

**IN THE MATTER OF THE THOMAS R. BRAIDWOOD, Q.C.,  
COMMISSIONS OF INQUIRY UNDER THE *PUBLIC INQUIRY ACT*,  
SBC 2007, c. 9**

Federal Courthouse  
Room 701  
701 West Georgia Street  
Vancouver, B.C.

May 23, 2008

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PROCEEDINGS AT  
FORUM (DAY 14)

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**ORIGINAL**

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Commissioner:	T.R. Braidwood, Q.C.
Commission Counsel:	A. Vertlieb, Q.C.
Associate Commission Counsel:	P. McGowan
Court Recorder:	P. Kealy, C.V.R., C.M.
Transcriber:	P. Neumann

1  
Dr. Keith Chambers (Medical experts presenter)  
Questions by Mr. Vertlieb

1 Vancouver, B.C.  
2 May 23, 2008  
3

4 THE COMMISSIONER: Well, good morning everyone. Yes,  
5 counsel, good morning.

6 MR. VERTLIEB: Thank you, Mr. Commissioner. Mr.  
7 Commissioner, the first presenter is Dr. Keith  
8 Chambers.  
9

10 DR. KEITH CHAMBERS, Medical  
11 experts presenter.  
12

13 QUESTIONS BY MR. VERTLIEB:  
14

15 Q Dr. Chambers, before we get into your work as an  
16 epidemiologist, would you just give the  
17 Commissioner your background in medicine, your  
18 studies, where you studied and what you did before  
19 you became an epidemiologist?

20 A Certainly. I went to UBC. My first degree was in  
21 mathematics. Then I went to Medical School at  
22 UBC, and after that I graduated, I did one year of  
23 Internal Medicine. I went into family practice in  
24 East Vancouver, where I remained in family  
25 practice for 15 years doing part-time emergency  
26 work. I was President of Mount St. Joseph  
27 Hospital and helped start the Emergency Department  
28 there. And then in 1989 I went back to university  
29 and trained as a clinical epidemiologist. And  
30 from '90 to '95 I ran the undergraduate program  
31 for UBC.

32 Q Let me just stop you one second, please, before we  
33 get into the epidemiology.

34 A All right.

35 Q When did you become a licensed physician?

36 A 1973.

37 Q And where did you do your residency?

38 A At VGH.

39 Q And you've told the Commissioner about your family  
40 practice.

41 A Yes.

42 Q Let's then cover your decision to become an  
43 epidemiologist, how did you go about doing that,  
44 and --

45 A I went back to UBC and I got a Master's in Health  
46 Science, in the Department of Health Care and  
47 Epidemiology.

Dr. Keith Chambers (Medical experts presenter)  
Questions by Mr. Vertlieb

1 Q Tell us about the work from 1990 to 1995.

2 A After I graduated I became the director and  
3 directed the undergraduate program in Health Care  
4 and Epidemiology, which basically taught  
5 epidemiology to third-year medical students. And  
6 I also worked part-time at the Children's Hospital  
7 doing -- as a clinical consultant in epidemiology.

8 Q That then allows us to have you tell the  
9 Commissioner about epidemiology. We've heard that  
10 word before, but would you tell us, please, what  
11 it really means, the different facets of that, and  
12 then discuss what you actually do.

13 A Yes. Epidemiology is a word that's been used  
14 several times during these presentations, and you  
15 have to make a distinction between classic  
16 epidemiology and what I do, which is clinical  
17 epidemiology.

18 Epidemiology, the classic form, is trying to  
19 find out the distribution and the determinates of  
20 disease in the community. So a typical example  
21 would be trying to find out where AIDS came from,  
22 where is it distributed and what are the risk  
23 factors. You might also be looking at clusters of  
24 disease in certain communities. But clinical  
25 epidemiology, as the name implies, is more  
26 clinically oriented. What we're trying to do is  
27 figure out what works in healthcare. So our  
28 training would include how to design research  
29 studies, how to conduct them, and the analysis,  
30 including learning about biostatistics. We would  
31 also take courses in health economics, health  
32 program evaluation and that kind of thing.

33 Q So tell the Commissioner about your work as a  
34 clinical epidemiologist at Vancouver General  
35 Hospital, just so the Commissioner understands  
36 what you -- what you did for many years.

37 A I was the -- from '95 till 2005, I was the  
38 Assistant Director of the Centre for Clinical  
39 Epidemiology and Evaluation, and our centre was  
40 really there for threefold purpose: first of all,  
41 to do our own clinical research. I was principal  
42 investigator on several clinical trials and other  
43 research studies. We were there to support other  
44 clinical research with other physicians and health  
45 personnel in the hospital. We had a third  
46 mandate, and that was to do evaluations if a new  
47 health technology came along, or we wanted to

Dr. Keith Chambers (Medical experts presenter)  
Questions by Mr. Vertlieb

- 1 evaluate somebody, we would evaluate a technology,  
2 we would review the literature for them and give  
3 an opinion.
- 4 Q That was full-time work for you for the hospital,  
5 .9, as it were?
- 6 A It was essentially full-time work, but I also was  
7 part-time from UBC, I worked for a group called  
8 the Drug Assessment Working Group and we reviewed  
9 new drug therapies that were coming into the  
10 province for Pharmacare and give the opinion on  
11 their effectiveness.
- 12 Q Tell the Commissioner about the study that you did  
13 with people in cardiac arrest.
- 14 A One study that was done at the hospital was called  
15 the ABBA study. It was by Riyadh Abu-Laban, it was  
16 published in the *Lancet*, I believe, and what we  
17 did was we randomized people in cardiac arrest in  
18 Vancouver, on witness arrest, so when the Advanced  
19 Life Support Unit got there, they were randomized  
20 to receive either a drug or placebo. This was  
21 technically and ethically a very difficult study,  
22 as you can imagine, to try and design and conduct,  
23 but it was successful.
- 24 Q What was the product, the health product that was  
25 under consideration?
- 26 A Aminophylline.
- 27 Q And just tell us in a simple way what the thought  
28 was about that drug's benefit.
- 29 A Aminophylline is a stimulant and the thought was  
30 that if somebody went into cardiac arrest and they  
31 were in the community, you could give them this  
32 drug and it might bring back a heartbeat,  
33 basically.
- 34 THE COMMISSIONER: Would you mind spelling the drug,  
35 the name, can you?
- 36 A A-m-i-n-o-p-h-y-l-i-n-e, I think.
- 37 THE COMMISSIONER: Thank you.
- 38 A I have that study here. I could look it up.
- 39 THE COMMISSIONER: Well, one time along the way; don't  
40 worry about it.
- 41 MR. VERTLIEB:
- 42 Q So that was a new drug that might have application  
43 for someone who had --
- 44 A It was a new application.
- 45 Q So tell the Commissioner just what your  
46 involvement was in that study?
- 47 A Our centre, I was on the Safety Monitoring

1 Committee and we did the data management for that  
2 study.

3 Q So tell us what you did. I want the Commissioner  
4 to get a sense of the way you go about your work  
5 as a clinical epidemiologist and using that as an  
6 example.

7 A We would look at the safety profile, the study,  
8 and we had stopping rules that if it didn't  
9 achieve a certain event rate within a certain  
10 period of time, we would advise investigators to  
11 stop the study or recommend that. We would look  
12 at serious adverse events and deal with that, and  
13 then we would -- we would collect the data, we had  
14 a data management centre where we would run it  
15 through a program and do the analysis.

16 Q Mm-hmm.

17 A And give the investigator the results.

18 Q And so how -- you were trying to see if this  
19 medicine would have a health benefit to someone  
20 who had a heart attack?

21 A Exactly.

22 Q And so how did you go about doing it to see  
23 whether there's a benefit? Did you have different  
24 groups, did you have a blind group or double  
25 blind? Just tell the Commissioner that.

26 A In clinical epidemiology, and I'm going to lead to  
27 this in my presentation, there's a hierarchy of  
28 research designs that we look to to measure things  
29 in the real world. This is a very important  
30 point. And so you're trying to control for bias,  
31 because when you do research there's such a  
32 tendency on the part of the investigators and the  
33 people analyzing and everybody involved, even the  
34 subjects, for the results to get biased in a  
35 certain way or another. So most high-quality real  
36 world studies that are of good quality, rather,  
37 are randomized. So we randomize people to one  
38 group or the other so we can ensure there's a  
39 quality between the groups.

40 We also like to do comparison, and this is  
41 another issue that's going to come up in my talk,  
42 that in general we're not trying to ask the  
43 question, does this drug work? We're trying to  
44 ask the question, does this intervention work  
45 better than what's currently available or  
46 comparison?

