Finding the answers to Casey Nathan's death in childbirth

Aidan O'Donnell15:28, Jun 05 2015

One quiet night shift in Edinburgh's Simpson maternity unit, I started to flick through the old leather-bound ward ledgers. At random, I chose one from 1951. Each page had about 35 lines, detailing the summary of a delivery, handwritten in ink with a neat copperplate script.

Though many women gave birth normally, there was a lot of pathology too, a mixture of problems: malpresentation, obstructed labour, convulsions, puerperal sepsis. On every page, the death of a baby was recorded; sometimes more than one per page.

It was easy to see at a distance, because the deaths were recorded in red ink.

Casey Nathan and her partner Hayden Tukiri.

Every two or three pages—the equivalent, I suppose, of a week's worth of admissions—was a maternal death, again written in red ink, a neat record of what was presumably a chaotic and disastrous event. I was shocked to find such a catastrophe was so commonplace, even in a tertiary centre, where the highest-risk women would be sent.

The death of a woman in childbirth is, rightly, a dreaded event. Not only is the woman dying in the prime of life, but she may leave motherless children, a widowed partner, and an unfillable void for her other loved ones.

Maternal deaths still occur. But they have become so rare that we almost never hear about them. Why are maternal deaths so rare? I believe it is because the medical model of childbirth has been widely adopted. That is, we train midwives to a high clinical standard, and we invite pregnant women to give birth in hospitals, close to operating theatres and blood banks and specialist practitioners.

But this safety comes at a price, hinted at in the title of the Simpson Memorial Maternity Pavilion, deliberately avoiding the word hospital because pregnancy is not an illness.

The death of a woman in childbirth is, rightly, a dreaded event. Not only is the woman dying in the prime of life, but she may leave motherless children, a widowed partner, and an unfillable void for her other loved ones.

Maternal deaths still occur. But they have become so rare that we almost never hear about them. Why are maternal deaths so rare? I believe it is because the medical model of childbirth has been widely adopted. That is, we train midwives to a high clinical standard, and we invite pregnant women to give birth in hospitals, close to operating theatres and blood banks and specialist practitioners.

But this safety comes at a price, hinted at in the title of the Simpson Memorial Maternity Pavilion, deliberately avoiding the word hospital because pregnancy is not an illness.

By framing pregnancy as if it were an illness (with hospitals and blood tests and needles and so on) we exact a penalty from women. They become patients, and the power balance is very much tipped against them. Much of their autonomy and dignity is taken from them. In some cases, they even end up with interventions and treatments they might not need.

All of this has created a backlash against the over-medicalisation of childbirth, which is gathering momentum. It has been driven partly by natural childbirth pressure groups and partly by the midwifery profession itself, seeking to redress the balance.

The impact of the medical model of childbirth has been so resounding that we, as a society, have forgotten that childbirth can still be a life-threatening experience for both mother and baby. Childbirth is now presented as a wholly natural process, one in which we ought not to interfere, and doctors, with our obstetric forceps and epidural needles, are sometimes cast as villains. It seems we have forgotten why we needed these things in the first place.

Women, we are now told, must have choice in all aspects of the birth of their baby.

We are getting to the point where birth plans can be drawn up as if someone were ordering a meal at a restaurant. But the intention of the medical model was never to limit choices (even if this inadvertently happens) but to improve safety.

The tension between the natural childbirth model and the medical model does nobody any favours. Pregnant women are caught in the middle. They are routinely deluged with information, some of it conflicting, and understandably they may be left wondering what to believe. They may not see much point in attending regular antenatal checks, when they feel fine. They may not know, or wish to know, about what can go wrong in childbirth, and this may leave them unwittingly vulnerable to disaster.

In the 1950's the UK set up a Confidential Enquiry into maternal deaths. It remains the longest-running and most successful of its kind in the world. The Confidential Enquiry collects its figures rigorously: the death of any woman during pregnancy or within 42 days after the end of pregnancy is documented and analysed. It does this so well that its figures can paradoxically appear worse than those produced by other countries whose counting is less reliable.

