the challenges I see are.

279 00:24:43.569 --> 00:24:51.248 Common symptom overlap. So we've been doing telemedicine setting up new patients,

280 00:24:51.248 --> 00:24:55.611 and of course they're going to have operated with symptoms,

281 00:24:55.611 --> 00:24:57.720 so no later mouth breathing,

282 00:24:57.720 --> 00:25:02.309 dry mouth, stuffy nose, it's allergy season.

283 00:25:02.309 --> 00:25:05.059 Behind why this is around.

284 00:25:05.059 --> 00:25:11.736 So and not everybody can just walk to some spot and get the rabbit test done.

285 00:25:11.736 --> 00:25:15.690 Not yet anyway. So we're going to have.

286 00:25:15.690 --> 00:25:19.296 C pap related or populated direct effects,

287 00:25:19.296 --> 00:25:23.650 which can overlap with kernel error symptoms.

288 00:25:23.650 --> 00:25:27.710 And the usual suspects of allergy and been on viruses.

289 00:25:27.710 --> 00:25:31.194 Yes, of course. Uh, the issue of dispersion of viral particles,

290 00:25:31.194 --> 00:25:34.170 which was only touched upon.

291 00:25:34.170 --> 00:25:40.160 Uh, I gave some thought about risk stratification because not all apnea patients are the same.

292 00:25:40.160 --> 00:25:43.369 And what are the optimal alternative therapies?

293 00:25:43.369 --> 00:25:50.509 And all the messages I got from my patients forced me to spend a bit of time thinking about it and then.

294 00:25:50.509 --> 00:25:53.461 A look in the one of my fellows,

295 00:25:53.461 --> 00:25:56.029 uh? Uh.

296 00:25:56.029 --> 00:26:02.863 You know, Austin? Possible idea of inserting a filter into the circuit an literally.

297 00:26:02.863 --> 00:26:05.435 When I was answering his email,

298 00:26:05.435 --> 00:26:09.230 I got a call from Doctor Krieger and.

299 00:26:09.230 --> 00:26:12.430 We kind of follow that down a bit.

300 00:26:12.430 --> 00:26:16.039 Settings for risk stratification I.

301 00:26:16.039 --> 00:26:19.559 Uh, suggest a four risk categories,

302 00:26:19.559 --> 00:26:24.680 low, intermediate, high and extreme.

303 00:26:24.680 --> 00:26:27.056 So extreme moriscos somewhat easier.

304 00:26:27.056 --> 00:26:32.660 Anyone on went later, or who is being treated for respiratory failure.

305 00:26:32.660 --> 00:26:34.405 And many of the you know,

306 00:26:34.405 --> 00:26:38.031 several of those who responded to my broadcast email,

307 00:26:38.031 --> 00:26:42.150 actually wear on trilogy's and that type of thing.

308 00:26:42.150 --> 00:26:47.549 And they clearly are it really high risk and there's not much room for error there.

309 00:26:47.549 --> 00:26:49.176 I would come to the low risk.

310 00:26:49.176 --> 00:26:54.130 A younger individuals you can decide for yourself what you would call young.

311 00:26:54.130 --> 00:26:58.230 But perhaps less than 40.

312 00:26:58.230 --> 00:27:01.580 And biologically milder summer pure sleep apnea,

313 00:27:01.580 --> 00:27:04.730 obstructive apnea ram. Dominant apnea.

314 00:27:04.730 --> 00:27:09.577 And not severe desaturations I would call it biologically miner.

315 00:27:09.577 --> 00:27:16.160 Well, Mila because they may have lots of symptoms for sleep quality and such.

316 00:27:16.160 --> 00:27:19.795 But would they be at risk off as long as they don't dry?

317 00:27:19.795 --> 00:27:21.650 Will they be at any?

318 00:27:21.650 --> 00:27:26.299 Terrible risk by not using path as an example.

319 00:27:26.299 --> 00:27:31.103 Intermediate risk as patients who have substantial apnea,

320 00:27:31.103 --> 00:27:33.970 those you don't want to.

321 00:27:33.970 --> 00:27:38.127 Without without any form of treatment and also have high low gain apia,

322 00:27:38.127 --> 00:27:41.015 various types, periodic breathing, complex apnea,

323 00:27:41.015 --> 00:27:45.664 central sleep apnea. Uh, but otherwise in decent medical shape,

324 00:27:45.664 --> 00:27:47.953 high risk would be heart failure.

325 00:27:47.953 --> 00:27:50.511 CEO, PD and oxygen. Maybe Theo paean.

326 00:27:50.511 --> 00:27:53.869 Oxygen could be an extreme risk situation.

327 00:27:53.869 --> 00:27:57.140 So we're asthma by history.

328 00:27:57.140 --> 00:27:59.567 So now is it really bad sleep apnea?

329 00:27:59.567 --> 00:28:03.170 I have triggered acatic a red meals from apnea.

330 00:28:03.170 --> 00:28:14.190 Pregnancy epilepsy. So those are going to really high risk individuals and I was thinking how can I charge my treatment options for such individuals?

331 00:28:14.190 --> 00:28:18.460 So it turns out that many of my patients home oximeters.

332 00:28:18.460 --> 00:28:21.219 I generally don't ask about that in clinic,

333 00:28:21.219 --> 00:28:25.200 but you know what time they have got home oximeters.

334 00:28:25.200 --> 00:28:28.279 So some of them will give you a whole night.

335 00:28:28.279 --> 00:28:31.680 Uh, information. Some of them I just spot checks.

336 00:28:31.680 --> 00:28:36.219 But that's a useful thing in this day and age,

337 00:28:36.219 --> 00:28:40.565 and I'll show you some examples from Amazon,

338 00:28:40.565 --> 00:28:45.240 which I snapped. Snapshots of today,

339 00:28:45.240 --> 00:28:52.357 so low risk. I would stop by non supine sleep if their problematic insomnia.

340 00:28:52.357 --> 00:28:57.720 Short-term consideration for. A sedative.

341 00:28:57.720 --> 00:29:00.459 No, it's all paid him or something of that kind.

342 00:29:00.459 --> 00:29:04.930 It's really just to help them over the period of infection and they get better.

343 00:29:04.930 --> 00:29:07.444 And then you know things are fine of course,

344 00:29:07.444 --> 00:29:10.742 and everyone gets worse and get short of breath and so on.

345 00:29:10.742 --> 00:29:12.923 And then they deserve to go to the ER.

346 00:29:12.923 --> 00:29:15.640 They would need to do so.

347 00:29:15.640 --> 00:29:22.400 The intermediate risk, and that's the majority of the patience I have.

348 00:29:22.400 --> 00:29:27.221 Uhm, you know I would probably ask him to stop the fat.

349 00:29:27.221 --> 00:29:34.255 Get them oxygen. No considers all of mine if they're high Lookin apnea and home oximetry,

350 00:29:34.255 --> 00:29:37.460 I would consider ideal if they had that option.