47 THE COMMISSIONER: An improvement?

Dr. Keith Chambers (Medical experts presenter)  
Questions by Mr. Vertlieb

1 A An improvement.  
2 THE COMMISSIONER: Yes.  
3 A It's very rare that, and I think when you come to  
4 Taser, you realize Taser is not acting in a  
5 vacuum, it's what you really want to find out is  
6 how does it compare with other interventions.  
7 THE COMMISSIONER: Yes. And in terms of what you did  
8 in the ABBA study, as I understand it, you have to  
9 make sure that the group you give the placebo to  
10 is comparable to the group that you do give the  
11 medicine to?  
12 A Exactly.  
13 THE COMMISSIONER: Yes, all right.  
14 A And the example would be if you did a study and  
15 you compared, say, cancer rates with a group of  
16 people from Victoria and a group of people from  
17 Surrey, you might conclude that cancer is rampant  
18 in Victoria but the groups aren't comparable. The  
19 age difference between Victoria and Surrey --  
20 THE COMMISSIONER: Would skew it.  
21 A -- would mislead you into thinking that Victoria  
22 had a bigger problem with cancer.  
23 THE COMMISSIONER: Yes.  
24 A In fact, it would just be age related.  
25 THE COMMISSIONER: Yes.  
26 MR. VERTLIEB:  
27 Q So were you actually using placebo with people who  
28 had a heart attack?  
29 A Yes.  
30 Q How were you able to do that? How were you able  
31 medically to make that transition?  
32 A Well, as you can understand, that would be a  
33 difficult issue ethically, but it was passed by  
34 the Ethics Committee. And what you would do is  
35 you could either have a - and I am now talking  
36 generally - you could have an envelope which said  
37 "A" or "B" and you go to the "A" cupboard or the  
38 "B" cupboard at the time that you are going to do  
39 the intervention. And then you would pull out a  
40 syringe and you give what's in there. And you,  
41 the person giving the intervention, would be  
42 unaware of what was in that syringe.  
43 Q And the people doing this intervention were  
44 paramedics?  
45 A They were Advanced Life Support people, yes.  
46 Q So these are people called out to an emergency?  
47 A Yes.

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Presentation

1 THE COMMISSIONER: Let's move on now.

2 MR. VERTLIEB:

3 Q So that's an indication of the work that you are  
4 able to do as a clinical epidemiologist?

5 A That's part of the work, yes. A lot of what I  
6 actually did was evaluating studies for either the  
7 Cochrane Collaboration or for the Drug Assessment  
8 Working Group, or doing evaluations at the  
9 hospital.

10 Q And you're going to get into that in your  
11 presentation, I take it?

12 A Yes.

13 Q Okay. Well, I think, Dr. Chambers, with that  
14 background perhaps then you can start your  
15 presentation for the Commissioner.

16 THE COMMISSIONER: Yes, thank you.

17

18 PRESENTATION BY DR. KEITH CHAMBERS:

19

20 A Thank you. I think the first thing I should say  
21 is I am here at the request of the Braidwood  
22 Commission to give an independent view. I have no  
23 other interest in this topic. I am not paid by  
24 any company, or anything to do with that.

25 The approach I am going to take is going to  
26 be, as I have mentioned, similar to that of a  
27 clinical epidemiologist and somebody who would be  
28 working at the Drug Assessment Working Group at  
29 UBC or at the Evaluation Unit at the hospital.  
30 And so I am going to, for me to understand this  
31 literature that's presented to the Commission, I  
32 really need to think of it as a clinical  
33 epidemiologist as if it came across my desk and I  
34 was asked to give an opinion as to its effect in  
35 the real world. So quite simply I am going to try  
36 and apply some basic principles that we use in  
37 clinical epidemiology to the scientific literature  
38 that was presented here.

39 If I can go the right way.

40 The one thing I have noticed that I think  
41 there has been fairly good coverage of studies at  
42 the Commission so far. We have looked at the  
43 Internet and the various, the company website, and  
44 gone through the databases, Medline, et cetera,  
45 and I don't think there is really much that's  
46 important that's missing.

47 The problem that I have noticed that there's

1 a study and there's been sort of some conflicting  
2 interpretations. So what I am going to try and do  
3 is develop a framework for you, the Commission, to  
4 better understand where this data sits in terms of  
5 its ability to test what's going on in the real  
6 world.

7 Before I get into the presentation, there are  
8 just some basic concepts that I want to go across  
9 so we are all on the same page.

10 And the first one is that of anecdotal  
11 experiences, and I think we all receive them, and  
12 some of them brought forward to the Commission,  
13 and how do you deal with them, should they raise  
14 concern? The answer is absolutely, yes, they  
15 should raise concern. The problem is they are  
16 often --

17 THE COMMISSIONER: Let me just -- in my book, I don't  
18 seem to have that. My first page is "Some terms".

19 A Before that there should be a page "Some basics".

20 THE COMMISSIONER: Okay, hang on a minute.

21 Okay, I've got it now. Thank you.

22 A So I'm talking about anecdotal experiences and how  
23 you deal with them. I think they should raise  
24 concern, but they can often be wrong and  
25 misleading. And they can never be used to measure  
26 harm or benefit in the real world, and the problem  
27 is they're subject to bias, opinions, and a lack  
28 of valid comparison. And I'm sure we've all got  
29 experiences where we've had anecdotes and they've  
30 turned out to be very wrong.

31 I can give you one example from my own  
32 experience. When I first went into clinical  
33 practice I used to assist at surgery. And one of  
34 the common procedures was to do stomach surgery  
35 called a V&P, vagotomy and pyloroplasty, to treat  
36 stomach ulcers. And the patients seemed to get  
37 better and the surgeons thought it was a great  
38 thing. And it wasn't until much later when we did  
39 proper studies that we understood that medical  
40 therapy was preferred and this surgery just  
41 essentially disappeared. So I think anecdotal  
42 experience is important, but I don't think it can  
43 be used instead of good studies.

44 The second point, and this is going to differ  
45 from some of your other presenters, is I am as  
46 much interested as a clinical epidemiologist in  
47 what's been missing as what's been presented. So

1 part of my study is going to deal with what isn't  
2 here.

3 And the third one, I think we all know that,  
4 you know, there's lies, damn lies and then there's  
5 statistics. So when people present numbers to  
6 you, you've got to be a little bit careful, and  
7 especially descriptive ones. Descriptive  
8 statistics are ones that you just describe a  
9 population. For example, how many people in this  
10 room? What's our average weight, height and age?  
11 And the analogy I could give you, it's sort of  
12 like if you're a hockey fan saying that, you know,  
13 the Canucks played really well last night. They  
14 scored two goals. They only got four penalties,  
15 and unless you knew what the other team did, if  
16 the other team, say, the Edmonton Oilers got no  
17 goals, the Canucks did very well. If they got  
18 seven goals, they didn't do very well. So  
19 descriptive statistics on their own can be very  
20 misleading.

21 And the fourth basic point I'm going to make  
22 that's going to come out again in this --

23 THE COMMISSIONER: I can't help but think that the old  
24 saw about the star comes out on the ice, roars  
25 down to the other end and scores, and then the  
26 other team came on the ice. (Laughter).

27 A That would be a descriptive statistic.

28 The fourth basic point that's going to come  
29 up in this presentation is beware of  
30 extrapolations to the real world. I mean, the  
31 bottom line, if you want to know what's going on  
32 in the real world, you should be studying in the  
33 real world. It is very hard to do studies in a  
34 non-real world situation and then say, well, they  
35 fit into the real world. So there will be more on  
36 this.

37 This is a little more technical, but it's  
38 something that I think bears paying a little bit  
39 of attention to. In clinical epidemiology, we  
40 talk about the quality of studies, of research  
41 designs. And what we really mean is their ability  
42 to measure what's going on in the real world, both  
43 harms and benefits. And there's three big things  
44 we look at. We look at how they're measuring  
45 effectiveness. That means is it measuring  
46 something in an ideal situation, or is it actually  
47 measuring what's going on in the real world?

1           The second thing we want to look at to decide  
2 on the quality or the ability of the study  
3 designed to answer a question is whether or not  
4 there's a comparison group. And I mentioned this  
5 earlier, that we're really interested in  
6 comparing, you know, an intervention to the  
7 alternative. We're rarely interested in that  
8 intervention compared to itself or to nothing at  
9 all.

10           And the third thing we look at in terms of  
11 quality of studies is the ability of the study to  
12 control bias. So one way of controlling bias is  
13 randomization so you get equal balance in the two  
14 study groups. There's other ways, such as  
15 blinding the person giving intervention and/or the  
16 recipient, or even the person doing the analysis,  
17 you can blind them and that all helps to control  
18 bias.

19           The point I'm trying to make is that various  
20 study designs have more or less ability to measure  
21 this what's going on in the real world to make  
22 comparisons between groups and to control bias.  
23 And the top of the line as I'm going to get into  
24 is called a meta-analysis, and I'll describe that  
25 in a minute. Next down would be randomized  
26 control trials, which we were discussing like ABBA  
27 earlier. The third level would probably be  
28 analytic studies, where you don't have control of  
29 the intervention but you're kind of observing what  
30 happens in two groups in the community. And then  
31 we get down to further away from real studies,  
32 which are animal studies, volunteer studies, case  
33 reports and the like, and these are not being done  
34 in the real world. They're not doing comparisons,  
35 and they have a much greater increase for bias.

36           One thing you're going to hear about in this  
37 presentation is a thing called power. I think  
38 it's very important that you need to understand  
39 when you do a research study how much power you  
40 need to actually see the difference you're looking  
41 for. And an example would be, you know, I was  
42 trying to think of a good simple example because I  
43 understand the need for power. And I thought,  
44 well, I play golf and if I had a putt 40 feet  
45 away, and I thought the odds of sinking that putt  
46 was say one in a hundred, I'd have to putt it a  
47 hundred times to sink it once. If I then did the

1 study and said, okay, we're going to putt five  
2 times, the putt didn't go in therefore there's no  
3 hole there, I think we'd all understand we hadn't  
4 putted enough times. We'd probably, if it was one  
5 in a hundred we might have to putt five or six  
6 hundred times to sink it two or three times to try  
7 and figure out what the odds are. So the size of  
8 the study, as I'm going to try and show, is  
9 incredibly important in terms of determining how  
10 valid the outcomes are.

