## WEBVTT

1 00:00:03.240 --> 00:00:04.290 <v Maur>Okay, great.</v>

2 00:00:05.346 --> 00:00:07.637 So good morning and good evening to our friends

 $3\ 00:00:07.637 \longrightarrow 00:00:08.470$  joining from China.

 $4\ 00:00:08.470 \longrightarrow 00:00:10.413$  Welcome all, my name is Maur Desai.

5 00:00:11.310  $\rightarrow$  00:00:13.888 I'm a faculty member in the Department

6 00:00:13.888 --> 00:00:15.450 of Chronic Disease Epidemiology at the Yale School

7 00:00:15.450 --> 00:00:18.060 of Public Health and also the school's Associate Dean

8 00:00:18.060 --> 00:00:20.250 for Diversity, Equity and Inclusion.

9 00:00:20.250 --> 00:00:22.650 It is my pleasure to step in for Donna Spigelman 10 00:00:22.650 --> 00:00:26.223 to introduce our speaker, professor Dong Roman Xu.

11 00:00:27.488 --> 00:00:29.993 But first I'd like to acknowledge that this seminar

 $12\ 00:00:29.993 \longrightarrow 00:00:32.333$  is co-sponsored by the Yale Center for Methods

13 00:00:32.333 --> 00:00:34.521 and Implementation and Prevention Science,

14 00:00:34.521 --> 00:00:37.350 also known as CMIPS, which Professor Spigelman directs.

 $15\ 00:00:37.350 \longrightarrow 00:00:39.540$  The seminar is co-sponsored by the Department

 $16\ 00:00:39.540$  --> 00:00:42.090 of Chronic Disease Epidemiology and the global health

17 00:00:42.090 --> 00:00:46.080 concentration at YSPH, as well as the newly funded

18 00:00:46.080 --> 00:00:51.080 NIHT 32 training grant Implementation Science Research

19 $00{:}00{:}51{.}120 \dashrightarrow 00{:}00{:}52{.}740$  and Methods.

2000:00:52.740-->00:00:55.710Based at the Yale School of Public Health, CMIPS develops

21 00:00:55.710 --> 00:00:58.950 and disseminates innovative methodological approaches

22 00:00:58.950 --> 00:01:01.740 to address implementation gaps and improve public health

 $23\ 00:01:01.740 \longrightarrow 00:01:04.650$  worldwide strategically selecting the issues

24 00:01:04.650 --> 00:01:07.890 that carry the greatest burden and hold the greatest promise

 $25\ 00:01:07.890 \longrightarrow 00:01:10.350$  for amelioration right now.

26 00:01:10.350 --> 00:01:13.980 If you would like to be informed about future CMIP seminars,

27 00:01:13.980 --> 00:01:16.710 please let William Tutel know in the chat and he will add

 $28\ 00:01:16.710 \longrightarrow 00:01:18.633$  you to the CMIPS listserv.

29 00:01:20.010 --> 00:01:23.350 Professor Roman Xu is one of the foremost implementation

30 00:01:24.779 --> 00:01:26.340 science researchers and methodologists in China.

31 00:01:26.340 --> 00:01:28.890 H<br/>is research focuses on health system innovations

32 00:01:28.890 --> 00:01:31.710 and implementation science, particularly those

33 00:01:31.710 --> 00:01:35.410 involving chronic diseases quality of primary health care

34 00:01:35.410  $\rightarrow$  00:01:38.490 and eHealth in the context of global health.

35 00:01:38.490 --> 00:01:41.790 He's leading several large studies including primary

36 00:01:41.790 --> 00:01:45.840 healthcare quality cohort in China, the Silk Road Labs

37 00:01:45.840 --> 00:01:49.890 for health system strengthening in Nepal and Mozambique,

38 00:01:49.890 --> 00:01:54.300 an implementation trial for stroke guidelines in China

39 00:01:54.300 --> 00:01:57.450 and the shared medical appointment trial for diabetes

40 00:01:57.450 --> 00:01:59.160 or smart trial.

41 00:01:59.160  $\rightarrow$  00:02:01.380 Professor Xu received his PhD in global health

42 00:02:01.380 --> 00:02:03.960 implementation Science from the University of Washington

43 $00{:}02{:}03{.}960 \dashrightarrow > 00{:}02{:}08{.}960$  and his master's in Public Policy from Harvard University.

44 00:02:09.150 --> 00:02:12.150 The title of his talk today is Use PEDALs Model to PEDAL

45 00:02:12.150 --> 00:02:14.790 for Implementation Research.

46 00:02:14.790 --> 00:02:15.903 Roman, over to you.

47 00:02:17.712 --> 00:02:18.545 <v Roman>Thank you Maur.</v>

48 00:02:18.545 --> 00:02:21.330 Thank you very much for the very nice introduction,

 $49\ 00:02:21.330 \longrightarrow 00:02:24.633$  let me share my screen first.

50 00:02:32.461 --> 00:02:34.593 Okay, I suppose you can now see my screen.

51 00:02:35.490 --> 00:02:38.020 Today I'm going to talk about the PEDALs model

 $52\ 00:02:38.910 \longrightarrow 00:02:42.120$  and in that process I will use one of our ongoing,

53 00:02:42.120 --> 00:02:44.151 <v Maur>Oh, sorry, Roman.</v>

54 00:02:44.151 --> 00:02:46.133 Roman, do you want to put it in presentation mode?

55 00:02:46.980 --> 00:02:49.080 <v Roman>It is not in presentation mode now?</v>

56 00:02:49.080  $\rightarrow 00:02:53.163$  On my screen it is in the presentation mode,

 $57\ 00:02:54.480 \longrightarrow 00:02:56.339$  it's a little strange.

58 00:02:56.339 --> 00:02:57.360 <v Maur>Ahh.</v>

 $59\ 00:02:57.360 \longrightarrow 00:02:58.350 < v \text{ Roman>Let me share again.} </v>$ 

60 00:02:58.350 --> 00:03:00.450 <v Maur>Okay and while you're doing that,</v>

61 00:03:00.450 --> 00:03:03.240 I'll just say very quickly, if you have questions,

 $62\ 00{:}03{:}03{.}240$  -->  $00{:}03{:}05{.}460$  please hold them to the end, but you're welcome to put them

 $63~00{:}03{:}05{.}460$  -->  $00{:}03{:}08{.}512$  in the chat and then when we get to the Q&A,

 $64\ 00:03:08.512$  --> 00:03:12.570 you can use the raise hand feature, just unmute yourself,

65 00:03:12.570 --> 00:03:14.970 jump right in and we'll make sure that we get to

 $66\ 00:03:15.849 \longrightarrow 00:03:16.733$  as many questions as possible.

67 00:03:22.410 --> 00:03:23.510 <v Roman>Can see now.</v>

68 00:03:26.520 --> 00:03:28.380 <v Maur>I don't know about others, but I'm still seeing it</v>

 $69\ 00:03:28.380$  --> 00:03:31.630 in sort of the regular mode, not the presentation mode.

70 00:03:31.630 --> 00:03:35.070 <v Roman>Okay, just one second, sorry for that,</v>

71 00:03:35.070 --> 00:03:40.070 it's a little I tried but just one second.

 $72\ 00:03:52.860 \longrightarrow 00:03:54.603$  Sorry for that everybody.

73 00:03:56.744 --> 00:03:57.577 <v Maur>No problem.</v>

74 00:03:59.370 --> 00:04:02.046 <v Roman>Let me share my screen to see whether</v>

75 00:04:02.046 --> 00:04:02.879 this will be better.

 $76\ 00:04:12.660 \longrightarrow 00:04:14.580$  Now, can you see my screen now?

77 00:04:14.580 --> 00:04:16.880 <v Maur>Yes and you may want to, we're seeing</v>

78 00:04:17.730  $\rightarrow 00:04:20.460$  also the preview slide, so if you swap display

79 00:04:20.460 --> 00:04:23.103 may<br/>be that would help, that would help at the top.

 $80\ 00:04:25.680 \longrightarrow 00:04:27.030 < v \text{ Roman} > \text{Does it work now}? < /v > 10:04:27.030 < v \text{ Roman} > 10:04:27.030 < v \text{ Roman$ 

81 00:04:31.887 --> 00:04:34.252 <v Maur>And we can start, if it's gonna be a,</v>

82 00:04:34.252 --> 00:04:36.468 you don't wanna create too much delay,

83 00:04:36.468 --> 00:04:38.010 but if at the top, I think it's the second tab,

84 00:04:38.010  $\rightarrow$  00:04:41.010 if you say switch display, we should be able

 $85\ 00:04:41.010 \longrightarrow 00:04:44.190$  to then see it in full mode.

 $86\ 00:04:44.190 \longrightarrow 00:04:49.127$  So it was fine, but we were just seeing

 $87\ 00:04:49.127 \longrightarrow 00:04:50.333$  your previous slide as well.

88 00:05:19.740 --> 00:05:22.563 There we go, perfect.

89 00:05:32.930 --> 00:05:34.582 <v Donna>Oh, Dr Xu, you on mute?</v>

90 00:05:34.582 --> 00:05:39.582 <v Maur>Oh, you're on mute.</v>

91 00:05:43.027 --> 00:05:44.280 <v Roman>Okay, now it's good.</v>

92 00:05:44.280 --> 00:05:45.835 <v Maur>Perfect.</v>

93 00:05:45.835 --> 00:05:49.440 <v Roman>Ah, technology, I am supposed to know this well.</v>

94 00:05:49.440 --> 00:05:52.530 So today I'm going to talk about the PEDALs model,

95 00:05:52.530 --> 00:05:55.920 which is a model we have developed essentially at the

96 00:05:55.920 --> 00:05:59.490 beginning for our students so they can understand quickly

97 00:05:59.490 --> 00:06:02.490 with a nice acronym about the general procedures

98 00:06:02.490 --> 00:06:05.768 of conducting implementation research.

99 00:06:05.768 --> 00:06:10.320 And we'll use one of our ongoing trial for shared 100 00:06:10.320 --> 00:06:13.350 medical appointment for the management of diabetes

 $101 \ 00:06:13.350 \longrightarrow 00:06:14.880$  as an illustration.

 $102\ 00:06:14.880$  --> 00:06:18.240 And in that process I will talk about some

103 00:06:18.240 --> 00:06:21.420 of the common designs for implementation research

104 00:06:21.420 --> 00:06:25.700 and the choices and the rationale we choose some

 $105\ 00{:}06{:}25.700$  -->  $00{:}06{:}30.510$  of the designs versus others in this presentation.

106 00:06:30.510 --> 00:06:33.600 But before that, let me spend a few minutes on some

 $107 \ 00:06:33.600 \longrightarrow 00:06:34.893$  of the advertisement.

108 00:06:36.393 --> 00:06:39.450 I'm currently the principal investigator for a lab

109 00:06:39.450 --> 00:06:44.450 we call Acacia lab, which is sort of the child of

 $110\ 00:06:45.020 \longrightarrow 00:06:48.660$  a parent study called Acacia Study.

111  $00:06:48.660 \rightarrow 00:06:52.140$  In that study we have set up a consortium

112 00:06:52.140  $\rightarrow 00:06:55.770$  of researchers from 10 universities in China.

113 00:06:55.770 --> 00:06:59.400 And gradually because of using that study

114 00:06:59.400 --> 00:07:02.310 we have formed strong collaborative team in China

115 00:07:02.310 --> 00:07:05.370 for primary healthcare and implementation science.

116 00:07:05.370 --> 00:07:08.190 So looking to the future, we really want to use

117 00:07:08.190 --> 00:07:11.760 this platform to collaborate more with all of you.

118 00:07:11.760 --> 00:07:15.540 I'm also leading the Southern Medical University Institute

119 $00:07:15.540 \dashrightarrow 00:07:18.420$  for Global Health site.

120 00:07:18.420 --> 00:07:21.600 Southern Medical University is one of the first

121 00:07:21.600 --> 00:07:26.040 and largest medical center receiving international patients,

122 00:07:26.040 --> 00:07:29.490 especially from the low and middle income countries.

123 00:07:29.490 --> 00:07:33.000 And in terms of research, our institute holds largest

 $124\ 00:07:33.000 \longrightarrow 00:07:35.520$  total competitive grant size in China.

125 00:07:35.520 --> 00:07:38.430 And in terms of education, we are one of the four

 $126\ 00:07:38.430$  --> 00:07:42.660 and one of the earliest program for international MPH,

127 00:07:42.660 --> 00:07:47.143 every year we gave 25 scholarship to people from low

128 00:07:47.143 --> 00:07:51.183 and middle income countries to study MPH in China.

129 00:07:52.080 --> 00:07:55.710 I'm also the co-editor in chief along with the professor

130 00:07:55.710 --> 00:08:00.060 Ann Sales for a new journal called implementation science

131 00:08:00.060 --> 00:08:03.990 communications, which is a facial companion journal

 $132\ 00:08:03.990 \longrightarrow 00:08:05.553$  to implementation science.

133 00:08:06.634 --> 00:08:11.074 We are a brand new journal two years, but so far

134 00:08:11.074 --> 00:08:15.763 we have received last year we have received almost

135 00:08:15.763 --> 00:08:19.950 a 400 submission, which is quite good for new journal

136 00:08:19.950 --> 00:08:24.900 and the downloads are also increased dramatically from

 $137\ 00:08:24.900 \longrightarrow 00:08:26.493$  two years ago to last year.

138 00:08:27.436 --> 00:08:30.790 So yeah, we<br/>lcome to submit your work to our journal

139 00:08:31.795 --> 00:08:33.631 and thank you so much.