351 00:29:37.460 --> 00:29:40.263 They will also sleep in a different room.

352 00:29:40.263 --> 00:29:42.267 Ideally room with the window.

353 00:29:42.267 --> 00:29:47.209 Good aeration. Stay away from their families if they don't have families,

354 00:29:47.209 --> 00:29:49.400 even better.

355 00:29:49.400 --> 00:29:55.079 Uh, extreme risk would be a pretty low threshold for hospitalization.

356 00:29:55.079 --> 00:29:56.580 Yeah, and uh, you know,

357 00:29:56.580 --> 00:30:00.708 data tracking can be done online for at least the trilogy device.

358 00:30:00.708 --> 00:30:03.085 I think. Astral also you can do that.

359 00:30:03.085 --> 00:30:08.329 And of course. Buy Pepsi and such for the high risk.

360 00:30:08.329 --> 00:30:13.073 You know? If there was not such a hospital crunch,

361 00:30:13.073 --> 00:30:19.490 you could even make a case of having them admitted their substantial coronal virus related symptoms.

362 00:30:19.490 --> 00:30:23.067 Otherwise, the state or my would like them to continue past,

363 00:30:23.067 --> 00:30:26.204 probably given supplemental oxygen. Uh,

364 00:30:26.204 --> 00:30:29.022 probably convert to a non vented filter configuration,

365 00:30:29.022 --> 00:30:31.380 which I will show in a moment.

366 00:30:31.380 --> 00:30:35.351 At home off symmetry can't get it to the home care companies,

367 00:30:35.351 --> 00:30:38.233 at least not regional home care or reliable.

368 00:30:38.233 --> 00:30:42.012 Perhaps there is a home care company or two who may do so,

369 00:30:42.012 --> 00:30:45.599 but there's too much concern about how to disinfect the.

370 00:30:45.599 --> 00:30:50.970 Oximeter the you know. The packaging,

371 00:30:50.970 --> 00:30:57.029 you name it. And it'll be certain nice to track the respiratory rate.

372 00:30:57.029 --> 00:31:00.740 So this is a kind of configuration which.

373 00:31:00.740 --> 00:31:04.009 I got a cracker and I came up with.

374 00:31:04.009 --> 00:31:13.559 And it's based around the non vented mass configuration which will be using for well 15 plus years of the Beth Israel.

375 00:31:13.559 --> 00:31:15.724 For patients with high Logan apnea,

376 00:31:15.724 --> 00:31:21.137 which helps to stabilize CO2 by allowing a little bit every breathing so you have a well,

377 00:31:21.137 --> 00:31:23.182 this is a native non vented mass,

378 00:31:23.182 --> 00:31:27.299 but we will learn how to make a lot of mass non vented.

379 00:31:27.299 --> 00:31:36.539 Uh, then you have a little bit of connection to just for ergonomics and you have a safety valve anniversary well and then the see Pap Circuit.

380 00:31:36.539 --> 00:31:41.720 Uh, some configurations are less clunky because you have the integrated safety valve.

381 00:31:41.720 --> 00:31:45.200 Uh, in the mask itself.

382 00:31:45.200 --> 00:31:48.690 And it turns out there are a large number of.

383 00:31:48.690 --> 00:31:52.040 Filters are there. And all of them,

384 00:31:52.040 --> 00:31:57.443 almost of them. It's not all of them will actually fit quite nicely into the standard tubing.

385 00:31:57.443 --> 00:31:59.799 You may or may not either connector.

386 00:31:59.799 --> 00:32:05.900 But these kinds of tubings filters are available and.

387 00:32:05.900 --> 00:32:14.592 They are, uh, uh, if you cleared with fairly stringent requirements and demonstration of filtering,

388 00:32:14.592 --> 00:32:18.406 and. How do I look at some of the FDA approval letters?

389 00:32:18.406 --> 00:32:20.421 It goes into the site and K pathway,

390 00:32:20.421 --> 00:32:22.670 but if they approved, let us.

391 00:32:22.670 --> 00:32:27.509 They have a show that it blocks 99.999%

392 00:32:27.509 --> 00:32:32.589 dusty 9th of bacteria and virus.

393 00:32:32.589 --> 00:32:38.789 Uh, I couldn't, uh, find exactly how they determine that.

394 00:32:38.789 --> 00:32:43.752 But you know, I saw the FBI letters allowing them to make that claim,

395 00:32:43.752 --> 00:32:46.210 so I'm hoping that.

396 00:32:46.210 --> 00:32:48.599 You know there was actual data.

397 00:32:48.599 --> 00:32:53.817 And there are specifications of desirability specifications,

398 00:32:53.817 --> 00:32:58.436 so these filters for using ventilators as an example.

399 00:32:58.436 --> 00:33:03.228 What flow rate, what resistance to flow is permissible?

400 00:33:03.228 --> 00:33:08.104 As an example, if you have a leak of 60 meters a minute,

401 00:33:08.104 --> 00:33:10.509 it will bump up your.

402 00:33:10.509 --> 00:33:14.359 A pressure drop. The pressure drop is less than actually a centimeter,

403 00:33:14.359 --> 00:33:16.907 so it's not like when you apply such a filter,

404 00:33:16.907 --> 00:33:18.535 you will have 10 centimeters.

405 00:33:18.535 --> 00:33:20.540 People had dropped to 5 centimeters.

406 00:33:20.540 --> 00:33:22.384 See that it's not quite that way.

407 00:33:22.384 --> 00:33:23.903 There will be a small drop,

408 00:33:23.903 --> 00:33:26.140 but not quite that way.

409 00:33:26.140 --> 00:33:29.420 And, Uh, I don't have a patient who.

410 00:33:29.420 --> 00:33:35.799 I've done this too because amazingly now my patient so far have tested.

411 00:33:35.799 --> 00:33:38.150 False do were needed to be tested.

412 00:33:38.150 --> 00:33:39.961 The cause of the symptoms.

413 00:33:39.961 --> 00:33:43.910 I guess it'll it may just be a matter of time.

414 00:33:43.910 --> 00:33:48.304 But this configuration potentially useful for not just criminalize,

415 00:33:48.304 --> 00:33:53.103 but you know influenza. Now the infections of the upper airway.

416 00:33:53.103 --> 00:33:58.109 We generate elevation you don't keep using C Pap as best you can.

417 00:33:58.109 --> 00:34:00.430 Well, this is a simple way to.

418 00:34:00.430 --> 00:34:03.730 Uh, keep the system safer.

419 00:34:03.730 --> 00:34:05.388 The filters can quite cheap,

420 00:34:05.388 --> 00:34:08.690 is less than a Buck or not more than a dollar.

421 00:34:08.690 --> 00:34:13.920 Yeah, and uh, you know they can be changed more than once a day if it gets so goofy.

