TRANSCRIPT

ROAD SAFETY COMMITTEE

Inquiry into serious injury

Melbourne — 28 October 2013

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Professor J. Harrison, director, Research Centre for Injury Studies, and program manager, National Injury Surveillance Unit, Flinders University.

The CHAIR — Professor Harrison, on behalf of the Victorian parliamentary Road Safety Committee I thank you for travelling from South Australia to Victoria to give evidence to us here this afternoon in relation to our inquiry into serious injury and other matters. Evidence given before the committee is protected by parliamentary privilege. Any comments made outside the hearing are not afforded such privilege. The transcript will become a matter of public record. You will also get a copy of the transcript and be invited to correct any typographical or factual errors and return it to us. It is envisaged that that transcript will be part of the record of our deliberations on the inquiry and be placed on the web. Should there be any remarks which you would like to make in camera, we can go into a closed session as well. Shortly I will invite you to speak to your presentation, but before doing so if you could introduce yourself, with your title and position.

Prof. HARRISON — Thanks for the opportunity to speak with the committee. I am Professor James Harrison from Flinders University, where I have two roles. One is that I direct the Research Centre for Injury Studies, which is a university centre. I also direct the Australian Institute of Health and Welfare's National Injury Surveillance Unit, which is run through the research centre. By profession I am a public health physician and epidemiologist.

As a preliminary comment, I would like to say that I am conscious of the relatively late stage of this inquiry. I think this is the last hearing day or close to, and with that in mind I spent some time looking at previous presentations and read some of the transcripts. I have attempted to build on that in my presentation and provide a synthesis of what I saw there, rather than presenting entirely new material. That is the context for what I have set out to do.

Furthermore, in relation to your terms of reference for this inquiry, I am not focusing at all on the last three of them. I am focusing entirely on the first three: methodology to identify cost; processes to facilitate reporting; and definitions and measures and how to measure and report. Even among those three, most of what I have to say is about definitions and measures. In terms of the sequence of what I will talk about, I will briefly talk about the very small contribution I offer on your term of reference (a), then I will jump to term of reference (c), which I will look at in two parts: firstly, definitions and measures; and then a little on how to identify and report. Then I will return briefly to an aspect of criterion (b) on facilitating reporting.

I should say that it strikes me that this is a very welcome topic for an inquiry. What might at first glance appear to be the synonymous or near synonymous terms of 'serious injury' and 'severe injury' are terms that are used widely and frequently but very often without formal definition and if one is wanting to get into the territory in which the road safety sector has been a leader, measuring with a focus on the road toll, if one brings that same perspective to bear on non-fatal injury, one clearly needs to define very sharply what one is talking about. Even within aspects of road safety, I think I saw clearly in some of the earlier submissions a lot of diversity of meaning attached to those terms. So I am pleased to see that the inquiry is focusing on that, and I should say that I think the results of this inquiry will have interest quite widely internationally as well as nationally.

Concerning your first criterion, I am not an economist so I am not really trying to talk about costing of injury, but I think any method of costing really needs to understand the numbers of cases and the seriousness of cases in some operational sense before you can apply whichever of the main methods for costings you prefer. So I see my contribution as being part of the underpinning of costing rather than directly on costing.

The second and final point I would like to make with regard to this is that when I hear the word 'costing' I, of course, think of it in terms of currency, of dollar costing, but not only in those terms. I think it is useful to conceive of costing in terms of human burden as well as financial burden, and there are measures that are designed for this purpose. A couple of the submissions mentioned the DALY — the disability-adjusted life year — which is one of that type of measure. It has in common with currency that it provides a single summary number that takes account both of shortening of life due to deaths due to road injury (or any other injury) before a person might otherwise have died, but it also takes account of diminution of quality of life resulting from persisting disability due to an injury, and uses a method to combine both of those dimensions into a single measure. There are criticisms and doubts about the method but it is another way, other than currency, of coming up with a single number that can summarise the burden of something like road injury.

I now jump to your criterion (c), which seems logically the first one for me to talk about, starting with a few preliminary comments. The first thing to focus on is exactly what purposes are in mind. Until you have the purposes straight you cannot come up with a sensible decision about which metric to use. As an annotation,

which I will expand upon a little in a couple of slides, I think that there are several purposes — that is plural, not one purpose — inherent in what this inquiry is about.