140 00:08:33.631 --> 00:08:36.840 So now before I talk about the PEDALs model, I'd like

141 00:08:36.840 --> 00:08:40.860 to go over a few key concepts in implementation science.

142 00:08:40.860 --> 00:08:44.043 That is very much related to my model as well.

 $143\ 00:08:45.360 \longrightarrow 00:08:47.163$  So what is implementation science?

144 00:08:48.510 --> 00:08:53.510 This is a the question that I normally get in China

145 00:08:53.550 --> 00:08:57.720 and sometimes I find it's not so easy as it appears

146 00:08:57.720 --> 00:08:59.790 to discuss.

147 00:08:59.790 --> 00:09:04.290 According to a review in last HIV journal,

148  $00:09:04.290 \rightarrow 00:09:08.700$  they have identified 73 unique definitions

149 00:09:08.700 --> 00:09:10.773 for implementation science.

 $150\ 00:09:11.700 \longrightarrow 00:09:16.050$  So this definition I like it quite a bit

151 00:09:16.050 --> 00:09:19.890 but I still feel it is a little long, I prefer a much

152 00:09:19.890 --> 00:09:23.820 shorter definition modified on the definition given

 $153\ 00:09:23.820 \longrightarrow 00:09:25.710$  by the authors of this review.

154 00:09:25.710 --> 00:09:29.040 In my view, implementation science is a multidisciplinary

 $155\ 00:09:29.040 \longrightarrow 00:09:32.490$  specialty to seek generalized ology.

156 00:09:32.490 --> 00:09:34.830 So implementation science, one of the questions

157 00:09:34.830 --> 00:09:37.770 I got in China is it a field?

 $158\ 00:09:37.770 \longrightarrow 00:09:39.450$  Is it a discipline?

 $159\ 00:09:39.450 \longrightarrow 00:09:41.220$  Is it just a method?

 $160\ 00:09:41.220 \longrightarrow 00:09:45.150$  I would say it's a multidisciplinary specialty

161 00:09:45.150 --> 00:09:48.750 to seek generalizable knowledge, because it is a science

 $162\ 00:09:48.750 \longrightarrow 00:09:51.660$  so it has to generate generalizable knowledge,

 $163\ 00:09:51.660$  --> 00:09:56.190 it is about the scale of reasons for the strategies

164 00:09:56.190 --> 00:09:58.770 to close the evidence to practice gap.

165 00:09:58.770 --> 00:10:02.910 So what implementation science is about is really to

166 00:10:02.910 --> 00:10:07.560 put evidence-based practice into routine practice

167 00:10:07.560 --> 00:10:12.073 and our research is trying to understand how large

168 00:10:12.073 --> 00:10:14.307 that gap is and what are the determinants barriers

169 00:10:14.307 --> 00:10:17.830 and the facilitators for implementing that evidence-based

170  $00:10:18.792 \rightarrow 00:10:21.462$  practice and making it to a routine practice

171 00:10:21.462 --> 00:10:24.060 and what are the implementation strategies which are also

 $172\ 00:10:24.060 \longrightarrow 00:10:26.640$  intervention but we distinguish that from

 $173\ 00:10:26.640 \longrightarrow 00:10:28.620$  the health intervention, so we call it

 $174\ 00:10:28.620 \longrightarrow 00:10:30.240$  implementation strategies.

175 00:10:30.240 --> 00:10:33.090 What are the implementation strategies which can help

 $176\ 00:10:33.090 \longrightarrow 00:10:34.380$  close this gap?

177 00:10:34.380 --> 00:10:37.050 So that is about implementation science,

 $178\ 00:10:37.050 \longrightarrow 00:10:39.510$  so some of the other key concepts.

179 00:10:39.510 --> 00:10:41.580 In order to do implementation research,

180 00:10:41.580 --> 00:10:44.910 we have to start with health interventions

 $181\ 00:10:44.910 \longrightarrow 00:10:47.050$  and those healthy, not all of the health

182 00:10:47.926 --> 00:10:48.990 interventions can go into the process

 $183\ 00:10:48.990 \longrightarrow 00:10:50.820$  of implementation research.

184 00:10:50.820 --> 00:10:55.820 We have to first have evidence this health intervention

185 00:10:56.580 --> 00:11:00.450 can be regarded as evidence-based practice EBP.

186 00:11:00.450 --> 00:11:03.420 Once we have that, we need to understand the determinants

187 00:11:03.420 --> 00:11:06.480 of implementation, then based on that we will develop

 $188\ 00:11:06.480 \longrightarrow 00:11:08.490$  implementation strategies.

189 00:11:08.490 --> 00:11:11.670 We which we will tackle the barriers and the facilitators

190 00:11:11.670 --> 00:11:15.540 for implementing the EBP, some of them may come

 $191\ 00:11:15.540 \longrightarrow 00:11:17.820$  in from the health intervention itself,

192 00:11:17.820 --> 00:11:19.800 some are contextual factors.

193 00:11:19.800 --> 00:11:22.110 Then we need to understand the implementation

194 00:11:22.110 --> 00:11:24.810 outcomes which are different from the health outcomes

 $195\ 00:11:24.810 \longrightarrow 00:11:27.960$  and the clinical outcomes, then after that

 $196\ 00:11:27.960 \longrightarrow 00:11:30.870$  we make it into routine practice.

197 00:11:30.870 --> 00:11:35.870 Now let's talk the PEDALs models we have developed.

 $198\ 00:11:36.150 \longrightarrow 00:11:39.360$  First of all why we developed this model.

199 00:11:39.360 --> 00:11:42.360 Implementation science has already been in<br/>undated

 $200\ 00:11:42.360 \longrightarrow 00:11:45.026$  by the theories, models and the framework.

201 00:11:45.026 --> 00:11:50.026 A 2012 review identified more than 100 frameworks

202 00:11:50.250 --> 00:11:53.610 and it has ever since been increasing, why we are

 $203\ 00:11:53.610 \longrightarrow 00:11:55.356$  getting another framework.

204 00:11:55.356 --> 00:11:59.100 The motivation is from our students because when we are

205 00:11:59.100 --> 00:12:01.500 teaching implementation science to a master 206 00:12:01.500 --> 00:12:05.010 and an undergraduate students, very often we are challenged

207 00:12:05.010 --> 00:12:07.770 to give them a quick way to understand the essence

 $208\ 00:12:07.770 \longrightarrow 00:12:10.620$  of conducting implementation research.

209 00:12:10.620 --> 00:12:12.940 PEDALs has been developed as a teaching tool

210 00:12:14.102 --> 00:12:16.530 to wrap essential steps of conducting implementation

 $211\ 00:12:16.530 \longrightarrow 00:12:19.470$  research in an easy to remember acronym

212 00:12:19.470 --> 00:12:22.980 and also this acronym supposedly need to have an appropriate

 $213\ 00:12:22.980 \longrightarrow 00:12:26.400$  metaphor which can encompass

214 00:12:26.400 --> 00:12:28.653 the implementation science essence.

215 00:12:29.684 --> 00:12:34.020 This model has not yet been used, has not yet been published

 $216\ 00:12:34.020 \longrightarrow 00:12:36.170$  or peer reviewed, but we have been using it

217 00:12:37.075 --> 00:12:39.180 for our teaching already, so what is the PED-ALs?

218 00:12:39.180 --> 00:12:42.120 PEDALs has some of the letters and but first off

219 00:12:42.120 --> 00:12:45.510 for the PEDALs it's when your PEDAL, your bike,

220 00:12:45.510 --> 00:12:48.720 which has a image of a cycling forward with PEDALs

221 00:12:48.720 --> 00:12:51.280 which has a metaphor of moving forward with the

222 00:12:52.816 --> 00:12:55.726 short cycles, which indicates implementation science

223 00:12:55.726 --> 00:12:58.290 is very often indicating continued improvement.

224 00:12:58.290 --> 00:13:03.290 This is not a graphical representation of a model.

225 00:13:03.930 --> 00:13:06.930 So for the PEDALs for implementation science,

226 00:13:06.930 --> 00:13:11.190 we have to start with your problems in your work,

227 00:13:11.190 --> 00:13:13.710 which can be a clinical problem, which can be 228 00:13:13.710 --> 00:13:15.270 a public health problem.

229 00:13:15.270 --> 00:13:18.420 Once you have identified this problem, you need to search

230 00:13:18.420 --> 00:13:21.750 for whether or not there are existing evidence-based

231 00:13:21.750 --> 00:13:24.990 practice EBP, which can address the problem you have

 $232\ 00:13:24.990 \longrightarrow 00:13:28.470$  encountered after you have identified an EBP.

233 00:13:28.470 --> 00:13:31.620 To address your problem we have to think about how to,

234 00:13:31.620 --> 00:13:35.158 what are the barriers and the determinants to implementing

235 00:13:35.158 --> 00:13:38.490 this EBP in your work setting.

236 00:13:38.490 --> 00:13:41.820 So after the good understanding of the determinants

237 00:13:41.820 --> 00:13:46.650 to the implementation of the EVP, we need to develop

238 00:13:46.650 --> 00:13:49.950 implementation strategies which can facilitate 239 00:13:49.950 --> 00:13:53.910 the adoption and uptake of this EVP, then finally

 $240\ 00:13:53.910 \longrightarrow 00:13:57.390$  we hope it can get into sustained use.

241 00:13:57.390 --> 00:14:01.440 All across this process there is a S for the PEDALs,

 $242\ 00:14:01.440 \longrightarrow 00:14:05.460$  a small s some has two meanings here

243 00:14:05.460 --> 00:14:08.791 for one way it is plural form so means this might be

 $244\ 00:14:08.791 \longrightarrow 00:14:12.630$  a cycle, a continuous improvement.

245 00:14:12.630 --> 00:14:17.490 Another meaning of small s is it is a scale

246 00:14:17.490 --> 00:14:20.710 so it is indicating we need to have monitoring

247 00:14:21.694 --> 00:14:24.602 and evaluation designs and the methods for

248 00:14:24.602 --> 00:14:29.602 particularly in the last two process of EBP

249 00:14:30.180 --> 00:14:34.890 developing of the determined determinants of EBP

250 00:14:34.890 --> 00:14:37.620 and also developing implementation strategy

251 00:14:37.620 --> 00:14:40.560 and also to test the effectiveness

252 00:14:40.560 --> 00:14:42.270 of the implementation strategy.

 $253\ 00:14:42.270 \longrightarrow 00:14:44.520$  All of that need to have a strong monitoring  $254\ 00:14:44.520 \longrightarrow 00:14:46.590$  and an evaluation design.

 $255\ 00{:}14{:}46{.}590 \dashrightarrow 00{:}14{:}50{.}970$  So that's use our shared medical appointment study

 $256\ 00:14:50.970 \longrightarrow 00:14:55.524$  to illustrate those process first work challenges  $257\ 00:14:55.524 \longrightarrow 00:14:58.173$  and problems starting with P.

 $258\ 00{:}14{:}59{.}220$  --> 00:15:03.600 In China, China is facing with a severe diabetic epidemic.

 $259~00{:}15{:}03.600$  -->  $00{:}15{:}07.800$  In 2000 we only have 22 meaning people with diabetes.

260 00:15:07.800 --> 00:15:12.800 But in 2019 it is already 116 meaning the prevalence

261 00:15:13.890 --> 00:15:18.890 has increased dramatically from 2.7% to almost 10%.

262 00:15:20.760 --> 00:15:24.689 And the way to deal with the diabetic management in China

263 00:15:24.689 --> 00:15:27.489 is primary is through primary healthcare.

264 00:15:27.489 --> 00:15:29.979 However, we have a challenging here in China

 $265\ 00:15:29.979 \longrightarrow 00:15:31.740$  with a very much overburdened public health

266 00:15:31.740 --> 00:15:35.340 and clinical workforce and there is also reported

267 00:15:35.340 --> 00:15:39.030 very poor quality of care and insufficient communication

268 00:15:39.030 --> 00:15:41.250 between care providers and the patients,

269 00:15:41.250 --> 00:15:45.330 there is also a very much lack of patient centered care.

 $270\ 00:15:45.330 \longrightarrow 00:15:49.570$  So the service model is insufficient to really

271 00:15:50.430 --> 00:15:54.480 integrate public health work and also the curative services

272 00:15:54.480 --> 00:15:56.793 in diabetic management here in China.

273 00:15:57.890 --> 00:16:01.320 So we performed this gap analysis and we trying to

274 00:16:01.320 --> 00:16:05.850 identify whether there is other service model which has

275 00:16:05.850 --> 00:16:09.420 evidence which can meet and solve the problem we have

276 00:16:09.420 --> 00:16:11.733 encountered in this work setting.

 $277\ 00:16:12.690 \longrightarrow 00:16:15.420$  So that's come to the second step

278 00:16:15.420 --> 00:16:18.753 evidence-based practice EBP.

 $279\ 00:16:20.310 \longrightarrow 00:16:22.320$  So in order to do that, first we need to have

280 00:16:22.320 --> 00:16:27.220 some understanding to what extent health intervention

281 00:16:28.273 --> 00:16:32.435 can be considered EBP, I don't think we have some consensus

 $282\ 00:16:32.435 \longrightarrow 00:16:34.680$  on that, but most of the people I believe

283 00:16:34.680 --> 00:16:39.420 are familiar with this evidence pyramids evidence can

 $284\ 00{:}16{:}39{.}420 \dashrightarrow 00{:}16{:}43{.}410$  change from expert opinions to cross-sectional studies

 $285\ 00{:}16{:}43.410 \dashrightarrow 00{:}16{:}46.950$  all the way up to individual studies to synthesis of know

286 00:16:46.950 --> 00:16:50.310 to systematic reviews on the top.