422 00:34:13.920 --> 00:34:18.413 It is true that when you inhale you will be inhaling through the filter,

423 00:34:18.413 --> 00:34:22.230 so you probably inhale some of your own particles.

424 00:34:22.230 --> 00:34:26.949 But there's probably no way to escape that.

425 00:34:26.949 --> 00:34:30.349 There's a non rebreathing well.

426 00:34:30.349 --> 00:34:32.550 Uh, which could be considered?

427 00:34:32.550 --> 00:34:36.697 Uh, where, uh, it's. It'll be in the same position,

428 00:34:36.697 --> 00:34:38.914 but there will be a large leak port,

429 00:34:38.914 --> 00:34:44.547 meaning the expiration because of the increased pressure inside the circuit will be constant.

430 00:34:44.547 --> 00:34:50.610 Expert Tori flow and you'll need to throttle that expert expert Tori flow in some way too.

431 00:34:50.610 --> 00:34:58.387 Uh, prevent. Too much liq say this is the configuration in terms of oximeters available.

432 00:34:58.387 --> 00:35:03.599 I just went this morning and took some snapshots all from.

433 00:35:03.599 --> 00:35:07.532 Amazon. A Lucky Health Ring Tracker.

434 00:35:07.532 --> 00:35:17.867 Bellevue oxygen ring. Tracker all night wrist oxygen monitor via Tom Variable you can see that these are not cheap.

435 00:35:17.867 --> 00:35:20.175 199 two 1921 nine, 159 uh,

436 00:35:20.175 --> 00:35:24.840 they're pretty. They're kind of serious devices.

437 00:35:24.840 --> 00:35:30.072 But they will give you a full oximeter.

438 00:35:30.072 --> 00:35:32.949 Well report in an app.

439 00:35:32.949 --> 00:35:36.880 Some of them animated buzz if it drops below a certain level.

440 00:35:36.880 --> 00:35:44.030 So it looks like the home oximetry situation may be getting more sophisticated than we actually think.

441 00:35:44.030 --> 00:35:47.670 No, no, so as examples of those.

442 00:35:47.670 --> 00:35:52.900 Download discuss 3 cases which icon for the last couple of weeks.

443 00:35:52.900 --> 00:35:57.809 So the first one is 50 audio gentleman with quite severe OSA.

444 00:35:57.809 --> 00:36:00.918 And Lo and behold, he develops fever,

445 00:36:00.918 --> 00:36:04.581 sore throat. And to make matters interesting,

446 00:36:04.581 --> 00:36:08.400 he also developed acute diverticulitis.

447 00:36:08.400 --> 00:36:12.070 But there's no lower respiratory symptoms at all.

448 00:36:12.070 --> 00:36:14.500 Are you starting on uh?

449 00:36:14.500 --> 00:36:20.019 Uh, augmentin by his PCP for the diverticulitis.

450 00:36:20.019 --> 00:36:21.855 And, uh, here, so home oximeter.

451 00:36:21.855 --> 00:36:24.469 So we track that he moved to an isolated room.

452 00:36:24.469 --> 00:36:29.094 Continue tracking. And, uh. You know it.

453 00:36:29.094 --> 00:36:31.347 He settled down fairly quickly,

454 00:36:31.347 --> 00:36:34.655 the fever, maybe? It was acute diverticulitis.

455 00:36:34.655 --> 00:36:38.300 Maybe it was coronavirus will never know.

456 00:36:38.300 --> 00:36:41.778 Uh, but uh, if not for the acute diverticulitis,

457 00:36:41.778 --> 00:36:45.710 I guess the case of carnivalist stronger.

458 00:36:45.710 --> 00:36:49.130 But we just don't know.

459 00:36:49.130 --> 00:36:52.340 Asking to keep using his see pap.

460 00:36:52.340 --> 00:36:57.550 The second patient has. And the more moderate sleep apnea.

461 00:36:57.550 --> 00:37:00.010 But get good clinical benefit from it.

462 00:37:00.010 --> 00:37:09.150 Anne has severe asthma. Every year hospitalization on Indian or late modulation therapy.

463 00:37:09.150 --> 00:37:11.456 And he was now starting to have,

464 00:37:11.456 --> 00:37:13.692 as usual, summer spring asthma.

465 00:37:13.692 --> 00:37:16.130 Flare was coming up.

466 00:37:16.130 --> 00:37:26.730 And he was. Really worried because his flair often there will be some fever and upper respiratory tract symptoms and.

467 00:37:26.730 --> 00:37:31.219 You know there was no simple way to know whether his.

468 00:37:31.219 --> 00:37:36.210 Lower etc sentence where he asked know whether it was the current virus.

469 00:37:36.210 --> 00:37:38.501 So I decided we decided that we will,

470 00:37:38.501 --> 00:37:46.409 of course, in all these instances I communicate with the primary care physician and we make a kind of conjoined decision.

471 00:37:46.409 --> 00:37:48.800 He also had an oximeter.

472 00:37:48.800 --> 00:37:51.460 Not surprising because of his asthma.

473 00:37:51.460 --> 00:37:56.266 So we settled on tracking and I nearly ended up adding oxygen.

474 00:37:56.266 --> 00:37:58.554 But then it's flair subsided,

475 00:37:58.554 --> 00:38:02.059 but he would be a person I would early.

476 00:38:02.059 --> 00:38:05.039 Not wanting to stop. Fat,

477 00:38:05.039 --> 00:38:06.960 but I would add oxygen.

478 00:38:06.960 --> 00:38:09.449 Uh, and uh?

479 00:38:09.449 --> 00:38:16.590 No, no, maybe I would use a non vented option transiently for filtering.

480 00:38:16.590 --> 00:38:20.889 And then I will patiently with a physician pediatrician.

481 00:38:20.889 --> 00:38:24.929 Uh, interesting story here. That MA.

482 00:38:24.929 --> 00:38:31.590 About 20 years ago, but he had substantial vegetables and lap near.

483 00:38:31.590 --> 00:38:36.581 Um? Non vented mass configuration actually work quite well,

484 00:38:36.581 --> 00:38:39.210 but it made him feel little odd.

485 00:38:39.210 --> 00:38:42.905 Uh, so he just using a rented mask at the low pressure side,

486 00:38:42.905 --> 00:38:46.380 sleeping. Here's some degree of residual apnea.

487 00:38:46.380 --> 00:38:49.264 We tried using low dose episode made in the past.

488 00:38:49.264 --> 00:38:53.369 He developed vasculitic computer skin vasculitis.

489 00:38:53.369 --> 00:38:55.045 But he but he, you know,

490 00:38:55.045 --> 00:38:57.255 specially called me up and said,

491 00:38:57.255 --> 00:39:00.380 what should I do if I get symptoms?

492 00:39:00.380 --> 00:39:05.099 Uh I said, well I would probably just use oxygen.