The second theme is what I am calling the context. I have been active in my profession for getting on 30 years, and I would have to say that concerning measures of non-fatal injury, in the last three or four years there have been a lot of changes emerging, and I expect a lot more over the next few years, more so than in the couple of decades before that. So it is a time of change you are entering.

There are methodological developments in terms of data linkage and follow-up, which I will touch on later, and emerging knowledge. We are rapidly learning a lot more about the large proportion of seriously injured people, with road injuries and other injuries who have non-trivial problems that persist, certainly for one or two years and probably longer. In that context I think you need to frame your conclusions, expect that they will be implemented at a time of change, which makes them a bit more difficult to frame, but there you are.

A third preliminary is what is I am calling a reality check. I am used to dealing with people in the road safety area about measures of road deaths. Road deaths are few enough and well defined in terms of outcome — a person is dead or they are not — to make it feasible to measure to the exact number. You know how many road deaths meeting your definition there were in Victoria last year and the year before and so on. My reality check advice is: do not expect that to apply to serious injury, partly because they are more numerous and partly because there is not such a sharp dividing line between what is included and what is not. While you can employ an approach to serious injury that will come up with a specific number, you could easily spend more time than it is worth on worrying about the exact numbers, at least at this stage of development, rather than coming up with something that is fit for purpose, that is based on the information systems that you already have so that it does not cost too much. I am suggesting that, on reflection, an exact number may not be absolutely essential for the purposes you are on about. It is your call but I put this to you to think about.

Continuing on, still in definitions and measures but now looking at purposes. I see a range of purposes that flow from measurement of serious injury in this state as outlined there. Certainly I am sure that there is in your minds — and I can see good purpose — what you might call an indicator or quantitative measure of numbers of cases or rates of cases based on population size or numbers of vehicles or millions of kilometres travelled and that sort of thing. One point I would make here that follows on my advice a moment ago, about not worrying about the exact last number, is that in the context of road safety, it is at least as important, and I would argue more important, to detect change from year to year or over two or three years as to know that you have every last case included, and they are not synonymous.

It gets harder to define serious injury if you set out to include every case that might be called serious injury. It is easier to use certain definitions that are restricted to the most severely injured or those ones plus the fairly seriously injured to produce measures that can be relatively stable over time. As you get to the less serious injuries, the issues of inclusion criteria become a bit vaguer and a little less certain. I suggest that in the context of a quantitative indicator, having an indicator that is strong on detecting year-to-year change may be more important than one that counts every last case, but I will come back to that in a minute.

A number of other reporting issues are of practical as well as theoretical interest in this area. One I saw mentioned in some of the other submissions concerns differential trends in deaths and in serious or severe injuries over time. Are they tracking in the same direction or differently? That is a purpose that I think you are likely to be interested in, in addition to just coming out with a count of serious injuries. But there are other purposes as well, for which the same information is essential and I think they should be borne in mind.

One is describing outcomes. If there is a class of serious injuries that you want to count, it is going to be important for researchers to be able to provide good descriptions of the nature of the outcomes in that group — what sort of conditions people have and for how long, by how much is their survival shortened. That sort of information is going to be crucial for good quality costing of the class of cases you are interested in.

Secondly, for reasons I will come to in a minute, there is research that is being done at the moment which, over the next few years, is likely to come to fruition, that allows prediction of whether a person will meet a definition of having a persisting injury, based on the diagnoses recorded soon after injury. If you are interested — as I suspect you probably are — in timely measures, then if you have to wait for each case to reveal whether that

person is going to get better or not, over several years, you cannot have a timely measure, based directly on follow-up of those individuals.

Research of that type — which I will mention in the next couple of slides — is emerging. By studying groups of cases and comparing the patterns of injuries soon after a crash to look at who gets better, who does not and by how much, you can come up with models which you can then apply to later injury data to quickly project who will get better and whether or not they will get better quickly. I think that this will be crucial to providing time indicators, of the sort that I suspect you have in mind.

Finally, some cause-and-effect issues are important in the broader business of minimising the burden and maximising the management of road injury in Victoria and, more broadly effectiveness of retrieval and management of severe injuries. There is some good work being done on that as well as on crash characteristics and how that relates to the severity of injuries.

