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Minimising Harm To Patients In Hospital

Broadcast Monday 1 October 2001
with Norman Swan

Summary:

Dr. Brent James who is the Executive Director of Intermountain Health Care in Salt Lake City, Utah, talks about ways of minimising harm to patients in hospital. His ideas have produced remarkable results.

Transcript:

Norman Swan: Hallo, and welcome to the Health Report.

Over the last few years there's been lots of publicity suggesting how dangerous our hospital system is. Research has found many thousands of preventable deaths and injuries occur each year. Alongside that there are recurring stories of mistakes being made: the wrong thing injected, the wrong operation being done, doctors being disciplined for not doing the right thing.

A few days ago, some of the world's experts on how to make hospitals and health care safer came to Australia to help work out ways of doing things better here.

A big message was that if you mainly focus on the mistakes that doctors and nurses make, you'll fail to fix 95% of the problems. And sorting out that 95% is a very difficult task, but someone needs to do it.

Like Dr Brent James for example. Brent helps to run what many consider to be one of the safest health care systems in the world. It's called Intermountain Health Care, based in Salt Lake City. What he has to say has enormous implications for the Australian hospital system.

Brent James: We have 22 hospitals across the State of Utah, high in the Rocky Mountains in the Western United States, extending up into the State of Idaho. We also run about 100 out-patient clinics.

Norman Swan: How many people would you look after in any one year?

Brent James: Utah has about 2.2-million people, and of those we'd have about 1.2-million.

Norman Swan: And what's your motivation to improve things?

Brent James: We're a charitable, not-for-profit organisation, and that means our mission is to provide health care to people regardless of their ability to pay, and we don't have enough budget to meet the health care needs. One of the most important things we found is that properly done, high quality can reduce costs. Many other institutions in the United States were withholding care to meet budget, and we weren't willing to do that. So we made a decision to deliver much smarter, better care, as opposed to withhold care.

Norman Swan: We'll come to the sorts of things you've done later, but if you compare yourself to other systems, your injury

rates versus others and the level of expenditure on health care because of that policy.

Brent James: Utah is the cheapest State in the United States of America for the cost of health care. The main reason for that is Intermountain Health Care, this system I'm describing, we focus on keeping the cost of health care low. Now the old belief that quality means spare no expense, just turned out not to be a good model. A better model is do it right the first time. It looks like that could save as much as 15% to 25% of our total cost of operations.

Norman Swan: 15% to 25%?

Brent James: Yes. It's massive potential savings. Now they're hard to get, I wouldn't want you to think this was trivial or easy, but it looks like there's a huge upside. It's as if we'd increased our budgets, so that we can deliver more services to more people, more conveniently. When we recognise the challenges we face to meet the cost pressures, we found this so much more attractive an approach, nothing else could quite match.

Norman Swan: Let's just talk about the extent of the problem: worldwide, what are the standards of health care? I mean are they truly appalling? When you hear our quality of health care study which was done a few years ago, I think 14,000 or 18,000 preventable deaths occurring due to human error, or system failure, it sounds massive.

Brent James: The injury rates are massive, there's no doubt about it. Now I need to put that in context. It's easy to prove that current health care as practiced in any good Western democracy is easily the best the world has ever seen. We get better health care and better results than any previous generation living in this world experienced. You'd be a total fool if you were ill, to avoid the health care system. That said, the health care system falls far short of its theoretic potential. For example, a few years ago I served on something in the United States called the Institute of Medicine's National Round Table on Health Care Quality. We spent three years reviewing the scientific evidence about performance of the system, and found that typically we achieved 60% of theoretic potential. A massive gap between where we are and where we should be. Our job is to close the gap.

Norman Swan: The focus, when you're talking to people like me who broadcasts or publishes in newspapers, is error. We just love error, people making mistakes, someone injecting the wrong thing into somebody or taking out the wrong kidney, this is what gets the massive headlines. But you don't focus on error, do you?

Brent James: We focus on injuries. Injuries are much more important than just error, and the reason is we've discovered from experience that physicians, researchers were very, very poor at telling upfront what an error was.

Norman Swan: What do you mean?

Brent James: Well, the single most common source of injury in American hospitals is a medication injury, an adverse drug event where for example, you react with an allergic reaction to a medication we give, or we give you too much, we overdose or we give you the wrong drug by the wrong route at the wrong rate. Those are called adverse drug events. We carefully studied those inside my home system, more particularly at LDS Hospital in Salt Lake City. We discovered that first we were not detecting them well, we were relying

upon nurses and physicians to alert us when they occurred.

Norman Swan: So it was voluntary reporting?

Brent James: Voluntary reporting. In parallel with that, we used an electronic medical record to look for treatment of injuries in just the regular flow of hospital data.

Norman Swan: So it was a passive system, which despite itself, reported automatically when the signs that this person had had an adverse drug event would be something like a change of drug or an extended hospital stay, something like that, which triggered the alert that there might be something going on?