11 The sixth thing that's going to come up is  
12 the notion of relative risk. And this goes back  
13 to the comparison groups. In clinical  
14 epidemiology we're more interested in how much  
15 increased risk does one intervention or decreased  
16 risk does an intervention cause as opposed to its  
17 alternative.

18 And the last epidemiological term I am going  
19 to use that's going to come up is a thing called  
20 causation. A very famous man, Sir Bradford Hill,  
21 years ago came up with nine rules, that if you  
22 start seeing these, you'd better start thinking  
23 that there is a causative relationship between,  
24 you know, whatever the intervention is and the  
25 outcome. You don't have to have all of them, and  
26 it's not for sure, but the more you see, the more  
27 likely there is a causative relationship, and this  
28 is taught to virtually every medical student.

29 Okay. With that beginning, and if there's  
30 any confusion in those terms or you want  
31 clarification, please feel free to interrupt.

32 What I would do as a clinical epidemiologist,  
33 if something like an intervention, like the Taser,  
34 came by my desk, I would start at the top and say,  
35 okay, has a meta-analysis been done?

36 So what's a meta-analysis? A meta-analysis  
37 is something that combines a number of studies  
38 together, brings the data and allows you to look  
39 at bigger numbers. It also allows you to look at  
40 the different populations that were studied and  
41 gives you a better idea of who this intervention  
42 is relevant for.

43 It's kind of hard for me without, you know,  
44 giving you a course in this to give you all the  
45 details of what a meta-analysis is. So what I  
46 thought would be a better idea is just to read you  
47 the results, and I quite simply, what I did was I

1 went to the Cochrane database and there's a new  
2 meta-analysis which I think is interesting. I'm  
3 just going to read some of the relevant points,  
4 and I think that should clarify what a meta-  
5 analysis actually is. This was just published,  
6 so:

7  
8 Animal and physiological research as well as  
9 observational studies suggest that  
10 antioxidant supplements may improve survival.

11  
12 So there are some analogies to Taser. There is  
13 animal studies, there's physiological research,  
14 and there's observational studies that were kind  
15 of in support of a benefit of improved survival  
16 with antioxidants. However, when they did the  
17 meta-analysis, what they did is they found 67  
18 trials, different studies. When they combined the  
19 data, they had 232,550 participants. So the point  
20 here is, is the size that's required to actually  
21 see a difference, or not to miss any differences.  
22 And at the end of the day, after they combined the  
23 data, the overall antioxidant supplements had no  
24 significant effect to mortality.

25 I'm not reading in the entire study.

26 So the meta-analysis has answered a question  
27 that all the individual studies really couldn't  
28 answer.

29 THE COMMISSIONER: So this is how you get power?

30 A You get power by increasing the size.

31 THE COMMISSIONER: Yes.

32 A I was principal investigator of the SELECT Trial,  
33 which is a cancer prevention trial. I was the  
34 principal investigator for British Columbia, and  
35 it was 200 sites across North America. We had  
36 35,000 participants. That was the size we thought  
37 we needed to see the results of the intervention.

38 Now, this isn't just in, you know, things  
39 like vitamins or antioxidants or stuff like that.  
40 This is a quote out of a textbook:

41  
42 In the 1990s until a meta-analysis on  
43 treating heart attacks was published,  
44 ineffective treatments were being recommended  
45 and highly effective treatments were not.

46  
47 So to me this is very powerful information that

1 the standard for a clinical epidemiologist in  
2 evaluating scientific literature about  
3 interventions in the community, certainly health  
4 interventions, that a meta-analysis is incredibly  
5 important to have. It may not be practical, it  
6 may not be feasible, but if it's missing - and  
7 this is a quote from Archie Cochrane of the  
8 Cochrane Collaboration - "it is a great  
9 criticism." He meant of our profession. But I  
10 think it really shows that you are losing your  
11 ability to see what's going on.

12 My own experiences, I was involved in the  
13 Cochrane Collaboration here in Vancouver, and we  
14 were in charge of hypertension research for around  
15 the world for a meta-analysis. So all the  
16 Cochrane hypertensive research came to us, and we  
17 actually published one. It went in the *CMAJ* years  
18 ago, and it showed that despite all these trials  
19 on some very powerful anti-hypertensive drugs,  
20 that for first line therapy, the risk of death was  
21 not reduced, in fact it was better to use the old  
22 line diuretics. And I have got the -- that's in  
23 the references.

24 So when it comes to the Taser literature that  
25 I was provided with and tried to identify, there  
26 are no meta-analyses or systematic abuse could be  
27 identified. So in a sense there is some very  
28 powerful information missing. So that often  
29 happens. So, you know, it can happen. So your  
30 next step to look in terms of evaluating the  
31 scientific literature would be to say, okay, have  
32 they done a randomized controlled trial or a  
33 controlled trial in the community? And again  
34 we're back to those issues, you know, you'd like  
35 to see it randomized, you want to measure  
36 effectiveness. You'd like to see it done in the  
37 population in which it's going to be used.

38 And we talked about ABBA.

39 And I should talk about another study that I  
40 did, because sometimes there's a criticism saying,  
41 well, you know, this technology, you know, it just  
42 doesn't lend itself to clinical trials. It's  
43 unethical to do it. You can't do it. And our  
44 centre, we were pretty good at designing studies  
45 that could take care of complicated situations.

46 One study where it was really impossible to  
47 randomize an individual person doing the

1 intervention, we randomized by geographic area.  
2 In other words, what we did is we would find two  
3 areas that were very similar or ten areas that  
4 were very similar and then we'd randomize by area  
5 so the intervention would go into one area but the  
6 alternative would go in the other area.

7 And what I was thinking about, and I would  
8 need time to really sit down and design the best  
9 randomized clinical trial for something like the  
10 Taser. I've never been asked, but I'm just saying  
11 if theoretically I had to think about it, it would  
12 take some time. But one thought was you could  
13 take a series of agencies, or you could have at  
14 the start taken a series of agencies, say 20  
15 agencies, matched them for similarities,  
16 randomized them to one getting Tasered, one to  
17 having the alternative intervention, whatever that  
18 was, and then followed them long enough to get the  
19 size of the study big enough to actually see what  
20 was going on. That's just almost an off-the-cuff  
21 remark.

22 But I guess the point I'm trying to make, the  
23 two points I'm trying to make is (1) it's not  
24 necessarily unfeasible to do a study on Taser. I  
25 think it's highly feasible. It would be  
26 expensive, but as a person evaluating the  
27 literature, if the study is missing, I'm now  
28 stepping further down that hierarchy of quality of  
29 studies in having the ability to understand what's  
30 going on in the real world. So now we're kind of  
31 moving away from controlling bias and we're moving  
32 away, and we're moving down the scale.

33 So I asked the question, are there any case  
34 control or cohort studies? These are analytic  
35 studies in the community. And yes there is one.  
36 It was done by Ordog, and it showed that - and the  
37 sample size was 22 - there was 218 people Tasered,  
38 but your sample size is based on the smallest  
39 group and there was 22 people that were shot with  
40 a .38 Special. And the mortality rates were  
41 highly different: 50 percent died when you used  
42 the gun, and 1.4 percent died when you Tasered.  
43 They said the two groups were matched, were  
44 similar. I think it would be very difficult  
45 unless you randomized to actually have that  
46 matching exact, but I accept the study's  
47 statement.

1           The problem, though, is that that sample size  
2 is so small, I don't think there's any power to  
3 confirm that figure of 1.4 percent. If you did  
4 confirm it, I think you would be talking about a  
5 high mortality rate. So I am not quite sure how  
6 to interpret that. And I think the use of Tasers  
7 changed.

8           So now I've gone through meta-analysis,  
9 randomized clinical trials, basically analytical  
10 observational studies in the community, and now  
11 we're looking at other human studies, and these  
12 are the ones that have been presented to the  
13 Commission. And I'm not going to bore the  
14 Commission by going through each individual one in  
15 detail. They've been presented by several  
16 presenters. I'm just going to highlight some of  
17 the issues that I saw when I reviewed them, and  
18 this will probably not be new information.

19           So Ho has produced studies, small sample size  
20 of 66. The first study that I reviewed was in  
21 2006. The participants were healthy, they were  
22 resting, the single shot, the vector was attached  
23 to the back. The ECG was not taken during the  
24 shot for obvious reasons of interference.

25           Vilke did a study. It was also small, 32.  
26 Again they're healthy, single shot attached to the  
27 back, we think, or we don't know. Some ECG  
28 changes apparently were noted.

29           Levine, another small study, 105, healthy,  
30 single shot in the back. Some increased heart  
31 rate was noticed, some ECG changes.

32           There was a study that was quoted earlier by  
33 Cao, C-a-o, about myocardial capture, 240 beats  
34 per minute by a pacemaker after Taser. There is  
35 some evidence your lactate goes up a bit.

36           So what do you make of all this? And I think  
37 the other presenters were sort of arguing back and  
38 forth about did it capture, was there cardiac  
39 capture, about the meaning of the ECG changes, the  
40 potential for metabolic changes, you know, was it  
41 shown to be safe because there's no ventricular  
42 fibrillation or cardiac capture in the volunteer  
43 studies.

