

Long Term Care Covid-19 Commission Mtg.

Meeting with Dr. David Fisman and Dr. Ashleigh
Tuite
on Thursday, November 12, 2020



77 King Street West, Suite 2020
Toronto, Ontario M5K 1A1

neesonsreporting.com | 416.413.7755

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

MEETING OF THE LONG-TERM CARE COVID-19 COMMISSION

--- Held via Zoom, with all participants attending
remotely, on the 12th day of November, 2020,
1:00 p.m. to 1:43 p.m.

BEFORE:

The Honourable Frank N. Marrocco, Lead Commissioner
Angela Coke, Commissioner
Dr. Jack Kitts, Commissioner

1 PRESENTERS:

2
3 Dr. David Fisman, MD, FRCPC, Epidemiologist and
4 Professor at the Dalla Lana School of Public Health
5 and Institute for Pandemics, University of Toronto
6 Dr. Ashleigh Tuite, Assistant Professor at Dalla
7 Lana School of Public Health, University of Toronto

8
9 PARTICIPANTS:

10
11 Alison Drummond, Assistant Deputy Minister,
12 Long-Term Care Commission Secretariat
13 Dawn Palin Rokosh, Director, Operations, Long-Term
14 Care Commission Secretariat
15 Jessica Franklin, Policy Lead, Long-Term
16 Care Commission Secretariat
17 Sanjay Bahal, Team Lead for Operations, LTCC
18 Derek Lett, Policy Director, Long-Term Care
19 Commission Secretariat

20
21 ALSO PRESENT:

22
23 Janet Belma, Stenographer/Transcriptionist
24
25

1 -- Upon commencing at 1:00 p.m.

2 COMMISSIONER FRANK MARROCCO (CHAIR):
3 Hi, how are you? I'm Frank Marrocco, Commissioner
4 Dr. Jack Kitts, who you may or may not know, and
5 Commissioner, Angela Coke.

6 DAVID FISMAN: Hi. Nice to meet you.

7 COURT REPORTER: Good morning, sir.
8 I'm Janet. I'm the court reporter today.

9 COMMISSIONER FRANK MARROCCO (CHAIR):
10 Sorry, Janet. I left you out of that.

11 COURT REPORTER: That's okay. No
12 worries.

13 DAVID FISMAN: I see Ashleigh is here
14 as well.

15 COMMISSIONER FRANK MARROCCO (CHAIR):
16 Right.

17 ASHLEIGH TUITE: Hi.

18 COMMISSIONER FRANK MARROCCO (CHAIR):
19 Hello. I'm Commissioner Frank Marrocco,
20 Commissioner Jack Kitts, Commissioner Angela Coke,
21 Janet, from Neesons, who's taking the transcript.
22 Are you waiting for anyone else?

23 DAVID FISMAN: I don't think we are.

24 COMMISSIONER FRANK MARROCCO (CHAIR):
25 Neither are we, so we're ready to go when you are.

1 We will ask questions as we go along, if that's
2 okay, rather than trying to go back?

3 ASHLEIGH TUIITE: Yes. Sure.

4 DAVID FISMAN: Of course. I was just
5 looking for some headphones, but I don't seem to
6 have headphones that work with my computer, so...

7 COMMISSIONER FRANK MARROCCO (CHAIR)
8 well, we've got -- we've got a minute if you want
9 to take a second look for them.

10 DAVID FISMAN: If that's all right, it
11 shouldn't be more than a moment.

12 COMMISSIONER FRANK MARROCCO (CHAIR):
13 Sure.

14 DAVID FISMAN: They appear to have
15 moved to another address. We had prepared some
16 slides that I had hoped we could run through very
17 quickly.

18 COMMISSIONER FRANK MARROCCO (CHAIR):
19 Sure.

20 Janet, do you have the slides?

21 DAVID FISMAN: I haven't sent them, so
22 you wouldn't have them yet.

23 COMMISSIONER FRANK MARROCCO (CHAIR):
24 Oh. Oh, okay.

25 COURT REPORTER: I'm sorry. I don't

1 have the slides. If you want to email them to me
2 or if you want to screenshare, you're absolutely
3 able to do that right now.

4 DAVID FISMAN: That was my plan.

5 COURT REPORTER: Perfect.

6 COMMISSIONER FRANK MARROCCO (CHAIR):

7 All right.

8 DAVID FISMAN: And then I'll email them
9 after.

10 COURT REPORTER: Thank you.

11 DAVID FISMAN: Sure. Let's see. Can
12 you see that all right?

13 COMMISSIONER FRANK MARROCCO (CHAIR):

14 Yes, I can. I think we all can.

15 COMMISSIONER ANGELA COKE: Yes.

16 COMMISSIONER JACK KITTS: Yes. Yeah,
17 that's good.

18 COMMISSIONER FRANK MARROCCO (CHAIR):

19 Yes, we can all see.

20 DAVID FISMAN: All right. Well, I'll
21 just launch right in, then. And I thought I'd
22 begin with going back to March 2020 and ask the
23 question, what we -- what we knew about COVID-19 at
24 that time because I think it's a bit challenging
25 with a process like this to put ourselves back and

1 in the same state of knowledge as we were in when
2 this pandemic first got started.

3 I think we knew quite a bit. We knew
4 that SARS coronavirus-2 infection had a very high
5 case fatality in older individuals, and we already
6 knew at that point that it had a propensity to
7 cause outbreaks in care settings.

8 We had seen from February already in
9 China that case fatality increased markedly with
10 age. We knew that the virus almost seemed to
11 target care settings. The initial recognition of
12 community transmission in both Washington State and
13 British Columbia was associated with high mortality
14 outbreaks in long-term care.

15 We had had warnings from other
16 countries, and we already knew that long-term care
17 facilities were very vulnerable to outbreaks in
18 communicable diseases. We see this frequently with
19 influenza and other diseases.

20 In March 2020, we were working quite
21 closely with colleagues in Korea who had reached
22 out to us, had seen some of our modelling work, and
23 we were sort of helping them with policy in Korea.

24 And Ashleigh and I got to know a very
25 interesting fellow named Asaph Young Chun who's the

1 director of their Statistics Institute. And Asaph
2 is very wise and very humane. And in March 2020,
3 he was writing to us about their struggles with
4 long-term care and COVID outbreaks in Korea. And
5 he wrote: (as read)

6 "Visitors and nursing persons
7 in these group dwellings are more
8 likely to be infected or infecting
9 others as well, given the
10 asymptomatic nature of COVID-19."

11 You know, that he regards that as
12 established. This is March 22nd: (as read)

13 "I add this COVID-19 virus is
14 good at having humans to distrust
15 each other, creating ungrounded fear
16 and anxiety, and having us lose the
17 precious elderly, the source of
18 human wisdom. It attacks everyone
19 yet discriminates against those weak
20 and old by hitting them hard."

21 Then he has this lovely sentiment:

22 (as read)

23 "May I suggest Canadians,
24 Koreans and others keep using Trust
25 virus and Mutual Care vaccine to

1 defend against this ugly virus?"

2 This is from shortly thereafter. I
3 just want to show this graphically, and I'm sorry
4 it's such a small slide. This is an old picture
5 that we had made to illustrate what happens to case
6 fatality with age. So age groups are on the 'X'
7 axis here, and non-long-term care populations, and
8 in long-term care in Ontario, I would have made
9 this around April, May, or so.

10 And what this is is it's a logistic
11 regression model predicting mortality probability
12 in a way that adjusts for gender and as well as
13 comorbidities. And what you can see is that the
14 predicted mortality for each individual rises very
15 sharply with age going from well under 1% in kids
16 and young adults up to, sort of, 20, 30, 40% range,
17 both outside long-term care and inside long-term
18 care. I'd note that case fatality in this range is
19 what we see with viruses like Ebola.

20 We knew how to prevent death from
21 long-term care in Canada as early as March of 2020.
22 There are models for good practice from
23 British Columbia. Dr. Michael Schwandt is a
24 medical officer of health out there. He's a former
25 student, and I've added a link to a marvelous

1 thread that he put on Twitter. He's subsequently
2 written up a lot of this for the CMAJ, but I like
3 what Michael said here: (as read)

4 "If anyone tells you that
5 massive and deadly COVID-19
6 outbreaks in long-term care are
7 inevitable, please them otherwise.
8 We've managed 17 long-term care
9 outbreaks in Vancouver Coastal
10 Health and have developed some
11 useful measures which we think are
12 life-saving."

13 And this is a very useful thread,
14 but I note Michael's emphasis on using tests to
15 identify -- using testing to identify risk
16 before deaths start. He wrote: (as read)

17 "When it comes to long-term
18 care staff, monitor symptoms
19 closely, test early, test broadly,
20 and support workers from immediately
21 staying off work for any compatible
22 symptoms. It's well known that
23 symptoms can be very low grade."

24 So this is knowledge that's been
25 around in Canada, again, since March.

1 When I look back, and I must say more
2 recently, my focus has been more on trying to
3 forecast intensive care unit resources --
4 is they'll be, sort of, consumed by what seems to
5 be a coming COVID wave. But when I look back on
6 this time, March and April of 2020, I see at least
7 nine fundamental errors that were made in Ontario
8 that resulted in the tragedy that unfolded.

9 The first of these was denial of
10 community transmission in Ontario in March 2020.
11 The second was failure to acknowledge transmission
12 by asymptomatic, presymptomatic, and minimally
13 symptomatic individuals which I think is an ongoing
14 problem in Ontario.

