TRANSCRIPT

ROAD SAFETY COMMITTEE

Inquiry into serious injury

Melbourne — 22 July 2013

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Witnesses

Associate Professor M. Fitzgerald, director, trauma service, and

Professor R. Gruen, director, National Trauma Research Institute, Alfred Health.

The CHAIR — On behalf of the Victorian Parliament's Road Safety Committee I welcome Professor Gruen and Associate Professor Fitzgerald to our hearings today. By way of background, evidence given to the committee is protected by parliamentary privilege. Any comments made outside the hearing are not afforded the same privilege. The transcript will become a matter of public record. You will receive a copy of the transcript, which may require some correction of any typographical or factual errors. It should be returned to the secretariat, whereupon it will be placed on the committee's website. Should there be any in camera evidence that you would like to give us, we are happy to take that on board as well. We have covered the introductions. I now invite you to speak to your submission.

Overheads shown.

Prof. GRUEN — Thank you very much. Professor Fitzgerald and I are here representing Alfred Health, which incorporates the Alfred trauma service and the National Trauma Research Institute because they are both a critical service and a research aspect to the major trauma care delivery service in the state.

I want to start by showing you a slide that I think we should all be very proud of and that shows the absolute number of road deaths in Victoria per year over the last 60 years. You can see the peak in 1969. Some of you will remember the slogan, 'Declare war on 1034'. That was the number of road deaths there were in 1969. Now there are fewer than 300, the reason being quite an aggressive campaign of a number of legislative interventions, which Victoria is now world famous for — seat belts, breath testing, speed, drugs and so on.

What I want to show you now is the UN decade of action five pillars for road safety. You will notice that Victoria has really encompassed all of these in many ways, but the first four of them are related to prevention of serious injury through road safety management, safer roads, safer vehicles and safer road users. What I think is often forgotten is that we can try as hard as we like to prevent injuries but they will still occur. A key part of improving outcomes for Victorians after serious injury is to treat them well. To this end, Victoria has also led the world. I will show you another slide which we are equally, or perhaps even more, proud of, and that is what has happened to the likelihood of death for severely injured patients in Victoria since the introduction of the Victorian State Trauma System 12 years ago. After 10 years, the likelihood of dying after severe injury, all other things being equal, is less than half what it was in 2001, when the Victorian State Trauma System came into being. If you just think about that for a minute, it is virtually penicillinesque, I think. There is almost no other intervention in medicine or health care that has been as successful or as effective as that.

What is it that we are talking about? It is a system that gets people from this scene to the sorts of acute emergency, time-critical care they need in the Alfred emergency department, for example, and out the other end. It is a system of care that is multisectoral, integrated and population based. Every Victorian has access to it.

The Victorian system came into existence when, during the 1990s, a committee led by Professor Frank McDermott, an Alfred and Monash surgeon, reviewed every road trauma death that occurred on the state's roads with a panel of experts who represented many of the clinicians across the major hospitals in Melbourne. They found to everyone's surprise that 30 to 40 per cent of them were potentially preventable, that there were problems in their care — errors in their care, that led to, or possibly led to, their deaths. After that, they put forward the case for a ministerial review of trauma emergency services, which reported in 1999 and which subsequently led to the Victorian state trauma system being incorporated in 2001.

The goals were quite simple: to deliver the patient to the right hospital in the shortest amount of time and to then best match Victoria's resources with patients' needs. What this largely meant was delivering the time-critical patients to the hospitals with specialist units that were able to deal with the problem, so from the roadside, often through aerial retrieval or road ambulance, to one of the major trauma centres that were designated as part of the system. There are three major trauma services, two adult ones and one children's one. Since the Victorian state trauma system was implemented, the numbers of patients and the proportion of patients going through the major trauma centres have increased dramatically from about 40 per cent to well over 85 per cent. During that time too the outcomes of patients who have gone through the major trauma centres, such as the Alfred and Royal Melbourne, have improved. This is a highly successful system that has the results to prove its worth that almost no system in the world can compare with.

This slide shows the original governance of the Victorian state trauma system. You can see a number of different groups and processes reporting to the state trauma committee, which answers directly to and advises

the minister. It has the Victorian state trauma registry, which collects data about the treatment and outcomes of all patients who enter the system with major injury, and it uses that data to monitor the system performance and to suggest changes.

