Trauma Exchange: interview with Dr Kerry Gunn

Transcript

Carl Shuker:

Kia ora and welcome to Trauma Exchange, a series of conversations which explore the world of serious injury in New Zealand. My name is Carl Shuker and it's a privilege to host these discussions on behalf of the National Trauma Network and its partner organisation, Te Tāhū Hauora Health Quality & Safety Commission.

Physical injury is the leading cause of death for people in Aotearoa aged between 1 and 39 years, and blood loss, or haemorrhage, is the most common cause of death in the first 12 hours after a person is injured, even once they've reached hospital.

Today, Doctor Kerry Gunn joins me to talk about a quality improvement project to try and reduce avoidable deaths from blood loss after trauma. We'll be talking about some of the things that made this work a success.

Kerry is an anaesthetist with a special interest in coagulopathy and massive haemorrhage management. He was the clinical lead for the critical haemorrhage project, run by the National Trauma Network in partnership with Te Tāhū Hauora Health Quality & Safety Commission.

Kia ora and welcome, Kerry, thank you for taking the time to share this mahi.

Dr Kerry Gunn:

Thank you. Thank you for having me.

Carl:

So, Kerry, what was it about critical haemorrhage that drove you to start an improvement project on it?

Dr Gunn:

Well, as you alluded to in your introduction, it is a significant problem for us as clinicians in New Zealand in dealing with major haemorrhage with trauma.

The numbers that you described show that it is a major problem, it's a difficult to manage problem, and these patients go on to die early in their hospital course of haemorrhage. So, as an improvement project, it was immediately obvious to us that we could reduce the amount or the burden of death and trauma through an improvement programme.

The problem was that A, the numbers are relatively small across the whole country. So, the motu has a large surface area of trauma associated with it. And unfortunately, many of the deaths were associated with rural distant deaths with long protraction times into a relatively small peripheral hospital.

So, it created challenges to us to try and build an improvement programme that would address that and highlight the need for us to reduce deaths that were preventable in trauma.

Carl:

So, is that to say that the data was suggesting more people were dying than there should be and that there was variation in people dying across the country?

Dr Gunn:

Yes, well, I think because, as I alluded to, our large population spread across a large area – New Zealand does have a high degree of trauma deaths compared to comparable countries, say, in Australia. And that offered us an avenue to try and reduce that.

What we know in New Zealand from data that we gained from the Trauma Network database in 2019 is that there were around about 2,300 cases of severe trauma, major trauma that were occurring in New Zealand, of which 8.4 percent of those, 198, were dying. That is a higher number than we would hope, but it was representative on what you would expect in New Zealand. Twenty-five of those deaths were associated with haemorrhage. We know that it's the population that our bundle approached and tried to reduce.

And that's quantifiable amounts of preventable deaths that we had to work with in New Zealand. To reduce that down would be a very significant improvement in our health care for these types of patients.

Carl:

So, to reduce that number of people dying from blood loss, that was one of the goals. What were the solutions that you identified to achieve that goal? I think you mentioned a bundle just now.

Dr Gunn:

That's right. So, if you look at this, it’s a complex scenario. These patients are being injured across the country, often distant to both ambulance and hospital care. They are critically injured, therefore they represent to us our highest risk of death. These groups represent 60 percent of our major haemorrhage deaths in the first four hours after arriving at a hospital. So, time is of the essence to try and treat these patients better.

So, we needed to create a bundle that recognised these patients as being different to the ones that were not bleeding to death and create a universal language and understanding across all our colleagues from the site of injury through to hospital, to take these patients and treat them in a different way.

I think most international improvement programmes recognise that a bundle of care that's understood across different groups in the hospital is a health improvement strategy most likely to create success.

So, in 2019 we gathered together a group of New Zealand experts to build a bundle that was agreed across all the practitioners that care for this subgroup of patients. A language of understanding and a language and a process of treatment that would achieve two endpoints: one, to get the patient to a care delivery centre as fast as possible. That, in New Zealand, essentially means for these type of patients a hospital that can deal with major trauma and B, resuscitate and hold that patient in a life sustaining manner between the point of injury and that point of hospital.

So they were the overall points. The group that we brought together had to build a bundle within those constraints, referencing best world evidence and the resources that were available in New Zealand.

Carl:

So, has that bundle and the improvement project around it had an impact on the number of people who are dying from critical bleeding?

Dr Gunn:

Well, we believe it has.