The Confidential Enquiry reports cover more than half a century of continuous, rigorous data collection. The figures are published every three years in a report which analyses the data for trends and produces its top ten recommendations to improve care. Most developed countries take notice of the reports.

Here in New Zealand the Maternal Mortality Review Committee was dismantled in 1995. From then until 2006, maternal deaths were loosely counted and not analysed.

However, since 2006, the Perinatal and Maternal Mortality Review Committee (PMMRC) has produced an annual report on maternal deaths in New Zealand, containing solid figures and analysis. Australia has not published a similar report since 2008.

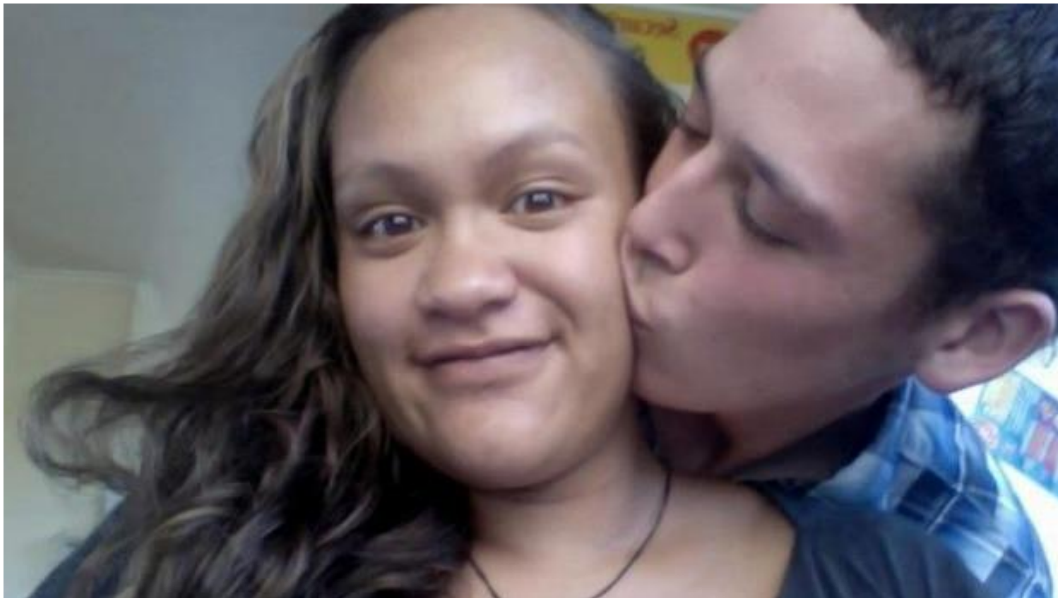
The eighth PMMRC report was produced in June 2014. It reports 77 deaths in the previous seven counted years (2006-12), making a maternal death something that happens slightly less often than once a month, nationwide.

One of the deaths in the most recent report was Casey Nathan, a 20-year old Maori woman in her first pregnancy, who died in front of me on 20th May, 2012. The memory of those events will remain with me always.

The court record shows that Casey had been labouring at a rural birthing centre. She collapsed in the birthing pool. Her midwife called an ambulance. By the time she left the birthing centre in the ambulance, she was so sick that the ambulance radioed the hospital to

warn us she was coming in. Her vital signs were so abnormal that we readied an operating theatre, ordered blood, summoned extra staff, and had everything ready when she arrived.

Despite the best attentions of five obstetricians, eight anaesthetists (which included me), one intensive care doctor, and dozens of midwives, technicians, nurses and other staff members—in short, every resource we could muster—Casey slipped away and died.



Casey died of an amniotic fluid embolism (AFE). The PMMRC reports ten AFE deaths from the whole country in the last seven years. There were 19 suicides of pregnant women in the same period, making suicide the leading single cause of maternal death in this country. AFE is so rare that most midwives will go for their whole careers without ever seeing one. This was my first involvement with AFE (and my first maternal death) in 16 years as an obstetric anaesthetist working in busy tertiary centres. It was not at all clear at the time what we were dealing with, since

AFE is hard to diagnose, even at post-mortem.