Over the decade of the Victorian state trauma system we have learnt some things about setting up trauma systems and about sustaining and maintaining them. There was a clear benefit proposition put to Victorians; there was a system of governance, authority and clear lines of responsibility and accountability built into the system; there was what Mark has consistently called 'absolute budgetary certainty' built into the system, which I will talk a little bit more about in a moment; and there was bipartisan political support along with professional organisations and health services lined up behind the proposition in the first place. This was a system that everybody wanted to come into place, there was a good argument put for it and a highly successful system implemented.

In sustaining the system, my belief is that it is often harder to sustain good systems than it is to implement them in the first place. There has been strong leadership. The system has proved to be responsive and adaptable through the state trauma committee and the monitoring data. While it took time, it did not actually take as long as it has taken in other jurisdictions for this system to demonstrate good results.

The budgeting system of the Victorian state trauma system is one of the keys to its success. About half the severely injured patients in Victoria are TAC or WorkSafe Victoria compensable patients, and that system clearly provides the financial basis for its maintenance. In the US, by comparison, many trauma centres closed during the 1990s when they could not afford to pay for high-cost trauma care, and one of the problems, as patients do not turn up able to sign the cheque and pay the money up-front, is that they then turn up needing time-critical care. So the ABC of trauma care, which clinicians are supposed to think of as 'airway, breathing, circulation', has changed since Mark coined the term 'absolute budgetary certainty' as the fundamental ABC of trauma care. I think that is one of the things that has really stuck with us over many years now — the truth of that statement. If you cannot afford to pay up-front for the system and recoup costs later, then you have not got a system, and that is what the Victorian insurance model provides.

Where to from here? A review was done about four years ago that showed there are still areas for improvement, and this slide is a list of what was articulated in that *Towards 2014* document. There was a period in 2011–12 when the Victorian State Trauma Committee did not meet due to some inertia in the government department at the time. That has been rectified, and the state trauma committee is now back at full steam and reformulated in a new modern version, but I think Mark can speak more to that, as he sits on that committee.

We are realising, with the data the Victorian system collects, that the hospital is not the end of the saga for the patient and that actually the outcomes for patients who are severely injured, even two years afterwards, are really still quite poor for many of them. Only a quarter at two years have had complete functional recovery, a quarter have not returned to work, one in five reports moderate to severe ongoing pain two years after their major injury and they still have quite high levels of disability. Clearly the non-mortality, long-term outcomes are something that we need to continue to work and improve upon, and undoubtedly the national disability insurance scheme — the national injury insurance schemes — will be appealing to this patient group, particularly the non-compensable patients in Victoria.

Finally, our system is built on excellent goodwill, a lot of clinical expertise, people like Mark and others setting it up and running the clinical services, and an excellent ambulance service, but we are also running out of what are now becoming quite dated facilities. The Alfred and the Royal Melbourne are the premier jewels in the crown of the Victorian state trauma system; they are widely regarded around the world as being the best there is. I do not know whether any of you saw *Extreme ER* — a show that a UK group put together that profiled four trauma systems in the world. It basically came out and said, 'Victoria is the best there is', and they spent a week at the Alfred filming and showing everything about the Alfred's system. We were obviously very proud of that in Victoria.

The UK modelled its development of its country trauma system in England on the Victorian system and is unashamed about admitting that to everyone. But we are now doing it out of fairly dated facilities, and modern trauma centres are building in things like hybrid resuscitation operating suites, where you can resuscitate patients without having to move them around different hospital departments — to operating theatres, CT scans

and radiology suites, for example — building them all into one. So I think there is a real need for us to be looking at those sorts of modernisations of facilities in the near future.

The CHAIR — Thank you. We have some questions. What are some of the common characteristics of road crash-related trauma cases that the VSTS would treat on a regular basis?

Assoc. Prof. FITZGERALD — What we do is the ambulance service has very good pre-hospital triage criteria, so they send the severely injured people into the major trauma services. About 93 per cent of them have blunt trauma, most of them from road accidents, occasionally from falls. They are the two biggest groups. There is a relatively low level of interpersonal injury, and the commonest combination is orthopaedic injuries — fractures — associated with head and chest injuries. The number of severe head injuries has dropped by a third in the last four or five years, and the severe chest injuries have increased by a third, and we think it is because of the airbag technology and such like. People are surviving the high-speed aspect and not suffering the severe head injury, and most of the force is being absorbed by their trunks.

Having said that, and not answering your question but just re-emphasizing Russell's point, prevention is very important and is responsible for up to 70-plus per cent as the reduction in road death and disability. But the treatment, once the accident occurs, is also extremely important.