44           I took a different approach. I was more  
45 interested, not in the outcomes, but in the design  
46 of the studies because it's been my experience  
47 that often how the study design tells you what the

1 investigator is really thinking and what they're  
2 interested in. It bothered me that the sample  
3 sizes were so small for the reasons I have spoken  
4 to you previously. And I spoke to Dr. Ho  
5 afterwards and some of the studies coming up, and  
6 he said some of his sample sizes were as low as  
7 15. The 2006 one was 66. It was very small. I  
8 am going to do a power analysis later, but to my  
9 opinion there is almost no power to detect adverse  
10 events unless you had a very high frequency in the  
11 community.

12 The other things with the design, where many  
13 times they were holding the subjects up to keep  
14 them from falling, or they were -- Dr. Ho showed  
15 pictures of them lying on a mat for protection.  
16 And this kind of indicates to me that what the  
17 investigator was worried about, that he was  
18 worried about the problem with falls. And  
19 certainly this is not real world research when  
20 you've got people lying on a mat and you're  
21 zapping them, you're holding them up.

22 Most experiments were a limited number of  
23 shots, mostly single shots, and they were to the  
24 back. So that's not the experience, I don't  
25 think, that's been going on in the real world,  
26 that some of the studies were showing that people  
27 are getting shot as many as 14 times. The  
28 potential of the Taser is 200 shots times five  
29 seconds, as we learned from Dr. Reilly.

30 And I think the health and the weight of the  
31 volunteer likely wouldn't match the real world.  
32 These are healthy police officers generally, not  
33 always.

34 So at the end of the day the bottom line is  
35 these studies aren't designed for the real world  
36 and they lack size. The critical issue, they lack  
37 any size to see relatively rare events. I don't  
38 think you can extrapolate this data into the real  
39 world.

40 THE COMMISSIONER: I take it the rarer the event, the  
41 greater the size has to be in the...

42 A Absolutely. If you're trying to measure something  
43 with, you know, that you need, say it's one in  
44 500, and you do something 50 times.

45 THE COMMISSIONER: Yes.

46 A What are the odds of you seeing anything.

47 THE COMMISSIONER: Yes.

Dr. Keith Chambers (Medical experts presenter)  
Presentation

1 A And being sure, you know, that it's true. That is  
2 the issue.

3 THE COMMISSIONER: Like your golf shot.

4 A Exactly. So going back to the real world, what  
5 can we learn from some of these case reports? You  
6 know, there was some evidence of ventricular  
7 fibrillation, or some reports of ventricular  
8 fibrillation. There was a miscarriage in a  
9 pregnant woman. There was an ocular injury in a  
10 male, terrible photograph attached to it. There  
11 was intercranial penetration in a teenager, you  
12 know, one of the barbs penetrated the cranial  
13 cavity. There was an episode of somebody, the  
14 muscle reaction of being shocked while standing  
15 caused a compression fracture of the back. There  
16 was, I think one presenter talked about somebody  
17 being very muscular and actually fracturing an  
18 arm.

19 I think there's a whole bunch of injuries  
20 around falls, you know, that aren't even being  
21 measured, you know. An area that I'm interested  
22 in, which is traumatic brain injury, I have  
23 actually written a chapter in a book, you know, if  
24 you fall and you have your brain injured, that  
25 decreases your life expectancy. And so I didn't  
26 see any evidence that really these kind of  
27 injuries are getting measured in the community.

28 We know from some of the studies, especially  
29 that Florida study, that many of the people  
30 getting Tasered have heart problems, they've got  
31 drug problems. We've heard about the  
32 hyperadrenergic state, and frailty, and we know  
33 that --

34 THE COMMISSIONER: That's lack of fluid?

35 A No, too much adrenalin, people are over-excited.

36 THE COMMISSIONER: Oh.

37 A I think Dr. Kerr --

38 THE COMMISSIONER: Yes.

39 A -- used that term, hyperadrenergic, excessive  
40 adrenalin. And there were some presentations that  
41 indicated that receiving multiple shocks could  
42 increase risk.

43 So to my mind when I looked at this, you  
44 know, I'm still a long way down in terms of  
45 quality of research, but it did raise some  
46 questions of what is a safe population to use it  
47 in and what is a safe frequency to use it in. It

1 really made me think about are we measuring, are  
2 we so focused on, you know, sudden death that we  
3 may be missing a whole bunch of other injuries  
4 that haven't even come to the light of day yet.  
5 But the bottom line with these case reports, of  
6 course there's no denominators, we don't know out  
7 of how many times the Taser was used, you get any  
8 of these things. So it's very hard to interpret  
9 this data.

10 THE COMMISSIONER: Could you just tell me again your  
11 reference to no denominator?

12 A Well, if, you know, miscarriage in a pregnant  
13 woman, for example, or ocular injury in a male.

14 THE COMMISSIONER: Yes.

15 A So that's one. But out of how many? How many  
16 times do you have to shoot it, you know, is it a  
17 million, is it 100,000, you know. And if you  
18 combine all the injuries, the potential injuries,  
19 okay, so combined effect of injury, what's the  
20 denominator, how many, what's the risk rate? I  
21 may clarify that a little bit with a slide that's  
22 coming up.

23 So coming further down in terms of study  
24 design and ability to see what's going on in the  
25 real world, there was a lot of presentations on  
26 the swine studies. And again I'm not going to go  
27 over them in detail, I think they've been well  
28 dealt with, but just some of the highlights. It  
29 was shown that Taser shocks can capture the heart.  
30 It was shown that location of the shock over the  
31 heart was a strong predictor of myocardial  
32 capture. The swine studies showed that if you  
33 simulated an excited state with adrenalin, that  
34 increased the capture rate, and lethal arrhythmias  
35 were demonstrated. And it did show that fatal  
36 episodes of ventricular fibrillation could be  
37 induced.

38 Some other quotes, that the X26 Taser current  
39 will directly trigger ventricular fibrillation in  
40 pigs. And that's when the stimulation dart is  
41 close enough to the heart, the distance that cause  
42 ventricular fibrillation varied but using one  
43 standard deviation as a range implied the  
44 distances over 23 millimetres could trigger  
45 ventricular fibrillation.

46 And that's going back to one of the studies.  
47 Everybody keeps quoting this distance of 17

1 millimetres. But if you read it carefully,  
2 there's a confidence limit around that, which  
3 means that it could be reasonable that it could be  
4 as much as 6.48 millimetres wider or narrower to  
5 be in that dangerous depth.

6 But it did show that echocardiography of an  
7 erect human showed skin-to-heart distance of 10 to  
8 57 millimetres. So the potential of having the  
9 dart, even though it's a low probability, it's not  
10 zero. It is there.

11 They went on to do some prolonged shocks, so  
12 severe metabolic and respiratory acidosis  
13 occurred, but when some of the studies did only  
14 one five-second pulse, there was no evidence of  
15 ventricular fibrillation.

16 So again what does one make from this other  
17 than that these are, you know, these are animal  
18 model studies, they're not real world studies.  
19 One of the comments in one of the articles, that  
20 is a quadruped like a swine has more fat and  
21 muscle across the chest and therefore it may be a  
22 poor model. Other comments that these animals  
23 were anaesthetized, so it's not real world. If  
24 you add epinephrine to try and stimulate the real  
25 world, the rate of capture of your heart rhythm  
26 rises. It does show that ventricular fibrillation  
27 can be induced, so it's not a theoretical issue.  
28 It's biologically plausible. Myocardial capture  
29 was recorded with inter-cardiac measurement during  
30 shocks, which supports a biologically plausible  
31 model.

32 And what's interesting as an epidemiologist  
33 is that there's a dose response going on here,  
34 that the more you shock, you know, the more chance  
35 you are of seeing an arrhythmia.

36 The huge problem is the small sample size.  
37 As one presenter said, you know, it's very hard to  
38 catch it on the T-wave, if that's what's going on.  
39 So you'd need a lot of events to start having  
40 problems show up. At the end of the day, as a  
41 clinical epidemiologist I just have to conclude  
42 these studies really don't represent the real  
43 world.

44 So is there anything else that we can look at  
45 that could give us more information about the  
46 harms or benefits of the Taser in the population  
47 in whom it's being used? And this is an

1 approximation of a slide that was presented to  
2 this Commission and I've titled "Is the population  
3 data compelling?" When I first saw it, I said  
4 this is really pretty important information  
5 because you've got the rise in Taser use, which is  
6 that blue squiggly line that roughly represents, I  
7 think, our RCMP use over the last four or five  
8 years. So that's a close approximation of the  
9 increase in RCMP Taser use. It's up around 500.  
10 And then this bottom line represents the seven  
11 deaths in B.C. and you can just see basically a  
12 flat line.

13 When I first looked at it, I said, you know,  
14 that really indicates that rising Taser use is not  
15 having any impact. But then I went back to my  
16 clinical epidemiology training and said, well,  
17 that's not really the question we're after. What  
18 we want to know is are we capable of detecting a  
19 relative risk? Are the numbers there to detect a  
20 relative risk? Rather than just that flat line.  
21 And if the problem is that the event rate is low,  
22 similar to the problem that I've been describing  
23 of the swine in the volunteer studies, then we  
24 could have a problem.