287 00:16:50.310 --> 00:16:53.640 So normally for the journal implementation science

288 00:16:53.640 --> 00:16:56.220 and the implementation science communications,

289 00:16:56.220 --> 00:17:01.220 we will regard some health intervention as a EBP

 $290\ 00:17:01.950$  --> 00:17:05.942 if they at least have several randomized control

291 $00{:}17{:}05{.}942 \dashrightarrow 00{:}17{:}08{.}220$  studies to support them in a health setting.

292 00:17:08.220 --> 00:17:12.450 But I have to say different settings, different studies,

293 00:17:12.450 --> 00:17:15.390 like some of the policy study, it's very difficult 294 00:17:15.390 --> 00:17:17.280 to have randomized control studies.

295 00:17:17.280 --> 00:17:21.715 But normally in the healthcare vicinities in this setting we

296 00:17:21.715 --> 00:17:24.801 consider several randomized control studies or even better,

297 00:17:24.801 --> 00:17:28.560 more since that systematic reviews is good to prove it

298 00:17:28.560 --> 00:17:29.703 is an EBP.

299 00:17:31.111 --> 00:17:34.020 So with that standard, fortunately we have identified

300 00:17:34.020 --> 00:17:37.320 systematic review for shared medical appointment

301 00:17:37.320 --> 00:17:41.490 which has approved SMA is a good way to tackle

302 00:17:41.490 --> 00:17:45.690 diabetic management in countries outside of china,

 $303\ 00:17:45.690 \longrightarrow 00:17:47.973$  so what is the shared medical appointment?

304 00:17:48.895 --> 00:17:50.700 Shared medical appointment is a new method

305 00:17:50.700 --> 00:17:52.800 of managing your patients.

30600:17:52.800 --> 00:17:55.410 In traditionally in China, patients are managed

 $307\ 00:17:55.410 \longrightarrow 00:17:59.280$  under one-on-one consultation.

 $308\;00{:}17{:}59{.}280 {\:-->}\;00{:}18{:}02{.}190$  So one patient go to see the doctor one-on-one,

309 00:18:02.190 --> 00:18:04.830 but for shared medical appointment patients

 $310\ 00:18:04.830 \rightarrow 00:18:07.800$  with similar conditions are grouped together

311 00:18:07.800 --> 00:18:11.760 and they go and see doctor together and sometimes also

312 00:18:11.760 --> 00:18:14.761 it's not only one doctor, it's a group of

 $313\ 00:18:14.761 \longrightarrow 00:18:16.290$  a multidisciplinary team come together.

314 00:18:16.290 --> 00:18:20.250 So it becomes a group and group consultation between

315 00:18:20.250 --> 00:18:22.050 and the education and the management

316 00:18:22.892  $\rightarrow$  00:18:24.930 between the clinicians and the patient.

317 00:18:24.930 --> 00:18:27.990 And there are systematic reviews suggest shared

318 00:18:27.990 --> 00:18:31.110 and medical appointment has substantially improved clinical

319 00:18:31.110 --> 00:18:35.580 outcomes in terms of glucose control

320 00:18:35.580 --> 00:18:39.240 and blood pressure control and also it improves,

321 00:18:39.240 --> 00:18:43.260 it has a lot of benefits to improve patient behavior,

 $322\ 00{:}18{:}43{.}260$  -->  $00{:}18{:}47{.}310$  self-management and also to improve (indistinct) adherence

323 00:18:47.310 --> 00:18:51.819 to best practice and adherence to clinical guidelines.

324 00:18:51.819 --> 00:18:56.299 And the very good is the study also suggests shared medical

325 00:18:56.299 --> 00:19:00.840 appointment for diabetic does not really increase

 $326\ 00:19:00.840 \longrightarrow 00:19:02.820$  the economics.

327 00:19:02.820 --> 00:19:06.090 So you don't really spend extra money,

328 00:19:06.090 --> 00:19:09.630 have extra spenditures to manage your patients

 $329\ 00:19:09.630 \longrightarrow 00:19:11.850$  with a shared medical appointment model.

 $330\ 00:19:11.850 \longrightarrow 00:19:15.960$  So it looks like it is effective and it does not

 $331\ 00:19:15.960 \longrightarrow 00:19:17.670$  increase your expenditure.

332 00:19:17.670 --> 00:19:21.450 It is no brainer we should use SMA but unfortunately

333 00:19:21.450 --> 00:19:23.970 in China, China we don't really use it a lot

334 00:19:23.970 --> 00:19:28.778 actually it is not used at all in all across China.

335 00:19:28.778 --> 00:19:32.340 So that's why we need to go to the third step. 336 00:19:32.340 --> 00:19:35.970 We need to understand what are the determinants various

337 00:19:35.970 --> 00:19:39.480 and facilitators which are determine the implementation

338 00:19:39.480 --> 00:19:43.850 of SMA shared medical appointment in China in our setting,

 $339\ 00:19:43.850 \longrightarrow 00:19:45.510$  in our primary care.

340 00:19:45.510 --> 00:19:48.240 So there are two types of barriers in the facilitators

 $341\ 00:19:48.240 \longrightarrow 00:19:49.110$  in my view.

342 00:19:49.110 --> 00:19:53.430 One is embedded with the shared medical appointment itself.

343 00:19:53.430 --> 00:19:57.330 So the health intervention itself can be a strong barrier

344 00:19:57.330  $\rightarrow 00:19:59.760$  then it moves to contextual factors.

345 00:19:59.760 --> 00:20:03.930 So first let's talk about shared medical appointment itself

346 00:20:03.930 --> 00:20:07.320 and what we need to do is we need to optimize SMA

 $347\ 00:20:07.320 \longrightarrow 00:20:09.153$  for the context of China.

348 00:20:10.620 --> 00:20:14.100 In that we're going to use the method proposed by

349 00:20:14.100 --> 00:20:15.730 Professor Linda Conius.

350 00:20:15.730 --> 00:20:20.730 Linda Conius is proposing a method she has developed a code

351 00:20:21.180 --> 00:20:26.130 optimizing of bio behavior and biomedical interventions,

352 00:20:26.130 --> 00:20:30.003 the multi-phase optimization strategy coll it MOST.

353 00:20:31.080 --> 00:20:35.280 So according to MOST, we have to first come up with a

 $354\ 00:20:35.280 \longrightarrow 00:20:39.690$  conceptual model for SMA for the setting

355 00:20:39.690 --> 00:20:43.770 of China because almost the all of the health interventions

 $356\ 00:20:43.770 \longrightarrow 00:20:47.520$  are sort of the complex intervention for shared

357 00:20:47.520 --> 00:20:49.920 medical appointment it's the same thing,

 $358\ 00:20:49.920 \longrightarrow 00:20:51.600$  it has many components.

359 00:20:51.600 --> 00:20:56.240 We need to decide what individual components for SMA

360 00:20:56.240 --> 00:20:59.880 can be combined together and it can be configured in a way

361 00:20:59.880  $\rightarrow 00:21:02.790$  which is best suited for the setting of China.

362 00:21:02.790 --> 00:21:05.580 So we have developed this conceptual model,

363 00:21:05.580 --> 00:21:09.630 at least it has four components which are important for SMA,

364 00:21:09.630 --> 00:21:13.470 one is you put patients with similar conditions together

 $365\ 00:21:13.470 \longrightarrow 00:21:15.900$  so they go to see the doctor together.

 $366\ 00:21:15.900 \longrightarrow 00:21:18.887$  So this component can be versus individual

367 00:21:18.887 --> 00:21:20.340 one-on-one session.

368 00:21:20.340 --> 00:21:24.419 The second component is the patient can go accompanied

 $369\ 00:21:24.419 \longrightarrow 00:21:26.430$  by their family members.

370 00:21:26.430 --> 00:21:30.150 The third component it is a multidisciplinary team

371 00:21:30.150 --> 00:21:33.570 from the clinicians come to see the patient.

372 00:21:33.570 --> 00:21:37.470 The fourth is the education for diabetes can

 $373\ 00:21:37.470 \longrightarrow 00:21:40.440$  be either online or offline, so we have at least

 $374\ 00:21:40.440 \longrightarrow 00:21:41.580$  four components.

 $375\ 00:21:41.580 \longrightarrow 00:21:44.280$  So in this conceptual model, those campaign,  $376\ 00:21:44.280 \longrightarrow 00:21:48.330$  those components works through one of those nine mechanisms,

377 00:21:48.330 --> 00:21:52.380 through those two types of mediators finally it can

378 00:21:52.380 --> 00:21:55.740 improve self-management of the patients in theory

379 00:21:55.740 --> 00:22:00.740 and finally to improve primary outcome of glucose control.

380 00:22:01.020 --> 00:22:04.740 So for the conceptual model it is good in a view,

381 00:22:04.740 --> 00:22:09.060 you have your components layout clearly and also have

382 00:22:09.060 --> 00:22:11.130 your mediators layout clearly.

383 00:22:11.130 --> 00:22:14.640 But mostly important, you have all of the mechanisms

384 00:22:14.640 --> 00:22:17.340 which are supposed to work to connecting each

385 $00{:}22{:}17.340 \dashrightarrow 00{:}22{:}20.130$  of the individual component to the mediators

 $386\ 00:22:20.130 \longrightarrow 00:22:23.110$  and in the end to the outcome health outcome

387 00:22:24.178 --> 00:22:26.370 and the clinical outcome you are trying to achieve.

388 00:22:26.370 --> 00:22:29.970 So with the development of this SMA conception model,

389 00:22:29.970 --> 00:22:33.030 we can develop with the information from literature

 $390\ 00:22:33.030 \longrightarrow 00:22:35.670$  and also with consultation with clinicians

391 00:22:35.670 --> 00:22:39.255 and the stakeholders, we need to really have optimization

392 00:22:39.255 --> 00:22:42.540 trial to really understand whether or not

393 00:22:42.540 --> 00:22:45.750 those individual components can work and whether

394 00:22:45.750 --> 00:22:49.260 you combine those individual components together,

395 00:22:49.260 --> 00:22:52.020 they can be working together rather than canceling

 $396\ 00:22:52.020 \longrightarrow 00:22:53.250$  each other out.

397 00:22:53.250 --> 00:22:57.690 So in order to do that we are going to do a factorial design

 $398\ 00:22:57.690 \longrightarrow 00:22:59.970$  while we are going to do a factorial design,

399 00:22:59.970 --> 00:23:01.890 because we have four components.

 $400\ 00:23:01.890 \longrightarrow 00:23:05.250$  Let's say if we only have three components

401 00:23:05.250 --> 00:23:08.430 with the three components you can have eight different

 $402\ 00{:}23{:}08{.}430$  -->  $00{:}23{:}11{.}970$  configuration of those components and making them into

 $403\ 00:23:11.970 \longrightarrow 00:23:13.560$  an complex intervention.

404 00:23:13.560 --> 00:23:18.210 If we are going to do in the individual two arm trial,

405 00:23:18.210 --> 00:23:22.320 we need to do three separate randomized control study

 $406\ 00{:}23{:}22{.}320$  -->  $00{:}23{:}26{.}910$  that is very time consuming and a very resource consuming.

407 00:23:26.910 --> 00:23:29.760 But with the factorial design as proposed by

408 00:23:29.760 --> 00:23:34.290 Professor Linda Conius, we can use one trial the same

409 00:23:34.290 --> 00:23:37.980 sample size, but we can deal with all three or four

410 $00{:}23{:}37{.}980$  -->  $00{:}23{:}41.040$  components, so with that study we can understand whether

411 00:23:41.040 --> 00:23:44.970 or not each individual component in your complex study

412 00:23:44.970 --> 00:23:47.343 is effective or not.

413 00:23:47.343 --> 00:23:52.020 And even better with the design of a factorial design,

414 00:23:52.020 --> 00:23:55.080 they can also test interaction between those

415 00:23:55.080 --> 00:23:56.490 individual components.

416 00:23:56.490 --> 00:23:59.280 So that is important for implementation science

417 00:23:59.280 --> 00:24:02.520 because sometimes individual component can work,

418 00:24:02.520 --> 00:24:05.433 but if you put different individual components together,

419 00:24:06.592 --> 00:24:08.250 they may cancel out the effects from each other

420 00:24:08.250 --> 00:24:12.810 or they can virtually reinforce, so one plus one may be

421 00:24:12.810 --> 00:24:16.110 larger than two or less than two, so factorial design

 $422\ 00{:}24{:}16{.}110 \dashrightarrow 00{:}24{:}19{.}350$  can deal with all those issues, so that is very good.

423 00:24:19.350 --> 00:24:23.610 And also good to remember is most it's not only

42400:24:23.610 --> 00:24:28.050 concerning factorial design because it is optimization,

425 00:24:28.050 --> 00:24:32.730 optimization means not the best if it is not optimization.

426 00:24:32.730 --> 00:24:36.522 We are only looking for health interventions which works

427 00:24:36.522 --> 00:24:38.670 best in terms of improving health outcomes,

 $428\ 00:24:38.670$  --> 00:24:42.660 but with optimization we are looking for under the resource

429 00:24:42.660 --> 00:24:46.920 constraints which we have agreed upon with the stakeholders

 $430\ 00:24:46.920 \longrightarrow 00:24:48.510$  what is working best.