Victoria has led the way in both these areas, but the review of the way it is being structured is really concentrating on the preventative aspects. It is almost like once the accident happens nothing else matters, which is a bit unfortunate because to begin with there is the development of positional beacons for emergencies that can automatically incite a post-crash response. The pre-hospital care is delivered by people as part of first aid, and there is the integrated ambulance service. When we set this up there were 12 ambulance services in this state; now there is one integrated ambulance service.

Improving the way they are received at the hospitals and then, as Russell has pointed out, improving their post-rehabilitation care makes a big difference, and we found that, particularly with our brain and spinal cord injuries, going through specialist rehab facilities like the Epworth, for instance, has made a big impact. So in summary, it is usually high-speed accidents, there is usually a multiplicity of injuries, there is usually some brain injury which is reduced over the years, and that has been supplanted by more trunk or orthopaedic injuries.

The CHAIR — Spinal?

Assoc. Prof. FITZGERALD — Yes, spinal column injury rates number nine on our list of common diagnoses, and when you consider that people have abrasions and concussion, to get up to number nine is pretty high. The Alfred has about 600 spine column injuries per year, so that is essentially two per day, and of those, 100 have spinal cord injury and at least 70 per cent of the spinal cord injury is incomplete, whereas a number of years ago it would have been 70 per cent complete. It is probably because of the reduction in cranio-cervical trauma, and also the ageing of the population. The older patients are more susceptible to spinal cord trauma with lower forces, and they tend to have less complete injuries.

The CHAIR — Thank you. And what is the role of the Victorian State Trauma Committee?

Assoc. Prof. FITZGERALD — The Victorian State Trauma Committee provides the governance authority that reports directly to the minister and the government. The state trauma system involves a whole lot of agencies, including the pre-hospital and hospital agencies and rehabilitation facilities, and there are a lot of people obviously with a lot of interest in what their agency can provide and is allowed to provide. One is that it maintains the state trauma system and ensures that everyone involved in it is compliant with agreed processes, and secondly it investigates areas that are considered weak or deficient. For instance, we have an older population now and we are doing a lot of work now on head injuries in the older population, survivability for people involved in accidents over the age of 75, which relates to some of the discussion you have seen in the media about screening people for licences once they reach a certain age.

One of the things being done at the moment is a review of the management of spinal cord injury and column injury as well. A couple of years ago, after the Black Saturday bushfires the committee organised the statewide burns education sessions so that all the peripheral hospitals were brought up to date with burns rehabilitation, resuscitation and so on. So it is really there to ensure governance and ensure there is strategic direction and that we stay on track.

The CHAIR — Thank you.

Mr LANGUILLER — Thank you, gentlemen. It is great to have you providing submissions to the committee. I think I would have to say that we are privileged to have you here, and we hope that in our deliberations and indeed recommendations we do some measure of justice to the good work that you do. I am reminded that I was recently at Hadassah hospital, and we heard very positive commentary in relation to the work you are doing in Israel, of all places, as I am sure you would be aware.

Assoc. Prof. FITZGERALD — The Hadassah people have been very generous at the Alfred. A number of us went there a few years ago to be trained to respond to terrorists and urban bombings and so on. We made some changes just before the second Bali bombing which made quite a difference to the way we managed people. They have been very generous with their time.

Mr LANGUILLER — Without wanting to distract, my colleague and I were very impressed with the triage done on site by the neurologists and specialists together with the paramedics and everybody else. We commend the good work you do. In its submission Alfred Health states that some of the core facilities of the Victorian state trauma system, especially the operating theatres, require upgrading. How do the existing facilities of the VSTS adversely impact upon the capacity of its trauma services to continue being world leaders in responding to serious trauma?

Assoc. Prof. FITZGERALD — I will give you a brief overview, and then Russell can probably give you some clinical details. I think the first thing is that when we set this up we were not too sure of what impact there would be. So for instance, at the Alfred there are four receiving trauma bays and at Royal Melbourne there are two. At Royal Melbourne the case load has doubled, and ours has gone up nearly 70 per cent. As far as the receiving facilities go it is quite common that we are full. It is a matter of shuffling deckchairs on the *Titanic* sometimes, although we do not expect to sink. Maybe that is a bad analogy. Can I take that back? There is often a juggling of facilities.

The second thing is that the main ward block of the Alfred was built in 1968. There are always renovations and enhancements. We have rebuilt the intensive care unit, which is fantastic; it is up to date. We are trying to rebuild some of the wards. The operating theatres are limited; they are small. They are great for single-system procedures, but when you are trying to surgically resuscitate someone and image what is going on at the same time, we do not have the facilities for that; we just cannot do it. We have to pack up and shift them next door — for instance, during spinal operations — to get some more imaging, and then bring them back, often still open, to make sure that the bits and pieces are in the right place. They need to be developed.