Victoria contributes to national reporting measures such as the National Road Safety Strategy's "confirmed admitted to a hospital class of cases". If Victoria is going to contribute to that, then clearly one of the purposes you need to have in mind is ensuring that data is collected in a form and of a type that contributes. There is also some international reporting to which Australia contributes and the Australian submissions at least partly depend on state data, and so there is a flow through there.

I will very briefly continue with some context. I mentioned that changes are afoot. International Road Traffic and Accident Database (IRTAD) recently proposed maximum abbreviated injury scale (MAIS) 3+ as a criterion for serious injury internationally. Some think that is a good idea but there is some doubt as to how many countries will be able to supply data strictly compliant with that in the near future. There are other international measures such as the World Health Organisation's International Classification of Diseases, which is under revision at the moment; the 11th revision is coming out soon. There will be some changes concerning road injury measurement in that, but they will probably not be too great.

There are also two methodological developments that I think are most pertinent. The first is the development of large-scale follow-up studies of injury cases. Victoria is absolutely at the forefront globally in terms of that kind of system. I know you have heard from earlier presenters about the Victorian trauma registry and the Victorian orthopaedic outcomes registry. If they are not unique, they are almost unique globally in that they follow up everybody who meets the inclusion criteria and who survives to discharge from hospital by telephone interviews, which are very sophisticated, and held at 6, 12 and 24 months.

I should say that just this week Associate Professor Gabbe won a National Health and Medical Research Council (NHMRC) grant to follow up a year's worth of those cases for another three years, out to five years. I should declare that I am involved in that project as one of the other investigators. That is really important and will reveal much that was not previously understood about who gets better, who does not, and how long problems persist.

The second of the methodological developments is large-scale data linkage, particularly internal data linkage within hospital data, to improve the reliability of counts. This is important because, unlike death, the same person can appear more than once in hospital data. There are problems with double counting due to this which data linkage can help resolve. With data linkage you can also link to deaths data to ensure you are not double counting deaths and serious injuries. You can also link with crash data for a number of other purposes that I do not have time to detail.

The point I would make about that is Australia is one of the leading countries in that respect. I would also point to several other states — Western Australia, New South Wales, as well as a joint project between South Australia and the Northern Territory. There is data linkage work happening in Victoria but it is not framed in quite the same way and I do not think it is quite as developed in some respects as in some other states. One would hope that it will be; it is heading in that direction. It will be important for the objectives of this inquiry for that to be encouraged in Victoria as well.

Finally, and I have said it several times so I will not reiterate it more than very briefly, there is emerging knowledge about what a high proportion of seriously injured people do not get better quickly. I think this underlies the crucial point in the submission that you received from the TAC — about 3 per cent of their cases account for about two-thirds of their predicted future cost. Clearly those 3 per cent of their cases are at the heart

of what a serious injury measure needs to include. The data coming from the Victorian State Trauma Registry (VSTR) and the work that Associate Professor Gabbe is doing is letting us understand the connection between the costs that the TAC knows it needs to bear and the types of cases and the circumstances in which those costly cases are arising.

I'll touch now on the theory of this, which is crucial to coming up with a practical solution. I said earlier that terms like 'serious', 'severe' and 'catastrophic' are widely used but are often used in a qualitative manner. They can be given quantitative meaning, and that is really what is going to be necessary if you are to come up with practicable recommendations. But that depends on establishing a formal relationship between case characteristics — that is, which injury the person has, and sometimes you might also take into account how they got it. Was it this sort of vehicle crash or that sort of vehicle crash? More particularly, which sort of injury it is — brain injury of this severity, fractured femur, that kind of thing — and the consequences that matter. The consequences that matter are notably whether the person dies — risk of non-survival — or whether they survive with a disability, but also based on that dollar cost. That is the theoretical side.

The practical side is: how do people measure injury outcomes? There are basically two methods, both of which have been mentioned in earlier submissions. I am summarising them as p(survival) for probability of survival, and probability of survival with disability, p(disability). Probability of survival, one might say, is less directly associated with what the TAC is concerned with; it is really focused on people who survive with disability. Right now the technology for measurement is not entirely mature for measuring probability of survival with disability; but it is mature for probability of survival — whether certain patterns of injury are likely to leave somebody alive or not. I will get to the details of that in a moment.