493 00:39:05.099 --> 00:39:07.034 Uh, with the filter configuration,

494 00:39:07.034 --> 00:39:08.750 and if he can't tolerate that,

495 00:39:08.750 --> 00:39:11.619 stop the path and just use oxygen.

496 00:39:11.619 --> 00:39:15.065 Now the patient with all appliance who said what should I do?

497 00:39:15.065 --> 00:39:19.409 I said well just use soap and water on your plants everyday.

498 00:39:19.409 --> 00:39:22.385 He also has some upper every sentence,

499 00:39:22.385 --> 00:39:27.300 but. Has not been tested and doesn't look like.

500 00:39:27.300 --> 00:39:29.663 Uh, once testing is more freely available,

501 00:39:29.663 --> 00:39:32.960 will probably have patience with my symptoms calling us up,

502 00:39:32.960 --> 00:39:35.659 but whether we will get to that?

503 00:39:35.659 --> 00:39:38.210 Quickly I just don't know.

504 00:39:38.210 --> 00:39:46.829 So these are my 3 cases and hopefully none of the patients on ventilator.

505 00:39:46.829 --> 00:39:53.940 Melanie has a bunch of patients on ventilator and hopefully none of them will develop compatible symptoms.

506 00:39:53.940 --> 00:39:56.760 And that was all I had to say.

507 00:39:56.760 --> 00:40:01.849

508 00:40:01.849 --> 00:40:06.179 Myself here, can you hear me now?

509 00:40:06.179 --> 00:40:09.335 OK so I can you guys if you can hear me,

510 00:40:09.335 --> 00:40:19.956 so I'm so there's a bunch of questions in the chat and what will do is will go through the questions and those of you who want to pipe in

511 00:40:19.956 --> 00:40:26.949 pipe in but just identify yourself and so we will go through the questions.

512 00:40:26.949 --> 00:40:29.110 I have one question here.

513 00:40:29.110 --> 00:40:35.338 Should we move to a oral appliances more at this time the answer is maybe,

514 00:40:35.338 --> 00:40:45.306 but not really. And the reason is most dental offices are not going to be doing dental appliances during this pandemic.

515 00:40:45.306 --> 00:40:49.460 I've spoken to some dentists about this question.

516 00:40:49.460 --> 00:40:57.599 Might be what if a patient develops kovid and is already on an appliance an the appliances breaks?

517 00:40:57.599 --> 00:41:03.150 Of the dentist is not gonna bring him in because believe it or not,

518 00:41:03.150 --> 00:41:10.090 some of the dentist that I know can't get protection and so they would be in trouble.

519 00:41:10.090 --> 00:41:11.760 So what they did say,

520 00:41:11.760 --> 00:41:24.260 however, is that the mold the information may be at the fabricator and they may be able to make another appliance based on the model that they already have.

521 00:41:24.260 --> 00:41:27.583 Next question was, how old were the patients Sheldon?

522 00:41:27.583 --> 00:41:30.030 I think there were five and 10.

523 00:41:30.030 --> 00:41:32.543 Uh, and they are much better now.

524 00:41:32.543 --> 00:41:34.465 Uh, next question, is it?

525 00:41:34.465 --> 00:41:43.114 Uhm, can you just ask a patient to use C Pap and his or her own room and not allow family members into that bedroom?

526 00:41:43.114 --> 00:41:46.735 I don't think that would make a huge difference.

527 00:41:46.735 --> 00:41:50.063 I think it would be dangerous no matter Wat.

528 00:41:50.063 --> 00:41:53.094 Um, just because being in your own room,

529 00:41:53.094 --> 00:42:00.559 I know that some of the celebrities they've sort of put themselves into a hibernation type situation.

530 00:42:00.559 --> 00:42:04.615 At home, thinking that that's going to separate them,

531 00:42:04.615 --> 00:42:07.695 but in fact with common heating systems,

532 00:42:07.695 --> 00:42:12.425 God knows what we don't know what happens to to these viruses.

533 00:42:12.425 --> 00:42:15.280 So let's move down to more questions.

534 00:42:15.280 --> 00:42:18.659 No one question. This is a terrific one from.

535 00:42:18.659 --> 00:42:22.090 From one of the attendings Here at Yale,

536 00:42:22.090 --> 00:42:31.043 do you think C pap spread the influenza virus is badly in the past and the answer is probably that's true.

537 00:42:31.043 --> 00:42:34.699 We just didn't really think about it.

538 00:42:34.699 --> 00:42:40.989 Next question with the risk be the same for all interfaces.

539 00:42:40.989 --> 00:42:43.829 Robert, what do you think about that?

540 00:42:43.829 --> 00:42:50.820 So it probably varies by the amount of leak.

541 00:42:50.820 --> 00:42:56.389 So for the. The full face mask clearly have a higher leak,

542 00:42:56.389 --> 00:42:59.179 and the higher the pressure.

543 00:42:59.179 --> 00:43:02.840 The higher the you know.

544 00:43:02.840 --> 00:43:04.139 What do you call it?

545 00:43:04.139 --> 00:43:08.659 The? What League do they call it for getting the term right now?

546 00:43:08.659 --> 00:43:11.806 Uh, they see when a chart from Phillips,

547 00:43:11.806 --> 00:43:14.568 an rationally Robert. That's right,

548 00:43:14.568 --> 00:43:25.110 they their charts from Phillips and rest Med way to tell you how much leak is OK based on the mask and based on the pressure so.

549 00:43:25.110 --> 00:43:31.809 If you have, you know 30 versus 40 liters per minute across.

550 00:43:31.809 --> 00:43:34.179 A night that's a lot of leak.

551 00:43:34.179 --> 00:43:37.101 The difference would be quite a bit,

552 00:43:37.101 --> 00:43:41.199 so you probably will have a difference in.

553 00:43:41.199 --> 00:43:46.900 In what mask used the cuter nasal pillows have the least leak?

554 00:43:46.900 --> 00:43:51.889 And the classic full face mask has the biggest boots right now.

555 00:43:51.889 --> 00:43:54.047 OK, so let's see the next question.

556 00:43:54.047 --> 00:43:58.364 Could I just follow up on a question I asked earlier that you answered?

557 00:43:58.364 --> 00:44:01.721 Dentists offices are closed. You're correct about that,

558 00:44:01.721 --> 00:44:05.556 but 36% of dentists who practice dental sleep medison are open.

559 00:44:05.556 --> 00:44:08.193 Where is the average dentist who just does?

560 00:44:08.193 --> 00:44:14.668 Dentistry is closed, but there's only about maybe 4 or 5000 dental Sleep Medicine providers in the country,

561 00:44:14.668 --> 00:44:23.000 so 36% of them are open and companies like persona sleep technologies have a CAD Cam process do store the digital information of the files.