Approximately six or seven years ago, through the local member, we were negotiating to rebuild what was called the west wing of the Alfred hospital to build a new surgical block. Then it basically just lost direction. There was some change in government and a change in staffing at the Alfred. But I am happy to bang the drum for it.

Prof. GRUEN — The seriously injured patient who is dying and in need of resuscitation has two points where their care is most dangerous. One is in the helicopter on the way to the helipad at the Alfred or Royal Melbourne. The second is between the emergency department and the operating theatre, which is where they are often highly unstable, bleeding and in need of urgent surgery. They go into a lift. Then they go 50 yards down a corridor, with patients and patients' families walking up and down the corridor, into the intensive care unit, and have to enter in through some old doors, which sometimes you have to push open to get into the operating theatre. In a way I think that sums up the problem with an aged facility that is housing an ultramodern trauma service which has to provide modern, world-class critical care.

Assoc. Prof. FITZGERALD — And things change. Before 2001, if you opened up someone's chest for a blunt injury to a heart, it was a waste of time; there were very few survivors. Now we have these rapid systems of transfer, such as pre-hospital resuscitation, which can keep people alive, and then as soon as people come into the trauma surgery they have ultrasounds that look at their heart and heart function. It is infrequent, but approximately once a month we will open up people's chests on arrival and repair their cardiac injury. It has gone from a zero survival rate for blunt trauma to 26 per cent. If you get stabbed in the heart and arrive at the hospital, your survival rate is 48 per cent. It used to be just, 'Forget it — if you have a cardiac injury, you will die'.

We are doing similar things with chest and pelvic injuries. There are a lot of new technologies. There has been a big advancement, really since around the start of war in Iraq. A lot of our improvements in trauma care are often related to conflicts such as the first and second world wars. Vietnam saw the development of helicopter systems. Now we have a better understanding of shock, how to stop bleeding and how to resuscitate people, which has been very carefully documented by the US and its allies, including us. We have been able to implement a lot of those technologies into civilian trauma care. Most of the war injuries now are blunt trauma, similar to the ones we have seen. The commonest injuries include thoracic trauma.

Mr PERERA — Through the Chair, you mentioned that you have issues from the helipad to the emergency department, and from the emergency department to the theatre. Have you had any bad experiences as a result of that?

Assoc. Prof. FITZGERALD — Some of the technology and the interventions we have had to introduce we do in the emergency department, and the trauma centre works as an operating theatre. It is less of a problem getting them from the helicopter to the trauma centre, because they are adjacent to each other, than it is getting an unstable person from the trauma centre upstairs to the operating suite. We are working towards trying to get integrated operating suites within the trauma centre like they have in Europe in particular and some places in North America. We have a case load to justify it.

Mr LANGUILLER — If I may change the subject, how would the system deal with multiple persons with multiple trauma — not just 1 patient but 5 or 10?

Assoc. Prof. FITZGERALD — I think during the Black Saturday bushfires the health system functioned extremely well, irrespective of the reviews. The ambulance service was prepared. They had additional resources. There was no state disaster plan declared, but we knew there was going to be a problem and we had a lot of resources at the hospital. We were expecting to receive up to 270 people from that incident. Unfortunately most of them died. We cleared the department. Royal Melbourne decided to take the non-burns trauma. We took the burns trauma. There was very good cooperation between the major hospitals and the suburban and rural hospitals. We had 21 severely burnt patients who were treated very expeditiously. Even people with previously unsurvivable injuries — these were grade 4 injuries to their airway — survived; 5 or 10 years previously we would have expected them not to. But still the difference with that is that it did not happen in the middle of Melbourne and there was plenty of time to draw people in and make sure that you did not roster everyone at the same time and run the system. We still have not been tested by an incident within the city of Melbourne.

Prof. GRUEN — For the Burnley Tunnel fires we were activated, but we did not need to do much.

Mr LANGUILLER — Plus in London or Hadassah hospital — —

Assoc. Prof. FITZGERALD — Yes, that is right. But there is a lot of depth. With media coverage and particularly with telecommunications, as long as it stays up I think we can respond extremely well. If there is a problem with telecommunications, which inevitably there will be because it gets crowded, we would have some problem. But with the limited scenarios we have had in the past, where there are only several dozen people, our biggest problem is keeping people away from the hospital so that they can provide the next phase of care and we can staff the place over days rather than hours. I think after the last series of external Bali bombings and various white powder scares, there was a lot of planning and exercises for state disasters. It would be good if we did that on a more routine and regular basis. That has drifted away in the last few years.