15 COMMISSIONER FRANK MARROCCO (CHAIR):
16 Doctor, can I just stop you there for a minute?

17 DAVID FISMAN: Of course.

18 COMMISSIONER FRANK MARROCCO (CHAIR):
19 Denial of community transmission, transmission by
20 asymptomatic people, when you say an error, do you
21 mean that's something that was known at the time --

22 DAVID FISMAN: Yes.

23 COMMISSIONER FRANK MARROCCO (CHAIR):
24 -- to be incorrect --

25 DAVID FISMAN: Yes. Yes.

1 COMMISSIONER FRANK MARROCCO (CHAIR):

2 -- or thought to be by --

3 DAVID FISMAN: Yes. Yes.

4 COMMISSIONER FRANK MARROCCO (CHAIR):

5 Okay.

6 DAVID FISMAN: Absolutely, and I'll

7 elaborate on that in a moment.

8 COMMISSIONER FRANK MARROCCO (CHAIR):

9 Sure.

10 DAVID FISMAN: The application of
11 influenza outbreak protocols including three tests
12 and then no more testing to COVID-19 outbreaks in
13 long-term care, I think that violates what
14 ethicists call the rule of rescue. And, of course,
15 COVID's very different from influenza in that we
16 have no vaccine and no medications that can be used
17 for prophylaxis.

18 There was failure to emulate successful
19 strategies from B.C. in a timely manner. There was
20 a failure to decouple our long-term care facility
21 network by restricting staff to single facilities
22 which resulted in this killer network.

23 We had failure to provide adequate PPE,
24 personal protective equipment to long-term care
25 staff, thus failure to create bidirectional

1 protection for staff and residents.

2 We know -- we understand this better
3 now since the summer that aerosol transmission is
4 probably important in long-term care, and I've got
5 a link to a very important paper there for you.

6 Failure to create economic security and
7 dignity for part-time workers at long-term care
8 which would obviate the need to work at multiple
9 facilities; failure to apply high throughput tests
10 to identify presymptomatic infection in PSW and
11 other workers, ongoing problem; and failure to
12 apply the precautionary principle.

13 And this is a quote from my late
14 teacher who was a pretty wonderful guy who taught
15 me infectious disease epidemiology. Jonathan
16 Freeman was very interested in understanding
17 communicable diseases and how they spread, but as
18 he used to teach us, your job is first and foremost
19 to make it stop.

20 COMMISSIONER FRANK MARROCCO (CHAIR):

21 M-hm.

22 DAVID FISMAN: And I -- I think the --
23 that's reflected in the precautionary principle
24 that we can make errors of commission when we make
25 good-faith efforts to stop epidemics and outbreaks.

1 This is an email that I sent on March
2 the 24th when I was very angry about a press
3 conference that Dr. Yaffe had given in which she --
4 again, this is March the 24th -- said that there
5 was no community transmission of COVID in Toronto.
6 And I apologize for the tone of this email, but I
7 was very angry. I wrote: (as read).

8 "Why is [Dr. Yaffe] doubling
9 down on the community transmission
10 stuff? Have you seen the poppycock
11 she's been spouting in the Globe and
12 Mail? [Name]..."

13 COMMISSIONER FRANK MARROCCO (CHAIR):
14 You really didn't agree with her.

15 DAVID FISMAN: You know what, I --
16 and I wrote this email when we had six deaths in
17 long-term care, you know, so about 2,000 left to
18 go. I wrote: We're admitting people to the
19 Toronto Western Hospital -- where I was working at
20 that time: (as read)

21 "-- whose exposures have been
22 raves and Bay Street tax seminars,
23 no travel.

24 Our first -- the first man we
25 intubated at the Toronto Western Hospital was a --

1 was a semiretired attorney who had a single
2 outside-the-house exposure which was to a tax
3 seminar on Bay Street. I wrote: (as read)

4 "What [Dr. Yaffe] is doing is
5 awful. It undermines public health
6 messaging and is patently false. We
7 have a long-term care outbreak
8 now -- "

9 This was connected to
10 Michael Garron Hospital where I also worked: (as
11 read)

12 "-- where staff worked with
13 mild respiratory symptoms because it
14 couldn't possibly be COVID. These
15 personal support workers joked about
16 it. But they haven't travelled,
17 and they didn't know anyone with
18 COVID, so according to [Dr. Yaffe]
19 that's unlikely COVID."

20 And I wrote: (as read)

21 "I am assuming you're all up to
22 speed on what mortality of COVID
23 looks like in long-term care...that
24 is coming."

25 What I was incorrect about here is

1 I went on in the next paragraph to say: I think
2 this will also saturate our ICU resources. And, of
3 course, as it turned out, people were not moved
4 from long-term care to intensive care units but
5 largely died in the homes. This was some --

6 COMMISSIONER JACK KITTS: Can I just --
7 Dr. Fisman, can I ask a question about just the
8 precautionary principle? I'd like to -- I'd like
9 to hear your opinion on why -- why we wouldn't use
10 the precautionary principle. Is it a fact that the
11 nine -- or the eight fundamental errors led to not
12 using the precautionary principle?

13 DAVID FISMAN: I can't answer your
14 question because I don't understand it. I don't
15 understand it at all. I think that repeatedly not
16 just in long-term care but throughout this pandemic
17 in Ontario, we've had arguments about things like
18 masks, arguments about things like bunk houses and
19 migratory workers where the precautionary principle
20 would clearly state that if you're in doubt and if
21 you're operating under uncertainty, you err on the
22 side of caution.

23 And that's actually in the Health
24 Protection and Promotion Act. That's been -- I
25 think that's been validated by -- I'm trying to

1 remember -- Dr. Nesathurai's recent case that went
2 before the Ontario Court of Appeals where the Court
3 of Appeals noted that, you know, he was making a
4 well-reasoned decision when he restricted occupancy
5 of bunk houses even if there wasn't certainty.
6 That -- you know, that -- we're supposed to do
7 that. That's one of the lessons from the Naylor
8 Commission in SARS is that we failed to use the
9 precautionary principle last time.

10 So I think there have been numerous
11 branch points over the course of this epidemic in
12 Ontario where we haven't used the precautionary
13 principle. And I think -- you know, I think I'm
14 regarded by some of my colleagues as coming across
15 as a bit of a hothead because I've been speaking
16 out quite forcefully about this.

17 But if we set out a principle that's
18 supposed to guide how we practice in a crisis and
19 then we ignore it time and time again, you know,
20 what is one to say?

21 This is a picture that I pulled out of
22 an old email that I sent to several medical
23 officers of health who are friends and colleagues
24 of mine on April 11 when we first took a look at
25 mortality in long-term care residents versus older

1 individuals outside long-term care and, sort of,
2 saw this divergence in terms of death risk. We
3 subsequently wrote this up. It's been published as
4 a paper now. It came out over the summer.

5 But what we saw is that as of early
6 April because of lockdowns, mortality outside
7 long-term care and older adults was declining, and
8 we saw this rapid takeoff happening in death risk
9 in long-term care. And this is a model that was
10 built based on 80 deaths in long-term care. So
11 we'd gone from six on March the 24th to, I think,
12 this analysis is April the 7th; now we have 80, and
13 it was very clear what the trajectory of this was.

14 We also wrote -- I'm not sure if this
15 is going to be particularly clear -- we also could
16 see in the data from long-term care that what
17 predicted death in residents were these yellow dots
18 which are infections in staff. A relative risk of
19 1.0 is a null effect -- null effect, so for these
20 blue dots, you have the confidence intervals mostly
21 overlapping one.

22 So infections in residents did not
23 predict deaths in residents. Infections in staff
24 were highly predictive of deaths in residents, so
25 you could actually, at this point, see

1 directionality, see how this was playing out, that
2 it was infected staff who were in these homes
3 infecting residents which I think for folks who
4 know how -- who have been in the long-term care
5 setting, know that many residents are -- many
6 residents are less mobile and unlikely to be moving
7 around and infecting one another. And in fact,
8 they're connected by the movements of staff. So
9 what you see here is directionality in
10 transmission.

11 And this is what we wrote. This was a
12 preprint draft. We posted this on April 14th. It
13 come out on April 17th on a preprint server where
14 it still sits. But we wrote this on April 14th:
15 (as read)

16 "In summary, we document that
17 the rapid movement of COVID-19
18 through Ontario's long-term care
19 system has resulted in a marked
20 surge in mortality in that
21 population, as compared to
22 community-living elders.

23 We find evidence that links
24 mortality to infection in LTC staff,
25 highlighting the urgent need for

1 improved infection control, more
2 widespread testing, access to
3 personal protective equipment, and
4 economic protections and support for
5 those who do this important work."

6 So, you know, I think -- I think much
7 of -- much of what we're talking about now was
8 visible and foreseeable in March and April.

9 And that ends my formal sort of slides,
10 but I wanted to share that, and I will send those.
11 I will send those.

12 COMMISSIONER FRANK MARROCCO (CHAIR):
13 Do you think we're any better situated today than
14 we were back in March and April?

15 DAVID FISMAN: I do. I do. I think --
16 I think that -- I think we're -- I think we're
17 starting to get into trouble, and, you know, we --
18 I think as of yesterday, we had seen 200 deaths in
19 long-term care since September attributable to
20 COVID.

21 But when one looks at the pattern, and
22 I -- you know, and I think -- I think the interim
23 recommendations from this commission have helped a
24 lot. When one looks at the pattern, it looks like
25 linear growth in deaths, so it's a straight line

1 upwards which is very different from that concave
2 upward shape that I showed you from April which is,
3 sort of, that very explosive exponential increase
4 in death risk.