25 So I just did an example. I said, for  
26 example and only theoretically, let's say we  
27 wanted to be sure that a device like the Taser  
28 couldn't be responsible for one of the two in-  
29 custody deaths. That would be a relative risk of  
30 double, and I think anybody would say that's a  
31 very significant risk, and this is very  
32 theoretical. This is modelling. But let's just  
33 say there was a device like the Taser and we want  
34 to make sure it wasn't responsible for one out of  
35 two deaths in custody.

36 If we knew that the risk of death was  
37 relatively uncommon for in-custody situations,  
38 before the introduction of a device like the  
39 Taser, or when it wasn't used, say, another group  
40 it wasn't used. Then I calculated you would need  
41 just under 50,000 subjects or 23,547 per group to  
42 have an 80 percent statistical power of detecting  
43 this increase in relative risk. That's the kind  
44 of size you would need to be sure that you weren't  
45 missing a fairly significant relative risk of  
46 Taser use. A 40 percent increase in risk would  
47 require even bigger numbers. And if a device like

1 the Taser increased your risk three times, you'd  
2 still need close to 10,000 events to be sure that  
3 you hadn't missed that relative risk.

4 So I modelled it different ways and the term  
5 we use, the need for large numbers to measure  
6 risk, is robust. You know, no matter how you  
7 change it around, you've got to have large numbers  
8 because I think the event rate is reasonably low.  
9 So I think there's a serious chance of missing a  
10 very significant relative risk to the use of  
11 Tasers, given the existing data.

12 But that's not the whole story. What about  
13 all these other injuries? And some data was  
14 presented. It was unpublished and I'm just going  
15 to take it at its face value and use it as an  
16 example to develop this idea that we could be  
17 missing significant outcomes.

18 The data that was presented I think showed  
19 that there was 231 out of 271 cases where 85  
20 percent of those Tasered had no or mild injury and  
21 it gave a confidence limit of 80 to 89. And I  
22 think the point that was being made was that  
23 basically it's a fairly safe instrument that most  
24 people are not seriously injured by it.

25 What wasn't stipulated was those confidence  
26 limits are based on assumptions, including a  
27 constant probability of being injured and of each  
28 event being independent. If some officers were  
29 using the Taser more than others, or if the  
30 persons receiving the shocks weren't uniform in  
31 terms of the risks, then you would have a thing  
32 called over-dispersion, which would create a  
33 larger variance, and this is statistical, but your  
34 confidence limits would most likely widen. I  
35 don't expect you to follow that argument  
36 technically, but the conclusion that I came up  
37 with that simply put the risk of injury of more  
38 than no or mild injury could be higher than  
39 indicated by this data.

40 So where have we been? A number of deaths  
41 have been associated with the Taser use. This  
42 temporality does point to a possible causative  
43 relationship, especially if there are other  
44 supportive factors.

45 One of the other presenters talked about a  
46 *post hoc* fallacy that just because something  
47 happens, and that something happens after that,

1           that you can't trust that. You must understand,  
2           that may be true, but the other statement is  
3           supposed to go along with it. If there are other  
4           supportive issues, then that does support a  
5           causative relationship. And that's going back to  
6           these rules of causation by Mr. Sir Bradford Hill.  
7           So we have this temporality where people are  
8           getting Tasered and dying. We have animal models  
9           that point to a possible biological mechanism,  
10          that include myocardial capture. There are some  
11          dose response relationship going on.

12                 These other two rules of causation favour a  
13          causative relationship and therefore temporality,  
14          I think, is an issue. I'm not saying there is a  
15          causative relationship, but I'm saying these three  
16          things do tend to support a causative  
17          relationship.

18        THE COMMISSIONER: We were told by - I forget the  
19          doctor's name, it was difficult for me to  
20          pronounce - that if an autopsy shows that there is  
21          no other cause of death in that you can't  
22          determine whether ventricular fibrillation caused  
23          death, that that is evidence that that is what  
24          caused death.

25        A          That's been my medical training, that an  
26          electrical death, in the absence of any other  
27          cause based on autopsy, then electrical death is a  
28          likely cause, yes.

29        THE COMMISSIONER: And does that fit in the indicia of  
30          connection?

31        A          What I'm really trying to do here is take the  
32          rules of causation, and they, and more of them  
33          that are positive, the more likely --

34        THE COMMISSIONER: Yes.

35        A          -- that you can get a relationship. I am really  
36          trying to deal with the issue that somebody talked  
37          about *post hoc* fallacy and don't worry about the  
38          fact the people get Tasered and then they die.  
39          And I think that's an over-simplistic way to look  
40          at it. From the point of view of a clinical  
41          epidemiologist, I would be looking at the  
42          temporality. I would then be looking at others of  
43          those rules in terms of is there a biological  
44          possibility and is there a dose response  
45          relationship, and in my personal opinion I think  
46          there is evidence that that exists, so I think it  
47          points towards a possible causative relationship.

1 But at the end of the day we have animal studies  
2 and volunteer studies that don't represent the  
3 real world and don't measure the magnitude of the  
4 harms or benefits.

5 We've talked about the relatively small  
6 sample sizes relative to the low event rates; the  
7 fact that there's no meta-analysis, no systematic  
8 abuse, no controlled trials on a population for  
9 which Taser use has been designed. There are  
10 anecdotal reports and police data have pointed to  
11 benefits. However, there's no standardized  
12 database or validated and published studies that  
13 accurately measure benefits that I could identify  
14 based on the current use. And case reports have  
15 pointed to a number of other injuries and risks  
16 for the device as we discussed.

17 So where are we right now? In my mind we  
18 have no idea of the relative risk of death in a  
19 large population due to Taser use. A significant  
20 risk could be being missed due to a lack of study  
21 in the real world. We really have no handle on  
22 what other injuries associated with Taser use  
23 might also be important - standing fractures,  
24 falling fractures, spinal cord injury, brain  
25 injury - as these are not being routinely followed  
26 in a systematic way.

27 Other presenters have pointed out that we  
28 have no standards for when to use a Taser between  
29 agencies. And one thing that's not happening is I  
30 can't find any evidence that we're developing  
31 accountability for changing technologies. We've  
32 got new generations of devices coming on. It  
33 appears the use of the device is changing. So my  
34 background tells me that the bottom line is that  
35 badly needed large sample size data on which to  
36 base policy decisions is missing and is not being  
37 systematically being collected at present.

38 It may be too late to conduct proper  
39 controlled trials, but not to set up some form of  
40 model system to track outcomes. And I'd just like  
41 to take a moment here to tell you what the model  
42 system is. Years ago in the United States they  
43 were having a problem with their spinal cord  
44 injuries. They weren't getting the kind of  
45 outcomes they wanted and what they did is they  
46 went and got funding from Congress. It was an Act  
47 of Congress. And they took funding and they went

1 to several hospitals, Magee, Shriners and some  
2 other hospitals, and they said if you will build a  
3 database to follow the outcomes and put in place  
4 some guidelines as to how you're going to treat  
5 them and some facilities, we'll give you funding.  
6 If you don't keep the quality of what you're doing  
7 up, we'll withdraw the funding. So it was driven  
8 by financial funding.

9 Some hospitals signed up, did very well, some  
10 couldn't keep it up and were dropped, and the  
11 system has been able to collect an incredible  
12 amount of information on spinal cord injury. And  
13 it's really gone as one of the models for database  
14 collection in interventions around North America.  
15 I've given you the references, the textbook. It's  
16 really worth reading what they've done and managed  
17 to do.

18 Finally, where should we be going? I think  
19 guidelines are badly needed at this point in time,  
20 and it would appear reasonable to me at least, and  
21 this is my opinion not as a clinical  
22 epidemiologist, just as, you know, somebody who  
23 has come to this Commission and is looking at  
24 these events. I think it would be reasonable to  
25 make these conservative guidelines with some form  
26 of use limitation and until the appropriate  
27 population data comparing harms to benefit is  
28 available.

29 I think guidelines should be standardized, at  
30 least provincially.

31 I think the condition of use and indications  
32 for use by an agency should require compliance  
33 with a standardized reporting mechanism.

34 And I think the reporting should be linked to  
35 some kind of an outcome database, a large  
36 database, hopefully along the model of the model  
37 system.

38 And finally, it's obvious to me that all the  
39 stakeholders, the company, enforcement agencies  
40 and the government should be encouraged to get  
41 together to find common ground to develop research  
42 strategies, including the creation of a large  
43 independent multi-centre database to resolve all  
44 these unanswered questions.

45 THE COMMISSIONER: Well, that is very, very helpful.

46 A That's a finish.

47 THE COMMISSIONER: Yes, indeed. The presentation is

Murray Mollard (Interested groups and individuals  
presenter)  
Questions by Mr. McGowan

1           complex but I think the point is clear, and I  
2           believe I have it.

3           A     Thank you.

4           THE COMMISSIONER: I'll read it again. All right.

5           Counsel, do you want a few minutes, or how are we  
6           doing?

7           MR. VERTLIEB: Perhaps so, yes.

8           THE COMMISSIONER: All right. A brief adjournment,  
9           then.

10

11                           (PRESENTER STOOD DOWN)

12

13                           (PROCEEDINGS ADJOURNED)

14                           (PROCEEDINGS RECONVENED)

15

16           THE COMMISSIONER: The good Doctor is gone. I wanted  
17           to thank him, but that's fine.

18           MR. VERTLIEB: Let me see if he's still here. Just a  
19           minute.

20           THE COMMISSIONER: No, never mind.

21           MR. VERTLIEB: No, that's all right.

22

23   DR. KEITH CHAMBERS, Medical  
24   experts presenter, resumed.

25

26           THE COMMISSIONER: Oh, Doctor, I just wanted to thank  
27           you very much. That's a lot of effort, and thank  
28           you, it's very helpful.