Prof. GRUEN — The facilities are designed to be able to deal with multiple, concurrent seriously injured patients. The Alfred and the Royal Melbourne are the two biggest trauma services in the country by a long shot. We have four identical trauma bays for the management of the most seriously injured patients and four resuscitation bays that can easily be brought into action. There are 50 ICU beds, 16 of which are dedicated to trauma, but others of which can be mobilised at fairly short notice when needed. The triage transport system pre-hospital can work in the situation of disaster to divert patients if needed.

Assoc. Prof. FITZGERALD — When we built it in 1999 we double plumbed everything. There are 47 bays in the emergency department of the Alfred, but they can all take two trolleys and the larger bays can take four trolleys. They are set up to receive 100 patients who will all have access to oxygen. There are four redundancies in the power supply. There is a lot proofing of it, but it has not really been tested.

Prof. GRUEN — I guess by comparison in New South Wales there are 10 dedicated trauma centres, all of which see less than half the volume that the Alfred and Royal Melbourne see. There is just not the redundancy in each sector to be able to suddenly expand the way we can expand.

Mr LANGUILLER — Evidence both in submissions to the inquiry and in the literature suggests that there is strong support for the use of the international classification of disease-based injuries severity score — the ICISS — to define 'serious injury'. What is your view on that classification and the feasibility of it being widely adopted in Victoria?

Prof. GRUEN — I will start, and I am sure Mark will also comment. The injury severity score — the ISS — has been a standard way of talking the same language across all trauma centres that have used it worldwide, and that number is increasing. It relies on coding of the severity of injuries by anatomical region of the body, which is a somewhat complex task; therefore well-developed countries have been able to do it. A lot of underdeveloped countries have not followed suit. That is possibly the main limitation.

In Victoria the ISS has been used for 20 years to describe a seriously injured patient and to show some relative severity between patients. It is like any coding system — it has its faults. It is not perfect, but at least it lets people talk the same language. Where Victoria has deviated from most other states and countries in the world is that it has designated major trauma to include a certain ISS score that is greater than 15, plus some other criteria. There is good reason for that. Maybe, Mark, you would like to talk about that.

Assoc. Prof. FITZGERALD — We developed this classification in the early 1990s. Once we had this standardised nomenclature to describe injury and the likelihood of survival — that was part of the strategy that Frank McDermott's groups did in the mid-1990s, 1995 or 1996 — this idea of preventable or potentially preventable death was not a matter of opinion of a few crusty professors around the table. It was actually based against an expected — —

The CHAIR — We were not referring to you as crusty, you know.

Assoc. Prof. FITZGERALD — We are trying to get there! But that was one of the problems — there was a lot of subjectivity in management. If you said the person was potentially survivable prior to the mid-1990s, people could become quite indignant about it because they felt that it was a subjective opinion. But once we had this injury severity score based on an anatomical injury scale, then Stephen Cordner and Frank McDermott were able to say, 'Look, this person, based on this large cohort, has an 85 per cent chance of survival'. You can plot survival against likelihood of survival, and the outliers that are a couple of standard deviations outside are expected survivors. Irrespective of your opinion, based on the injuries that they have sustained and their likelihood of survival against a large cohort, you can then determine whether your system is functioning well or functioning poorly, because you can then determine the number of preventable or potentially preventable deaths.

Once we developed and introduced this system in the early 1990s we were able to then progress the care of the injured, make it more objective and rely less on people pounding the podium and more on the factual basis. It took a lot of the emotion out of it, and we have benefited from that.

Mr LANGUILLER — What do you believe is the value in linking hospital data that already uses the ICISS to measure serious injury with police-reported crash data and the TAC's claims data?

Assoc. Prof. FITZGERALD — I am not too sure where the direct link is, but you can indirectly link it, and that is a good idea. It has been done in research studies. I am not too sure whether it is done internally, though.

Prof. GRUEN — Is your question about what the value might be if they were to be linked?

Mr LANGUILLER — Yes.

Prof. GRUEN — Right. I think from someone who is interested in proving the quality of care provided it is a very exciting possibility, the reason being that we can deal with what we know about the patient and how to improve care through what we do. To be able to link back to the circumstances in which the injury occurred and map the severity of injury and the processes of care that took place and how that happened through

mechanism X and so on is very powerful in terms of being able to use the trauma system both to prevent injury as well as to treat it.