What I recommend, as you can see on my last slide, is that because development of the probability of disability technologies is not quite there yet, it would not make sense for you to begin with recommending methods based on that approach. For now I think you need to look at methods that are based on the probability of survival measures.

What are they? There are two varieties of these measures. One can is based on the Abbreviated Injury Scale (AIS) and the other is based on the International Classification of Diseases (ICD). The good news for you is that because of the types of information systems that exist in Victoria (but not everywhere else) you have an easy choice because both varieties can be used here at low cost. The source information is there for both of them. They have somewhat different strengths and limitations.

AIS is a measure that trauma surgeons are very familiar with. They originated it and they use it, so not surprisingly it is embedded in the Victorian State Trauma Registry. The trauma registry has one of its characteristics — in common with most similar trauma registries — a fairly high cut point and only the most severe injuries are included. Abbreviated injury scale 3 and above is roughly what they include. That is good for some purposes but may turn out to not be all that you want, particularly, as I hope it will turn out to be the case. You begin to measure disability due to road injury, because some people who have less severe injuries than the threshold to be included in the Victorian State Trauma Registry, almost certainly have important disability. While it is a very good system, it has this quite high severity threshold and so it does not include some cases that are likely to be pertinent for the objectives you are likely to have.

The ICD-based measures of probability of survival are based on the classification that is applied to all cases that are admitted to a hospital, not just the ones that are severe enough to get onto the trauma registry. Victoria, like everywhere else in Australia, has a quite good quality application of this classification — the ICD — on all cases that are admitted. I am not describing the method in detail, but it is easily derived from good quality ICD-coded measures. In Victorian health department terms, the Victorian Admitted Episodes Dataset (VAED) is the basis for that system.

Both of these methods have pros and cons. AIS is familiar to trauma systems and trauma surgeons. It is consistent with what IRTAD has said its international definition is, although, as I said, I am sceptical about how many countries will actually be able to comply with the maximum AIS of 3-and-above definition that IRTAD has advocated. I think many countries will base their submissions on an ICD-based method because of the practicalities of the data. But anyway, you would be able to contribute an IRTAD-format data system from here. The ICD-based method has advantages also, in that the ICD system aligns well with health sector information systems, which are used for disability measurements and so on, so it is well connected to that sector.

As I said earlier, neither of the data sources, or methods, I am talking about is yet well validated for the prediction of disability, but studies are under way at the moment that will quite soon — over the next year or two — demonstrate the extent to which that can be achieved.

So which measure to choose and how to identify and report it? It depends on exactly which measure you have chosen, as I said a minute ago. My sense is that you are well served by having both systems, the VSTR and VAED, which makes it feasible to recommend both of those methods, which have related but somewhat different benefits. I think that in the near future — I cannot put a time on it, but within a small number of years — it will be possible to report in terms of probability of disability, but the route to that is research of the sort that the VSTR and VOTOR and the Alfred group are doing at the moment. As I said earlier, it is world-leading research.

I said earlier that a crucial component of that research is necessary in order to meet your expectation of timely measures to come up with information that enables prediction of who is going to meet a definition of 'serious injury' based on information that can be captured soon after they have had a crash, rather than waiting for each case to reveal itself as serious or not. That is a key to the research which lets you come up with that sort of measure. In terms of linked data systems, I think there is also much benefit to be gained from that. If I were you, I would be encouraging developments in Victoria and looking particularly to what has been achieved in several other jurisdictions.

In relation to developing linked data systems, one might think that the problem in achieving things there is predominantly technical. It is not. It is predominantly to come up with a system that is socially acceptable in an era of understandably high concern about privacy, data protection and so on; a system that weaves a very fine line between being seen as sufficiently protecting those characteristics and the concerns of the population, but also delivers the collective benefit of information that can come from these systems. There is a fine line that needs to be followed to come up with systems that are socially acceptable in those terms and still provide good benefits in terms of information to benefit things like road safety.

That is why it is slow and costly, and that is why I think big state-level initiatives, like the ones in those other states, are the way forward, rather than trying to see this as special projects. What I am saying there is that this Committee might usefully encourage the development in Victoria of systems like those in other states.