431 00:24:48.510 --> 00:24:53.510 So we have to set clear, something we call optimization

432 00:24:54.030 --> 00:24:57.570 criteria, which can be money, which can be time

 $433\ 00:24:57.570 \longrightarrow 00:24:59.640$  to implementing SMA.

434 00:24:59.640 --> 00:25:03.511 So once you we have those criteria set, we can do the

435 00:25:03.511 --> 00:25:05.910 factorial design we and the way we are going to pick up

436 00:25:05.910 --> 00:25:10.440 the configuration which best suited the resource

 $437\ 00:25:10.440 \longrightarrow 00:25:12.360$  concentration constraints.

438 00:25:12.360 --> 00:25:16.470 But under that umbrella, whatever configuration works best

439 00:25:16.470 --> 00:25:21.180 can be picked up for our final traditional randomized

440 00:25:21.180 --> 00:25:22.290 control study.

441 00:25:22.290 --> 00:25:26.940 So that is what we are going to do to select the components

442 00:25:26.940 --> 00:25:30.690 for our SMA in that way we can reconfigure SMA

443 00:25:30.690 --> 00:25:33.166 to the context of China.

 $444\;00{:}25{:}33.166\;{--}{>}\;00{:}25{:}37.890$  So suppose after we have optimized SMA itself  $445\;00{:}25{:}37.890\;{--}{>}\;00{:}25{:}40.800$  for the context of China, we still need to understand

446 00:25:40.800 --> 00:25:45.760 this reconfigured and optimized SMA and what are the

447 $00{:}25{:}46.795 \dashrightarrow 00{:}25{:}49.560$  other contextual factors which can determine

448 00:25:49.560  $\rightarrow 00:25:53.763$  the implementation of this optimized SMA.

449 00:25:54.900 --> 00:25:59.880 In order to do that we will use a lot of the frameworks.

450 00:25:59.880 --> 00:26:03.570 You know, implementation science is in undated by frameworks,

451 00:26:03.570  $\rightarrow 00:26:06.510$  but use of frameworks is really the essence

 $452\ 00:26:06.510 \longrightarrow 00:26:08.280$  of implementation research.

453 00:26:08.280 --> 00:26:11.490 I very much use this when I'm talking about

454 00:26:11.490 --> 00:26:15.244 implementation science theories, models and a framework

 $455\ 00:26:15.244 \longrightarrow 00:26:16.662$  without a theory.

45600:26:16.662 $\operatorname{-->}$ 00:26:19.680 Think about if you have many pieces of clothing, shoes,

 $457\ 00:26:19.680 \longrightarrow 00:26:23.755$  juries and you do not have really a very nichey  $458\ 00:26:23.755 \longrightarrow 00:26:27.360$  and very neat, very nice walking closet,

459 00:26:27.360 --> 00:26:31.130 then you are buried in your clothing and if you want to

460 00:26:31.130 --> 00:26:33.990 walk up and do a interview, it's very difficult for you

461 00:26:33.990 --> 00:26:37.320 to organize your clothing and dress up very nicely.

 $462\ 00{:}26{:}37{.}320$  -->  $00{:}26{:}41{.}130$  But if you have a very good framework, which is almost like

463 00:26:41.130 --> 00:26:43.950 your walk in closet, you can organize the things 464 00:26:43.950 --> 00:26:47.370 systematically and you can also standing on the shooters

 $465\ 00:26:47.370 \longrightarrow 00:26:49.470$  of many giants because other people have done

466 00:26:49.470 --> 00:26:52.440 the work of for you what are the items that you need

467 00:26:52.440 --> 00:26:53.283 to looking at.

468 00:26:54.303 --> 00:26:56.850 So frameworks provide us with more systematic

469 00:26:56.850 --> 00:26:59.850 and comprehensive way of looking at it, the things you want

470 00:26:59.850 --> 00:27:00.730 to look at.

471 00:27:02.517 --> 00:27:07.517 And we have very good taxonomy of series models

472 00:27:07.710 --> 00:27:11.280 and the frameworks and for the PEDALs we are going

473 00:27:11.280 --> 00:27:15.270 to use a determinants frameworks for the understanding

 $474\ 00:27:15.270 \longrightarrow 00:27:17.880$  of barriers and the facilitators and we will use

475 00:27:17.880 --> 00:27:21.840 process models and implementation series to understand

476 00:27:21.840  $\rightarrow 00:27:24.420$  how to develop implementation strategy.

477 00:27:24.420 --> 00:27:27.000 Then we are going to use evaluation frameworks

478 00:27:27.000 --> 00:27:30.720 for the evaluation of your implementation strategy

479 00:27:30.720 --> 00:27:32.073 for health outcomes.

480 00:27:34.678 --> 00:27:36.930 So for specifically for SMA, we are going to use

481 00:27:36.930 --> 00:27:40.200 a concern related framework for implementation research.

 $482\ 00{:}27{:}40.200$  -->  $00{:}27{:}43.173$  Why we use this very commonly used framework,

 $483\ 00{:}27{:}43.173$  -->  $00{:}27{:}47.253$  CFIR is probably most widely used implementation framework.

484 $00{:}27{:}48.150 \dashrightarrow 00{:}27{:}51.000$  Why we choose it, one of the biggest reason

 $485\ 00:27:51.000 \rightarrow 00:27:53.747$  is it is very comprehensive and the second is

486 00:27:53.747 --> 00:27:57.570 it has a really nice website which has layout all of the

 $487\ 00:27:57.570 \longrightarrow 00:28:00.930$  tools and options and the literature concerning  $488\ 00:28:00.930 \longrightarrow 00:28:04.500$  this framework and also the tutorials available,  $489\ 00:28:04.500 \longrightarrow 00:28:07.080$  so it's very easy to find resources.

490 00:28:07.080 --> 00:28:10.920 So once we have a implementation team and the research team

491 00:28:10.920 --> 00:28:15.390 if we use safer is much easier to teach the entire team

 $492\ 00:28:15.390 \longrightarrow 00:28:16.680$  how to use CFIR.

493 00:28:18.535 --> 00:28:21.183 But CFIR is a framework, it is not a model.

494 00:28:22.234 --> 00:28:25.890 So by that it does not really suggest causal linkage

 $495\ 00:28:25.890 \longrightarrow 00:28:28.980$  between the components and the outcome.

496 00:28:28.980 --> 00:28:32.910 So we are also considering use normalization process theory

497 00:28:32.910 --> 00:28:37.890 NPT as a complementary framework to CFIR.

498 00:28:39.877 --> 00:28:42.450 However, I have to say, even though normalization process

 $499\ 00:28:42.450 \longrightarrow 00:28:45.180$  theory is very nice in terms of illustrating

500 00:28:45.180 --> 00:28:50.180 the causal linkage of implementing process and the outcome,

 $501\ 00:28:51.030 \longrightarrow 00:28:53.790$  sometimes it is not so easy to use.

502 00:28:53.790 --> 00:28:58.590 For instance, in this picture is one of our

503 00:28:58.590 --> 00:29:02.850 reconfiguration of the domains and the constructs

 $504\ 00:29:02.850 \longrightarrow 00:29:05.574$  from normalization process theory.

 $505\ 00:29:05.574 \longrightarrow 00:29:07.470$  We have spent quite a bit of time in studying

 $506~00{:}29{:}07{.}470$  -->  $00{:}29{:}11{.}520$  and understanding NPT and organize it in a way our students

 $507\ 00:29:11.520$  --> 00:29:13.800 and the research team can understand better.

508 00:29:13.800 --> 00:29:17.665 But even with that we still found some of the constructs

 $509\ 00:29:17.665 \longrightarrow 00:29:21.090$  of this model is a little difficult to distinguish

510 00:29:21.090 --> 00:29:25.480 like inter action workability relational integration

511 00:29:25.480 --> 00:29:30.030 and skillset workability, those constructs can be very

 $512\ 00:29:30.030 \longrightarrow 00:29:34.140$  easily like confusing for our researchers.

513 00:29:34.140 --> 00:29:37.290 However, it is still one of the rare implementation

514 00:29:37.290 --> 00:29:39.960 science theories specifically for implementation,

 $515\ 00:29:39.960 \longrightarrow 00:29:42.960$  so we are considering using it for SMA as well.

 $516\ 00:29:42.960 \longrightarrow 00:29:45.600$  So how we are going to use it, this is a picture

517 00:29:45.600 --> 00:29:48.660 from the journey to the west, one of the very famous

 $518\ 00:29:48.660 \longrightarrow 00:29:50.430$  Chinese classic.

519 00:29:50.430 --> 00:29:54.124 It has many of the stakeholders for the journey to the West

 $520\ 00{:}29{:}54.124$  -->  $00{:}29{:}58.985$  from China to India to fit the classic scripts for Buddhism,

521 00:29:58.985 --> 00:30:02.190 so you can get the Buddhism back to China

 $522\ 00:30:02.190 \longrightarrow 00:30:04.050$  and implementing that.

 $523~00{:}30{:}04.050 \dashrightarrow 00{:}30{:}07.140$  So essentially we want to do stakeholder analysis

 $524\ 00:30:07.140 \longrightarrow 00:30:11.310$  to determine and engage the community.

525 00:30:11.310 --> 00:30:14.508 We want to have community engagement involvement

526 00:30:14.508 --> 00:30:16.740 and engage in your stakeholders so we can determine

527 00:30:16.740 --> 00:30:21.740 what are possible the facilitators and the barriers

528 00:30:22.055 --> 00:30:27.055 for your implementation of SMA, so in this process

 $529~00{:}30{:}27.660$  -->  $00{:}30{:}31.950$  we will use CFIR and NPT and use them to design

530 00:30:31.950 --> 00:30:33.003 or survey form.

531 00:30:33.860 --> 00:30:37.350 So those can be used as a quantitative survey form,

532 00:30:37.350 --> 00:30:40.620 but we will also use them to design interview guides.

533 00:30:40.620 --> 00:30:45.324 So we can use them to do in-depth interview or even use it

534 00:30:45.324 --> 00:30:48.750 for focus group and we'll also use those frameworks

535 00:30:48.750 --> 00:30:50.400 to analyze data.

536 00:30:50.400 --> 00:30:54.150 So implementation science framework, CFIR and NPT.

537 00:30:54.150 --> 00:30:57.870 We actually guide us throughout the entire process

 $538\ 00:30:57.870 \longrightarrow 00:30:58.803$  of our study.

539 00:31:00.012 --> 00:31:03.780 This is the barriers and the facilitators we have identified

540 00:31:03.780 --> 00:31:06.960 from the literature, not from a actual study as our study

 $541\ 00:31:06.960 \longrightarrow 00:31:08.313$  is currently ongoing.

542 00:31:10.663 --> 00:31:13.860 But now think if we have already determined the barriers

 $543\ 00:31:13.860 \longrightarrow 00:31:18.673$  and the facilitators to normalize EBP of SMA

 $544\ 00:31:19.710 \longrightarrow 00:31:22.230$  in our clinical setting in primary healthcare,

545 00:31:22.230 --> 00:31:25.830 now we need to develop implementation strategies to deal

 $546\ 00:31:25.830 \longrightarrow 00:31:27.753$  with each of the barriers.

547 00:31:28.770 --> 00:31:31.890 In order to identify implementation techniques,

548 00:31:31.890 --> 00:31:36.280 then you can package those individual techniques into the

 $549\ 00:31:36.280 \longrightarrow 00:31:39.330$  package we call implementation strategy,

550 00:31:39.330 --> 00:31:43.170 which can deal with the implementation barriers effectively

551 00:31:43.170 --> 00:31:45.450 so we can improve uptake.

552 00:31:45.450 --> 00:31:50.450 We already have good studies in developing taxonomy

553 00:31:50.460 --> 00:31:54.600 of implementation strategies which are expert recommendation

 $554\ 00:31:54.600 \longrightarrow 00:31:55.950$  for implementation change.

555 00:31:55.950 --> 00:31:59.790 The ERIC, so ERIC is one of the popular framework

556 00:31:59.790 --> 00:32:04.020 which have categorized all the available implementation

 $557\ 00:32:04.020 \longrightarrow 00:32:05.970$  technique they can identify.

 $558\ 00:32:05.970 \longrightarrow 00:32:09.420$  But the key is really to, I identify those

 $559\ 00:32:09.420$  --> 00:32:13.407 available implementation technique which very often

560 00:32:13.407 --> 00:32:15.690 have already some evidence-based and match them

 $561\ 00:32:15.690 \longrightarrow 00:32:17.610$  to your implementation barrier.

562 00:32:17.610 --> 00:32:21.613 So this is a step critical in developing your action,

563 00:32:21.613 --> 00:32:25.020 which means developing your implementation strategy.

564 00:32:25.020 --> 00:32:28.980 But the key, the big challenge is what are the methods

565 00:32:28.980 --> 00:32:33.980 you can use to match entertainer implementation strategies

 $566\ 00:32:35.880 \longrightarrow 00:32:38.730$  to your barriers in your setting.

567 00:32:38.730 --> 00:32:41.430 This is a really a under-researched area in

568 00:32:41.430 --> 00:32:42.840 implementation science.

569 00:32:42.840 --> 00:32:47.820 However, one of the researcher has suggest four methods

570 00:32:47.820 --> 00:32:51.330 we can consider, one is called concept mapping,

571 00:32:51.330 --> 00:32:54.693 which is a visual mapping using mixed and methods.

572 00:32:55.920 --> 00:33:00.920 The map here is one of the visualization of the barriers

 $573\ 00:33:01.439 \longrightarrow 00:33:06.063$  in implementing some EBP.