There are attempts now through Monash University's department of epidemiology and preventive medicine to link VSTORM — the Victorian state trauma outcomes registry data — and the TAC claims data. The TAC data has a lot of service use, and then there is outcome data relating to return to work and so on, which gives you that long-term perspective that you cannot easily get out of some of the health system data, although we are increasingly doing it through telephone-based interviews and some of the things we are talking about now.

Assoc. Prof. FITZGERALD — I think the biggest difference it will make is for the people who do not get to hospital, because we still believe that quite a number of them are dying from relatively simple things — airwave obstruction and such like. We do not know how many there are or what the cost-benefit of introducing new public safety measures and training and first aid programs will be, so I think that is where its biggest impact will be — the people who do not survive to get to hospital, what the severity of injury is and what we can do to help.

Mr ELSBURY — Your submission refers to the current gap in good data around what happens to a patient once they have left hospital. You say that 27 per cent or so recover, but your submission suggests that there is a bit of a gap for the remainder, where you just do not know what happens to them.

Prof. GRUEN — We get data from the most seriously injured by ringing them. The Victorian state trauma registry is funded to — —

Mr ELSBURY — How can that be improved so we are not just ringing them up at random and saying, 'Hi. How are you going?'?

Assoc. Prof. FITZGERALD — It is done in an objective and reproducible fashion, but we have applied to the National Health and Medical Research Council, led by Belinda Gabbe, who runs the Victorian state trauma outcome registry, for a five-year cohort follow-up. We agree with what you say, that two years is relatively premature. We thought initially, when we were going to six months, we were doing a great job. Then we realised that in fact the disability lasts for a lot longer, and the community burden and the burden the patient carries is of a significantly longer duration. We have just applied to the NHMRC to run a study for five years, which I think is what is required.

Mr ELSBURY — To try to capture full recovery up to what they are going to have, if they have suffered a major trauma?

Assoc. Prof. FITZGERALD — Yes. The supposition is that if you have not recovered in five years and you are left with this disability, it is unlikely that you are going to improve. We think two years is a bit premature.

Prof. GRUEN — Then there is the service use in that time. What services are they acting to obtain? What could they use if they had access to it? What is their professional life, social life, family life? What are the implications of that for them and their family?

Mr ELSBURY — How close to restoration they have come or otherwise?

Prof. GRUEN — Yes, exactly.

Mr ELSBURY — In the committee's last inquiry into motorcycle safety, Alfred Health provided evidence to the committee about the Victorian state trauma registry and the Victorian state trauma outcomes registry and monitoring group — VSTORM, which is a pretty cool name — which monitors and tracks patients' injuries. What is the current role of the registry in tracking patient injuries after they have been discharged from hospital, and will that be something that gets rolled into your submission to the federal government?

Assoc. Prof. FITZGERALD — Yes. Sometimes VSTORM does specific reviews at the request of the Victorian state trauma committee. One of the reviews that was published in the *Medical Journal of Australia* late last year or early this year was the patient's impression of the Victorian state trauma system. It was quite interesting, because the patients thought the pre-hospital and hospital system was very good; they were very happy with it. But they were very unhappy with their post-discharge care, particularly if they did not get discharged to a rehabilitation facility. They thought there was a lack of coordination of follow-up. Because it

was being run by a couple of larger centres, someone might have plastics, orthopaedic, neurosurgery and general surgery review, and they are coming to four different appointments from Echuca on four different days, two weeks apart. It was quite critical of the post-discharge care, and we are addressing that at the moment in Alfred Health and trying to improve the post-discharge care and also moving some post-discharge nurse planners. One of the biggest criticisms the patients had was that there was no single point of contact. They could not ring someone to help them work out whether things could be combined or made easier for them.

Mr ELSBURY — No real coordination of diaries.

Assoc. Prof. FITZGERALD — It is interesting, because you think you are doing a great job. But they are the people who are experiencing it. When I thought about it, I thought the criticisms were very relevant and fair, and we will fix it up.

Prof. GRUEN — Mr Elsbury, a high-performing system should be like a machine that works very well. It should be able to dial things up and down and make tweaks so that you can predict what is going to happen. You can only do that if you have the data that is sufficiently detailed and tells you the right things so you are able to do that. Our system is set up really quite ingeniously, with that sort of data capacity part of the way there. We are a long way ahead of all the other states in Australia. For example, the national disability insurance scheme and national injury insurance scheme really want this sort of information to be able to do the health economic analyses on it. This is an opportunity for Victoria to really shine and show that in trauma at least we have the capacity to have a high-performing machine that we can use to show what different models of care actually do for the people they serve.