Amniotic fluid embolism happens when some of the amniotic fluid around the baby enters the mother's bloodstream. We know this can happen without problems in some women. We also know that for others, it causes a rapid, untreatable and potentially fatal reaction. AFE is like a bush-fire. Once it has taken hold, you cannot put the flames out. You can only try to prevent them from spreading, and hope that, when it burns itself out, you have something left.

Casey did not die because we failed to save her: she died because, by the time she reached hospital, she could not be saved. It is tempting to believe that Casey would have survived if she had been in the hospital when she became ill, but women can die of AFE even in the best hospitals, with expert clinicians immediately available.

Human nature seeks to find someone to blame when something goes wrong. Surely it must be somebody's fault? Get rid of that person (even punish them) and the problem is easily and swiftly solved. In this case, whose fault could it possibly be except the midwife? In the days after Casey died, her midwife received death threats and was forced to leave her home in fear for her life.

But disaster analysts know that when a catastrophe occurs, it is seldom the direct result of a single event; instead it is usually the accumulation of a series of minor glitches, which may coincide in an unpredictable way, leading to disaster. None of these glitches by itself is sufficient to cause the disaster, but each of them is necessary. The kingdom can be lost, as the old nursery rhyme has it, for want of a nail. This is usually called the Swiss Cheese Model, first proposed by Prof James Reason. Any system has a series of defences and failsafes. They can be thought of as slices of Swiss cheese, with the holes representing the limitations and failings of each layer. A situation which falls through a hole in one layer might reach cheese on the next: disaster averted. However, if all the holes line up, a disaster happens.

The Swiss cheese model implies that potential disaster is the norm, with most systems routinely preventing disaster with the first or second failsafe. Another implication is that no failsafe is completely watertight; there are always holes.

In Reason's analysis, the predominant cause of holes in the cheese is human error.

Human error is inevitable. Not simply uncomfortable or undesirable: inevitable. No matter how highly trained you are, no matter how much attention you are paying, eventually you will make a mistake. I know I do, and I know you do. The solution is not to punish people when they make mistakes (because people do not set out intending to make mistakes) but to acknowledge that human error is part of any system which involves humans, and try to fix the system, to design it in such a way that human error becomes less likely. Medical care is a complex system with a high reliance on human performance, and it has the added complexity that the patient's own behaviour may be a contributory factor.

The Health Quality and Safety Commission (HQSC) uses three slices of Swiss Cheese as its official logo.

Although she has been widely criticised in print and online, the court record shows that Casey's midwife did a lot of things right. She immediately recognised Casey's collapse as a very abnormal event. She called for help from her colleagues, got Casey out of the birthing pool, put in a drip, took some blood, and called an ambulance. Later she had the presence of mind to put the blood tubes in her pocket and hand them to me at the hospital. She did not panic, even when things were spiralling rapidly out of control, when Casey was clearly dying and she was facing threats from Casey's terrified family. To single her out for criticism is unfair and unnecessary. She was only one part of a much larger system.

The court record also shows that at the time Casey's ambulance was called, there were no crews available to help, as they were all busy on other jobs. Instead, an off-duty ambulance officer agreed to take an ambulance to the birth centre. Only when Casey's ambulance undertook a mid-transfer vehicle rendezvous did Casey receive treatment from two Intensive Care Paramedics.

The system which treated Casey was doing its job in the normal way, as it is doing, right now, out there, not just in Waikato but around the whole country, looking after us and our loved ones. We live in a geographically spread-out country with few large population centres. We have an ambulance service with finite resources which continues to be run as a charity. And we have new midwives looking after pregnant women. That is the system, right now.