562 00:44:23.000 --> 00:44:25.063 And so they could, as you suggested,

563 00:44:25.063 --> 00:44:27.853 make another one. Just want to get that in there,

564 00:44:27.853 --> 00:44:30.197 for, you know, thank thank you very much.

565 00:44:30.197 --> 00:44:34.340 So uh, let's see, could I just go along the same line?

566 00:44:34.340 --> 00:44:36.295 I'm not, I'm not in our boil.

567 00:44:36.295 --> 00:44:39.753 There are boiling by temporary temporary appliances.

568 00:44:39.753 --> 00:44:49.077 It can also be utilized that are made by a number of different companies so they can actually be shipped to the patients home and the patient.

569 00:44:49.077 --> 00:44:53.150 There's instructions and with the assistance remotely.

570 00:44:53.150 --> 00:45:00.679 And this they can walk through the process of making the appliance the mic app,

571 00:45:00.679 --> 00:45:04.820 or zip, uh, there's store free their energy.

572 00:45:04.820 --> 00:45:11.789 Provide some level of intervention while waiting till all this passes.

573 00:45:11.789 --> 00:45:23.079 Yeah, OK, so now there was a question having to do with family members and this question came up a couple of times.

574 00:45:23.079 --> 00:45:31.981 So one of the things that I think would be helpful to add a notation's room if they can get it is is a really good HEPA filtering system and

575 00:45:31.981 --> 00:45:35.516 their portable ones that are out there that aren't bad,

576 00:45:35.516 --> 00:45:37.347 and I think that would help.

577 00:45:37.347 --> 00:45:39.304 It wouldn't solve the problem,

578 00:45:39.304 --> 00:45:42.139 but it would help.

579 00:45:42.139 --> 00:45:44.702 Uh, let's see what we have here.

580 00:45:44.702 --> 00:45:47.731 Let's you underestimate or his friend,

581 00:45:47.731 --> 00:45:50.371 you have to change your settings.

582 00:45:50.371 --> 00:45:52.467 Yeah, so um, that is true.

583 00:45:52.467 --> 00:45:56.815 So a doctor pelayo mentioned that on a rest Med system,

584 00:45:56.815 --> 00:46:09.163 there's actually a setting in the machine itself where you can tell the see Pap machine that I'm adding a filter to your machine and it compensates for it and

585 00:46:09.163 --> 00:46:13.110 related to that I actually spoke to a couple of.

586 00:46:13.110 --> 00:46:26.380 Of Res Med Engineers in Australia last night and they have been testing this kind of a configuration similar to what we have been using.

587 00:46:26.380 --> 00:46:28.931 That that doctor Thomas showed,

588 00:46:28.931 --> 00:46:37.938 and they and basically the they were testing pressures at different pressures and with different configurations.

589 00:46:37.938 --> 00:46:48.380 And the there was very little degradation of the either a see pap or a Bipap machine with added filters and it worked fairly well.

590 00:46:48.380 --> 00:46:56.909 The other thing I want to mention is that you can add oxygen into the system as as Doctor Thomas mentioned.

591 00:46:56.909 --> 00:47:01.585 And there are different kinds of ways you can add oxygen.

592 00:47:01.585 --> 00:47:09.728 You can also also add a an adapter that allows you to connect a metered dose inhaler if the patient,

593 00:47:09.728 --> 00:47:15.128 for example, ends up on a BI level in an intensive care like unit,

594 00:47:15.128 --> 00:47:17.949 you can actually add, for example,

595 00:47:17.949 --> 00:47:20.932 albuterol from metered dose inhaler,

596 00:47:20.932 --> 00:47:27.139 or you can actually possibly even be able to add a nebuliser into the system.

597 00:47:27.139 --> 00:47:37.900 So one of the things that that the engineers from rest man told me it was in Wukan very often and this is not for sleep apnea patients.

598 00:47:37.900 --> 00:47:43.438 This was with patients just in general when they ran out of ICU beds,

599 00:47:43.438 --> 00:47:47.420 they would do noninvasive ventilation using.

600 00:47:47.420 --> 00:47:49.666 C pap machines, Bipap Machines,

601 00:47:49.666 --> 00:47:59.985 whatever machines they kind of had and just added viral filters if they could find them wherever an and whether or not that worked or didn't work.

602 00:47:59.985 --> 00:48:05.650 We don't really know, but this is something that actually did happen.

603 00:48:05.650 --> 00:48:10.172 So then we have another question of a patient lives alone,

604 00:48:10.172 --> 00:48:13.161 so I think if the patient lived alone,

605 00:48:13.161 --> 00:48:16.458 it's probably OK for them to use the pack.

606 00:48:16.458 --> 00:48:21.440 My experience with this one patient and other people that I know.

607 00:48:21.440 --> 00:48:36.902 Uh. Personally, who have chronic virus infection take off like crazy and when you're coughing like crazy trying to stay on a see Pap Machine is really really difficult so

608 00:48:36.902 --> 00:48:42.019 let's see. So that was another question.

609 00:48:42.019 --> 00:48:42.820 All right?

610 00:48:42.820 --> 00:48:44.860

611 00:48:44.860 --> 00:48:50.414 So another question, can this be used in an ICU?

612 00:48:50.414 --> 00:48:54.780 The answer is probably yes and No.

613 00:48:54.780 --> 00:48:57.849 Which isn't a direct answer to the question.

614 00:48:57.849 --> 00:49:02.487 I think if you're gonna be using non invasive ventilation using uh,

615 00:49:02.487 --> 00:49:04.806 uh for example a bilevel machine,

616 00:49:04.806 --> 00:49:08.626 you actually have to know what you're doing in the use,

617 00:49:08.626 --> 00:49:10.878 and you need to have a response.

618 00:49:10.878 --> 00:49:15.175 Tory therapist that understands what's going into the patient,

619 00:49:15.175 --> 00:49:17.494 what's coming out of the patient,

620 00:49:17.494 --> 00:49:19.677 the hospital by level machines,

621 00:49:19.677 --> 00:49:22.338 you know. They usually have two limbs,

622 00:49:22.338 --> 00:49:24.929 they have an in, and they have an out.

623 00:49:24.929 --> 00:49:30.637 So there you can add filters an and you'll increase safety for the staff.

624 00:49:30.637 --> 00:49:35.418 With a regular BI level machine that's normally used at home,

625 00:49:35.418 --> 00:49:41.123 you would actually need to make sure that everything is working properly.

626 00:49:41.123 --> 00:49:43.978 You have filters in the right place,

627 00:49:43.978 --> 00:49:50.760 otherwise you're going to leave the the nurses and the staff in trouble.

628 00:49:50.760 --> 00:49:56.510 So do you wanna answer some of the next few questions?

629 00:49:56.510 --> 00:49:59.219 Um, Robert.

630 00:49:59.219 --> 00:50:01.833 So let's talk about the interface.