5 So looking at the numbers, I don't
6 regard them as positive or really even acceptable,
7 but I regard them as a vast improvement on what
8 happened to us in the spring.

9 COMMISSIONER FRANK MARROCCO (CHAIR):
10 Okay.

11 DAVID FISMAN: I want to turn this over
12 to Ashleigh who has a lot to say. I tend to talk a
13 lot, and --

14 COMMISSIONER JACK KITTS: Can I just --
15 can I just ask --

16 COMMISSIONER FRANK MARROCCO (CHAIR):
17 Yeah, go ahead.

18 COMMISSIONER JACK KITTS: -- if you
19 could -- if you could, would it be easy to put your
20 second last slide up? Because I want to see what
21 the contributing --

22 DAVID FISMAN: Of course.

23 COMMISSIONER JACK KITTS: -- factors
24 were. Yeah, the one before that. Yeah.

25 DAVID FISMAN: Is this the one?

1 COMMISSIONER JACK KITTS: That's the
2 one. So we know that in Wave 1 that there didn't
3 seem to be enough PPE. We also knew that the IPAC
4 preparation was -- could be better. We weren't
5 doing widespread testing, so have we, in Wave 2,
6 satisfied -- tell me how satisfied you are that
7 we've improved significantly in those contributing
8 factors for Wave 2.

9 DAVID FISMAN: Ashleigh, do you have a
10 comment on that? Or --

11 ASHLEIGH TUIITE: I mean, I don't work
12 in long-term care. I don't work in that setting,
13 so I don't feel qualified to talk about the
14 preparations within the home. I think, you know,
15 based on what we're seeing in terms of the
16 epidemiology in terms of the average size of the
17 outbreak, it looks like the outbreaks are smaller.

18 But, you know, having said that, it's
19 still early days, so I don't -- I don't know that I
20 can comment beyond that.

21 DAVID FISMAN: I think there's -- I
22 think there's a different appreciation of how
23 deadly this can be, and some of the things that we
24 were seeing in the spring, for example, a colleague
25 of mine, Janine McCready at Michael Garron, had a

1 situation where they had an individual hospitalized
2 with COVID whose family members worked either in
3 long-term care or as -- one of them worked in a
4 meat-packing plant actually. And the difficulty
5 that that person had was, you know, Janine's told
6 to -- you have to isolate, and this individual's
7 response was, well, if I isolate, I work at a
8 long-term care facility; they'll fire me.

9 And Janine, you know, contacted that
10 long-term care facility and sort of laid down the
11 law a little bit there in terms of why this person
12 can't come.

13 I don't -- I hope that the situation's
14 improved with respect to some of that. I think
15 there is more widespread use of testing in
16 long-term care. I think there was that initial
17 blitz in May where people really got a better
18 handle on the epidemiology by doing widespread
19 testing in long-term care. And it's my
20 understanding that there is more aggressive testing
21 of staff in long-term care now.

22 But as with Ashleigh, you know, I
23 think -- I think the wave that I know best is the
24 first wave which is, sort of, where we were very
25 focused on this, and I think others have moved into

1 this area now; and I think a great person to talk
2 to would be Nathan Stall who's our colleague from
3 Mount Sinai who's really taken over -- you know,
4 taken up the torch in terms of following long-term
5 care epidemiology very closely, and I think Nathan
6 is probably a better person to ask about what's
7 better and what's not better.

8 THE COURT: Yeah, he was here this
9 morning, Doctor.

10 DAVID FISMAN: Oh, excellent. He's
11 great.

12 COMMISSIONER JACK KITTS: Thank you.

13 DAVID FISMAN: Sure.

14 COMMISSIONER FRANK MARROCCO (CHAIR):
15 What -- in terms of the -- of the first wave, are
16 there, from your perspective, institutional
17 barriers that get in the way of appreciating some
18 of the factors that you've identified, do you
19 think?

20 DAVID FISMAN: I'm curious what
21 Ashleigh has to say about this. Let me -- let me
22 give you my perspective. I -- I'm a -- my
23 background is an infectious disease physician.
24 I've also worked in public health in Ontario. I
25 was the Medical Officer of Health in Hamilton in

1 the early 2000s, and I got seconded to Toronto
2 Public Health during SARS because they were
3 shorthanded, so there's sort of a bit of compare
4 and contrast.

5 The reason I'm back in Canada is I'd
6 moved to the States and came back somewhat at the
7 invitation of Dr. Don Low who was helping build the
8 new Provincial Public Health Agency. And the idea
9 in 2008, 2009 was we were going to build something
10 that is arm's length and science-based, so I came
11 back to join Public Health Ontario.

12 I didn't last there very long. I was
13 gone by September 2009. I found Public Health
14 Ontario to be extremely bureaucratic. There were
15 issues around politics and the uses of data and
16 saying the wrong thing, and it was not my speed.
17 And a job came up at the University of Toronto, and
18 I moved; and I've been there ever since, and I know
19 a number of other scientific staff, some of whom I
20 continue to collaborate with, also left Public
21 Health Ontario.

22 So to me, you know -- and this is my --
23 this is certainly -- this is a bit of an egocentric
24 world view here, but based on -- based on my
25 experiences in Public Health in Ontario over 20

1 years, I think we do have cultural problems. I
2 think -- I think we do tend to go with -- how shall
3 I put this -- I think dogma over science. I think
4 there's a resistance to new ideas. I think there
5 is a tendency to not want to make hard decisions in
6 real time.

7 And when I look at COVID in Ontario now
8 and look back at SARS 20 years ago, you know, I
9 don't -- I don't feel like much has changed. The
10 public health -- the organization that was proposed
11 which was supposed to look like -- something like
12 the British Columbia CDC, was very rapidly -- I
13 think by the time I left in 2009, it was already
14 clear that this was simply becoming another, you
15 know, adjunct Ontario Ministry of Health. And the
16 science and creation of new knowledge and arm's
17 length were not -- were not kind of concepts or
18 principles that were going to be embraced, and so I
19 left.

20 And I think -- I think a pandemic is a
21 stress test for a public health system in terms of
22 its ability to be nimble and be innovative and be
23 brave because by definition, the challenges are
24 new, you know. It's a new disease. That's what
25 makes it challenging from a disease-dynamic point

1 of view. The newness means that the entire
2 population's susceptible.

3 So that does a couple of different
4 things. One is it makes the reproduction number
5 very high because transmission is shut down by
6 partial immunity in populations, right? So that's
7 why we've had these very -- you know, these high
8 rates of transmission.

9 The second is that older individuals in
10 populations usually have early-life immune
11 experience that protects them against death from
12 infectious diseases because you've seen it before,
13 and we saw that in 2009 with H1N1.

14 What you have here is a disease where
15 you don't have that advantage which is why it's so
16 lethal in older people. They don't have the
17 advantage of a lifetime of immune experience.

18 You have a brand-new virus that also
19 behaves in some funny ways. It's transmissible in
20 people who don't have symptoms which makes it --
21 that's one of the hallmarks of a disease that's
22 difficult to control.

23 You have a disease that you're, sort
24 of, learning about in real time, and for each one
25 of these things, you actually need to be up to

1 speed on what the science is in Canada and
2 elsewhere. You need to be open-minded and not
3 looking at things, like, you know, what we've
4 always done for flu outbreaks and then applying
5 that to this just because it's a respiratory virus.
6 And you need to be able to roll with the punches a
7 little bit and admit that you're wrong.

8 And I don't think -- I don't think the
9 culture in Ontario welcomes any of those things. I
10 think we saw that with masks over the summer. I
11 think we're seeing it with masks still. You know,
12 the idea that physicians have always had a certain
13 dogma around droplet versus airborne, and even as
14 we've had aerosol scientists come to us and say,
15 you know, this is how aerosols work; what you've
16 been teaching each other is incorrect. There's
17 absolutely -- there's absolute reluctance to, sort
18 of, let go of that dogma and say, we were wrong; we
19 need to acknowledge that we were wrong, and we need
20 to move on; we can't spend months learning about
21 this because the pace of events doesn't allow it.

22 And I think culturally, we are not
23 really equipped to deal with a novel rapidly
24 evolving, rapidly changing, highly lethal public
25 health threats in Ontario. We can't move fast

1 enough. Folks who are at the top of the totem pole
2 don't want to acknowledge that they're wrong. And
3 we simply don't have a -- kind of, a ruling caste
4 in public health that is able to, kind of, keep up
5 with new knowledge about a novel disease as it
6 emerges. And I think that's been -- you know, I
7 think that's at the core of our problem. It's not
8 that the information wasn't available. It's not
9 that you couldn't see what was coming. I mean,
10 we're not particular genius epidemiologists, but
11 this is, if you chose to look at the data, this was
12 slap in the face obvious in March and April what
13 was coming down the pike.

14 It's a matter of being prepared to pay
15 attention, acknowledge you were wrong, and respond
16 appropriately in a way that tries to protect, you
17 know, the health and the lives of the population
18 that you're supposed to be protecting.

19 And I'm just not sure what we need to
20 do to bring about that kind of cultural change.
21 You know, we -- I mean, the Naylor -- the Naylor
22 Commission -- there were two other Post-SARS
23 Commissions, they all sort of said the same thing,
24 and it's one thing to say the words, and it's
25 another thing to actually walk the talk.