It's been a difficult period of time to get accurate numbers associated with change in practice. We've gone through COVID, we've gone through a significant alteration in normal practice. But if you look at the four years of data since the rollout of the bundle, the amount of preventable haemorrhage death has been dropping from 10.6 percent in the year before the bundle was rolled out, to the low point last year of just over 5 percent. So, we've had around about halving in the amount of deaths associated with this subgroup of patients.

So, we believe we're getting close to enough data now to be confident that we've had a significant improvement in the care of these type of patients.

Carl:

That's an extraordinary result.

You work in a large urban hospital and that has access to plenty of people resources, a large blood bank. How are things different for smaller regional hospitals?

Dr Gunn:

Well, as I referred to earlier, this really brings the nubbin of the problems of dealing with these type of patients.

You can imagine the difficulty of having a patient that is likely to die within the next four to five hours of bleeding in a rural site, in a road traffic accident, in a peripheral road, long extraction time, hard to access. And quite often a two-stage process of a transport to a peripheral hospital and then ongoing transport to a metropolitan.

Most of these smaller hospitals have low amounts of resources… of blood products… because blood is a scant reserve in New Zealand that we cannot have in every single hospital. Part of the bundle even addresses putting blood on helicopters and in ambulances for this subgroup of patients. But getting it to those patients in need at the right time is still difficult and could easily lead to a lot of waste of blood products without really being able to address the issues of the patients that they're focused on.

So, it created a balance and the bundle, I think, went a long way to discussing where that balance is. What groups that resuscitation can be advanced towards and what groups we had to rely on the peripheral hospitals and the metropolitan hospitals for dealing with it.

Carl:

So, there are differences in the resources hospital and emergency services have across New Zealand. What helped get agreement that the bundle would be the right thing for all patients no matter where the injury happened?

Dr Gunn:

Part of it, and part of the strength of what we were able to create, was for the first time related to this topic. Practitioners all the way from paramedics at roadside through to emergency departments, through to operating room surgeons and anaesthetists and

intensivists and blood transfusion specialists were all able to get together and work this bundle out together.

It created a common understanding of the problem. It created a pathway of language, of recognition. And very importantly, it created a bypass where the recognition that the patient was acutely ill and likely to die without care, meant that they bypassed what were normal holding strategies which would slow the patient's transfer to that delivery environment, usually an operating room.

So, patients were getting to the operating room faster and alive, and that needed everybody working together.

Carl:

Before the bundle, there must have been a lot of pressure on those smaller centres when they received a patient with major injuries.

Dr Gunn:

This is stressful stuff. You very infrequently get patients this crook and they turn up on your doorstep and you don't have the resources to do it, you know.

So, the whole point of this was to offer a system to everybody up and down the country that gave them confidence when they trialled and practiced it that they were doing the right thing and if they needed the tools to add, whether that's personal education or physical capex or in certain circumstances blood they could get it.

But, you know, building a unity in the country of hospitals that don't get this sort of stuff very often was a key part of the bundle.

Carl:

What's next for this work?

Dr Gunn:

Well, I think we are excited by the change and we have to reinforce that the change is permanent and that change goes on going.

If we look at what we've got potentially with the combination of haemorrhage deaths and patients that die from multi-system organ failure in intensive cares; we've got up to 50 patients that we could prevent a death in a five-year period. And that is an exciting proposition of an improvement project.

So, if that is where we are, we are halfway along that path, we've got the other half to go.

I think, too, we have created, I think, an understanding in a lot of hospitals in New Zealand of a bundle that is changing care. We need to reinforce the positivity of that to the groups. We need to look at the bundle, see where there are areas of improvement, see where there is areas of rollout to groups that we can assist with, so that we can maximise the benefit of that. And create a situation where this improvement continues.

We're excited that improvement projects like this seem when changing practice, to improve patient outcome; we're on a pathway that we need to both celebrate and keep on going.

Carl:

Kerry, thank you for taking the time to speak with me and to share this work today. It's been a pleasure talking with you.

Dr Gunn:

Thank you very much for having me.

Carl:

Thanks for tuning into our kōrero with Dr Kerry Gunn today.

He's talked about how standardising care for managing critical bleeding in major trauma patients across the country has saved lives and provided the tools for trauma teams to respond more quickly and effectively.

If you'd like more information about this work, including the bundle and self-audit tools, head to the National Trauma Network website at www.majortrauma.nz. You can also find information about other work being done by the National Trauma Network and Te Tāhū Hauora Health Quality & Safety Commission to improve trauma care.

Thanks again for joining us.

Mā te wā.