631 00:50:01.833 --> 00:50:05.041 Oh yeah, so there's one question about uh,

632 00:50:05.041 --> 00:50:09.998 HM ES. Um, so it says there are some studies and I see you,

633 00:50:09.998 --> 00:50:14.329 but H me. So what are your thoughts about the HM S?

634 00:50:14.329 --> 00:50:16.110 So that the Hitcher Maine,

635 00:50:16.110 --> 00:50:19.539 as long as it has been rated for a filter function,

636 00:50:19.539 --> 00:50:23.563 is fine. So there hicham ease which have a filtering rating.

637 00:50:23.563 --> 00:50:27.322 And the histamines which do not have a filtering rating.

638 00:50:27.322 --> 00:50:31.809 So if it's rated to be a filter also it should be fine.

639 00:50:31.809 --> 00:50:36.219 OK. So let's see here.

640 00:50:36.219 --> 00:50:37.943 Let's see what are your thoughts.

641 00:50:37.943 --> 00:50:39.615 I'm using a filtered H me three.

642 00:50:39.615 --> 00:50:41.980 OK, so that question we've answered.

643 00:50:41.980 --> 00:50:48.309 Then we have. From UK.

644 00:50:48.309 --> 00:50:53.000 How does how does humidification effect?

645 00:50:53.000 --> 00:51:00.389 The filters life, these are all these filters really gotta change them once a day at least if not.

646 00:51:00.389 --> 00:51:02.539 More frequently if it looks.

647 00:51:02.539 --> 00:51:05.579 Gunky, it would have to be changed.

648 00:51:05.579 --> 00:51:14.657 Uh, that space, uh in the specifications examples I saw I saw things like 20 eight 3335ML.

649 00:51:14.657 --> 00:51:22.519 So it's a pretty small amounts of added Dead Space within the filter.

650 00:51:22.519 --> 00:51:24.309 Hum.

651 00:51:24.309 --> 00:51:27.152 Yep, there's a leak around the mass,

652 00:51:27.152 --> 00:51:30.380 so these are definitely not a full proof.

653 00:51:30.380 --> 00:51:34.222 You can't. Having zero leak is almost impossible.

654 00:51:34.222 --> 00:51:40.751 This is more a mitigation strategy if I may use the term used frequently these days,

655 00:51:40.751 --> 00:51:42.981 it's not a perfect strategy,

656 00:51:42.981 --> 00:51:53.583 and I'd like to say something about that that the hospital grade masks are not as good as the masks that are used for for patients homes.

657 00:51:53.583 --> 00:51:56.579 So the hospital masks are much cheaper.

658 00:51:56.579 --> 00:52:03.074 Uh, and they simply do not work as well and and so even in the hospital setting,

659 00:52:03.074 --> 00:52:14.460 if you can get one of them asks that works one of the non vented masks for example of a quadrel air or something like that that's non vented.

660 00:52:14.460 --> 00:52:19.349 You're better off than the traditional hospital mask.

661 00:52:19.349 --> 00:52:24.206 Go ahead, Robert. Ideally, of course we should use a order nasal mask.

662 00:52:24.206 --> 00:52:25.918 If you use a nasal mask,

663 00:52:25.918 --> 00:52:30.228 anytime the patient opens amount talks out it's going to come,

664 00:52:30.228 --> 00:52:32.976 so that's definitely so. Uh,

665 00:52:32.976 --> 00:52:38.960 so go says that data suggests that UV light kills covered.

666 00:52:38.960 --> 00:52:45.260 Although FDA warning on so clean which comes ozone?

667 00:52:45.260 --> 00:52:50.849 So it turns out that the UV you need to.

668 00:52:50.849 --> 00:52:56.797 Truly kill viruses and sterilizes pretty a pretty powerful stuff like you can have it.

669 00:52:56.797 --> 00:52:59.570 You know bounds on to humans.

670 00:52:59.570 --> 00:53:02.170 And it is very effective.

671 00:53:02.170 --> 00:53:07.420 Um? Whether they would be a UV system good enough to kill viruses,

672 00:53:07.420 --> 00:53:11.550 I know there is a so clean accommodative which uses UV.

673 00:53:11.550 --> 00:53:14.655 But there is not good data available on,

674 00:53:14.655 --> 00:53:17.456 uh, you know what controls are used.

675 00:53:17.456 --> 00:53:22.239 They really check whether it killed viruses or not.

676 00:53:22.239 --> 00:53:26.039 Uh, it would be certainly theoretically possible to.

677 00:53:26.039 --> 00:53:32.692 Uh. For like some kind of UV light mechanism to even the filter area,

678 00:53:32.692 --> 00:53:43.286 but will just make the whole thing so complex in any League of UV light at that intensity you know will cause skin burns as an example,

679 00:53:43.286 --> 00:53:46.780 so. Oh, you mean like uh?

680 00:53:46.780 --> 00:53:50.530 You know? Would be needed to handle with care,

681 00:53:50.530 --> 00:53:54.239 and of course the cleaning up after its use is nice,

682 00:53:54.239 --> 00:53:56.409 but soap and water would work.

683 00:53:56.409 --> 00:53:59.699 Definitely an while. You're actually using it.

684 00:53:59.699 --> 00:54:02.239 It was still spew out.

685 00:54:02.239 --> 00:54:07.119 Hey so I just wanna answer rithwik.

686 00:54:07.119 --> 00:54:15.981 Question in Connecticut there so far behind in testing that it's it's less than academic.

687 00:54:15.981 --> 00:54:28.780 Unfortunately, the patients who the only people that seem to be getting quick test results around here are our medical personnel.

688 00:54:28.780 --> 00:54:35.771 Patience sometimes have to wait for like a week or two to get results.

689 00:54:35.771 --> 00:54:50.057 Rafael Esquer. Uh, please follow up about the mask in can I please go ahead and rock go ahead like Oh my God read background you got there and your

690 00:54:50.057 --> 00:54:57.494 honor. Factor cricket doctor Thomas to quick thing I understand intentional leak issue with the nasal pillows is less than with the full face.

691 00:54:57.494 --> 00:55:04.559 However, patients in practice, if you open your mouth wouldn't full face mask serve some form of barrier and switch as a mitigation strategy.

692 00:55:04.559 --> 00:55:10.639 Switchmode full face because at least they want to have their mouth dropping open during the night periodically.

693 00:55:10.639 --> 00:55:19.360 I mean definitely voting full face mask is best absolutely because yeah well fitting full face mask.

694 00:55:19.360 --> 00:55:25.072 Automation mask is definitely better than the nasal because with a nasal across the whole night,

695 00:55:25.072 --> 00:55:28.949 I'm absolutely sure people open the mouse intermittently.