One aside here, picking up on one phrase in your terms of reference, is, I think pertinent to facilitating reporting, is what I am calling 'indicator attributes'. Your terms of reference say you want a measure which is 'accurate, consistent and timely'. My point is that, in information systems, the more attributes you set out to achieve simultaneously, the tougher the job. It probably becomes exponentially tougher the more criteria you set out to meet simultaneously. It is relatively easy and cheap to build an information system that meets one of those criteria, and probably not too bad at meeting two of those criteria, but when you meet all three of these criteria it starts to get rather tough.

Just one point: I am not quite sure what the terms 'accurate' means here. My interpretation is that it means that the system includes all of the cases meeting some particular definition and only those cases. Taking it in those terms, it seems to me — based on my awareness of the sorts of issues that I see getting attention in road safety — that consistency over time (so that you can measure trends) and timeliness are the most important of those three criteria for your purposes. The accuracy of it means include all the cases. There are some reasons why that matters, but it is a different issue to counting deaths, because of the soft, grey zone concerning what counts as serious. You can come up with a good measure that includes, say, 3000 cases that meet some definition of 'serious injury'. You could also define 'serious' so that it includes 4000 cases or 4500 cases. They are different definitions and different degrees of severity that you are choosing to include. They are all correct. It is a matter of deciding what is the most practical and meaningful cut point to apply, for practical purposes.

Whatever you do, it is likely to have a bit of grey zone around the edge of the inclusions. You can come up with a system that is more capable of measuring trend if you do not worry too much about whether all the cases that could possibly be called serious are included. This is partly because degree of disability may not be resolved for a long time, and in some cases it becomes definitionally fuzzy. Because of the varying ascertainment — if you keep trying harder and harder to get all the cases — you may wind up with varying efforts from time to time or place to place.

This has affected some other information systems where, for example, you are trying to measure Indigenous status. If people give a lot of attention, or put varying amounts of effort over time into including all the Indigenous cases, then it can become harder and harder to answer the question, 'Is risk changing over time?', because you know that each year more effort is being expended, to include all the cases. You may see rising numbers of cases, and you can be fairly sure that at least part of that rise is because more effort has been expended in collecting all the cases. It becomes very difficult to separate out how much of an apparent rise over time is due to changing effort to count all the cases versus an actual change in the number of cases involving Aboriginal people.

Often it is best to have an information system in a stable mode, where it is collecting the same kinds of cases year in, year out. Sudden bursts of enthusiasm to improve the collection can have the perverse effect of making it hard to say whether what will almost inevitably be a rise in count — if you try harder to count to include something — is due to a change in the true incidence rate or just because you have changed your counting system. There are those kinds of issues.

The final slide; in summary. Right now for monitoring serious injury the technologies are there to do it on the basis of the probability of survival methods, one or both. Victoria is in a position where it is not too hard a decision, because the information systems are there to allow both. But the other reasons to encourage further work using the follow up registers — the Victorian State Trauma Registry and the Victorian Orthopaedic Trauma Outcomes Registry is to do outcome measurements, because those are going to be crucial for cost models, and also because that sort of work is going to enable the development of the disability-based measurement of serious injury.

Population data linkage is also important for several reasons: to better combine crash data with injury outcome data; to refine the measures, to minimise under and over counting and double counting in hospitals data and so on; and to improve understanding. Something I have not mentioned before, is that there is some reason to think that some of the problems that people have that get counted as disability after serious injury are things that some of those people had before they were injured. There is very little data yet on that, but that is something else that can come from data linkage systems.

Later — in not very long, but I would not want to say how long — it should be possible to move to a measure which is more tightly focused on probability of disability and the sorts of things that the TAC is interested in, but also are going to be really important to meet the sorts of purposes that the submission from Monash University Accident Research Centre was focusing on, calling for information systems that help guide design decisions about vehicles and help design road safety measures by getting a good handle on which body parts are being injured and which are leading to high proportions of serious injury cases and burden of injury. I will leave it there.

The CHAIR — Thanks very much, Professor Harrison. We have three questions.