Brent James: Exactly. For example, if we overdose you with an opiate, like morphine, it will cause your breathing to slow and stop. You'll be happy but you will die. But we have a drug that directly counteracts morphine, it's called naloxone so we put a little flag in the system that any time any physician ordered naloxone we automatically reviewed to see if this was to treat morphine overdosing, a drug event.

Norman Swan: So you could objectively compare true adverse drug events to what people were voluntarily reporting. So I'm sure we're not going to get the surprise now to hear what the findings are.

Brent James: The computer-based system detected 80 times more adverse drug events than the voluntary reporting system.

Norman Swan: Eight zero, 80 times?

Brent James: Eight zero. For example in an 18 month period, voluntary reporting produced nine confirmed moderate or severe adverse drug events, moderate means you have to treat, severe means that it was actively threatening to the patient's wellbeing and while the computer system detected 731 confirmed adverse drug events.

Norman Swan: Now is this because people were scared to admit that they'd done wrong, or what?

Brent James: Well you've hit on one of the main reasons. In the United States you can be punished fairly severely if you're on the watch and one of these events occurs. Here's the problem though, we have good data to demonstrate that humans are inherently fallible, I don't care how well trained you are, or how careful or conscientious you are, we know that you will make these kinds of mistakes, it's quite predictable.

Norman Swan: To use the title I think of one your papers: 'To err is human'.

Brent James: 'To err is human', which we produced at the Institute of Medicine again, the best physicians, the best nurses, will make mistakes. And punishing them for their mistakes does not solve the problem. To solve the problem you have to come back and make it easy to do it right, you have to fix the systems within which those people work. Well, when we knew that we have 731 as opposed to nine serious adverse drug events, we analysed the adverse drug events. For example, 28% of them, the biggest single category, were allergic reactions, or allergic reactions where we discovered the allergy by giving the drug. The patient had no prior history of allergy. Everyone agreed that that was not an error, but it was 28%.

Norman Swan: Did you call it an accident of fate?

Brent James: Yes, but it turns out they were fully preventable.

Norman Swan: Why? If you've never an allergy before?

Brent James: Well in most instances when I give a drug to a patient, I have some alternative drugs that I could give that would achieve much the same effect. We programmed the computer so that if a physician ordered a drug that had high potential for allergy, and there was a safer alternative, that the computer would alert the physician about the risk, and that reduced our adverse drug event rate associated with allergic reactions by more than 50%. Now in retrospect, it turns out that Dr James Reisen in the United Kingdom, would have called that an error of planning. He's maybe the world's leading authority on the nature of errors, and failures of systems. But you know, we didn't even recognise it as an error until we were beyond the problem, looking back, until we'd realised that they were preventable. Well that led us to conclude that we shouldn't just focus in on errors, that we should look at any source of injury.

Norman Swan: And you've also done a study which looks at the number of real errors that occurred in prescribing medications and the number of injuries, and they almost don't overlap.

Brent James: For ten consecutive years we tracked every adverse drug event and in parallel with that we tracked classic human errors. In ten years we had 4,155 confirmed human errors. In parallel with that we had 3,996 confirmed moderate or severe adverse drug events.

Norman Swan: In other words, what was actually happening to the patient him or herself?

Brent James: Injuries. Those were injuries, those 3,996. The fascinating thing was the overlap. Among 3,996 confirmed injuries, 138 or 3.5% resulted because of a human error.

Norman Swan: So in other words most of the human errors didn't result in an injury.

Brent James: Most of them were caught before they actually led to injury, or the patient suffered such a minor consequence that it wasn't classified as an injury.

Norman Swan: So this is another reason why you say Don't focus on error because you're only going to pick up 5% of the problem, focus on the actual injuries themselves.

Brent James: That's it exactly. There's this huge political temptation to go after the bad guys, those bad physicians, those bad nurses, to punish them, because an injury occurred. Huge political pressure to do that. But the way I ask it when I'm at home with my colleagues, I say 'Wait a minute, are you going to get right after that 3.5%? Are you just going to devote all of our resources to that and root out that 3.5% while ignoring the 96.5%? Any responsible person in an administrative role would focus on a large category.

Norman Swan: And apart from say, alerting doctors to drugs which have got high allergy causing potential, what are the other things going on in that circle where all these injuries are occurring?

Brent James: Well 28% were allergic or idiosyncratic reactions, 23%, so in other words a 51% total on the additional 23%, had to do with kidney function. Most drugs are eliminated from the human body through the kidneys. What people don't appreciate is during the hospitalisation, the kidney function declines gradually. Now the fact is, you can't pick it up very easily. The trouble is peak blood levels of the drug depend upon its rate of absorption and its rate of excretion from the body, so as the excretory rate drops, peak blood levels go up. And we discovered that for 23% of our ADEs that was the cause, as kidney function gradually declined, it pushed an appropriate normal dose of the drug into an overdose range.