574~00:33:07.274 --> 00:33:09.750 Then the second method is group model building,

575 00:33:09.750 --> 00:33:13.882 which is sort of the a causal loop diagram of complex

 $576\ 00:33:13.882 \longrightarrow 00:33:15.300$  problems.

577 00:33:15.300 --> 00:33:19.530 The third is a conjoint analysis, conjoint analysis

578 00:33:19.530 --> 00:33:21.090 has different forms.

579 00:33:21.090 --> 00:33:24.120 One of the most popular form is called a discrete choice

 $580\ 00:33:24.120$  --> 00:33:27.960 experiment, which we are going to talk a little later

581 00:33:27.960 --> 00:33:31.800 because we have opted for DCE Discrete Choice Experiment

582 00:33:31.800 --> 00:33:33.570 for our study.

583 00:33:33.570 --> 00:33:35.760 The last one is intervention mapping,

584 00:33:35.760 --> 00:33:39.120 which is a systematic and multi-step development

 $585\ 00:33:39.120 \longrightarrow 00:33:41.040$  of interventions.

586 00:33:41.040 --> 00:33:45.090 All of those four methods have been extensively used in

 $587\ 00:33:45.090$  --> 00:33:48.450 other fields but not as much in implementation research.

588 00:33:48.450  $\rightarrow 00:33:50.790$  So I'm really highly encouraging all of us

589 00:33:50.790 --> 00:33:54.270 in doing implementation research to use some of those

 $590\ 00:33:54.270$  --> 00:33:57.810 methods in systematically match and retainer implementation

591 00:33:57.810 --> 00:34:00.630 strategies to the barriers you have identified 592 00:34:00.630 --> 00:34:01.950 in your study.

593 00:34:01.950 --> 00:34:05.460 So for us, we are going to use a difficult choice experiment

59400:34:05.460 --> 00:34:08.137 to tailor implementation strategies for SMA,

595 00:34:09.063 --> 00:34:11.880 DCE is widely used in health economics,

596 $00{:}34{:}11.880 \dashrightarrow 00{:}34{:}14.880$  but not as much in implementation science.

597 00:34:14.880 --> 00:34:18.030 DCE belongs to the method in conjoin analysis,

598 00:34:18.030 --> 00:34:23.030 DCE in our team we have used the DCE before

 $599\;00{:}34{:}23.160 \dashrightarrow 00{:}34{:}27.030$  in understanding healthcare professionals preference

 $600\ 00{:}34{:}27.030$  -->  $00{:}34{:}31.142$  for working in the primary care setting job preferences.

601 00:34:31.142 --> 00:34:34.440 According to review, they have identified

60200:34:34.440 --> 00:34:38.340 22 DCE studies comparing different implementation

 $603 \ 00:34:38.340 \longrightarrow 00:34:39.243$  strategies.

60400:34:40.320 --> 00:34:45.320 So it is not so much used as as much in other field of work.

 $605\ 00{:}34{:}46.770$  -->  $00{:}34{:}51.240$  So use of DCE in our SMA study is like this  $606\ 00{:}34{:}51.240$  -->  $00{:}34{:}55.980$  in basically in DC you it's a combination of a quantitative

 $607\ 00:34:55.980 \longrightarrow 00:34:57.690$  and a quantitative work.

60800:34:57.690 --> 00:35:02.690 You first it's most likely we'll use a quantitative work

60900:35:02.730 --> 00:35:06.930 and also literature review to identify what are the

610 00:35:06.930 --> 00:35:11.190 possible implementation techniques to be developed.

611 00:35:11.190 --> 00:35:14.370 So we develop those implementation strategies,

61200:35:14.370 --> 00:35:18.571 the techniques through initial review of literature

 $613\ 00:35:18.571 \longrightarrow 00:35:20.910$  and expert consensus.

614 00:35:20.910 --> 00:35:25.060 So for instance, if we have identified through this process

615 00:35:26.070 --> 00:35:30.000 audit and feedback is one of the major implementation

 $616\ 00:35:30.000 \longrightarrow 00:35:32.550$  strategy to deal with this barriers,

617 00:35:32.550 --> 00:35:36.840 we have identified the DCE then can do the work of

618 00:35:36.840 --> 00:35:40.240 painter audit and feedback to the specific setting

619 00:35:41.190 --> 00:35:44.940 to implementing SMA, because why we are going to do this,

 $620\ 00{:}35{:}44{.}940$  -->  $00{:}35{:}49{.}320$  because even it is called audit and feedback,

 $621 \ 00:35:49.320 \longrightarrow 00:35:51.810$  it actually has many components.

62200:35:51.810 --> 00:35:56.160 This is very much like EBP of SMA can be complex

 $623\ 00:35:56.160 \longrightarrow 00:35:57.480$  as many components.

62400:35:57.480 --> 00:36:00.930 Our implementation strategy can also have many components.

 $625\ 00{:}36{:}00{.}930 \dashrightarrow > 00{:}36{:}05{.}910$  So we can develop these different components of audit

626 00:36:05.910 --> 00:36:09.060 and feedback including format of feedback.

 $627\ 00:36:09.060 \rightarrow 00:36:12.750$  Is it a verbal or written recipients of feedback?

628 00:36:12.750 --> 00:36:15.870 Do we feedback to individual clinician or feedback

 $629\ 00:36:15.870 \longrightarrow 00:36:18.450$  to the entire group the source of feedback,

630 00:36:18.450 --> 00:36:21.580 is the feedback coming from that influential source

631 00:36:22.600 --> 00:36:25.590 like their peers or supervisor or is it coming from

 $632\ 00:36:25.590 \longrightarrow 00:36:26.910$  the researchers?

633 00:36:26.910 --> 00:36:29.790 How we are going to deliver the feedback by emails,

 $634\ 00:36:29.790 \longrightarrow 00:36:32.370$  by letter or in person?

635 00:36:32.370 --> 00:36:34.810 How frequent your feedback should be monthly

 $636\ 00:36:36.393 \longrightarrow 00:36:37.637$  or every four months.

 $637\ 00{:}36{:}37{.}637$  -->  $00{:}36{:}41{.}430$  Now how the instruction for feedback need to be developed.

638 00:36:41.430 --> 00:36:46.430 Will it be explicit, measurable, targeted but no action plan

 $639\ 00:36:46.620 \longrightarrow 00:36:50.310$  or should it be accompanied with action plan,

640 00:36:50.310 --> 00:36:55.200 but no explicit target or in addition to audit and feedback,

 $641\ 00:36:55.200 \longrightarrow 00:36:57.060$  do we need to copy that with another

 $642\ 00:36:57.060 \longrightarrow 00:36:58.500$  implementation strategy?

643 00:36:58.500 --> 00:37:01.110 Say giving people financial incentive.

644 00:37:01.110 --> 00:37:04.890 If we are going to do the SMA, we give them extra money

645 00:37:04.890 --> 00:37:05.730 to do that.

646 00:37:05.730 --> 00:37:09.810 Okay, so the audit and feedback and our implementation

 $647 \ 00:37:09.810 \longrightarrow 00:37:13.350$  strategy have all those individual attributes

 $648\ 00:37:13.350 \longrightarrow 00:37:16.705$  and all those attributes have levels.

649 00:37:16.705 --> 00:37:21.705 So we can based on those, we can develop different choices

 $650\ 00{:}37{:}22.227$  -->  $00{:}37{:}26.610$  have one to many, many, many, many choices for.

651 00:37:26.610 --> 00:37:31.610 So we present those choices side by side to our respondents,

 $652\ 00{:}37{:}31{.}943$  -->  $00{:}37{:}35{.}496$  to our stakeholders to so they can choose between those

 $653\ 00:37:35.496 \longrightarrow 00:37:36.329$  two choices.

654 00:37:36.329 --> 00:37:40.830 Which set would you prefer is our approach to improve SMA

655 00:37:40.830 --> 00:37:43.230 in your organization So they can make the choice,

 $656\ 00:37:43.230 \longrightarrow 00:37:46.800$  so after the respondents the stakeholders have

657 00:37:46.800 --> 00:37:51.800 making all those choices from those choices then we can do a

 $658\ 00:37:53.100 \longrightarrow 00:37:54.780$  statistical analysis.

659 00:37:54.780 --> 00:37:58.590 With that we can determine how preference are influenced

 $660\ 00:37:58.590 \longrightarrow 00:38:01.530$  by each attributes and we can also give the

 $661\ 00:38:01.530 \longrightarrow 00:38:05.580$  relative importance of those attributes.

 $662\ 00{:}38{:}05{.}580$  -->  $00{:}38{:}08{.}970$  And in particular, once we give a financial incentive here

 $663\ 00{:}38{:}08{.}970 \dashrightarrow > 00{:}38{:}13{.}530$  have a dollar amount, we can actually measure and transform

 $664\ 00:38:13.530 \longrightarrow 00:38:15.960$  all those attributes into something called

 $665\ 00:38:15.960 \longrightarrow 00:38:17.520$  the willingness to pay.

666 00:38:17.520 --> 00:38:21.742 So we can precisely quantify the value of all those

 $667\ 00:38:21.742 \longrightarrow 00:38:24.300$  individual attributes.

 $668\ 00:38:24.300 \longrightarrow 00:38:27.120$  So after we have done this exercise,

66900:38:27.120 $\operatorname{-->}$ 00:38:31.291 we can understand the preference of our stakeholders,

670 00:38:31.291 --> 00:38:36.291 what kind of audit and feedback they think might work best

 $671\ 00:38:36.930 \longrightarrow 00:38:39.333$  even though this is pre-implementation,

672 00:38:40.573 --> 00:38:44.430 so after doing this we can develop a complete package

 $673\ 00:38:44.430 \longrightarrow 00:38:47.010$  of implementation strategy.

674 00:38:47.010 --> 00:38:50.490 So after we have done this, the important thing

 $675\ 00:38:50.490 \longrightarrow 00:38:52.920$  before we can move this to sustain the use

 $676~00{:}38{:}52{.}920$  -->  $00{:}38{:}56{.}940$  is to come up with very good monitoring and evaluation plan,

 $677\ 00:38:56.940 \longrightarrow 00:39:01.020$  which will entail to develop evaluation designs

678 00:39:01.020 --> 00:39:04.747 implementation outcomes and measurement tools.

 $679\ 00:39:04.747 \longrightarrow 00:39:07.863$  So let's focus on this S part of the S model.

680 00:39:09.000 --> 00:39:12.820 First we need to understand what kind of design we want to

 $681\ 00:39:14.220 \longrightarrow 00:39:15.930$  tailor this into.

 $682\ 00:39:15.930 \longrightarrow 00:39:18.660$  There are something called a hybrid design.

683 00:39:18.660 --> 00:39:22.830 Hybrid design is sort of the design you are trying

684 00:39:22.830 --> 00:39:26.310 to balance to what extent you want to have this study

685 00:39:26.310 --> 00:39:30.390 as a effectiveness study of your EBP, which is SMA

686 00:39:30.390 --> 00:39:33.420 or to what extent you want to test the implementation

 $687\ 00:39:33.420 \longrightarrow 00:39:36.210$  outcome of your implementation strategy,

 $688\ 00:39:36.210 \longrightarrow 00:39:39.510$  which in our case can be audited the feedback.

689 00:39:39.510 --> 00:39:44.400 So depending on the priority of set to those two outcomes,

690 $00{:}39{:}44{.}400$  --> 00:39:49.320 it can be type one, type two or type three hybrid design.

691 00:39:49.320 --> 00:39:52.860 For type two hybrid design, you are going to test

 $692\ 00{:}39{:}52{.}860$  -->  $00{:}39{:}55{.}770$  both the effectiveness of the EBP

 $693\ 00{:}39{:}55{.}770$  -->  $00{:}40{:}00{.}480$  and also to test the effectiveness of your implementation

694 00:40:00.480 --> 00:40:05.400 strategy, because SMA has not yet been done in China before.

69500:40:05.400 --> 00:40:10.400 So it's very important for us to test the factories of SMA,

 $696\ 00:40:10.950 \longrightarrow 00:40:13.290$  but it is also important for us as an

697 00:40:13.290 --> 00:40:17.250 implementation scientist to test the implementation strategy

698 00:40:17.250 --> 00:40:20.790 of audit and feedback in implementing SMA.

699 00:40:20.790 --> 00:40:25.470 So we opted for type two hybrid design for implementation

700 $00{:}40{:}25{.}470$  --> 00:40:30.470 for implementing SMA in our setting, but what type of design

701 00:40:31.589 --> 00:40:35.610 we are going to use for our trial, we are considering to use

702 00:40:35.610 --> 00:40:39.510 something called the step wedge design, step wedge design

 $703\ 00:40:39.510 \longrightarrow 00:40:42.690$  is a unique type of randomized control study,

704 00:40:42.690 --> 00:40:47.690 but it allow gradual implementation of SMA across

705 00:40:48.420 --> 00:40:53.160 the primary care institutions centers in our sample.

706 00:40:53.160 --> 00:40:57.798 So for the use of a step wedge design, eventually everybody

707 00:40:57.798 --> 00:41:02.798 in your setting in your S participants will receive SMA.

708 00:41:03.764 --> 00:41:08.764 So this give the gradual implementation of SMA

709 00:41:09.060 --> 00:41:14.060 has some advantage, because then we can facing our manpower

710 00:41:14.340 --> 00:41:18.750 so we can ensure we really implement SMA in our institutions

711 00:41:18.750 --> 00:41:20.610 step by step gradually.