Assoc. Prof. FITZGERALD — I think earlier this year it was the 100th anniversary — no, it must have been the 150th anniversary of the University of Melbourne medical centre.

Prof. GRUEN — Yes, the 150th.

Assoc. Prof. FITZGERALD — I saw Robert Doyle, who was parliamentary secretary for health at the time and was involved in the state trauma committee, and we looked at the number of patients' lives that were definitely saved that previous year by going to the Alfred directly. It was exactly 100. It was the first year that we got to that. When you add 70 patients from the Royal Melbourne, it is quite a significant number of lives that were saved without any increase in disability and with a substantial increase in road traffic numbers and population.

Mr PERERA — A number of submissions have canvassed the use of burden of injury measures, such as the disability adjusted life years and quality adjusted life years, to measure long-term injury consequences. Can you explain how DALYs and QALYs are calculated? What are your thoughts on their use for this purpose?

Prof. GRUEN — Disability adjusted life years are a standard measure that tries to enable you to have different disease groups come to the same table to compare the importance of, firstly, what they cause and, secondly, the value of treatments. They enable trauma people to sit around the table with infectious diseases people and neonatal and maternal health people.

Assoc. Prof. FITZGERALD — All doctors will tell you that what they are doing is most important. It is just how they work; otherwise they would not be doing it.

Prof. GRUEN — To calculate a DALY or a QALY takes fairly complicated modelling that brings to our consideration the severity of disability with some standard measures that it has caused and the duration by which it was caused. You can imagine that some things become permanent, like a stroke, for example. Some conditions are transient, like major trauma from which you recover, and some can increase gradually over time, like Parkinson's disease. It is actually quite a complicated process to do that, but it is a real attempt to not just use death rates as the benchmark measure but to have a standard measure of the amount of disability, which is the product of the amount of disability plus the duration it has had for any one person to come to the table.

Assoc. Prof. FITZGERALD — When we had this discussion about resuscitating trauma patients in the early 1990s, we were told that if they were unconscious and you did a lot of resuscitation, you would end up with more vegetative survivors. There was an argument about whether you should be resuscitating people with severe brain injury. But we did resuscitate, and we found that the number of deaths dropped, the number of

independent survivors increased and the number of people who were permanently disabled remained exactly the same. You can imagine that one group went up, the people who may have been permanently disabled survived and some of the people who may have died ended up permanently disabled. There was no increase in economic or disability burden.

It is relatively easy to work out the years of productive life lost, and countries like India do this. They look at the number of people killed in accidents. The commonest cause of death for people in India between 1 and 35 is a road traffic crash, and as you only have a life expectancy in the 60s, you just calculate the number of years of life lost against the number of deaths. But people want to know then whether there is a disability burden. If a lot of these people survive and there is an economic burden and a disability burden, what is that? The disability burden varies between systems. Our disability burden is relatively low relative to other systems.

Prof. GRUEN — I think it is essential, as Mark has said, from the perspective of a funder that says, 'If I invest money into the system to improve the care, are we actually not just going to convert people who would have died into long-term vegetative, highly dependent and therefore highly expensive people?'. That is a real concern for the funders, and that is why it has been so important to show that over the 10 years that the mortality has declined in Victoria the functional outcomes have improved commensurately. Everybody's outcomes have improved; it has not just been that group and a bigger, highly disabled group.

Assoc. Prof. FITZGERALD — We have had a subliminal message. For instance, there is a show called *Medical Emergency*, and one of the reasons we put that on was to demonstrate to the public that this is what happens in hospitals — there is less of a barrier — and, secondly, you would see people on that show that you would think would not survive. Then at the end of the show they would be sitting up in bed, having breakfast, wondering what happened. We just wanted people to be aware not to be forlorn when you see someone you are close to injured because they have every prospect of survival, and everyone is doing everything for them.

However, when I was at high school we were told — this is when I finished, in 1974 — at least one child in our class would be killed. This was in the days of 1034, and within five years of finishing there were two in rural Victoria. I went to Drouin High School. By the time I had finished university I had had three cousins killed in car accidents. One remained a permanently vegetative survivor. It was a real problem at the time. Our concern, when we went looking at this latest review into road safety, was that people have been less exposed to the impact of road trauma because of all the initiatives that are happening in Victoria, and we do not want people to forget the message that prevention is very important — it is the no. 1 thing — but post-crash treatment is also extremely important and should not be left out of the equation.