29           A     Thank you.

30           THE COMMISSIONER: All right.

31           A     I hope it's helpful.

32           THE COMMISSIONER: No, it is.

33

34                           (PRESENTER EXCUSED)

35

36   MURRAY MOLLARD, Interested  
37   groups and individuals  
38   presenter.

39

40           THE COMMISSIONER: Good morning, Mr. Mollard.

41           MR. MOLLARD: Good morning.

42           THE COMMISSIONER: Yes, counsel.

43

44           QUESTIONS BY MR. MCGOWAN:

45

46           MR. MCGOWAN: Yes, Mr. Commissioner. The next  
47           presenter is Mr. Murray Mollard. He is the

Murray Mollard (Interested groups and individuals  
presenter)  
Questions by Mr. McGowan  
Presentation

1 Executive Director of the B.C. Civil Liberties  
2 Association.

3 Q Mr. Mollard, just before we send you off on your  
4 presentation, I'm going to spend just a couple of  
5 minutes on your background as has been our custom.  
6 You have a Bachelor of Commerce from UBC, 1986?

7 A yes.

8 Q You subsequently went to McGill and completed your  
9 law degree there?

10 A Yes.

11 Q After which you spent some time practising in the  
12 areas of labour and environmental law?

13 A Yes.

14 Q You worked on the Oppal Commission of inquiry into  
15 policing in this province?

16 A I did.

17 Q You got your start with the Civil Liberties  
18 Association, at least as a permanent member in the  
19 1990s as the Policy Director?

20 A That's correct.

21 Q And you took over the position of Executive  
22 Director with the Association in 2001?

23 A Yes.

24 MR. MCGOWAN: Thank you. Please commence your  
25 presentation whenever you're ready.

26

27 PRESENTATION BY MURRAY MOLLARD, B.C. CIVIL LIBERTIES  
28 ASSOCIATION:

29

30 A Thank you, and Mr. Commissioner and Commission  
31 staff, I'd like to on behalf of the B.C. Civil  
32 Liberties Association thank you for inviting us to  
33 speak and indeed accommodating some of my schedule  
34 to appear today. And I guess I'm lucky enough,  
35 perhaps to have the last word, at least on the  
36 public --

37 THE COMMISSIONER: Well, maybe not quite.

38 A On the public presentations, yeah. No, I joke, I  
39 jest.

40 But more seriously as a way of introduction  
41 to the association, you may be familiar that the  
42 B.C. Civil Liberties Association has been doing  
43 its business for almost 45 years now, and we  
44 consider ourselves if not the leading  
45 organization, certainly one of the leading  
46 organizations advocating for civil liberties in  
47 Canada and in the province.

1           We have four program areas that include  
2 public education, complaint assistance, law reform  
3 advocacy and litigation. Importantly, and it  
4 involves a range of areas, I mean, from free  
5 speech to due process to anti-discrimination, et  
6 cetera. What's key today here, of course, is our  
7 work involving police accountability, which has  
8 really been a cornerstone of our work since 1962,  
9 and it touches on all those four program areas  
10 that I have just reviewed.

11           I want to say this at the outset. Police  
12 bear a tremendous responsibility in Canada's  
13 democracy. They are responsible for public safety  
14 and serve the public by preventing and  
15 investigating crime. In doing so that they at  
16 times place their own lives at risk in dealing  
17 with dangerous and violent individuals. And for  
18 those reasons they are very deserving of our  
19 respect and support, generally speaking.  
20 Sometimes the association is considered to be  
21 anti-police, in fact, we're very pro-police. We  
22 recognize their absolutely critical role in our  
23 society.

24           At the same time, the BCCLA recognizes the  
25 police possess extraordinary authority to  
26 undertake this responsibility, including the power  
27 to detain, arrest, use force against individuals  
28 and sometimes lethal force.

29           A hallmark of a liberal democracy like Canada  
30 is the rule of law as the legitimacy of policed  
31 authority is dependent on the confidence of the  
32 public and civil society, consistent with the rule  
33 of law, police must always remain fully  
34 accountable to civilian authority. This is the  
35 principle that really underlies all of our work in  
36 terms of police accountability, and I think it's a  
37 theme that will run through my presentation this  
38 morning.

39           In carrying out its responsibility to ensure  
40 public safety, obviously the police must use  
41 weapons from time to time, but weapons have  
42 obviously tremendous implications for the civil  
43 liberties of individuals. Our submission is that  
44 whenever a new weapon is considered for use by  
45 police forces, there must be thorough and  
46 independent - independent of police - research and  
47 analysis into whether a weapon poses or does not

1 pose an unreasonable risk of harm and safety to  
2 the public. If it does not pose such a risk, then  
3 clear rules and regulations about training, use  
4 and accountability regarding the weapon must be  
5 established before the weapon is approved.

6 Consistent with the principle that the police  
7 are responsible to civilian authority, the  
8 responsibility for the assessment and regulation  
9 of new weapon technology lies with the civilian  
10 government, not with police. Indeed, public  
11 confidence in the police can only be maintained if  
12 the police and weapons like the conducted energy  
13 weapon are in fact, and are perceived to be,  
14 serving the public interest, not simply the  
15 police's interest. That means that solicitors  
16 general, attorneys general, must take  
17 responsibility for ensuring that new technology,  
18 technology especially like the CEW, that can, I  
19 think uncontroversially, inflict severe pain on  
20 individuals and may cause irreparable harm, does  
21 not pose that unreasonable risk of harm to  
22 Canadians. These same authorities must ensure  
23 that there are high and appropriate uniform  
24 standards with respect to the regulation of these  
25 weapons.

26 I think there's a lesson to be drawn from  
27 CEWs and Tasers generally since its introduction  
28 almost ten years ago. There's an important lesson  
29 that, and we submit that the Braidwood Inquiry  
30 should recommend to the provincial government that  
31 more careful study, research and assessment occur  
32 before any new weapon. I mean, we're here, of  
33 course, your inquiry is all about CEWs, but use of  
34 force, and I think it's predictable that in the  
35 not too distant future we'll see other new weapon  
36 technology, and that when new weapon technology,  
37 before it is introduced, the proper studies, the  
38 proper research is undertaken before it's  
39 introduced into general use by police forces. And  
40 that if such technology is not posed to be an  
41 unreasonable risk, that that regulatory  
42 environment is created before its deployment.

43 I want to go into the sort of second part of  
44 my submission this morning, and that is to talk  
45 about police governance generally, and especially  
46 with respect to the conducted energy weapon. Our  
47 submission is that there has been indeed a large

1 failure and utter failure, almost an abdication of  
2 responsible government control over the  
3 evaluation, regulation of the conducted energy  
4 weapon by police forces in British Columbia and  
5 Canada.

6 Now, we go back to the beginning and you've  
7 heard, I think, from Mr. Dosanjh, you certainly  
8 have heard from Mr. Begg, the Director of Police  
9 Services currently, in ten years ago or so when  
10 the weapon was introduced about how we were sold,  
11 and certainly the Civil Liberties Association was  
12 sold on this technology as something that was  
13 going to save lives because it was going to be  
14 used as a substitute for firearms. In the words  
15 of Mr. Begg before you when he presented:

16  
17 It was expected that Tasers would be limited  
18 to being used in situations where subjects  
19 were violent, aggressive or armed, in other  
20 words, in situations with a very high level  
21 of risk and potential for serious injury to  
22 both police officer and subjects.  
23

24 That was the anticipated use model at the time  
25 when the weapon was approved.

26 And to be fair to Mr. Dosanjh, our position  
27 was much the same as him. When asked by the media  
28 whether we opposed this technology, we said, well,  
29 look, we're not experts on the technology, safety  
30 of this weapon. That's not our role. That is the  
31 government's role, though, to ascertain. But to  
32 the extent that it can save lives because it will  
33 be used instead of a gun, this is an option that I  
34 think is worth looking at and worth testing. But  
35 we also said if that's going to occur, what would  
36 have to accompany with it was clear, high,  
37 uniform, legally enforceable standards.

38 I want to just pause here. The pilot project  
39 that the Victoria Police Department conducted, as  
40 I understand it, was a very short project pilot,  
41 six months in length. At some point, in the  
42 materials that our association has been given by  
43 the Ministry of Attorney General, I read  
44 somewhere, and I'm sorry I couldn't, I went back  
45 to find the source of this, but there was a  
46 suggestion I thought I read and I'll continue to  
47 look for it, that in that six-month pilot project,

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1           13 deployments were reviewed as the basis for  
2           approving the weapon. In my submission, Mr.  
3           Commissioner, 13 deployments over a six-month  
4           period is not the kind of pilot project that  
5           should be the basis for an approval of a weapon.

6       THE COMMISSIONER: Well, we just heard an extensive  
7           presentation on that point.

8       A    Thank you. We've all heard about the problem of  
9           usage creep since that time, and we know that that  
10          has been a growing concern. Indeed, from our  
11          association's point of view, in August 2004, after  
12          a growing number of deaths being associated with  
13          the use of the Taser locally in Canada and the  
14          United States, we wrote to then Minister Rich  
15          Coleman, who was the Solicitor General at the  
16          time, asking him to undertake a comprehensive  
17          review, including audits of actual use, in  
18          formulating provincial-wide policy and rules with  
19          respect to the Taser. We urged the Minister to  
20          undertake a review and to implement those  
21          standards. Our letter is attached to our  
22          submission.