712 00:41:20.610 --> 00:41:25.260 And also all sites eventually receive SMA means ethically it

713 00:41:25.260 --> 00:41:28.920 is better than some people only serving as controls

714 00:41:28.920 --> 00:41:32.100 without the benefits of the SMA.

715 00:41:32.100 --> 00:41:36.690 Also it says the step wedge design has a great statistical

716 00:41:36.690 - 00:41:40.380 property so with the same sample size,

717 00:41:40.380 --> 00:41:44.070 normally it has a much higher statistical power

718 00:41:44.070 --> 00:41:47.340 than conventional two (indistinct) control study.

719 00:41:47.340 --> 00:41:51.930 But the complications of step wedge design is the analysis

720 00:41:51.930 --> 00:41:56.310 plan is much more complicated than the two randomized

 $721\ 00:41:56.310 \longrightarrow 00:41:59.940$  control study and also the length of your study

 $722\ 00:41:59.940 \longrightarrow 00:42:02.073$  is much longer than your study.

723 00:42:03.017 --> 00:42:06.750 So in our specific for SMA study in the study we are going

 $724\ 00:42:06.750 \longrightarrow 00:42:10.110$  to do the effectiveness trial for SMA.

725 00:42:10.110 --> 00:42:14.661 So five counties in China, each county have two

 $726\ 00:42:14.661 \longrightarrow 00:42:17.404$  primary healthcare centers.

727 00:42:17.404 --> 00:42:22.404 So we will randomize those five counties in those six steps,

 $728\ 00{:}42{:}22.560$  -->  $00{:}42{:}27.240$  randomize them into receiving SMA gradually until in the end

 $729\ 00:42:27.240 \longrightarrow 00:42:29.820$  all of them are receiving SMA.

730 00:42:29.820 --> 00:42:34.820 But for each of the county, one of the primary care centers,

731 00:42:34.961 --> 00:42:38.700 one of them will receive the audit and the feedback

 $732\ 00:42:38.700 \longrightarrow 00:42:40.620$  as a implementation strategy.

733 00:42:40.620 --> 00:42:43.920 The other will receive another type of usual implementation

734 00:42:43.920 --> 00:42:46.800 strategy, so we can compare in this study

735 00:42:46.800 --> 00:42:51.800 both the effectiveness of SMA but also can use experimental

 $736\ 00:42:53.160 \longrightarrow 00:42:56.880$  design to compare the effectiveness

737 00:42:56.880 --> 00:43:00.690 for implementation outcomes for audit and feedback

738  $00:43:00.690 \rightarrow 00:43:04.353$  versus usually of implementation.

739 00:43:07.145 --> 00:43:09.600 <v Maur>I just wanted to let you know we have less</v>

740 00:43:09.600 --> 00:43:12.480 than 15 minutes, so I just wanted to make sure.

741 00:43:12.480 --> 00:43:13.740 <v Roman>Sure, sure, sure, </v>

742 00:43:13.740 --> 00:43:16.530 I only need two more minutes to wrap this up.

 $743\ 00:43:16.530 \longrightarrow 00:43:19.380$  I have a big timer on my side.

744 00:43:19.380 --> 00:43:20.213 <v Maur>Oh perfect.</v>

745 00:43:20.213 --> 00:43:22.280 <v Roman>Reminding of that.</v>

746 00:43:22.280  $\rightarrow 00:43:24.699$  So we also have implementation outcomes,

747  $00:43:24.699 \rightarrow 00:43:26.730$  which I think people are already familiar with.

748 00:43:26.730 --> 00:43:29.910 The one thing I want to emphasize is for implementation

749 00:43:29.910 --> 00:43:32.820 outcomes and also for patient and the service outcomes,

750 00:43:32.820 --> 00:43:36.960 they all have two dimensions, the absolute obtainment

751 00:43:36.960  $\rightarrow 00:43:39.660$  and also the equity which is the distribution

752  $00:43:39.660 \rightarrow 00:43:42.573$  of your outcomes among your stakeholders.

 $753\ 00{:}43{:}43.620$  -->  $00{:}43{:}47.863$  We're going to use the RE-AIM as well, but there are many

754 00:43:47.863 --> 00:43:51.570 challenges actually in using a RE-AIM, RE-AIM

755 00:43:51.570 --> 00:43:55.350 is not as simple as it appears, because it is sometimes

 $756\ 00:43:55.350 \longrightarrow 00:43:57.930$  it's difficult to operationalize say

757 00:43:57.930 --> 00:44:01.920 the implementation outcome for RE-AIM framework,

758 00:44:01.920 --> 00:44:06.000 say how do you measure fidelity of delivering SMA?

759 00:44:06.000 --> 00:44:09.571 One of the things we're considering the measurement tool

 $760\ 00:44:09.571 \longrightarrow 00:44:11.329$  is to use standardized patient.

761 00:44:11.329 --> 00:44:13.260 We have not yet decided on this yet, but because

762 00:44:13.260 --> 00:44:18.060 we have already been the conducting a very massive study

763 00:44:18.060 --> 00:44:23.060 of using standardized patients in assess quality of care

764 00:44:23.130 --> 00:44:26.160 in China, which is a fake patients, but they are trained

 $765\ 00:44:26.160 \longrightarrow 00:44:29.970$  so they control the case mix and there is no

766 00:44:29.970 --> 00:44:33.510 Haw<br/>thorne effects compared with other direct observation

767 00:44:33.510 --> 00:44:38.510 of your clinical practice and using standardized patients

768 00:44:40.620 --> 00:44:43.980 can also enable quick audit and feedback work.

769 00:44:43.980 --> 00:44:47.670 So we are considering seriously because of our experiences

 $770\ 00:44:47.670 \longrightarrow 00:44:50.490$  and the expertise in using this method

771 00:44:50.490 --> 00:44:54.510 in assessing primary care quantity, we are considering

772 00:44:54.510 --> 00:44:58.320 using this as a quantity outcome collecting tool

773 00:44:58.320 --> 00:45:03.320 to understand the fidelity and implementation process

 $774\ 00:45:03.510 \longrightarrow 00:45:06.570$  of SMA for our settings.

775 00:45:06.570 --> 00:45:08.790 If we are interested in this method further,

776 $00{:}45{:}08{.}790 \dashrightarrow 00{:}45{:}12{.}180$  you can check out two of the papers that we have published

777 00:45:12.180 --> 00:45:16.050 to illustrating how this can be used in other setting.

778 00:45:16.050 --> 00:45:20.820 So that is what I am trying to talk about this PEADLs model.

779 00:45:20.820 --> 00:45:24.630 So basically this is the model is to give researchers

780 00:45:24.630 --> 00:45:27.810 and students to think about your thought implementation

781 00:45:27.810 --> 00:45:31.650 research from identifying the problem in your work.

 $782\ 00{:}45{:}31.650$  -->  $00{:}45{:}35.670$  Then you need to identify EBP to address that problem,

 $783\ 00{:}45{:}35{.}670$  -->  $00{:}45{:}38{.}787$  but you really need to understand what might be the barriers

784 00:45:38.787 --> 00:45:41.640 and the facilitators and based on that to develop

785 00:45:41.640 --> 00:45:45.090 your implementation strategy in order to achieve

786 00:45:45.090 --> 00:45:46.260 sustained use.

787 00:45:46.260 --> 00:45:50.460 But all across this process you have to have a very sound

 $788\ 00{:}45{:}50.460$  -->  $00{:}45{:}55.460$  and a good evaluation design plans and measurement tools.

 $789\ 00{:}45{:}56{.}520 \dashrightarrow 00{:}45{:}59{.}717$  So thank you so much, I hope this presentation

790 00:45:59.717 --> 00:46:04.717 can motivating some people to come for our program

791 00:46:05.384 --> 00:46:08.700 for postdoctoral fellows in implementation science

792 00:46:08.700 --> 00:46:11.970 in our Acacia lab and our center for

793 00:46:11.970 --> 00:46:13.800 Institute for Global Health.

794 00:46:13.800 --> 00:46:17.580 We give very nice benefits for people coming to China

 $795\ 00:46:17.580 \longrightarrow 00:46:20.880$  to do two to three year postdoctoral fellowship

79600:46:20.880 --> 00:46:24.360 in implementation science, all of you are welcome to apply.

 $797\ 00:46:24.360 \longrightarrow 00:46:25.533$  Thank you so much.

798 00:46:26.667 --> 00:46:29.553 <<br/>v Maur>Great, thank you Roman, that was fantastic,<br/>\_/v>

 $799\ 00:46:30.930 \longrightarrow 00:46:33.090$  really a terrific presentation.

 $800\ 00:46:33.090 \rightarrow 00:46:35.190$  I'll go ahead and open it up to questions.

 $801\ 00{:}46{:}36{.}150$  -->  $00{:}46{:}39{.}982$  If you have any questions feel free to just unmute yourself,

802 00:46:39.982 --> 00:46:42.660 introduce yourself and ask or I see Donna

 $803\ 00:46:42.660 \longrightarrow 00:46:43.493$  has raised her hand.

 $804\ 00:46:43.493 \longrightarrow 00:46:45.000$  Donna, why don't please go ahead.

805 00:46:46.160 --> 00:46:50.262 <v Donna>Hi everybody, sorry I'm on the train actually,</v>

80600:46:50.262 --> 00:46:52.740 I had to go into New York City today for an appointment,

80700:46:52.740 --> 00:46:56.070 so there's some background noise I apologize for.

808 00:46:56.070 --> 00:46:58.590 But Roman, I just wanna say that this was just an

80900:46:58.590 --> 00:47:02.640 absolutely brilliant talk where you walked us through all

810 00:47:02.640 --> 00:47:06.540 of the essential aspects of implementation science

 $811\ 00:47:06.540 \longrightarrow 00:47:09.300$  from the beginning to end and connected.

812 00:47:09.300 --> 00:47:12.540 How these various theories and frameworks where they jump in

 $813\ 00{:}47{:}12.540$  -->  $00{:}47{:}16.440$  where we need 'em, what might be a recommended approach.

814 00:47:16.440 --> 00:47:20.160 I mean just absolutely fantastic and I'm sure

 $815\ 00:47:20.160$  --> 00:47:23.274 the audience learned very much from this talk.

 $816\ 00:47:23.274 \longrightarrow 00:47:26.490$  I know all of us struggle with the confusions

817 00:47:26.490 --> 00:47:29.670 of these theories and models and frameworks and where they

818 00:47:29.670 --> 00:47:33.420 fit in what is implementation science and the steps of it.

 $819\ 00:47:33.420 \longrightarrow 00:47:36.360$  You just laid it out so clearly it's just,

 $820\ 00:47:36.360 \longrightarrow 00:47:39.210$  I'm just floored at how nice this was.

 $821\ 00{:}47{:}39{.}210$  -->  $00{:}47{:}43{.}854$  So thank you so much and on behalf of all of us for this,

 $822\ 00:47:43.854 \longrightarrow 00:47:45.860$  I have two questions actually.

823 00:47:45.860 --> 00:47:49.731 One comment you mentioned, you know I'm somebody who's

824 00:47:49.731 --> 00:47:53.790 done research on developing statistical methods

825 00:47:53.790 --> 00:47:57.360 for step wedge design, you mentioned two drawbacks.

 $826\ 00{:}47{:}57{.}360 \dashrightarrow 00{:}48{:}00{.}540$  One is that it takes longer, which I completely agree with

 $827~00{:}48{:}00.540$  --> 00:48:03.720 and I think it's worth documenting that better,

 $828\ 00:48:03.720$  --> 00:48:06.000 because I'm not sure there's any kind of papers  $829\ 00:48:06.000$  --> 00:48:09.150 or publications that actually show that trade off.

 $830\ 00:48:09.150 \longrightarrow 00:48:11.397$  And then the other is, and people ask me

831 00:48:11.397 --> 00:48:13.590 and I know it's longer but I can't really say

 $832\ 00:48:13.590 \longrightarrow 00:48:15.453$  how much longer exactly.

833 00:48:16.320 --> 00:48:18.870 So I think it probably gets the longer,

 $834\ 00:48:18.870 \longrightarrow 00:48:20.370$  the more step times you have.

835 00:48:20.370 --> 00:48:22.650 But anyway, I'm not gonna speculate right now.

836 00:48:22.650 --> 00:48:26.029 But the other thing you mentioned was that the analysis

 $837\ 00{:}48{:}26.029$  -->  $00{:}48{:}27.780$  was more complicated and it's true that in

838 00:48:27.780 --> 00:48:30.210 a parallel cluster randomized design,

 $839\ 00:48:30.210 \longrightarrow 00:48:32.670$  which is usually the other alternative,

840 00:48:32.670 --> 00:48:36.150 you can just basically compare the mean outcome rates,

841 00:48:36.150 --> 00:48:39.585 whether they're continuous or binary at the end of the study

842 00:48:39.585 --> 00:48:43.470 using a two sample tests, but you do have to account

 $843\ 00:48:43.470 \longrightarrow 00:48:45.450$  for clustering even there.

844 00:48:45.450 --> 00:48:48.780 And then with the step wedge design, it's only one step

845 00:48:48.780 --> 00:48:52.890 more complicated in that that comparison has to adjust

846 00:48:52.890 --> 00:48:54.090 the time effect.