696 00:55:28.949 --> 00:55:30.442 Uh, and uh, they will be,

697 00:55:30.442 --> 00:55:36.007 you know you want a few minutes of that will be enough to God knows billions of viral particles,

698 00:55:36.007 --> 00:55:38.920 I mean. And in those little inline photos,

699 00:55:38.920 --> 00:55:42.255 Hudson inline filters, I've noticed it prices jacked up on the Internet.

700 00:55:42.255 --> 00:55:44.650 You think we should be changed every day?

701 00:55:44.650 --> 00:55:48.460 Not once a week. That's the formula recommended.

702 00:55:48.460 --> 00:55:53.750 Well, that's a written recommendation without any reference or data.

703 00:55:53.750 --> 00:56:02.590 Unfortunately, uh, anything in half demand is going to go up today I I bought.

704 00:56:02.590 --> 00:56:04.673 About a week and a half,

705 00:56:04.673 --> 00:56:09.592 but almost two weeks ago I I purchased some of these mass.

706 00:56:09.592 --> 00:56:14.927 Sorry these filters of them and they were still at basic price.

707 00:56:14.927 --> 00:56:17.012 They hadn't gone up yet,

708 00:56:17.012 --> 00:56:19.539 but now I suppose it's up.

709 00:56:19.539 --> 00:56:21.710 I'd go ahead.

710 00:56:21.710 --> 00:56:26.001 Our antiviral filters helpful at all with standard vented mass.

711 00:56:26.001 --> 00:56:31.969 Probably not, because the pixelation would go out through the pores into the atmosphere.

712 00:56:31.969 --> 00:56:34.309 There won't be enough of a.

713 00:56:34.309 --> 00:56:37.780 Uh, back slow to make much of a difference.

714 00:56:37.780 --> 00:56:41.907 Coughing will make a oral appliance therapy impossible.

715 00:56:41.907 --> 00:56:45.559 Difficult, but not impossible, I suppose.

716 00:56:45.559 --> 00:56:48.434 Hum. The old appliances today,

717 00:56:48.434 --> 00:56:51.860 uh, you know, they do allow you to open him out.

718 00:56:51.860 --> 00:56:55.110 It's not like you're. You know?

719 00:56:55.110 --> 00:57:05.188 Trap shut. Would be good to open the nasal airway with a nasal dilator in conjunction with all appliance of a mild sleep apnea.

720 00:57:05.188 --> 00:57:15.800 I think so. Reasonable mitigation strategy by putting a fan near window to make a somewhat negative pressure room.

721 00:57:15.800 --> 00:57:22.206 Play. It's keep the window open is probably good enough.

722 00:57:22.206 --> 00:57:28.159 I'm guessing no. He put a sign near the window creating almost an exhaust like situation.

723 00:57:28.159 --> 00:57:31.239 In theory, that could be beneficial.

724 00:57:31.239 --> 00:57:32.681 But a good open window,

725 00:57:32.681 --> 00:57:35.806 and today at this temperature you can keep it open,

726 00:57:35.806 --> 00:57:38.099 at least in much of the US.

727 00:57:38.099 --> 00:57:44.150 Although it will get hot down South and you might in fact your entire neighborhood.

728 00:57:44.150 --> 00:57:48.050 That's possible, I suppose. A good idea too,

729 00:57:48.050 --> 00:57:57.630 sorry, increase risk of pneumonia with C Pap and cover patients with only mild upper area symptoms.

730 00:57:57.630 --> 00:58:04.152 We, I'm sure all of us get asked that by patients who have sinusitis or any upper airway.

731 00:58:04.152 --> 00:58:08.199 Do we force bugs down into the lungs with C pap?

732 00:58:08.199 --> 00:58:10.545 I'm sure we actually do force bugs down,

733 00:58:10.545 --> 00:58:13.179 but the lungs normally.

734 00:58:13.179 --> 00:58:19.619 You know cleric. Um, there isn't like an epidemic of.

735 00:58:19.619 --> 00:58:25.739 Bacterial pneumonia is infections in patients using C Pap at least.

736 00:58:25.739 --> 00:58:27.478 Nothing published as far as I know.

737 00:58:27.478 --> 00:58:31.420 If it's occurring, it certainly occurring in a more subtle way.

738 00:58:31.420 --> 00:58:36.518 But it, but almost certainly there will be some sitting in the airway.

739 00:58:36.518 --> 00:58:40.612 If you have free floating particles in the upper airway,

740 00:58:40.612 --> 00:58:45.099 and you of course have this air coming in.

741 00:58:45.099 --> 00:58:49.659 So I think their plan.

742 00:58:49.659 --> 00:58:58.679 Is there a plan to obtain an objective analysis of air solution mitigation by the mask filter configuration you showed us today?

743 00:58:58.679 --> 00:59:02.800 It would be nice if we can do that.

744 00:59:02.800 --> 00:59:04.782 A corner versus, Uh, I mean,

745 00:59:04.782 --> 00:59:10.219 you have to do something like that in a bio-hazard for facility.

746 00:59:10.219 --> 00:59:12.550 Yeah.

747 00:59:12.550 --> 00:59:16.780 Because you can't just do it in A.

748 00:59:16.780 --> 00:59:19.050 In a lab, you would need to.

749 00:59:19.050 --> 00:59:25.630 Have a model respiratory model and then actually have corner virus.

750 00:59:25.630 --> 00:59:31.199 A real Colonel iris. And then have.

751 00:59:31.199 --> 00:59:34.864 You know, capture the air coming out and run it through while media.

752 00:59:34.864 --> 00:59:39.769 If you're talking about some pretty heavy duty stuff to do it safely.

753 00:59:39.769 --> 00:59:45.469 Hum. It would need a high level bio safety environment to do so.

754 00:59:45.469 --> 00:59:48.786 So so, um, Robert, I actually spoke to,

755 00:59:48.786 --> 00:59:52.766 UM, one of our faculty members here at the ale.

756 00:59:52.766 --> 00:59:59.030 And what he stressed it is to put in a second viral filter.

757 00:59:59.030 --> 01:00:08.818 In the in a strategic place in the circuit and measure the viruses on the second filter and he said he's he can probably do that.

758 01:00:08.818 --> 01:00:15.894 He does that kind of stuff and and the only problem is we would need IRB and stuff like that,

759 01:00:15.894 --> 01:00:17.900 and so we kind of.

760 01:00:17.900 --> 01:00:23.510 You know, I don't even know if RIRB is functioning these days.

761 01:00:23.510 --> 01:00:24.873 So there's a better Israel,

762 01:00:24.873 --> 01:00:27.699 their functioning essentially for covered.

763 01:00:27.699 --> 01:00:30.945 Related stuff only. Yeah yeah.

764 01:00:30.945 --> 01:00:35.099 Anyway. So we did think about it.

765 01:00:35.099 --> 01:00:39.329 Alright, so uh, let's see any other questions here.

766 01:00:39.329 --> 01:00:42.000

767 01:00:42.000 --> 01:00:46.938 Any chance of a fact sheet summarizing these options?