23                Mr. Coleman's response in 2004 in December -  
24                we also attach that - was to point to various  
25                reviews that were ongoing, including the office of  
26                Complaint Commissioner, office of the Police  
27                Complaint Commissioner, I should say, which he  
28                noted had made interim recommendations and an in-  
29                custody review by the Coroner's Service. To this  
30                date we have heard of no word of the Coroner's  
31                Service review and we aren't aware of any  
32                standards. And of course I think it's fair to say  
33                that there just simply aren't any standards in  
34                British Columbia or Canada that are uniform for  
35                all municipal and RCMP police forces.

36                I just note that again in 2004 when the  
37                Minister pointed to the office of the Police  
38                Complaint Commissioner's review, of course, we  
39                know that it wasn't his review. In a sense he  
40                delegated the review to the Victoria Police  
41                Department. And then I think that raises  
42                questions about the independence of that review,  
43                given the Victoria Police Department's investment  
44                in the technology, and I think endorsement of the  
45                technology early, from an early stage.

46                We submit that some recent documentation from  
47                the Attorney General of British Columbia to you,

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1 to your inquiry, further confirms that the  
2 Ministry of Public Safety has failed to play an  
3 adequate governance role. There has been a letter  
4 from John Les dated December 21st, 2007 to the  
5 RCMP Deputy Commissioner. He also wrote to the  
6 Municipal Chiefs at the time and he said this, in  
7 quotes:

8  
9 The time has come for British Columbia law  
10 enforcement agencies to come together to  
11 clarify practices and policies around Taser  
12 use and establish definitive threshold use  
13 guidelines and training requirements.  
14

15 Well, Mr. Commissioner, that's December 21st,  
16 2007. It's a long overdue statement from the  
17 Minister, a statement that we have been asking for  
18 from this government from the get-go. And  
19 needless to say, you can understand our  
20 frustration with respect to governance. Indeed,  
21 it's really only due to, I think, Mr. Dziekanski's  
22 tragic death, and the fact that his death was  
23 captured on video that was broadcast to the world,  
24 that has really brought us to this today, the fact  
25 that the government is finally, finally waking up  
26 to say that it's time to actually have these kinds  
27 of standards.

28 There was something in the documentation as  
29 well, there's something called "Taser Trends in  
30 B.C. Research Plan" that was a document put  
31 together by the Ministry dated February 19th,  
32 2008. It recommends options for analyzing data of  
33 past CEW use to aid and identifying key issues  
34 regarding the CEWs. Mr. Kevin Begg and Joel  
35 Johnston, the Provincial Use of Force Coordinator,  
36 I think have made presentations that indeed they  
37 are looking to ensure that there is greater  
38 capture of data now. Obviously we would support  
39 that, but we say again that this kind of data  
40 should have been collected much earlier, and  
41 you've heard a lot about that, I think. But this  
42 lacuna in data collection seriously undermines the  
43 capacity of police and civilian authorities to  
44 ensure accountability and create appropriate  
45 regulatory environment.

46 I have got a quote from Paul Kennedy's  
47 interim report there that really takes the RCMP to

1 task over the fact that they haven't been  
2 collecting data. I think obviously the same could  
3 be said for municipal police in British Columbia,  
4 and indeed for the responsible governing  
5 authorities, civilian governing authority, the  
6 Ministry.

7 I want to talk a little bit about the  
8 staffing within the Police Services Division.  
9 It's our submission that the Police Services  
10 Division of the Ministry has not had adequate  
11 staff to provide the Ministry with expert advice  
12 regarding civilian governance regarding the  
13 regulation of use of force, including the CEW. We  
14 note that the Oppal Commission in 1994 recommended  
15 the appointment of a provincial Use of Force  
16 Coordinator. That didn't happen until 2005, that  
17 Staff Sergeant Joel Johnston was hired on  
18 secondment from the Vancouver Police Department.

19 We've reviewed Mr. Johnston's background and  
20 qualifications. And we submit that he's not in a  
21 position to provide the sort of disinterested  
22 expert policy advice and guidance the Ministry  
23 needs with respect to civilian governance. We're  
24 not here to criticize Mr. Johnston. He's got a  
25 job to do and obviously has expertise in the use  
26 of force techniques. But my point here, and I  
27 think our association's point here is that  
28 governing, civilian governing authority has to  
29 have its own expertise independent of police to be  
30 able to make assessments about the safety of use  
31 of force technology and the regulation of that  
32 technology. That's our point here.

33 We've also reviewed Mr. Johnston's draft  
34 report and we noted that Mr. Begg expressed that  
35 he had concerns about it, hasn't been adopted. We  
36 share those concerns. In our view it does not  
37 provide a thorough academic disinterested review  
38 of the literature, nor a thorough analysis of the  
39 issues necessary to provide sound policy.

40 We learned through Mr. Begg's submission that  
41 the Police Services Division has hired and engaged  
42 a program manager with expertise in police use of  
43 force to provide what he called a "civilian lens"  
44 through which to provide policy advice. We  
45 obviously welcome that. We've learned that this  
46 program manager was only appointed in sometime in  
47 early 2008. We're uncertain of her

1           qualifications. I've had a quick chat with her,  
2           but I'm certainly not in a position to assess  
3           whether in fact she's the kind of person I think  
4           that the Ministry needs and the expertise it needs  
5           to have to independently of the police assess and  
6           make regulatory policy with respect to the Taser.

7           I want to move now to the idea that -- and  
8           Mr. Begg suggested that he had some concerns about  
9           the legislative authority for this provincial  
10          government to make uniform or impose uniform  
11          standards on municipal police forces, and  
12          particularly he pointed to part 8, which I think  
13          sets out his authority under the **Police Act**.

14          We submit that the only impediment to  
15          ensuring that there are high uniform legal and  
16          enforceable standards with respect to CEWs in this  
17          province, whether that be today or whether they  
18          were first introduced is a lack of political will.  
19          It is not because there is inadequate statutes or  
20          regulations. And indeed we point you to paragraph  
21          74(2)(t) of the **Police Act** that states:

22  
23                 Without limiting subsection (1), the  
24                 Lieutenant Governor in Council may make  
25                 regulations as follows:

26                 ...

27  
28                 (t) respecting the use of force by a class of  
29                 officers in the performance of their duties,  
30                 including without limitation...

31  
32          And then it goes on to issues around training,  
33          talk about training. But we think that paragraph  
34          is broadly worded and would support a specific  
35          regulation with respect to Tasers.

36          Furthermore, section 11 of the **Use of Force**  
37          **Regulation** states:

38  
39                 Each police force must develop or adopt a use  
40                 of force model approved by the director --

41  
42          - that is the Director of Police Services -

43  
44                 -- and develop a written use of force policy  
45                 that includes at least the following force  
46                 options: ...

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1 Then it goes through the sort of spectrum, officer  
2 presence, communication, physical control,  
3 intermediate weapons, lethal force.

4 The BCCLA believes that the Director of  
5 Police Services does actually have the legal  
6 authority today to deny approval of a use of force  
7 policy by a municipal police force if he is not  
8 satisfied with that policy. So we say that the  
9 standards are there -- or, sorry, the regulatory  
10 capacity, the legal authority to create those  
11 standards actually exists today. Sure, you could  
12 fine-tune the legislation somewhat, but we don't  
13 think it's necessary to have those standards  
14 today, nor was it necessary eight to ten years ago  
15 when CEWs were first approved in this province.

16 We submit to you and recommend to you, Mr.  
17 Commissioner, that your inquiry undertakes a  
18 thorough audit and review of the structure and  
19 staffing of Police Services Division, as well as  
20 the Ministry, to make sure that they have the  
21 proper capacity to provide civilian governance  
22 with respect to the regulation of CEWs. As you  
23 can tell, we are unhappy as an association about  
24 what's occurred in the past. I think there's  
25 lessons to be learned, lessons about the future,  
26 because use of force technology obviously is  
27 always going to be an ongoing issue.

28 I move to the issue of public safety in our  
29 submission. We know that there has been numerous  
30 deaths associated with Taser and CEW deployment.  
31 There's, of course, large controversy about  
32 whether it's caused those deaths or not. But we  
33 suggest that there is more research needed. You  
34 have heard, obviously, in large measure throughout  
35 the public hearings here and just recently this  
36 morning from someone who says in fact new research  
37 and more research is required.

38 We suggest research with respect to risk of  
39 CEW applications to those with pre-existing heart  
40 disease, multiple CEW shocks, vulnerable  
41 populations, such as children, the elderly and  
42 pregnant women. The physiological and  
43 psychological impact of pain, we've heard about  
44 how painful this weapon in fact is and we think  
45 there should be research about that. The risk of  
46 CEW applications to those that have ingested drugs  
47 and exhibiting symptoms of serious agitation or

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1 distress, and the risk of Taser applications to  
2 those exhibiting signs of mental illness.

3 We say that this research must be  
4 independent. Funding for this research must be  
5 provided by government, or some other independent  
6 agency independent of the police, or other  
7 existing or potential users of the technology.  
8 More of the researchers themselves must be  
9 independent, and perceived to be so, if this  
10 research is going to be credible.