1 That's a bit of a long-winded answer,
2 but I think we have very deep-rooted problems in
3 the culture of public health and medicine in this
4 place.

5 COMMISSIONER FRANK MARROCCO (CHAIR):
6 Commissioner Coke.

7 COMMISSIONER ANGELA COKE: So I'm just
8 trying to understand when you gave some examples
9 earlier how B.C. had seemed to have done a better
10 job or seemed to be more on top of things, do you
11 think that's because they have a different approach
12 to the things you've just spoken about, or are
13 there other factors that you think enable them to
14 be somewhat more successful than Ontario?

15 DAVID FISMAN: I'm not sure. I've long
16 regarded B.C. as the gold standard for, sort of,
17 professionalism and competence and scientific
18 orientation in public health practice in Canada.
19 They've had the -- in the early 2000s, they started
20 the British Columbia Centre For Disease Control
21 which I've described to people as almost like a
22 Russian nesting doll where you had this institution
23 on the ground of some of the B.C. -- UBC teaching
24 hospitals which was a public-health institution but
25 which also served as sort of a clinic and as a

1 clinical-care hub for things like TB and
2 sexually-transmitted infections.

3 And then within the institution, there
4 was the University of British Columbia Centre For
5 Disease Control which lived in the B.C. CDC and,
6 for example, provided them with mathematical
7 modelling and expertise. So you had these
8 different pieces of a jigsaw puzzle that fit very
9 well together.

10 You also had in Dr. Bob Brunham a
11 scientist who had come to public health, and I
12 think his orientation was and is -- I think
13 Dr. Brunham is retired now, but his orientation was
14 always very much on using good science to protect
15 people and help people.

16 And I think, in Ontario, that's always
17 been upside down. I think folks have tended to
18 come through an institutional public health
19 background, and the idea is, well, we could use
20 science if you needed it. And I think that
21 different orientation has set them up differently.

22 I mean, I don't agree with everything
23 British Columbia has been doing as of late. I
24 think they've also pushed back on masks. I have
25 tremendous respect for Dr. Henry as a person and

1 as a friend -- I'd count her as a friend. I don't
2 agree with everything that she has done.

3 But I think that ability to sort of
4 roll with the punches and acknowledge your
5 imperfections and communicate that to a population,
6 I think, has served them very well, and I'll admit
7 that I -- you know, I -- when I came back to
8 Ontario, I thought working at Public Health Ontario
9 was -- I had passed by an opportunity to work at
10 B.C. CDC and always regretted it, so I'd sort of
11 thought this was my mulligan that I'd get to work
12 at a place like that. And it didn't work out that
13 way, so I'm still puzzled why we can't get that to
14 work here.

15 You know, I look at some of the things
16 that we could do in Ontario. I look at the fact
17 that, you know, the British Columbia -- the B.C.
18 CDC lab has kept pace with the requirement for
19 testing. You know, they haven't had these sort of
20 boom-bust cycles of test collapse, test collapse as
21 we've had in Ontario. They're using phylogenetics,
22 which is genetic fingerprinting on the virus
23 strains to identify their hotspots and where
24 transmission's happening. We have that capability
25 technically. We should have it in Ontario, but

1 we're not using it. Their infectious disease
2 modellers have been integrated into, you know,
3 their disease response from the get-go.

4 So, you know, it's sort of -- I think
5 there's this willingness to use the tools that are
6 in the toolbox, or rather than, I think, in
7 Ontario, let things reach a point where it's a
8 crisis and then say, oh, you know, we could maybe
9 ask some scientists what to do in this situation.
10 I think that integration is a very different model
11 and has served them very well.

12 I should stop talking and let Ashleigh
13 talk because I sure talk a lot.

14 COMMISSIONER FRANK MARROCCO (CHAIR):
15 Ashleigh.

16 ASHLEIGH TUIITE: I actually don't know
17 that I have anything to add to what -- to what
18 David said. I mean, I think, you know, in terms of
19 the questions around institutional barriers, I
20 mean, I don't have as long a history working in
21 public health as David does, but I was around for
22 H1N1. And, you know, a lot of the conversations
23 that we have are the same conversations that we had
24 then, you know, in terms of needing to update
25 technology and have systems in place and be more

1 nimble. And, you know, there just doesn't seem to
2 be -- you know, the crisis goes away, and things
3 revert back to normal.

4 And I think the thing that's been
5 surprising to me is the fact that, you know, you
6 have so many people who are, you know, nominally
7 outside of institutional public health, you know,
8 people working at universities, people working --
9 you know, clinicians who are doing a lot of the
10 heavy lifting here in terms of the science, in
11 terms of, you know, trying to call -- call to arms
12 in a sense, you know, the fact that we were
13 publishing this -- these sorts of analyses on
14 long-term care homes, and that wasn't coming
15 from -- you know, within Public Health Ontario or
16 within the Government. It's surprising to me given
17 the fact that, you know, we have that capacity, and
18 you know, that should be the, sort of, bread and
19 butter type of analysis that's happening by our
20 Government scientists. You know, they should be
21 monitoring this and helping, you know, move the
22 science forward.

23 COMMISSIONER FRANK MARROCCO (CHAIR): I
24 have the -- I have the impression from some of what
25 I've heard that there was a reluctance or is a

1 reluctance to access the expertise that's available
2 in our hospitals.

3 Do you have a view about that? Either
4 you or Ashleigh, but -- or both of you, but do you
5 have a view about that?

6 DAVID FISMAN: I think -- I think
7 that's interesting. Something that I suspect is
8 going to evolve in the coming weeks is we've almost
9 split off into -- you know, I like -- I suspect
10 most in Ontario don't really know who makes the
11 actual decisions, and I think that's a separate
12 conversation is who is giving the thumbs up and the
13 thumbs down to different policies.

14 I can speak more to what's happening in
15 terms of advisory bodies, and I think there have
16 been some very positive changes there that mostly I
17 would lay at the feet of Steini Brown who's my boss
18 at the School of Public Health and is -- again, has
19 been a long-time personal friend but have sort of
20 been lucky enough to get to work with him during
21 this crisis.

22 And Steini actually established a
23 Modelling Table. It's called the Modelling
24 Consensus Table which I think is a bit jarring to
25 anyone who does infectious disease epidemiology or

1 modelling. The idea is not consensus. The idea is
2 figuring it out and identifying where the
3 differences between different groups come from and
4 digging down into that. But at any rate, that's
5 what it was called.

6 Was -- there was a success over the
7 summer and was followed by a science table that's
8 now chaired by Peter Jüni, who's another really
9 excellent colleague at St. Mike's table, and
10 Beate Sander who took over the Modelling Table at
11 this point, she's at the University Health Network.
12 And I think both of those groups are doing very
13 good work.

14 I think what you saw this past week or
15 so with Ontario's new guidelines speaks to the
16 limitations of that approach where I know from, you
17 know, emails within the group with the Modelling
18 Table, we were blindsided by Minister Elliot saying
19 that the new -- the new benchmarks and guidelines
20 had been based on advice from the Modelling Table,
21 and I think she's walked that back now.

22 But there's been a lot of discomfort
23 within the group and a lot of private conversations
24 about whether it's ethical to continue in this vein
25 if we are going to serve on science and modelling

1 tables that are not only advising the Government,
2 but we really -- you know, are used more or less as
3 window dressing, were used as a scientific fig leaf
4 for bad policy decisions which we would never
5 endorse. I think that's really problematic, and I
6 think we could do more harm than good in that
7 regard.

8 There's another table called the Public
9 Health Measures Table. The Modelling Table -- the
10 Science Table actually posts its guidance. We have
11 a website, and the Modelling Table's now followed
12 suit. We have websites where we post stuff, and
13 the Public Health Measures Table is a completely
14 different table that doesn't overlap and whose
15 deliberations are not public.

16 And I think with this, sort of, walking
17 back of whether or not the new guidance came from
18 the Modelling Table now, it's been, sort of, laid
19 at the feet of the Public Health Measures Table;
20 and none of us can really comment on that.

21 So I think -- I think one difficulty
22 that we're into in Ontario is you've sort of got
23 this Byzantine structure where you have all these
24 different groups and tables, and who knows how the
25 information flows; or, you know, it also sets up

1 the opportunity of the divergent tables; you know,
2 you can cherry-pick which one you listen to. And I
3 think that's a problem.

4 So I think there's -- you know, I think
5 the Modelling Table and the Science Table have been
6 excellent developments that I would not have
7 expected based on how things played out in the
8 spring. But I think the difficulty is how is
9 that -- how is that information used.

10 There, sort of, seems to be a little
11 bit a separatist movement brewing at these tables
12 now where folks are starting to talk about, you
13 know, should we just split off and start a group
14 like the SAGE -- the SAGE Group that they have in
15 the UK that's totally independent of Government
16 because there is -- there is tremendous frustration
17 that we're, sort of, linked to Government and not
18 only giving advice, but that advice is not
19 necessarily, sort of, heated in any meaningful way.

20 COMMISSIONER FRANK MARROCCO (CHAIR):

21 Well, I don't have any further questions.

22 Dr. Kitts, did you?

23 COMMISSIONER JACK KITTS: No. Thank
24 you.

25 COMMISSIONER FRANK MARROCCO (CHAIR):

1 Commissioner Coke?

2 COMMISSIONER ANGELA COKE: No. That
3 was good. Thank you.

4 DAVID FISMAN: Thank you.

5 COMMISSIONER FRANK MARROCCO (CHAIR):
6 Well, thank you very much, Doctor. This is -- I
7 certainly found it helpful, and I've been trying to
8 sort out for myself what was known when and in
9 order to avoid the evils of hindsight.