This system is not watertight; in fact, no system is. Tomorrow, a very similar scenario could happen again. And today, perhaps it almost did, saved from catastrophe by the merest sliver of Swiss cheese. Every system has the ability to flex and adapt when challenged, but every system has a tipping point, where something comes along which it cannot handle. Casey Nathan was beyond that tipping point, and the system failed to cope.

Though it is uncomfortable to say it and painful to consider it, we cannot make the system watertight, not even with limitless resources, or a helicopter at every birthing centre.

What can we learn from this tragic case? Retrospective analysis of a disaster can often identify several points at which the catastrophe could have been averted, by seemingly easy or trivial actions. It is seductive—but wrong—to think that one or two easy steps are all that is needed to prevent a recurrence. We need to be cautious not to apply a quick fix, which ends up causing more problems than it solves. There is a very real risk of unintended consequences.

One might conclude the problem lies with the rural birthing centre where Casey gave birth. Why not just close it? The unexpected answer is that the quality of antenatal care in that region would go down, not up. The evidence presented at the inquest showed that Casey frequently failed to show up for her antenatal appointments. The midwives who cared for Casey went out of their way to track Casey down, phoning her contacts and friends, to try to find her. They were successful, and the reason they knew all the tricks was, I believe, because they are used to going out of their way to provide antenatal care to women who are not well engaged with their services. If we close the rural birthing centre, there will be nobody left to provide that care, and those women will probably be reluctant to travel long distances to other towns.

Instead, why not invest time and money into that birthing centre? Provide training, and emergency equipment and other initiatives designed to make it better at handling disaster? Because statistically, this birthing centre will not see another AFE for another two centuries. Next time, the disaster will happen somewhere else.

What about the midwifery profession? Should it not be brought to account? My answer is no. To do so would be to demand the impossible: that the profession and its practitioners must always be perfect; that AFE and similar catastrophes must always be foreseeable and preventable. The midwives I know and work with are dedicated, passionate, caring people. Criticising or vilifying them in public will not improve their performance: instead, they will just leave the profession. We should recognise and acknowledge that they are often doing a very difficult job in very difficult circumstances.

Another unintended consequence might be the tendency for all of us to practise more defensively: for midwives to start referring every woman with a risk factor to a hospital. Our hospitals would soon be swamped.

Somewhere between the medical model and the natural childbirth model is a sweet spot, one that everyone should be able to agree on.

All women do not need to deliver in a hospital, on a drip, with obstetricians in attendance. Likewise all women cannot give birth safely in a rural birthing centre, far from specialist medical help.

The Coroner's report of this case is balanced. It looks closely at every slice of cheese. It recognises that this was a systems failure, not a personal one, and seeks to identify problems in the system which could be improved. In particular, it does not blame the midwife personally for Casey's death, even though it was reported in some media as doing so.

The Coroner does not suggest that we should train all midwives to manage AFE better: he might as well say we should train them all to manage a woman who has been struck by lightning. But catastrophes of many kinds can occur in childbirth: haemorrhage, collapse, eclampsia, sepsis. The Coroner believes newly-trained midwives should spend more time in hospitals learning about the recognition and management of those catastrophes.

Those old ward ledgers remind us that maternal death used to be common and is now rare in the developed world. New Zealand's maternal mortality figures are currently among the best in the world. The real news is not that sometimes women die, but how well the system usually works, and how often women now survive things which two generations ago would have claimed their lives.

Every woman who loses her life falling through some tiny hole in the cheese is a disaster, for her family and for society as a whole. Closing up the holes in the cheese needs all of us—doctors, midwives, professional leaders and government bodies—to work together, to keep scrutinising the system, to analyse disasters without blame, and to drive forward initiatives to change things for the better.

Dr Aidan O'Donnell is the Lead Obstetric Anaesthetist at Waikato Hospital, Hamilton. He is a Fellow of both the Royal College of Anaesthetists and the Australian and New Zealand College of Anaesthetists. He sits on the national Severe Acute Maternal Morbidity (SAMM) enquiry.

The original article appeared in the New Zealand Sunday Star Times and was reprinted at:
https://www.stuff.co.nz/national/health/69138132/null