11 Our association advocates a precautionary  
12 approach to conducted energy weapons. And we say  
13 that given that scientific uncertainty that exists  
14 today, and consistent with a precautionary  
15 approach, we actually have urged a moratorium on  
16 the use of these weapons, and we urge that on to  
17 you, Mr. Commissioner, in your inquiry.

18 As an alternative, though, we'll also say  
19 that if your ultimate recommendation is to  
20 continue that the province and that the municipal  
21 forces be allowed to deploy Tasers, we say that  
22 CEW deployment should be restricted to those  
23 situations only where firearms would be otherwise  
24 authorized. We have pointed to some provisions in  
25 the **Criminal Code** that I think are interesting  
26 here, and I'm going to just read subsection (3) of  
27 section 25, which says:

28  
29 Subject to subsections (4) and (5), a person  
30 is not justified for the purposes of  
31 subsection (1) in using force that is  
32 intended or is likely to cause death or  
33 grievous bodily harm unless the person  
34 believes on reasonable grounds that it is  
35 necessary for the self-preservation of the  
36 person or the preservation of any one under  
37 [their] authority...from death or grievous  
38 bodily harm.  
39

40 THE COMMISSIONER: Excuse me. Where are you reading?

41 A This is page 12 in my submission.

42 THE COMMISSIONER: Section 25, what...?

43 A Sub (3).

44 THE COMMISSIONER: (3).

45 A I point out that there is some jurisprudence on  
46 page 13. I am now on page 13 of my submissions.  
47 There is some jurisprudence, indeed, a case named

1           **R. v Bottrell**, 1981 case of the B.C. Court of  
2 Appeal that has judicially interpreted the meaning  
3 of grievous bodily harm to mean serious hurt or  
4 pain.

5           I think it's uncontroversial now that the CEW  
6 actually causes serious hurt or pain. Therefore,  
7 arguably, looking at this section of the **Code**,  
8 given that CEW deployment is either going to be  
9 intended or likely to cause grievous bodily harm,  
10 police officers are therefore not authorized  
11 pursuant to this section to deploy CEWs unless  
12 they have a reasonable belief that the application  
13 of this level of force is necessary for their  
14 self-preservation, or the self-preservation of  
15 someone under their protection from grievous  
16 bodily harm or death.

17 THE COMMISSIONER: Well, of course, as you know,  
18 criminal law is all about intention and if the  
19 officer is taught it's safe, then he's immune from  
20 prosecution probably, just as a broad statement.

21 A Well, I think that goes to the whole issue of  
22 training, as well.

23 THE COMMISSIONER: Oh, indeed.

24 A I'll just point out the National Use of Force  
25 Model that's used by municipal forces and the  
26 Incident Management Intervention Model that the  
27 RCMP use, and I'll just read from that. I'm on  
28 page 14 now, Mr. Commissioner. And this is how  
29 they define essentially grievous bodily harm or  
30 death as a category of resistance:

31  
32           The client acts in any way which would lead  
33 the Officer to believe that their actions  
34 could result in death or grievous bodily harm  
35 to the police or any other person. For this  
36 level of behaviour to exist, the presence of  
37 a weapon is not an essential element as long  
38 as the fear of death or grievous bodily harm  
39 exists. This level would be present in a  
40 case of most weapon attacks and would of  
41 course include the threat of the following:  
42 knife attack, baseball bat or firearms.  
43

44           We note that prior to 200 there was actually  
45 a provincial regulation regarding firearm use  
46 which restricted that use of firearms to  
47 situations where an officer had reasonable grounds

1 for believing it necessary to protect his or her  
2 life or the life of another, or to apprehend or  
3 detain a person whom the officer believes to be  
4 dangerous.

5 I want to move to talking about the  
6 regulation of CEWs more generally, if indeed CEWs  
7 would continue to be used and a moratorium would  
8 not be placed on their use.

9 With respect to training we suggest, and  
10 recommend, and urge that all new police recruits,  
11 indeed anyone who is going to be authorized to use  
12 a CEW, receive standardized training under the  
13 auspices of the Justice Institute. Obviously  
14 Taser trainers themselves must be certified to a  
15 very high provincially enforceable standard. The  
16 training standards and materials obviously should  
17 be independent of any training programs from TASER  
18 International or any other manufacturer. They  
19 should include current information regarding  
20 health associated with CEW. We suggest and  
21 recommend no trainer or instructor should own  
22 shares in any company that produces a CEW. We  
23 think certification should occur on an annual  
24 basis, and that would, I think, assist in making  
25 sure that everyone who deploys Tasers would have  
26 the most current information possible.

27 I want to talk a little bit about crisis  
28 intervention, because that's been an important  
29 part, I think, of some of the presentations that  
30 you've heard. We say that police officers should  
31 receive significant training in crisis  
32 intervention so that they are able to interact  
33 with individuals who have, they perceive having  
34 health issues of whatever kind so that they are  
35 able to deal with it in a way that I think is  
36 going to be most safe for the subject and also for  
37 the police and the general public.

38 You have heard from the Vancouver Police  
39 Department that they have initiated a training  
40 program, and a fairly extensive training program  
41 that provide their officers with crisis  
42 intervention training. We'd like to commend the  
43 Vancouver Police Department for that initiative.  
44 We'd also like to endorse their - I believe they  
45 suggested this, and if they didn't, we certainly  
46 would - that all police officers undergo such  
47 training and that the training be provincially

1 funded. As it exists now, as I understand, the  
2 Vancouver Police Department makes funding possible  
3 themselves, and of course every department has  
4 different priorities. But I think this should be  
5 standard, given the realities that police officers  
6 face on the street today.

7 With respect to use, we suggest that if  
8 situational factors indicate the presence of a  
9 mental health crisis or other health crisis that  
10 does not require immediate apprehension of a  
11 subject, the police should ensure that there are  
12 officers or other personnel trained in crisis  
13 intervention to attempt to control the subject  
14 using those techniques of persuasion and dialogue.

15 There should be no deployment of CEWs until  
16 Emergency Health Services are present on the scene  
17 unless exigent circumstances justify that  
18 deployment. Even so, if there are such exigent  
19 circumstances, the police must ensure that EHS  
20 personnel are called to the scene and allow those  
21 health personnel to examine anyone who has been  
22 subject to a CEW in probe mode deployment.

23 Consistent with our suggestion,  
24 recommendation in urging that CEWs in the  
25 alternative only be permitted where firearms are  
26 possible, we suggest that as far as the number of  
27 deployments go, there should only be as many as  
28 needed to eliminate the probable risk of grievous  
29 bodily harm or death.

30 With respect to reporting, you've heard a lot  
31 about the need for data. Obviously, and I won't  
32 go into detail on this, more data is needed and  
33 extensive data is needed across the board, I  
34 think, with respect to use of force, not just  
35 involving CEWs, but the various modes of  
36 constraining and restraining subjects.

37 On page 17 of my submission, Mr.  
38 Commissioner.

39 We recommend and urge you to recommend that a  
40 further independent public review of CEWs occur  
41 three years after your report. It's obvious this  
42 tool, this weapon has become perhaps the most  
43 controversial police have employed. There's a  
44 lack of public confidence, I think, in deployment,  
45 many in the general population oppose its use.  
46 Police obviously are strong proponents of it.  
47 There seems to be a general consensus that more

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1 research is required, more data is required.

2 All of these factors suggest to us that in  
3 three years the picture will look different than  
4 it does today, and it would be worth having a  
5 public review of this subject again in three  
6 years.

7 In conclusion, again I'd suggest that the CEW  
8 is really a case study for how not to regulate  
9 police use of force and in particular the CEW. I  
10 think we've got lessons to learn.

11 I thank you again for the opportunity to come  
12 and speak to you and I look forward to your  
13 recommendations about how we can learn from this  
14 past. Thank you.

15 THE COMMISSIONER: Thank you very much.

16 Does counsel have any questions?

17 MR. MCGOWAN: No.

18 THE COMMISSIONER: Mr. Mollard, thank you very much for  
19 coming forward and presenting it both in writing  
20 and orally.

21 A Thank you.

22 THE COMMISSIONER: Most helpful.

23

24 (PRESENTER EXCUSED)

25

26 THE COMMISSIONER: Now, just by way of a general  
27 announcement, this ends perhaps the public inquiry  
28 part of this. When I say "perhaps" there may be  
29 three other presenters that are on the horizon,  
30 and we're trying to see as to their availability  
31 and scheduling. I don't suppose, Mr. Vertlieb,  
32 that you can update that, or it's in the course of  
33 negotiation?

34 MR. VERTLIEB: Yes, Mr. Commissioner.

35 THE COMMISSIONER: But at most there'll be one more  
36 day.

37 All right, thank you very much. We are  
38 adjourned, as they say in the courtroom, *sine die*.

39 Excuse me a moment, everybody. I perhaps  
40 shouldn't be that brief. I must say that I really  
41 compliment the press and television and other  
42 media as to their coverage of these hearings.  
43 It's not for me to comment on what you have said,  
44 but I am very impressed.

45 Next of all I might say, as you have heard me  
46 often repeat, that the most important tool in the  
47 arsenal of the police is public support, and you

1 have greatly furthered that goal of mine in having  
2 these hearings. So now we're adjourned.

3  
4 (PROCEEDINGS ADJOURNED SINE DIE)  
5  
6  
7  
8  
9  
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