847 00:48:54.090 --> 00:48:58.110 But there's very standard statistical methods

848 00:48:58.110 --> 00:49:02.100 that basically every kind of software to do a

 $849\ 00:49:02.100 \longrightarrow 00:49:04.500$  generalized linear model or a regression model

 $850\ 00:49:04.500 \longrightarrow 00:49:07.200$  that accounts for clustering and allows for

 $851\;00{:}49{:}07{.}200$  -->  $00{:}49{:}10.860$  a binary intervention effect and then indicator variables

 $852\ 00{:}49{:}10{.}860$  -->  $00{:}49{:}13{.}980$  for every time effect and then perform the test

 $853\ 00:49:13.980 \longrightarrow 00:49:16.950$  of the difference between the two groups based

85400:49:16.950 --> 00:49:20.990 on the regression coefficient using either a robust wall

 $855\ 00:49:20.990 \longrightarrow 00:49:23.422$  or a robust square tests.

856 00:49:23.422 --> 00:49:27.570 So I'm not sure why you felt it was like an actual barrier,

 $857\ 00:49:27.570 \longrightarrow 00:49:31.020$  I just don't feel that that should be so,

 $858\ 00{:}49{:}31.020$  -->  $00{:}49{:}34.241$  and then my last comment, because we've been chatting about

85900:49:34.241 --> 00:49:37.365 this is the issue of quality and how that fits into,

 $860\ 00:49:37.365 \longrightarrow 00:49:41.490$  especially in low and middle income countries,

861 00:49:41.490 --> 00:49:43.950 I think it's sort of assumed in the United States

862 00:49:43.950 --> 00:49:46.860 all you have to do is get the service out to somebody

 $863\ 00:49:46.860 \longrightarrow 00:49:48.750$  and the quality is already very high,

 $864\ 00:49:48.750 \longrightarrow 00:49:51.200$  we don't have to worry about that.

 $865~00{:}49{:}51.200$  -->  $00{:}49{:}53.010$  It's probably not true, but that's the assumption.

866 00:49:53.010 --> 00:49:55.110 But in low and middle income countries may be,

 $867\ 00:49:55.110 \longrightarrow 00:49:57.270$  and it may not even be true, the quality issue  $868\ 00:49:57.270 \longrightarrow 00:50:00.510$  is even bigger and it doesn't seem to be some-

thing, 869 00:50:00.510 --> 00:50:03.060 it seems to be addressed in the health systems

870 00:50:03.060 --> 00:50:07.680 research field but not, I haven't heard any chatter about it

 $871\ 00:50:07.680 \longrightarrow 00:50:09.030$  implementation science.

872 00:50:09.030 --> 00:50:13.350 So anyway, my question was complexity of step wedge design

87300:50:13.350 --> 00:50:15.810 analysis and then this issue of quality.

874 00:50:15.810 --> 00:50:18.840 And just thank you so much again for an absolutely

 $875\ 00:50:18.840 \longrightarrow 00:50:21.393$  like fantastic crystal clear talk.

876 00:50:22.980 --> 00:50:24.510 <v Roman>Thank you Donna.</v>

877 00:50:24.510 --> 00:50:29.040 I think I'm not a statistician, but I think this is

 $878\ 00:50:29.040 \longrightarrow 00:50:32.850$  precisely where statisticians like Donna,

879 00:50:32.850 --> 00:50:36.660 you can play a really big role in help strengthening

 $880\ 00:50:36.660 \longrightarrow 00:50:38.790$  the methods in implementation science.

 $881\ 00:50:38.790 \longrightarrow 00:50:41.580$  Step wedge design has a lot of potential

 $882\ 00:50:41.580 - > 00:50:43.560$  for implementation science, I think that

883 00:50:43.560 --> 00:50:46.649 is my understanding, but statistician can correct me.

884 00:50:46.649 --> 00:50:51.649 I think it's generally longer than traditional two RCT.

 $885\ 00{:}50{:}51{.}960$  -->  $00{:}50{:}55{.}770$  The reason is for the steps, like the step here,  $886\ 00{:}50{:}55{.}770$  -->  $00{:}50{:}59{.}010$  we allow it three months for one phase, one step

887 00:50:59.010 --> 00:51:03.257 because for each step you have to have long enough

888 00:51:03.257 --> 00:51:08.257 a duration to allow SMA effect to be fully released

88900:51:09.840 --> 00:51:14.130 if the effect cannot be fully released during one step,

890 00:51:14.130 --> 00:51:17.820 you have to use even more complicated statistical

 $891\ 00:51:17.820 \longrightarrow 00:51:19.740$  method for analysis.

 $892\ 00:51:19.740 \longrightarrow 00:51:24.703$  So because in theory if it is a two arm RCT

 $893\ 00:51:27.085 \longrightarrow 00:51:29.610$  in three months you can wrap up this study.

894 00:51:29.610 --> 00:51:33.900 But for implementation for step wedge it is much longer,

895 00:51:33.900 --> 00:51:35.490 so that is one reason.

896 00:51:35.490 --> 00:51:38.190 In terms of analysis, I agree with

897 00:51:38.190 --> 00:51:41.597 Donna now compared with the several years ago

89800:51:41.597 --> 00:51:46.597 there now have been many software R package coming out,

 $899\ 00{:}51{:}47{.}220 \dashrightarrow 00{:}51{:}50{.}400$  which can enable analysis much easier.

 $900\ 00:51:50.400 \longrightarrow 00:51:53.340$  But still sometimes it's difficult for researchers

901 00:51:53.340 --> 00:51:57.030 which have no statistical background to understand

 $902\ 00:51:57.030 \longrightarrow 00:51:59.670$  why they need to do this and why not.

903 00:51:59.670 --> 00:52:04.670 Sometimes it's always good to embed some good statistician

904 00:52:04.830 --> 00:52:07.950 in your team even though the software can do a lot of

 $905\ 00:52:07.950 \longrightarrow 00:52:09.300$  work for you.

906 00:52:09.300 --> 00:52:11.010 In terms of quality of care,

907 00:52:11.010 --> 00:52:13.958 I agree with Donna, it's a severe issue,

908 00:52:13.958 --> 00:52:17.760 increasing coverage is not the only thing to do

 $909\ 00:52:17.760 \longrightarrow 00:52:19.980$  in low income countries.

910 00:52:19.980 --> 00:52:23.798 The coverage without a quality service can be harmful

911 00:52:23.798 --> 00:52:26.527 and the risk of your resources.

912 00:52:26.527 --> 00:52:31.380 So that's why our research team case study focus,

913 00:52:31.380 --> 00:52:34.200 a lot of our study we use as standardized patient

914 00:52:34.200 --> 00:52:38.400 to assess quality of care across seven provinces in China,

915 00:52:38.400 --> 00:52:41.987 which is unprecedented, because of the implementation

916 00:52:41.987 --> 00:52:46.650 of standardized patients is really very difficult

917 00:52:46.650 --> 00:52:50.045 to that scale, but we have demonstrated it's possible even

 $918\ 00:52:50.045 \longrightarrow 00:52:52.784$  using in that setting.

919<br/>  $00{:}52{:}52{.}784$ --> $00{:}52{:}55{.}740$  So we now have a precise understanding of the quality

920 00:52:55.740 --> 00:52:59.040 in China, which is, I have to say very, very poor.

921 00:52:59.040 --> 00:53:01.020 We have not yet get this paper out,

922 00:53:01.020 --> 00:53:03.933 but once it is out we'll share, thank you so much.

923 00:53:07.629 --> 00:53:09.540 <v Maur>Great, thank you.</v>

 $924~00{:}53{:}09{.}540$  -->  $00{:}53{:}11{.}940$  I don't know if there, we have a couple minutes left.

925 00:53:11.940 --> 00:53:15.693 I don't know if any<br/>one has any last comment or question.

926 00:53:25.230 --> 00:53:26.970 Go ahead, I see your hand raised.

927 00:53:26.970 --> 00:53:30.025 <v Attendee 1>Yeah, thank you Dr. Xi < /v >

 $928\ 00:53:30.025 \longrightarrow 00:53:31.893$  and it's very great to meet you here.

929 00:53:32.940 --> 00:53:35.403 Yeah, I think this is a great talk.

930 00:53:36.451 --> 00:53:39.210 I really learned a lot about implementation science

931 00:53:39.210 --> 00:53:43.555 and as I can see, I actually have a question about

932 00:53:43.555 --> 00:53:47.700 the third stage in PEDALs, the third stage is determinants.

 $933\ 00:53:47.700 \longrightarrow 00:53:51.090$  So I can see you list health intervention factors

 $934\ 00:53:51.090 \longrightarrow 00:53:53.823$  and also contextual factors.

935 00:53:54.887 --> 00:53:58.120 So I would like to know whether you have insights on

936 00:53:59.196 --> 00:54:04.196 how to analyze or disentangle the relationship between

937 00:54:04.200 --> 00:54:09.200 health intervention factors and contextual factors,

 $938\ 00:54:09.746 \longrightarrow 00:54:12.090$  how would you consider their relationship?

939 00:54:12.090 --> 00:54:15.090 Like whether contextual factors can be considered

940 00:54:15.090 --> 00:54:20.090 as mediators or whether it's hierarchical design

941 00:54:20.610 --> 00:54:25.260 that contextual factors need to be on a higher level

942 00:54:25.260 --> 00:54:30.260 and whether it involve very complex analysis 943 00:54:30.720 --> 00:54:35.720 and yeah, like what we want to get out of this analysis.

944 00:54:38.520 --> 00:54:42.750 <v Roman>Thank you Pungfe, actually in most of the</v>

945 00:54:42.750 --> 00:54:47.220 implementation science framework, they put the

 $946\ 00:54:47.220 \longrightarrow 00:54:52.220$  barriers associated with health intervention

947 00:54:53.370  $\rightarrow$  00:54:57.407 itself and the contextual factors together

948 00:54:57.407 --> 00:55:02.407 in the framework like CFIR and TDF, many other frameworks,

949 00:55:03.660 --> 00:55:08.660 which already wrapped both elements in one framework,

950 00:55:10.560 --> 00:55:15.560 but I have tear them apart because in our SMA study,

951 00:55:16.770 --> 00:55:21.540 we essentially have decided to do this in two steps.

952 00:55:21.540 --> 00:55:26.540 One is to optimize SMA so it can work better

953 00:55:29.280 --> 00:55:30.750 in the Chinese setting,

 $954~00{:}55{:}30{.}750 \dashrightarrow > 00{:}55{:}34{.}360$  as I have described in the past SMA, although there are many

 $955\ 00:55:35.400 \longrightarrow 00:55:38.460$  RCTs to prove its effectiveness,

 $956\ 00{:}55{:}38{.}460{\:}-{:}{>}\ 00{:}55{:}41{.}040$  but most of them are in high income countries

957 00:55:41.040 --> 00:55:45.270 and almost none of them have compare head to head

958 00:55:45.270 --> 00:55:50.220 the individual components in that complex SMA study,

959 00:55:50.220 --> 00:55:53.370 so we don't really know what individual components

960 00:55:53.370 --> 00:55:54.903 can work best.

961 00:55:55.860 --> 00:55:59.220 So after we have done that, then we goes to understand

962 00:55:59.220 --> 00:56:02.700 for the optimized package complex intervention,

963 00:56:02.700 --> 00:56:05.670 what are the contextual factors which can contribute in

964 00:56:05.670 --> 00:56:10.050 to the implementation of that health intervention SMA.

 $965\ 00{:}56{:}10.050 \dashrightarrow 00{:}56{:}14.610$  So in our study we sort of have clearly divided those

966 00:56:14.610 --> 00:56:19.610 into two steps even though the optimized SMA

 $967\ 00:56:19.710 \longrightarrow 00:56:22.680$  can still be a factor, which can create barriers  $968\ 00:56:22.680 \longrightarrow 00:56:25.830$  in our final study I have to say.

969 00:56:25.830 --> 00:56:28.740 The other thing is it's very difficult to distinguish

970 00:56:28.740 --> 00:56:31.830 sometimes, sometimes people use contextual factors,

971 00:56:31.830 --> 00:56:34.140 environmental factors, settings.

972 00:56:34.140 --> 00:56:37.560 Sometimes it is very difficult to distinguish

973 00:56:37.560 --> 00:56:39.480 the difference be between them.

974 00:56:39.480 --> 00:56:42.660 I tend to not to distinguish them, because different people

975 00:56:42.660 --> 00:56:45.420 have different ideas whether one off to use

976 00:56:45.420 --> 00:56:50.420 other hierarchical analysis for the intervention factor

977 00:56:51.180 --> 00:56:54.930 and the contextual factor, I can't answer that

978 00:56:54.930 --> 00:56:57.150 because I need more time to think about that.

979 00:56:57.150 --> 00:57:01.590 I don't yet have a clear answer to that yet,

 $980\ 00:57:01.590 \longrightarrow 00:57:05.130$  but I tend to think it may not be a hierarchical

 $981\ 00:57:05.130 \longrightarrow 00:57:07.230$  analytical question here.

982 00:57:07.230 --> 00:57:08.520 Thank you Pungfe.

983 00:57:08.520 --> 00:57:10.343 <v Pungfe>Yeah, thank you very much.</v>

984 00:57:14.131 --> 00:57:16.350 <v Maur>Great, I see a couple of other hands raised.</v>

985 00:57:16.350 --> 00:57:18.660 I think Gloria was next.

986 00:57:18.660 --> 00:57:20.070 <v Gloria>Yes.</v> <v Maur>Go ahead.</v>

987 00:57:20.070 --> 00:57:22.470 <<br/>v Gloria>Thank you very much Maur, thank you very much.<br/>(/v>

988 00:57:22.470 --> 00:57:24.903 Very nice talk, I really enjoyed.