Mr ELSBURY — If Victoria were to adopt three separate measures to track road crash trauma — that is, the current resource-based measure used by Victoria Police, a threat to life measure such as the ICISS and other outcomes measures such as a DALY or a QALY, would that provide government and road safety agencies with the best picture of what is happening on our roads?

Prof. HARRISON — Those three measures, particularly the second and third, all have arguments for them. On the first, I think there is debate about the measures that police agencies are using. Certainly around the country there are several studies that show problems in which cases get identified with that sort of measure. I may be misunderstanding exactly which measure you are talking about, but there has been a tradition in the past of a police-based measure at the crash scene being something like including the cases that the police at the scene thought were going to be admitted to hospital. That has been problematic, partly because certain sorts of crashes get police attendance more than others, so that bicycle-only crashes tend not to get police attendance as much as crashes involving motor vehicles. So reliance on that sort of method tends to have a bit of inbuilt distortion.

I know that several states — I think Victoria is one of them — are working towards what the BITRE have been advocating as a confirmed hospital admission, which is where police do follow-up work to confirm which of those cases they suspected might have been hospitalised were in fact hospitalised. With that modification to

your first type, I think that that right now is a very useful measure, and it is now the nearest thing there is to a national recommended standard for national reporting under the national road safety strategy.

Mr ELSBURY — By 'hospitalised' you mean for an extended period of time, not just taken into emergency, assessed and then released?

Prof. HARRISON — Yes, admitted to the ward. I cannot remember, but I do not think they had an overnight requirement, but certainly it was admitted to the ward.

Mr ELSBURY — One of the problems with the data is that police officers see someone get put into the back of an ambulance and they think, 'They've been sent to hospital'; meanwhile, when they have got to the hospital they have been checked out and they have walked out the other door, basically almost immediately after they have been assessed.

Prof. HARRISON — That is right. One of the benefits of the data-linkage systems — and I think the Western Australian one gives the best evidence of this, and I know that Di Rosman from Western Australia gave a submission to you — is that linkage of on-scene crash data with the hospital's data essentially allows resolution of those problems, because the two information systems are joined up case by case.

Mr ELSBURY — By comparison to the MAIS and the ICISS, what are the benefits and advantages of the 'serious injury with a high threat to life' definition that is used by the Australian Institute of Health and Welfare's publication *Serious Injury Due to Land Transport Accidents, Australia*?

Prof. HARRISON — It is my group that produces that report that you have just mentioned. With any of the threat to life or threat to disability measures, there is a need to decide on and apply a cut point in the measure and say that it is cases above this threshold that we are going to call serious injury and report. In the reports that you have talked about, the high threat to life is simply a cut point that we have used that was based on research that we did some years ago with New Zealand colleagues, and we have continued to use that cut point for consistency. There could be arguments about having a more severe cut point or a lower cut point, but you need to choose a cut point for those reports.

That is in part because, with hospitals data, there is good reason to think that with the least severely injured people there is lots more latitude for some of them to be admitted and some of them not to be admitted, whereas with more severely injured people (in a country like Australia with a good supply of hospital services) all or nearly all cases that survive long enough and have relatively severe injuries will make it to hospital. So you get a more stable measure from the hospitals data if you do not look at the least, if you sort of put aside the least severe cases, where somebody has a broken little finger. They might occasionally be admitted to hospital because of that, but most will not. With a relatively minor fracture of the forearm, most will not be admitted but a few will be. With serious injury such as a fracture of the femur or an internal brain injury, nearly everybody will be admitted.

The point of those cut points is that the threshold is to include just the ones where a high proportion of cases will be admitted. You get a more stable measure that way.

Mr ELSBURY — So you are basically saying that statistically they have a higher likelihood of having an injury that is threatening to life?

Prof. HARRISON — Exactly so, yes.

Mr ELSBURY — Because you can get a blood clot from a broken bone and end up dead?

Prof. HARRISON — You can, but the probability is very low.

Mr ELSBURY — Yes, exactly.

Mr PERERA — An important factor for a number of submitters and witnesses is the ability to compare Victorian road trauma data with data from other Australian jurisdictions and internationally. It has been suggested to the committee that mapping software could be used to map current serious injury data held by hospitals for such comparisons. If Victoria were to keep its 'major trauma' definition or adopt another type of

definition, could that data be converted in a way that allows it to be compared to MAIS 3+ coded data or ICISS coded data?