768 01:00:46.938 --> 01:00:49.226 Maybe through a TSO ASM?

769 01:00:49.226 --> 01:00:53.260 So we have sent a letter to the JCSM.

770 01:00:53.260 --> 01:00:57.539 Uh, and hopefully it will be published quickly.

771 01:00:57.539 --> 01:01:00.476 Uh, with the basic issues involved,

772 01:01:00.476 --> 01:01:05.041 yeah, the the letter has been accepted and it shows it.

773 01:01:05.041 --> 01:01:10.449 It's really describes much of what we talked about today.

774 01:01:10.449 --> 01:01:13.556 And it should be available on their website.

775 01:01:13.556 --> 01:01:16.000 I think in a matter of days.

776 01:01:16.000 --> 01:01:17.699 Stop, but to me also,

777 01:01:17.699 --> 01:01:21.409 a larger question is you know away from Kuwait,

778 01:01:21.409 --> 01:01:24.610 no influenza and such, should we?

779 01:01:24.610 --> 01:01:34.739 You know constantly change the configuration while a person has a substantial library or lower airway infection.

780 01:01:34.739 --> 01:01:38.329 You know, I was only perfectly aware of.

781 01:01:38.329 --> 01:01:41.577 The droplet. Uh, issues it really.

782 01:01:41.577 --> 01:01:46.110 Medical school information based learning a bootable closest.

783 01:01:46.110 --> 01:01:49.280 No, I didn't, uh, give it too much thought.

784 01:01:49.280 --> 01:01:55.039 Since then. But now it's tempting to want to do that.

785 01:01:55.039 --> 01:01:56.710 Uh.

786 01:01:56.710 --> 01:02:01.210 Hopefully you can convince the home care companies or demanded from them.

787 01:02:01.210 --> 01:02:04.030 If someone has a diagnose influencer.

788 01:02:04.030 --> 01:02:06.601 To just use for every call will be a bit much,

789 01:02:06.601 --> 01:02:12.159 but someone who is diagnosed influence I think will be a reasonable thing.

790 01:02:12.159 --> 01:02:14.545 Alright, any other questions? Uh,

791 01:02:14.545 --> 01:02:16.369 we're a few minutes over.

792 01:02:16.369 --> 01:02:21.710 Will be happy to take a couple more questions if anybody has them.

793 01:02:21.710 --> 01:02:24.952 OK, so there's another one here from the UK.

794 01:02:24.952 --> 01:02:26.824 Oh essays or risk factor?

795 01:02:26.824 --> 01:02:30.282 Random insurance. We just response team's eyes.

796 01:02:30.282 --> 01:02:39.648 Asian conoce a be a risk factor for a new Monia the there's some data that suggests that they haven't looked at OSA specifically,

797 01:02:39.648 --> 01:02:41.739 that I know of. But obesity,

798 01:02:41.739 --> 01:02:46.637 I believe has been shown to be a risk factor for Cove it infection,

799 01:02:46.637 --> 01:02:53.409 and certainly if a patient has diabeetus alot of our patients have metabolic issues diabeetus.

800 01:02:53.409 --> 01:03:05.664 Obesity, so my guess is it probably is a risk factor for the patients that they get it and probably then go on to be to really have a severe

801 01:03:05.664 --> 01:03:11.123 problem. Alright, so if there are no other questions here,

802 01:03:11.123 --> 01:03:17.914 I think, uh, I think we can call it an afternoon and an I hope all of you are safe,

803 01:03:17.914 --> 01:03:23.170 uh, and I'm really happy that we have got to talk to each other,

804 01:03:23.170 --> 01:03:27.456 at least for a few minutes an and one more question.

805 01:03:27.456 --> 01:03:38.050 Possibly it has to do with an elect assists and the issue of the pap therapy actually help decrease the development of atelectasis.

806 01:03:38.050 --> 01:03:42.032 And so if you've got to sleep apnea patients through your,

807 01:03:42.032 --> 01:03:50.539 if the recommendation is to not use C Pap that maybe we're enhancing the likelihood of them developing a worsening new monia,

808 01:03:50.539 --> 01:03:58.641 whereas if they were to use a see pap that actually may prevent preventive role in the worsening of the code 19 itself,

809 01:03:58.641 --> 01:04:02.679 yeah? Yeah, so that's that's sort of a controversial thing.

810 01:04:02.679 --> 01:04:09.664 In other words, the patient is sick enough that they require opening up of lungs that might collapse.

811 01:04:09.664 --> 01:04:12.199 They should really be in a hospital.

812 01:04:12.199 --> 01:04:15.967 Ann, not you know, not on a on a home see Pap Machine.

813 01:04:15.967 --> 01:04:17.817 They need to be monitored,

814 01:04:17.817 --> 01:04:20.282 in my opinion, much more carefully.

815 01:04:20.282 --> 01:04:21.721 As long as you know,

816 01:04:21.721 --> 01:04:24.050 as long as facilities allow that.

817 01:04:24.050 --> 01:04:25.967 But what would we decrease?

818 01:04:25.967 --> 01:04:29.050 The likelihood of them getting to that point?

819 01:04:29.050 --> 01:04:31.800 By helping to you know the peep.

820 01:04:31.800 --> 01:04:35.552 The positive airway pressure you're getting,

821 01:04:35.552 --> 01:04:39.719 but actually will help prevent the atelectasis so.

822 01:04:39.719 --> 01:04:41.380 Such a double edged sword?

823 01:04:41.380 --> 01:04:43.349 Yeah, it's a double edge sword.

824 01:04:43.349 --> 01:04:51.411 It it is. It's a double edge sword in one of the things we have to always bear in mind is we need to do whatever we can to predict

825 01:04:51.411 --> 01:05:01.099 the nurses they respond. Tory therapist and the doctors you know the medical students were walking and taking care of these patients now.

826 01:05:01.099 --> 01:05:06.548 Alright, so there's boy these questions keep on coming here.

827 01:05:06.548 --> 01:05:08.960 Uh, uh, let's see alright,

828 01:05:08.960 --> 01:05:11.552 lot of thank you's here and,

829 01:05:11.552 --> 01:05:14.766 uh. Yeah, so um, this is good.

830 01:05:14.766 --> 01:05:19.280 I think we need to do another session in a few weeks.

831 01:05:19.280 --> 01:05:26.219 Once we have a little bit more experience which Wich St Nyack who used to be here.

832 01:05:26.219 --> 01:05:34.829 And she was, uh, you know she was in in Boston for awhile so let's see an I think that's a great idea.

833 01:05:34.829 --> 01:05:39.929 Sry an everybody keep healthy and I'm going to sign off now.

834 01:05:39.929 --> 01:05:42.519 Thank you very much. Thank you.

835 01:05:42.519 --> 01:05:44.090 Bye bye.

836 01:05:44.090 --> 01:05:48.739