Mr PERERA — What is the value of the measures in enhancing the collection of data and contributing to a greater understanding of how injuries lead to disability burdens for individuals?

Assoc. Prof. FITZGERALD — That is basically the reason we run VSTORM — the Victorian state trauma outcomes registry — and we just set up a spinal column/spinal cord registry so that, similar to the broad generalisation using the anatomical injury scale, and ISS looking at death, we can now look at more specific registries to see if we can get more objective criteria for disability and predictive disability and interventions that can reduce that.

Prof. GRUEN — Taking it a step further, the National Trauma Research Institute is setting up a national trauma registry for which Australia's 26 trauma centres, like the Alfred and the Royal Melbourne, will contribute data. Through that we will be able to benchmark the performance of how each centre is doing with certain types of patients and learn from what the high-performing centres are doing that the lower performing centres are not doing, or vice versa, that can help improve everybody's care.

Assoc. Prof. FITZGERALD — Yes. You pinch everyone else's good ideas and leave your bad ones behind.

Mr LANGUILLER — Can I just come back to my question in relation to the international classification of disease-based injury severity score — it is quite a mouthful — as distinct from the injury severity score, which is the one that we understand you have been using for the last 20 years.

Assoc. Prof. FITZGERALD — Yes.

Mr LANGUILLER — Are you able to make a distinction between them for us, do you have a view and do you think that this international classification of disease-based injury severity score should be used? I think you have confirmed that you use the injury severity score — —

Prof. GRUEN — Yes, sorry. I misinterpreted your question if that is what it was previously. I am not an expert on this topic, but I can certainly refer the committee to Belinda Gabbe, who is an expert on this topic. My relatively superficial knowledge of it is that there are certainly moves around the world to try to apply ICD coding — and everybody in hospitals gets coded to diagnoses and procedures — and see if that can accurately do the work of the injury severity score that we talked about before. There is a lot of work going on in that space. I do not know whether we are actually convinced that it can do that yet.

Assoc. Prof. Fitzgerald — We are doing some work on it at the moment. We are funded to 'electronify' part of our trauma admission program. Part of it on tablets is drop-down screens using the latest ICD-10 coding to accurately record injuries, and we can do the analyses that you require, but what happened with the ISS is that a few years ago they changed it with the new international disease coding — and even our ISS period because of that — and because we have a registry that goes back 20 years, with tens and tens of thousands of severely injured patients, we are very reluctant to change the basis of it. We can track trends and different interventions, and we would need a lot of convincing before we did that. So we will not be the last to adopt something new, but we will not be the first either, because we have that good historical database. So we are sticking with ICD at the moment.

Mr LANGUILLER — I thank you for that clarification.

The CHAIR — I would just like to go back to the state trauma committee and ask the question: how regularly should it meet, and are there any consequences of it not meeting regularly?

Assoc. Prof. Fitzgerald — It meets three times a year. It was in a abeyance I think with the recent change in government, and then the minister addressed the re-formed committee. It had grown quite large, and it was trimmed down a bit last year. It has had a workshop and a review and developed a strategic plan in in February this year. Certainly there were consequences of not meeting. Things had been left in abeyance, particularly the development of a state education plan, because as more seriously injured people go directly to the trauma services, it means that people in rural and suburban hospitals have less exposure, so when they do see somebody who is severely injured more is expected from them, but they have not got the educational support to deliver that care.

We know, for instance, that if you get admitted to a rural hospital in Victoria, you have three times the likelihood of death if you are severely injured. This is from VSTORM data last year. Those deaths do not occur in the first few hours — it is not because you are bleeding to death and severely injured. They usually occur post-24 hours. A lot of it is to do with recognition of injury and how to activate the system to pick up the patient who requires transfer, and we are trying to address that through this education program, which is one of the tenets of the new state trauma committee. There was a lag bringing that forward, but now that the committee has been reconstituted it is being addressed.

The CHAIR — Associate Professor Fitzgerald and Professor Gruen, thank you very much for your attendance here today. You will receive a copy of the Hansard transcript, and as I indicated if you could deal with that and return it expeditiously, that would be of assistance to our work. We greatly appreciate your giving of your professional insight and expertise to the work of our committee today. Thank you.

Assoc. Prof. Fitzgerald — Thank you for the committee's work.

Witnesses withdrew.