Prof. HARRISON — I think it is actually rather difficult to make that translation. There is a little bit of history here, but back in the 1980s and 1990s in the United States a fairly substantial bit of work was done to develop a map between the then current version of the abbreviated injury scale, the AIS, which underpins the MAIS 3+ definition, and the then current United States ICD-9-CM classification. A thing called the ICD-Map was produced, initially by some people at John Hopkins University and it then became a commercial product.

What made that map worth knowing about was the fact that it had been validated. Some fairly big and fairly expensive studies had been done to confirm that the map actually worked. There is not an equivalent map that has been validated between the current Australian ICD-10-AM and current versions of the AIS. It is fairly easy to write a map saying, 'I think this category here corresponds to that category there, at face value', but whether that actually turns out to be valid requires validation studies, and those have not been done, or at least have not been published. So it could be done, but they are quite big and expensive studies.

I think a reason why people have not done them is that there are not all that many reasons to worry about that translation. You can frame a question, as you have, and ask, 'Can we translate the Victorian ICISS method data to say exactly which subset of those corresponds to MAIS 3+?'. You can do that, but I must say that it does not strike me as being a terribly strong reason to do that. You can have two separate measures with separate purposes.

One could imagine a very specific project that was designed not to provide a general map but to come up with an answer to this specific question: which subset of cases, according to the ICISS method, corresponds to the MAIS 3+ group? That would be a somewhat smaller and more practicable project, but again I am not aware of it having been done and validated. So right now I would say that I do not know that the technology is there. It is theoretically possible, because it has been done before in another time in another place, but it would need to be redone for now and here.

Mr LANGUILLER — Thank you, Professor Harrison, for your submission and for coming to Melbourne. What are your views on the 'major trauma' definition, which uses road-based inclusion criteria developed by the Victorian State Trauma Registry for monitoring serious road trauma in Victoria?

Prof. HARRISON — I am sorry; I am not sure that I quite heard the last phrase.

Mr LANGUILLER — The 'major trauma' definition, which is one we use here at the Victorian State Trauma Registry.

Prof. HARRISON — Right. There is a tradition in trauma registries of being concerned particularly about probability of survival, and trauma surgeons have tended to focus on high-threat-to-life cases that meet the definition, such as AIS 3 and above. Roughly speaking, that is the inclusion criteria of the Victorian State Trauma Registry. They also include a few other groups — people who have been ventilated for 24 hours or more, I think, and one or two other groups.

For many purposes that would be a good measure. In terms of probability of death measures, that would be quite a good measure to use. The catch, however, is that in terms of people who sustain persisting disability as a result of road injuries, there are probably quite a lot not included by that criterion. Below that threshold there will be quite a lot. I am being a little bit coy about saying how much and how many and so on because there is some work that is being done right at the moment that will give us a much better quantitative sense of how many there are and what sorts of cases there are, but there are certainly some, and it could be quite a lot.

If, in time, you move towards measures that are focused on disability, then I think you may well find that that threshold is set a bit high and that it misses out on some cases that matter in terms of disability but really do not threaten life very much, such as some joint injuries – disrupted knees. People can have disrupted knees without really being at a very high threat to life, but they can have persisting serious disability. That is really my concern, and that is really the main reason why I am tending to advocate 'Both' as my answer to which of the two to choose. The all-hospitalised cases with a cut point are likely to be less affected by the problem I am describing than the trauma registry set that has the quite high AIS threshold for inclusion. As I said in my presentation, both have very strong special benefits. But in answer to your specific question, that would be my

main concern — that it would turn out that if you hooked your wagon solely to the Victorian trauma registry inclusion criteria, there would be a non-trivial number of serious injury or persisting-disability cases that would be below the cut point and therefore out of scope.

Mr LANGUILLER — Thank you.

The CHAIR — Professor Harrison, on behalf of my colleagues I thank you for presenting to the inquiry today, for your erudition, for your keen knowledge in the area and for delivering an hour and a half's worth of material in 45 minutes. I trust that your transport from Spring Street to Tullamarine now can move at a similarly proficient rate.

Prof. HARRISON — Thanks very much. Thanks for the opportunity.

Witness withdrew.