10 DAVID FISMAN: Right.

11 COMMISSIONER FRANK MARROCCO (CHAIR): I
12 do appreciate the slide presentation for more
13 reasons than that, but that in particular. And
14 thank you for the effort. It's helpful to us, and
15 we'll look forward to staying in communication with
16 you as we go forward.

17 And we're kind of like -- we're kind of
18 like -- we can't be -- you can't be cured from us.
19 We don't go away. We just keep -- we just keep
20 coming back in waves.

21 DAVID FISMAN: Well, I want to thank
22 you for your work because, as I say, your
23 preliminary inquiry recommendations, I think, were
24 spot on, and I think there are people alive now who
25 are alive thanks to those. So thank you for that.

1 And, you know, I can't speak for Ashleigh, but I'm
2 certainly at your disposal moving forward.

3 COMMISSIONER FRANK MARROCCO (CHAIR):
4 Thank you. It gives us a certain amount of renewed
5 energy to hear something like that, so thank you
6 very much. Good-bye now.

7 COMMISSIONER JACK KITTS: Thank you.
8 Thank you both.

9 COMMISSIONER ANGELA COKE: Thank you.

10 COMMISSIONER JACK KITTS: Thank you.

11 -- Adjourned at 1:43 p.m.

12

13

14

15

16

17

18

19

20

21

22

23

24

25

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

REPORTER'S CERTIFICATE

I, JANET BELMA, CSR, Certified
Shorthand Reporter, certify:

That the foregoing proceedings were
taken before me at the time and place therein set
forth;

That all remarks made at the time
were recorded stenographically by me and were
thereafter transcribed;

That the foregoing is a true and
correct transcript of my shorthand notes so taken.

Dated this 13th day of November, 2020.



NEESONS, A VERITEXT COMPANY

PER: JANET BELMA, CSR

CHARTERED SHORTHAND REPORTER

1 Page 32, line 1: "counter" should be "count her".

2

3 Page 35, line 10: "turned" should be "took over"

4

5 Page 35, line 11: "be added to" should be "she's at
6 the"

7

8 Page 37, line 14: References to the "Sage" Group
9 should be "SAGE" Group.

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

WORD INDEX

< 1 >

1 8:15 21:2
41:1
1.0 17:19
1:00 1:16 3:1
1:43 1:16 39:11
10 41:3
11 16:24 41:5
12th 1:15
13th 40:17
14 41:8
14th 18:12, 14
17 9:8
17th 18:13

< 2 >

2 21:5, 8
2,000 13:17
20 8:16 24:25
25:8
200 19:18
2000s 24:1
29:19
2008 24:9
2009 24:9, 13
25:13 26:13
2020 1:15 5:22
6:20 7:2 8:21
10:6, 10 40:17
22nd 7:12
24th 13:2, 4
17:11

< 3 >

30 8:16
32 41:1
35 41:3, 5
37 41:8

< 4 >

40 8:16

< 7 >

7th 17:12

< 8 >

80 17:10, 12

< A >

ability 25:22
31:3
absolute 27:17

absolutely 5:2
11:6 27:17
acceptable 20:6
access 19:2
34:1
acknowledge
10:11 27:19
28:2, 15 31:4
Act 15:24
actual 34:11
add 7:13 32:17
added 8:25
41:5
address 4:15
adequate 11:23
Adjourned 39:11
adjunct 25:15
adjusts 8:12
admit 27:7 31:6
admitting 13:18
adults 8:16
17:7
advantage
26:15, 17
advice 35:20
37:18
advising 36:1
advisory 34:15
aerosol 12:3
27:14
aerosols 27:15
after 5:9
age 6:10 8:6,
15
Agency 24:8
aggressive
22:20
ago 25:8
agree 13:14
30:22 31:2
ahead 20:17
airborne 27:13
Alison 2:11
alive 38:24, 25
allow 27:21
amount 39:4
analyses 33:13
analysis 17:12
33:19
Angela 1:22
3:5, 20 5:15
29:7 38:2 39:9
angry 13:2, 7
anxiety 7:16

apologize 13:6
Appeals 16:2, 3
appear 4:14
application
11:10
apply 12:9, 12
applying 27:4
appreciate 38:12
appreciating
23:17
appreciation
21:22
approach 29:11
35:16
appropriately
28:16
April 8:9 10:6
16:24 17:6, 12
18:12, 13, 14
19:8, 14 20:2
28:12
area 23:1
arguments
15:17, 18
arms 33:11
arm's 24:10
25:16
Asaph 6:25 7:1
Ashleigh 2:6
3:13, 17 4:3
6:24 20:12
21:9, 11 22:22
23:21 32:12, 15,
16 34:4 39:1
Assistant 2:6,
11
associated 6:13
assuming 14:21
asymptomatic
7:10 10:12, 20
attacks 7:18
attending 1:14
attention 28:15
attorney 14:1
attributable
19:19
available 28:8
34:1
average 21:16
avoid 38:9
awful 14:5
axis 8:7

< B >

B.C 11:19 29:9,
16, 23 30:5
31:10, 17
back 4:2 5:22,
25 10:1, 5
19:14 24:5, 6,
11 25:8 30:24
31:7 33:3
35:21 36:17
38:20
background
23:23 30:19
bad 36:4
Bahal 2:17
barriers 23:17
32:19
based 17:10
21:15 24:24
35:20 37:7
Bay 13:22 14:3
Beate 35:10
becoming 25:14
behaves 26:19
Belma 2:23
40:3, 23
benchmarks
35:19
best 22:23
better 12:2
19:13 21:4
22:17 23:6, 7
29:9
bidirectional
11:25
bit 5:24 6:3
16:15 22:11
24:3, 23 27:7
29:1 34:24
37:11
blindsided 35:18
blitz 22:17
blue 17:20
Bob 30:10
bodies 34:15
boom-bust
31:20
boss 34:17
branch 16:11
brand-new
26:18
brave 25:23
bread 33:18
brewing 37:11
bring 28:20

British 6:13
8:23 25:12
29:20 30:4, 23
31:17
broadly 9:19
Brown 34:17
Brunham 30:10,
13
build 24:7, 9
built 17:10
bunk 15:18
16:5
bureaucratic
24:14
butter 33:19
Byzantine 36:23

< C >
call 11:14 33:11
called 34:23
35:5 36:8
Canada 8:21
9:25 24:5 27:1
29:18
Canadians 7:23
capability 31:24
capacity 33:17
CARE 1:7 2:12,
14, 16, 18 6:7,
11, 14, 16 7:4,
25 8:7, 8, 17, 18,
21 9:6, 8, 18
10:3 11:13, 20,
24 12:4, 7
13:17 14:7
15:4, 16 16:25
17:1, 7, 9, 10, 16
18:4, 18 19:19
21:12 22:3, 8,
10, 16, 19, 21
23:5 33:14
care...that 14:23
case 6:5, 9 8:5,
18 16:1
caste 28:3
caution 15:22
CDC 25:12
30:5 31:10, 18
Centre 29:20
30:4
certain 27:12
39:4
certainly 24:23
38:7 39:2
certainty 16:5

CERTIFICATE

40:1
Certified 40:3
certify 40:4
CHAIR 3:2, 9, 15, 18, 24 4:7, 12, 18, 23 5:6, 13, 18 10:15, 18, 23 11:1, 4, 8 12:20 13:13 19:12 20:9, 16 23:14 29:5 32:14 33:23 37:20, 25 38:5, 11 39:3
chaired 35:8
challenges 25:23
challenging 5:24 25:25
change 28:20
changed 25:9
changes 34:16
changing 27:24
CHARTERED 40:24
cherry-pick 37:2
China 6:9
chose 28:11
Chun 6:25
clear 17:13, 15 25:14
clearly 15:20
clinic 29:25
clinical-care 30:1
clinicians 33:9
closely 6:21 9:19 23:5
CMAJ 9:2
Coastal 9:9
Coke 1:22 3:5, 20 5:15 29:6, 7 38:1, 2 39:9
collaborate 24:20
collapse 31:20
colleague 21:24 23:2 35:9
colleagues 6:21 16:14, 23
Columbia 6:13 8:23 25:12 29:20 30:4, 23 31:17

come 18:13 22:12 27:14 30:11, 18 35:3
comes 9:17
coming 10:5 14:24 16:14 28:9, 13 33:14 34:8 38:20
commencing 3:1
comment 21:10, 20 36:20
COMMISSION 1:7 2:12, 14, 16, 19 12:24 16:8 19:23 28:22
Commissioner 1:21, 22, 23 3:2, 3, 5, 9, 15, 18, 19, 20, 24 4:7, 12, 18, 23 5:6, 13, 15, 16, 18 10:15, 18, 23 11:1, 4, 8 12:20 13:13 15:6 19:12 20:9, 14, 16, 18, 23 21:1 23:12, 14 29:5, 6, 7 32:14 33:23 37:20, 23, 25 38:1, 2, 5, 11 39:3, 7, 9, 10
Commissions 28:23
communicable 6:18 12:17
communicate 31:5
communication 38:15
community 6:12 10:10, 19 13:5, 9
community-living 18:22
comorbidities 8:13
COMPANY 40:22
compare 24:3
compared 18:21
compatible 9:21
competence 29:17

completely 36:13
computer 4:6
concave 20:1
concepts 25:17
conference 13:3
confidence 17:20
connected 14:9 18:8
Consensus 34:24 35:1
consumed 10:4
contacted 22:9
continue 24:20 35:24
contrast 24:4
contributing 20:21 21:7
control 19:1 26:22 29:20 30:5
conversation 34:12
conversations 32:22, 23 35:23
core 28:7
coronavirus-2 6:4
correct 40:15
count 31:1 41:1
counter 41:1
countries 6:16
couple 26:3
course 4:4 10:17 11:14 15:3 16:11 20:22
COURT 3:7, 8, 11 4:25 5:5, 10 16:2 23:8
COVID 7:4 10:5 13:5 14:14, 18, 19, 22 19:20 22:2 25:7
COVID-19 1:7 5:23 7:10, 13 9:5 11:12 18:17
COVID's 11:15
create 11:25 12:6
creating 7:15
creation 25:16
crisis 16:18