989 00:57:26.400 --> 00:57:29.670 You mentioned several techniques in order to choose

990 00:57:29.670 --> 00:57:32.708 the implementation strategies.

991 00:57:32.708 --> 00:57:34.260 And this is, you know very complex issue

992 00:57:34.260 --> 00:57:38.457 because you have a lot of implementation strategies

993 00:57:38.457 --> 00:57:42.763 that how to use them in the context or with the problem

994 00:57:42.763 --> 00:57:45.393 that you have and how to choose them, right?

 $995\ 00:57:45.393 \rightarrow 00:57:49.050$  Is a like a real point in implementation process.

996 00:57:49.050 - 00:57:51.063 Can you please elaborate on that?

997 00:57:52.023 --> 00:57:52.856 Thank you.

998 00:57:54.990 --> 00:57:59.990 <v Roman>I have some challenges of understand the question.</v>

 $999\ 00:58:00.339 \longrightarrow 00:58:03.540$  Maur, can you paraphrase the question?

1000 00:58:03.540 --> 00:58:04.452 <v Gloria>Yeah.</v>

1001 00:58:04.452 --> 00:58:06.990 So basically, you know, you mentioned that you use

 $1002\ 00{:}58{:}06{.}990$  -->  $00{:}58{:}11{.}990$  several techniques to choose the implementation strategies.

1003 00:58:12.120 --> 00:58:15.810 So can you please elaborate on those techniques

 $1004 \ 00:58:15.810 \longrightarrow 00:58:17.940$  or methods that you use to choose

 $1005\ 00:58:17.940 \longrightarrow 00:58:19.530$  the implementation strategies?

1006 00:58:19.530 --> 00:58:20.891 <v Roman>Oh, okay.</v>

 $1007 \ 00:58:20.891 \longrightarrow 00:58:22.020$  Okay, thank you.

1008 00:58:22.020 --> 00:58:23.460 Thank you, sorry for that.

1010 00:58:25.200 --> 00:58:29.790 <v Roman>Yeah, there are many implementation,</v>

1011 00:58:29.790 --> 00:58:34.472 there are many methods which can be used to map

1012 00:58:34.472 --> 00:58:38.070 your strategies to barriers.

1013 00:58:38.070 --> 00:58:43.070 I would say the simplest strategy is not one of those four.

1014 00:58:44.040 --> 00:58:48.213 The simplest strategy is simply stakeholder consensus.

 $1015\ 00{:}58{:}49{.}650$  -->  $00{:}58{:}54{.}259$  For many time, if people do not have a higher level of

1016 00:58:54.259 --> 00:58:59.259 methods, you can simply have a group consensus

1017 00:59:00.360 --> 00:59:05.360 to be achieved through a Delphi process or a nominal group

 $1018 \ 00:59:06.120 \longrightarrow 00:59:07.950$  process.

1019 00:59:07.950 --> 00:59:12.950 There are many simple way of achieving stakeholder

1020 00:59:13.200 --> 00:59:17.820 consensus on what type of implementation techniques,

1021 00:59:17.820 --> 00:59:20.820 which you can select from the ERIC framework

 $1022\ 00{:}59{:}20{.}820 \dashrightarrow 00{:}59{:}24{.}480$  to match each of the barriers you have identified,

 $1023\ 00:59:24.480\ -->00:59:28.470$  but the four methods here listed on this slide

1024 00:59:28.470 --> 00:59:33.270 are more methods driven and I have never used

1025 00:59:33.270 --> 00:59:36.527 a concept mapping group model building

 $1026\ 00:59:36.527 \longrightarrow 00:59:39.253$  and intervention mapping, but we have used

1027 00:59:39.253 --> 00:59:42.930 a conjoint analysis in a way to use difficult

 $1028 \ 00:59:42.930 \longrightarrow 00:59:44.550$  choice experiments.

1029 00:59:44.550 --> 00:59:47.940 So as I've discussed earlier, which is the sort of

1030 00:59:47.940 --> 00:59:51.270 the questionnaire you have developed (indistinct).

1031 00:59:51.270 --> 00:59:54.930 So you present those products, each product consists

 $1032\ 00{:}59{:}54{.}930$  -->  $00{:}59{:}59{.}160$  of different attributes of your implementation strategy.

 $1033\ 00:59:59.160 \longrightarrow 01:00:02.760$  So you'll present those products side by side  $1034\ 01:00:02.760 \longrightarrow 01:00:04.140$  to your stakeholders.

1035 01:00:04.140 --> 01:00:07.620 They make a choice out of the two, but you have

 $1036 \ 01:00:07.620 \longrightarrow 01:00:08.610$  many of them.

1037 01:00:08.610 --> 01:00:11.760 So once they have complete data, all of the choices,

1038 01:00:11.760  $\rightarrow$  01:00:14.250 then you can perform a logistical regression 1039 01:00:14.250  $\rightarrow$  01:00:18.960 and other statistical methods to really evaluate the statistical methods are statistical methods to really evaluate the statistical methods are statistical methods to really evaluate the statistical methods are statistical methods to really evaluate the statistical methods are statistical methods.

1040 01:00:18.960 --> 01:00:23.960 and quantify the value of those individual attributes.

1041 01:00:24.000 --> 01:00:27.420 So then you can choose the attributes with the highest

1042 01:00:27.420 --> 01:00:32.081 valuation and package them into the packaging

1043 01:00:32.081 --> 01:00:35.760 of your implementation strategy, I hope this helps a bit.

1044 01:00:35.760 --> 01:00:37.763 <v Gloria>A lot if you, thank you.</v>

 $1045\ 01:00:37.763 \longrightarrow 01:00:40.098 < v Roman > There are lots of literature. </v>$ 

1046 01:00:40.098 --> 01:00:45.098 I'm using DCE in health economics and health service

1047 01:00:45.690 --> 01:00:48.270 literature, it is not really a very difficult method

1048 01:00:48.270 --> 01:00:53.270 to understand, so I can send out some of the literature

 $1049 \ 01:00:54.954 \longrightarrow 01:00:56.210$  as well.

1050 01:00:56.210 --> 01:00:57.792 <v Maur>Okay, you thank you very much.</v>

1051 01:00:57.792 --> 01:01:00.032 <v Roman>Thank you. (indistinct)</v>

 $1052 \ 01:01:00.032 \longrightarrow 01:01:02.090 < v Maur>Roman, thank you.</v>$ 

1053 01:01:02.090 --> 01:01:05.220 I know it's very late where you're now in China,

 $1054\ 01{:}01{:}05{.}220$  --> 01:01:08.100 but we have one last question if you wouldn't mind.

1055 01:01:08.100 --> 01:01:10.050 Mariana, go ahead.

1056 01:01:10.050 --> 01:01:12.570 <v Mariana>Yes, thank you so much for these great talk.</v>

1057 01:01:12.570 --> 01:01:15.360 Mariano Kaori from the University of Miami Miller

1058 01:01:15.360 --> 01:01:16.310 School of Medicine.

 $1059 \ 01:01:17.732 \longrightarrow 01:01:18.990$  I just have a quick question.

1060 01:01:18.990 --> 01:01:22.920 Can you implement this very comprehensive study

 $1061 \ 01:01:22.920 \longrightarrow 01:01:24.093$  in five years?

1062 01:01:26.400 --> 01:01:28.250 <v Roman>Ah, that's a good question.</v>

 $1063\ 01{:}01{:}29.880$  -->  $01{:}01{:}34.880$  That's our hope in five years, but let me share the story.

1064 01:01:36.000 --> 01:01:40.690 I used to do a study using texting as a reminder

1065 01:01:42.150 --> 01:01:45.660 for people with schizophrenia in the rural Chinese

1066 01:01:45.660 --> 01:01:47.523 village to take medication.

1067 01:01:48.856 --> 01:01:51.990 The implementation is for six months and we thought

 $1068\ 01{:}01{:}51{.}990 \dashrightarrow 01{:}01{:}55{.}173$  we are going to have that done simply within eight months,

 $1069 \ 01:01:56.083 \longrightarrow 01:01:57.660$  but it takes us three years.

1070 01:01:57.660 --> 01:02:01.950 So implementation of those trials always take longer

1071 01:02:01.950 --> 01:02:06.950 than we thought, but I have to say we are exactly trying

 $1072 \ 01:02:08.160 \longrightarrow 01:02:11.253$  to do this within four years time.

1073 01:02:12.390 --> 01:02:17.390 But with, I think one of the element is the pandemic.

1074 01:02:18.662 --> 01:02:23.185 A (indistinct) know China is fortunate in a way.

 $1075\ 01{:}02{:}23.185$  -->  $01{:}02{:}26.528$  We are not very much affected by the pandemic

1076 01:02:26.528 --> 01:02:28.110 for the past two years.

1077 01:02:28.110 --> 01:02:31.032 Our life here in China is essentially normal

1078 01:02:31.032 --> 01:02:32.370 for majority of the people, so we are able to done

1079 01:02:32.370 --> 01:02:33.840 a lot of the field work.

1080 01:02:33.840 --> 01:02:38.840 But now with the omicron all the other part of the world

1081 01:02:38.940 --> 01:02:42.021 are opening up, China has some challenges.

 $1082\ 01:02:42.021 \longrightarrow 01:02:44.175$  So we don't know whether in the future years

 $1083 \ 01:02:44.175 \longrightarrow 01:02:45.803$  whether this will be playing a part,

1084 01:02:45.803 --> 01:02:48.270 but even without pandemic, sometimes it's difficult

 $1085 \ 01:02:48.270 \longrightarrow 01:02:49.980$  to get the implementation done.

1086 01:02:49.980 --> 01:02:54.980 However, what I have to say is we have develop it

 $1087\ 01{:}02{:}55{.}350$  -->  $01{:}03{:}00{.}060$  and really excellent consortium of collaborators in China.

 $1088 \ 01:03:00.060 \longrightarrow 01:03:03.030$  We have 12 research teams in China.

 $1089 \ 01:03:03.030 \longrightarrow 01:03:05.250$  We have always been working together

1090 01:03:05.250 --> 01:03:08.670 and many of the health service and implementation research,

1091 01:03:08.670 --> 01:03:11.610 even without any grant support, our teams are

 $1092\ 01{:}03{:}11.610$  -->  $01{:}03{:}14.880$  working together, so we know each other extremely well.

 $1093 \ 01:03:14.880 \longrightarrow 01:03:18.000$  So when we are doing those multi-site trial,

1094 01:03:18.000 --> 01:03:21.933 it's almost much easier now to set up your team,

1095 01:03:24.243 --> 01:03:26.690 because it's communication is a simple and how to divide up

1096 01:03:26.690 --> 01:03:29.250 your work is already established and how to share

1097 01:03:29.250 --> 01:03:33.810 your intellectual property is prior grade upon 1098 01:03:33.810 --> 01:03:36.300 and how to mobilize your resources and what are

1099 01:03:36.300 --> 01:03:40.830 the statistical data management platform,

1100 01:03:40.830 --> 01:03:43.800 all this has already been been constructed

 $1101 \ 01:03:43.800 \longrightarrow 01:03:45.330$  in our prior studies.

1102 01:03:45.330 --> 01:03:48.990 So very easy for us to conduct multi-site study in China

1103 01:03:48.990 --> 01:03:52.530 because of our existing work of the Acacia Labs

1104 01:03:52.530 --> 01:03:55.008 with those a dozen research teams always

 $1105 \ 01:03:55.008 \longrightarrow 01:03:56.670$  be working together.

1106 01:03:56.670 --> 01:04:00.690 We also have very strong support from the clinical centers,

1107 01:04:00.690 --> 01:04:03.600 because we work with some of the clinical centers

1108 01:04:03.600 --> 01:04:06.520 in many other ways, so we get to know them much better

 $1109\ 01:04:07.595 \rightarrow 01:04:10.290$  and we can get a support from them as well.

1110 01:04:10.290 --> 01:04:12.660 So hopefully we can get this done within four years.

1111 01:04:12.660 --> 01:04:15.840 But I have to say things happens, it may get longer

1112 01:04:15.840 --> 01:04:17.493 than we thought, thank you.

1113 01:04:21.817 --> 01:04:22.870 <v Maur>Great.</v>

1114 01:04:22.870 --> 01:04:24.438 Great, well thank you again.

1115 01:04:24.438 --> 01:04:28.020 I don't wanna cut off the discussion and the comments,

1116 01:04:28.020 --> 01:04:29.770 but I know it's getting late there.

1117 01:04:31.080 --> 01:04:35.220 If there are no other questions, I'll just end by thanking

1118 01:04:35.220 --> 01:04:36.990 you again, Roman, for being with us today,

1119 01:04:36.990 --> 01:04:41.130 it was a fantastic presentation, really enjoyed it

1120 01:04:41.130 --> 01:04:44.724 and learned a lot as I know every<br/>body else did on the call.

 $1121 \ 01:04:44.724 \longrightarrow 01:04:46.710$  So thanks so much for being with us

1122 01:04:46.710  $\rightarrow$  01:04:51.710 and see you all again soon, thanks everyone.

1123 01:04:52.140 --> 01:04:54.132 <v Roman>Thank you, bye-Bye</v>

1124 01:04:54.132 --> 01:04:55.098 <v Donna>bye.</v>

1125 01:04:55.098 --> 01:04:57.319 <v Roman>Thank you, by e-Bye, by e-Bye.</v>

1126 01:04:57.319 --> 01:04:58.152 <v Maur>Bye everyone.</v>