32:8 33:2 34:21
CSR 40:3, 23
cultural 25:1 28:20
culturally 27:22
culture 27:9 29:3
cured 38:18
curious 23:20
cycles 31:20

< D >
Dalla 2:4, 6
data 17:16 24:15 28:11
Dated 40:17
David 2:3 3:6, 13, 23 4:4, 10, 14, 21 5:4, 8, 11, 20 10:17, 22, 25 11:3, 6, 10 12:22 13:15 15:13 19:15 20:11, 22, 25 21:9, 21 23:10, 13, 20 29:15 32:18, 21 34:6 38:4, 10, 21
Dawn 2:13
day 1:15 40:17
days 21:19
deadly 9:5 21:23
deal 27:23
death 8:20 17:2, 8, 17 20:4 26:11
deaths 9:16 13:16 17:10, 23, 24 19:18, 25
decision 16:4
decisions 25:5 34:11 36:4
declining 17:7
decouple 11:20
deep-rooted 29:2
defend 8:1
definition 25:23
deliberations 36:15
denial 10:9, 19
Deputy 2:11
Derek 2:18

described 29:21
developed 9:10
developments 37:6
died 15:5
differences 35:3
different 11:15 20:1 21:22 26:3 29:11 30:8, 21 32:10 34:13 35:3 36:14, 24
differently 30:21
difficult 26:22
difficulty 22:4 36:21 37:8
digging 35:4
dignity 12:7
directionality 18:1, 9
Director 2:13, 18 7:1
discomfort 35:22
discriminates 7:19
disease 12:15 23:23 25:24 26:14, 21, 23 28:5 29:20 30:5 32:1, 3 34:25
disease-dynamic 25:25
diseases 6:18, 19 12:17 26:12
disposal 39:2
distrust 7:14
divergence 17:2
divergent 37:1
Doctor 10:16 23:9 38:6
document 18:16
dogma 25:3 27:13, 18
doing 14:4 21:5 22:18 30:23 33:9 35:12
doll 29:22
Don 24:7
dots 17:17, 20
doubling 13:8
doubt 15:20

draft 18:12
dressings 36:3
droplet 27:13
Drummond 2:11
dwelling 7:7

< E >

earlier 29:9
early 8:21 9:19
17:5 21:19
24:1 29:19
early-life 26:10
easy 20:19
Ebola 8:19
economic 12:6
19:4
effect 17:19
effort 38:14
efforts 12:25
egocentric
24:23
elaborate 11:7
elderly 7:17
elders 18:22
Elliot 35:18
email 5:1, 8
13:1, 6, 16 16:22
emails 35:17
embraced 25:18
emerges 28:6
emphasis 9:14
emulate 11:18
enable 29:13
endorse 36:5
ends 19:9
energy 39:5
entire 26:1
epidemic 16:11
epidemics 12:25
Epidemiologist
2:3
epidemiologists
28:10
epidemiology
12:15 21:16
22:18 23:5
34:25
equipment
11:24 19:3
equipped 27:23
err 15:21
error 10:20
errors 10:7
12:24 15:11

established
7:12 34:22
ethical 35:24
ethicists 11:14
events 27:21
evidence 18:23
evils 38:9
evolve 34:8
evolving 27:24
example 21:24
30:6
examples 29:8
excellent 23:10
35:9 37:6
expected 37:7
experience
26:11, 17
experiences
24:25
expertise 30:7
34:1
explosive 20:3
exponential 20:3
exposure 14:2
exposures 13:21
extremely 24:14

< F >

face 28:12
facilities 6:17
11:21 12:9
facility 11:20
22:8, 10
fact 15:10 18:7
31:16 33:5, 12,
17
factors 20:23
21:8 23:18
29:13
failed 16:8
failure 10:11
11:18, 20, 23, 25
12:6, 9, 11
false 14:6
family 22:2
fast 27:25
fatality 6:5, 9
8:6, 18
fear 7:15
February 6:8
feel 21:13 25:9
feet 34:17
36:19
fellow 6:25

fig 36:3
figuring 35:2
find 18:23
fingerprinting
31:22
fire 22:8
Fisman 2:3 3:6,
13, 23 4:4, 10,
14, 21 5:4, 8, 11,
20 10:17, 22, 25
11:3, 6, 10
12:22 13:15
15:7, 13 19:15
20:11, 22, 25
21:9, 21 23:10,
13, 20 29:15
34:6 38:4, 10, 21
fit 30:8
flows 36:25
flu 27:4
focus 10:2
focused 22:25
folks 18:3 28:1
30:17 37:12
followed 35:7
36:11
following 23:4
forcefully 16:16
forecast 10:3
foregoing 40:6,
14
foremost 12:18
foreseeable 19:8
formal 19:9
former 8:24
forth 40:8
forward 33:22
38:15, 16 39:2
found 24:13
38:7
Frank 1:21 3:2,
3, 9, 15, 18, 19,
24 4:7, 12, 18,
23 5:6, 13, 18
10:15, 18, 23
11:1, 4, 8 12:20
13:13 19:12
20:9, 16 23:14
29:5 32:14
33:23 37:20, 25
38:5, 11 39:3
Franklin 2:15
FRCPC 2:3
Freeman 12:16
frequently 6:18

friend 31:1
34:19
friends 16:23
frustration 37:16
fundamental
10:7 15:11
funny 26:19

< G >

Garron 14:10
21:25
gender 8:12
genetic 31:22
genius 28:10
get-go 32:3
give 23:22
given 7:9 13:3
33:16
gives 39:4
giving 34:12
37:18
Globe 13:11
gold 29:16
Good 3:7 5:17
7:14 8:22
30:14 35:13
36:6 38:3
Good-bye 39:6
good-faith 12:25
Government
33:16, 20 36:1
37:15, 17
grade 9:23
graphically 8:3
great 23:1, 11
ground 29:23
group 7:7
35:17, 23 37:13,
14 41:8, 9
groups 8:6
35:3, 12 36:24
growth 19:25
guidance 36:10,
17
guide 16:18
guidelines
35:15, 19
guy 12:14

< H >
H1N1 26:13
32:22
hallmarks 26:21
Hamilton 23:25

handle 22:18
happened 20:8
happening 17:8
31:24 33:19
34:14
happens 8:5
hard 7:20 25:5
harm 36:6
headphones
4:5, 6
Health 2:4, 7
8:24 9:10 14:5
15:23 16:23
23:24, 25 24:2,
8, 11, 13, 21, 25
25:10, 15, 21
27:25 28:4, 17
29:3, 18 30:11,
18 31:8 32:21
33:7, 15 34:18
35:11 36:9, 13,
19
hear 15:9 39:5
heard 33:25
heated 37:19
heavy 33:10
Held 1:14
Hello 3:19
help 30:15
helped 19:23
helpful 38:7, 14
helping 6:23
24:7 33:21
Henry 30:25
Hi 3:3, 6, 17
high 6:4, 13
12:9 26:5, 7
highlighting
18:25
highly 17:24
27:24
hindsight 38:9
history 32:20
hitting 7:20
home 21:14
homes 15:5
18:2 33:14
Honourable 1:21
hope 22:13
hoped 4:16
Hospital 13:19,
25 14:10
hospitalized
22:1

<p>hospitals 29:24 34:2 hothead 16:15 hotspots 31:23 houses 15:18 16:5 hub 30:1 human 7:18 humane 7:2 humans 7:14</p> <p>< I > ICU 15:2 idea 24:8 27:12 30:19 35:1 ideas 25:4 identified 23:18 identify 9:15 12:10 31:23 identifying 35:2 ignore 16:19 illustrate 8:5 immediately 9:20 immune 26:10, 17 immunity 26:6 imperfections 31:5 important 12:4, 5 19:5 impression 33:24 improved 19:1 21:7 22:14 improvement 20:7 including 11:11 incorrect 10:24 14:25 27:16 increase 20:3 increased 6:9 independent 37:15 individual 8:14 22:1 individuals 6:5 10:13 17:1 26:9 individual's 22:6 inevitable 9:7 infected 7:8 18:2 infecting 7:8 18:3, 7</p>	<p>infection 6:4 12:10 18:24 19:1 infections 17:18, 22, 23 30:2 infectious 12:15 23:23 26:12 32:1 34:25 influenza 6:19 11:11, 15 information 28:8 36:25 37:9 initial 6:11 22:16 innovative 25:22 inquiry 38:23 inside 8:17 Institute 2:5 7:1 institution 29:22, 24 30:3 institutional 23:16 30:18 32:19 33:7 integrated 32:2 integration 32:10 intensive 10:3 15:4 interested 12:16 interesting 6:25 34:7 interim 19:22 intervals 17:20 intubated 13:25 invitation 24:7 IPAC 21:3 isolate 22:6, 7 issues 24:15</p> <p>< J > Jack 1:23 3:4, 20 5:16 15:6 20:14, 18, 23 21:1 23:12 37:23 39:7, 10 Janet 2:23 3:8, 10, 21 4:20 40:3, 23 Janine 21:25 22:9 Janine's 22:5 jarring 34:24 Jessica 2:15 jigsaw 30:8</p>	<p>job 12:18 24:17 29:10 join 24:11 joked 14:15 Jonathan 12:15 Jüni 35:8</p> <p>< K > kept 31:18 kids 8:15 killer 11:22 kind 25:17 28:3, 4, 20 38:17 Kitts 1:23 3:4, 20 5:16 15:6 20:14, 18, 23 21:1 23:12 37:22, 23 39:7, 10 knew 5:23 6:3, 6, 10, 16 8:20 21:3 knowledge 6:1 9:24 25:16 28:5 known 9:22 10:21 38:8 knows 36:24 Korea 6:21, 23 7:4 Koreans 7:24</p> <p>< L > lab 31:18 laid 22:10 36:18 Lana 2:4, 7 largely 15:5 late 12:13 30:23 launch 5:21 law 22:11 lay 34:17 Lead 1:21 2:15, 17 leaf 36:3 learning 26:24 27:20 led 15:11 left 3:10 13:17 24:20 25:13, 19 length 24:10 25:17 lessons 16:7 lethal 26:16</p> <p>27:24 Lett 2:18 life-saving 9:12 lifetime 26:17 lifting 33:10 limitations 35:16 linear 19:25 link 8:25 12:5 linked 37:17 links 18:23 listen 37:2 lived 30:5 lives 28:17 lockdowns 17:6 logistic 8:10 long 24:12 29:15 32:20 LONG-TERM 1:7 2:12, 13, 15, 18 6:14, 16 7:4 8:8, 17, 21 9:6, 8, 17 11:13, 20, 24 12:4, 7 13:17 14:7, 23 15:4, 16 16:25 17:1, 7, 9, 10, 16 18:4, 18 19:19 21:12 22:3, 8, 10, 16, 19, 21 23:4 33:14 long-time 34:19 long-winded 29:1 looking 4:5 20:5 27:3 looks 14:23 19:21, 24 21:17 lose 7:16 lot 9:2 19:24 20:12, 13 32:13, 22 33:9 35:22, 23 lovely 7:21 low 9:23 24:7 LTC 18:24 LTCC 2:17 lucky 34:20</p> <p>< M > made 8:5, 8 10:7 40:10 Mail 13:12 making 16:3 man 13:24</p>	<p>managed 9:8 manner 11:19 March 5:22 6:20 7:2, 12 8:21 9:25 10:6, 10 13:1, 4 17:11 19:8, 14 28:12 marked 18:19 markedly 6:9 Marrocco 1:21 3:2, 3, 9, 15, 18, 19, 24 4:7, 12, 18, 23 5:6, 13, 18 10:15, 18, 23 11:1, 4, 8 12:20 13:13 19:12 20:9, 16 23:14 29:5 32:14 33:23 37:20, 25 38:5, 11 39:3 marvelous 8:25 masks 15:18 27:10, 11 30:24 massive 9:5 mathematical 30:6 matter 28:14 McCready 21:25 MD 2:3 meaningful 37:19 means 26:1 measures 9:11 36:9, 13, 19 meat-packing 22:4 medical 8:24 16:22 23:25 medications 11:16 medicine 29:3 meet 3:6 MEETING 1:7 members 22:2 messaging 14:6 M-hm 12:21 Michael 8:23 9:3 14:10 21:25 Michael's 9:14 migratory 15:19 Mike's 35:9 mild 14:13 mine 16:24</p>
---	--	--	---

<p>21:25 minimally 10:12 Minister 2:11 35:18 Ministry 25:15 minute 4:8 10:16 mobile 18:6 model 8:11 17:9 32:10 modellers 32:2 modelling 6:22 30:7 34:23 35:1, 10, 17, 20, 25 36:9, 11, 18 37:5 models 8:22 moment 4:11 11:7 monitor 9:18 monitoring 33:21 months 27:20 morning 3:7 23:9 mortality 6:13 8:11, 14 14:22 16:25 17:6 18:20, 24 Mount 23:3 move 27:20, 25 33:21 moved 4:15 15:3 22:25 24:6, 18 movement 18:17 37:11 movements 18:8 moving 18:6 39:2 mulligan 31:11 multiple 12:8 Mutual 7:25</p> <p>< N > named 6:25 Nathan 23:2, 5 nature 7:10 Naylor 16:7 28:21 necessarily 37:19 needed 30:20 needing 32:24</p>	<p>Neesons 3:21 40:22 Neither 3:25 Nesathurai's 16:1 nesting 29:22 network 11:21, 22 35:11 new 24:8 25:4, 16, 24 28:5 35:15, 19 36:17 newness 26:1 Nice 3:6 nimble 25:22 33:1 nominally 33:6 non-long-term 8:7 normal 33:3 note 8:18 9:14 noted 16:3 notes 40:15 novel 27:23 28:5 November 1:15 40:17 null 17:19 number 24:19 26:4 numbers 20:5 numerous 16:10 nursing 7:6</p> <p>< O > obviate 12:8 obvious 28:12 occupancy 16:4 officer 8:24 23:25 officers 16:23 old 7:20 8:4 16:22 older 6:5 16:25 17:7 26:9, 16 ongoing 10:13 12:11 Ontario 8:8 10:7, 10, 14 15:17 16:2, 12 23:24 24:11, 14, 21, 25 25:7, 15 27:9, 25 29:14 30:16 31:8, 16, 21, 25 32:7</p>	<p>33:15 34:10 36:22 Ontario's 18:18 35:15 open-minded 27:2 operating 15:21 Operations 2:13, 17 opinion 15:9 opportunity 31:9 37:1 order 38:9 organization 25:10 orientation 29:18 30:12, 13, 21 outbreak 11:11 14:7 21:17 outbreaks 6:7, 14, 17 7:4 9:6, 9 11:12 12:25 21:17 27:4 outside 8:17 17:1, 6 33:7 outside-the- house 14:2 overlap 36:14 overlapping 17:21</p> <p>< P > p.m 1:16 3:1 39:11 pace 27:21 31:18 Palin 2:13 pandemic 6:2 15:16 25:20 Pandemics 2:5 paper 12:5 17:4 paragraph 15:1 partial 26:6 participants 1:14 2:9 particular 28:10 38:13 particularly 17:15 part-time 12:7 passed 31:9 patently 14:6 pattern 19:21,</p>	<p>24 pay 28:14 people 10:20 13:18 15:3 22:17 26:16, 20 29:21 30:15 33:6, 8 38:24 Perfect 5:5 person 22:5, 11 23:1, 6 30:25 personal 11:24 14:15 19:3 34:19 persons 7:6 perspective 23:16, 22 Peter 35:8 phylogenetics 31:21 physician 23:23 physicians 27:12 picture 8:4 16:21 pieces 30:8 pike 28:13 place 29:4 31:12 32:25 40:7 plan 5:4 plant 22:4 played 37:7 playing 18:1 point 6:6 17:25 25:25 32:7 35:11 points 16:11 pole 28:1 policies 34:13 Policy 2:15, 18 6:23 36:4 politics 24:15 poppycock 13:10 population 18:21 28:17 31:5 populations 8:7 26:6, 10 population's 26:2 positive 20:6 34:16 possibly 14:14</p>	<p>post 36:12 posted 18:12 posts 36:10 Post-SARS 28:22 PPE 11:23 21:3 practice 8:22 16:18 29:18 precautionary 12:12, 23 15:8, 10, 12, 19 16:9, 12 precious 7:17 predict 17:23 predicted 8:14 17:17 predicting 8:11 predictive 17:24 preliminary 38:23 preparation 21:4 preparations 21:14 prepared 4:15 28:14 preprint 18:12, 13 PRESENT 2:21 presentation 38:12 PRESENTERS 2:1 press 13:2 presymptomatic 10:12 12:10 pretty 12:14 prevent 8:20 principle 12:12, 23 15:8, 10, 12, 19 16:9, 13, 17 principles 25:18 private 35:23 probability 8:11 problem 10:14 12:11 28:7 37:3 problematic 36:5 problems 25:1 29:2 proceedings 40:6 process 5:25 professionalism 29:17</p>
--	---	---	--	---

<p>Professor 2:4, 6 Promotion 15:24 propensity 6:6 prophylaxis 11:17 proposed 25:10 protect 28:16 30:14 protecting 28:18 protection 12:1 15:24 protections 19:4 protective 11:24 19:3 protects 26:11 protocols 11:11 provide 11:23 provided 30:6 Provincial 24:8 PSW 12:10 Public 2:4, 7 14:5 23:24 24:2, 8, 11, 13, 20, 25 25:10, 21 27:24 28:4 29:3, 18 30:11, 18 31:8 32:21 33:7, 15 34:18 36:8, 13, 15, 19 public-health 29:24 published 17:3 publishing 33:13 pulled 16:21 punches 27:6 31:4 pushed 30:24 put 5:25 9:1 20:19 25:3 puzzle 30:8 puzzled 31:13</p> <p>< Q > qualified 21:13 question 5:23 15:7, 14 questions 4:1 32:19 37:21 quickly 4:17 quite 6:3, 20 16:16 quote 12:13</p>	<p>< R > range 8:16, 18 rapid 17:8 18:17 rapidly 25:12 27:23, 24 rate 35:4 rates 26:8 raves 13:22 reach 32:7 reached 6:21 read 7:5, 12, 22 9:3, 16 13:7, 20 14:3, 11, 20 18:15 ready 3:25 real 25:6 26:24 really 13:14 20:6 22:17 23:3 27:23 34:10 35:8 36:2, 5, 20 reason 24:5 reasons 38:13 recognition 6:11 recommendation s 19:23 38:23 recorded 40:11 References 41:8 reflected 12:23 regard 20:6, 7 36:7 regarded 16:14 29:16 regards 7:11 regression 8:11 regretted 31:10 relative 17:18 reluctance 27:17 33:25 34:1 remarks 40:10 remember 16:1 remotely 1:15 renewed 39:4 repeatedly 15:15 REPORTER 3:7, 8, 11 4:25 5:5, 10 40:4, 24 REPORTER'S 40:1 reproduction 26:4 requirement</p>	<p>31:18 rescue 11:14 residents 12:1 16:25 17:17, 22, 23, 24 18:3, 5, 6 resistance 25:4 resources 10:3 15:2 respect 22:14 30:25 respiratory 14:13 27:5 respond 28:15 response 22:7 32:3 restricted 16:4 restricting 11:21 resulted 10:8 11:22 18:19 retired 30:13 revert 33:3 rises 8:14 risk 9:15 17:2, 8, 18 20:4 Rokosh 2:13 roll 27:6 31:4 rule 11:14 ruling 28:3 run 4:16 Russian 29:22</p> <p>< S > SAGE 37:14 41:8, 9 Sander 35:10 Sanjay 2:17 SARS 6:4 16:8 24:2 25:8 satisfied 21:6 saturate 15:2 School 2:4, 7 34:18 Schwandt 8:23 science 25:3, 16 27:1 30:14, 20 33:10, 22 35:7, 25 36:10 37:5 science-based 24:10 scientific 24:19 29:17 36:3 scientist 30:11 scientists 27:14</p>	<p>32:9 33:20 screenshare 5:2 seconded 24:1 Secretariat 2:12, 14, 16, 19 security 12:6 seminar 14:3 seminars 13:22 semiretired 14:1 send 19:10, 11 sense 33:12 sentiment 7:21 separate 34:11 separatist 37:11 September 19:19 24:13 serve 35:25 served 29:25 31:6 32:11 server 18:13 set 16:17 30:21 40:7 sets 36:25 setting 18:5 21:12 settings 6:7, 11 sexually- transmitted 30:2 shape 20:2 share 19:10 sharply 8:15 Shorthand 40:4, 15, 24 shorthanded 24:3 shortly 8:2 show 8:3 showed 20:2 shut 26:5 side 15:22 significantly 21:7 simply 25:14 28:3 Sinai 23:3 single 11:21 14:1 sir 3:7 sits 18:14 situated 19:13 situation 22:1 32:9 situation's 22:13 size 21:16 slap 28:12</p>	<p>slide 8:4 20:20 38:12 slides 4:16, 20 5:1 19:9 small 8:4 smaller 21:17 somewhat 24:6 29:14 Sorry 3:10 4:25 8:3 sort 6:23 8:16 10:4 17:1 19:9 20:3 22:10, 24 24:3 26:23 27:17 28:23 29:16, 25 31:3, 10, 19 32:4 33:18 34:19 36:16, 18, 22 37:10, 17, 19 38:8 sorts 33:13 source 7:17 speak 34:14 39:1 speaking 16:15 speaks 35:15 speed 14:22 24:16 27:1 spend 27:20 split 34:9 37:13 spoken 29:12 spot 38:24 spouting 13:11 spread 12:17 spring 20:8 21:24 37:8 St 35:9 staff 9:18 11:21, 25 12:1 14:12 17:18, 23 18:2, 8, 24 22:21 24:19 Stall 23:2 standard 29:16 start 9:16 37:13 started 6:2 29:19 starting 19:17 37:12 state 6:1, 12 15:20 States 24:6 Statistics 7:1</p>
---	--	---	--	---

<p>staying 9:21 38:15 Steini 34:17, 22 Stenographer/Tra nscriptionist 2:23 stenographically 40:11 stop 10:16 12:19, 25 32:12 straight 19:25 strains 31:23 strategies 11:19 Street 13:22 14:3 stress 25:21 structure 36:23 struggles 7:3 student 8:25 stuff 13:10 36:12 subsequently 9:1 17:3 success 35:6 successful 11:18 29:14 suggest 7:23 suit 36:12 summary 18:16 summer 12:3 17:4 27:10 35:7 support 9:20 14:15 19:4 supposed 16:6, 18 25:11 28:18 surge 18:20 surprising 33:5, 16 susceptible 26:2 suspect 34:7, 9 symptomatic 10:13 symptoms 9:18, 22, 23 14:13 26:20 system 18:19 25:21 systems 32:25</p> <p>< T > Table 34:23, 24 35:7, 9, 10, 18, 20 36:8, 9, 10, 13, 14, 18, 19 37:5</p>	<p>tables 36:1, 24 37:1, 11 Table's 36:11 takeoff 17:8 talk 20:12 21:13 23:1 28:25 32:13 37:12 talking 19:7 32:12 target 6:11 taught 12:14 tax 13:22 14:2 TB 30:1 teach 12:18 teacher 12:14 teaching 27:16 29:23 Team 2:17 technically 31:25 technology 32:25 tells 9:4 tend 20:12 25:2 tended 30:17 tendency 25:5 terms 17:2 21:15, 16 22:11 23:4, 15 25:21 32:18, 24 33:10, 11 34:15 test 9:19 25:21 31:20 testing 9:15 11:12 19:2 21:5 22:15, 19, 20 31:19 tests 9:14 11:11 12:9 thanks 38:25 thing 24:16 28:23, 24, 25 33:4 things 15:17, 18 21:23 26:4, 25 27:3, 9 29:10, 12 30:1 31:15 32:7 33:2 37:7 thought 5:21 11:2 31:8, 11 thread 9:1, 13 threats 27:25 throughput 12:9</p>	<p>thumbs 34:12, 13 time 5:24 10:6, 21 13:20 16:9, 19 25:6, 13 26:24 40:7, 10 timely 11:19 today 3:8 19:13 told 22:5 tone 13:6 toolbox 32:6 tools 32:5 top 28:1 29:10 torch 23:4 Toronto 2:5, 7 13:5, 19, 25 24:1, 17 totally 37:15 totem 28:1 tragedy 10:8 trajectory 17:13 transcribed 40:12 transcript 3:21 40:15 transmissible 26:19 transmission 6:12 10:10, 11, 19 12:3 13:5, 9 18:10 26:5, 8 transmission's 31:24 travel 13:23 travelled 14:16 tremendous 30:25 37:16 tries 28:16 trouble 19:17 true 40:14 Trust 7:24 trying 4:2 10:2 15:25 29:8 33:11 38:7 Tuite 2:6 3:17 4:3 21:11 32:16 turn 20:11 turned 15:3 41:3 Twitter 9:1 type 33:19</p> <p>< U > UBC 29:23</p>	<p>ugly 8:1 UK 37:15 uncertainty 15:21 undermines 14:5 understand 12:2 15:14, 15 29:8 understanding 12:16 22:20 unfolded 10:8 ungrounded 7:15 unit 10:3 units 15:4 universities 33:8 University 2:5, 7 24:17 30:4 35:11 update 32:24 upside 30:17 upward 20:2 upwards 20:1 urgent 18:25 useful 9:11, 13 uses 24:15</p> <p>< V > vaccine 7:25 11:16 validated 15:25 Vancouver 9:9 vast 20:7 vein 35:24 VERITEXT 40:22 versus 16:25 27:13 view 24:24 26:1 34:3, 5 violates 11:13 virus 6:10 7:13, 25 8:1 26:18 27:5 31:22 viruses 8:19 visible 19:8 Visitors 7:6 vulnerable 6:17</p> <p>< W > waiting 3:22 walk 28:25 walked 35:21 walking 36:16</p>	<p>wanted 19:10 warnings 6:15 Washington 6:12 wave 10:5 21:2, 5, 8 22:23, 24 23:15 waves 38:20 ways 26:19 weak 7:19 website 36:11 websites 36:12 week 35:14 weeks 34:8 welcomes 27:9 well-reasoned 16:4 Western 13:19, 25 widespread 19:2 21:5 22:15, 18 willingness 32:5 window 36:3 wisdom 7:18 wise 7:2 wonderful 12:14 words 28:24 work 4:6 6:22 9:21 12:8 19:5 21:11, 12 22:7 27:15 31:9, 11, 12, 14 34:20 35:13 38:22 worked 14:10, 12 22:2, 3 23:24 workers 9:20 12:7, 11 14:15 15:19 working 6:20 13:19 31:8 32:20 33:8 world 24:24 worries 3:12 writing 7:3 written 9:2 wrong 24:16 27:7, 18, 19 28:2, 15 wrote 7:5 9:16 13:7, 16, 18 14:3, 20 17:3, 14 18:11, 14</p> <p>< Y ></p>
--	---	---	---	--

<p>Yaffe 13:3, 8 14:4, 18 Yeah 5:16 20:17, 24 23:8 years 25:1, 8 yellow 17:17 yesterday 19:18 Young 6:25 8:16 < Z > Zoom 1:14</p>				
---	--	--	--	--