Norman Swan: So if you alert doctors and nurses to check kidney function, you could actually reduce that rate of adverse drug reaction?

Brent James: That's right. Today at LDS Hospital the computer calculates ideal dosing for every dose of every drug that's delivered, based upon well first, kidney function. For some drugs on estimated liver function, on your age, on your gender, on your body mass, on other blood chemistries that we have available.

Norman Swan: So this is making it easier to prescribe more safely?

Brent James: The idea is make it easier to do it right. One of the things that typifies current modern Western medicine is massive complexity, hugely complex, to the point where no human being can begin to deal with all the bits and pieces. We try to create an environment where our systems manage that complexity, to make it easy for physicians and nurses to do it right. If we know the right thing to do, why would we ever leave it up to human memory or recall? We ought to just build it into the system.

Another classic example: we have good scientific evidence that for patients with congestive heart failure, ischaemic heart disease, two drugs have potentially great benefit, they're called betablockers and ACE inhibitors. A recent study in the United States suggested that the very best hospitals among patients who would clearly benefit from betablockers, less than half received them. Well we put in place a simple protocol: the evidence was overwhelming. The nurses do it, it's part of a discharge packet. They have a series of sheets they fill out on hospital discharge for each patient. One of those sheets now in our hospitals is a little check sheet, and you just check off indications for betablockers or ACE inhibitors. Well at the end of the sheet, if a patient meets indications, it automatically generates some order. Now the physician still has full over-ride control, the physician will know the patient better than any check sheet, but what we saw inside the Intermountain Health Care, is appropriate use of betablockers went from 57% to 98%, appropriate use of ACE inhibitors went from 63% to about 97%.

Norman Swan: So the patient feels better and doesn't bounce back to the hospital quite so fast?

Brent James: Exactly. I just saw the initial data; our one-year mortality rates for patients with congestive heart failure, a deadly disease, fell from 22%, to 17%. That 5-percentage point difference represented about 310 lives per year, 310 people who didn't die, who would have under that other system. While hospitalisation rate for congestive failure fell by about 55 admissions per month. Think of it as another 200 or 300 patients that potentially could come in. The lines go

down, the care goes up, what's not to like about that?

Norman Swan: The other issue about this, and it's the same sort of story as errors, is that it comes back to nasty people like me in the media, is that we just love rare events caused by humans, we love the stories about the wrong kidney being removed, the rogue surgeon, surgeons operating where they're not really capable of operating. And you question whether we've really got the priorities right.

Brent James: Let me just give you an example. I, after hearing some of those reports in the United States about wrong side surgery, you have to remember I'm a surgeon. And to say wrong side it's not just that you remove the wrong leg, it may be that you operated on the wrong patient, or you did the wrong procedure. You were supposed to remove that damaged leg and what you did instead was take out the kidney. Taking all of those together, what I can tell you is that one bad day in my home system, of adverse drug events does more damage to patients than ten full years of wrong side surgery.

Norman Swan: That's the ratio?

Brent James: Yes, roughly. Or another example, it turns out that we have about 3400 new bedsores a year, decubitus ulcers. Another big thing in the United States at the moment is physician handwriting. Now it turns out that about a third of medication orders from physicians are very hard to read because of handwriting problems, or they're incomplete. But the fact is that we have some fairly robust systems to catch and track those errors. The systems themselves are fairly expensive, they're wasteful, but it nearly never lets a problem slip through. What I can tell you is one bad week on decubitus ulcers outweighs a decade of injuries resulting from physician handwriting errors. Now if I'm a responsible leader in a health care system, where do I focus my attention? And the trouble is that the common things are so common that people accept them as part of the background.

Norman Swan: But are bedsores a bit like adverse drug events, that people don't recognise the problem?

Brent James: They literally don't in many cases.

Norman Swan: I'm not just talking about elderly people, it's just anybody here who's confined to bed for a period of time, their skin starts to break down.

Brent James: That's correct, and the early changes are fairly subtle. You use capillary filling, blood flow to the skin, which means that you're going to have skin breakdown. The initial skin breakdown is reddening, and then just erosion of the top surfaces of the skin.

Norman Swan: And the effect is disability and pain for the person, and for you, much increased cost.

Brent James: Yes, very much higher cost as we treat these things but realise too that's a primary source of infection, and if the infection goes into bone, osteomyelitis, it's a common source of amputation and death. So there's a hierarchy here, a kind of a slippery slope you start to slide down.

Norman Swan: Why aren't people aware of that problem?

Brent James: Well there seem to be a couple of things that work here. For the very common injuries, health care professionals seems to regard them as an inevitable part of

care delivery. They don't understand that they're avoidable, that if we treated people differently that it just wouldn't happen. And they say Well they're not preventable, we couldn't avoid those sorts of things. More than that they simply don't recognise them, which is fascinating. To recognise an adverse drug event requires some specialised training outside of the normal type of training that we give to physicians and nurses. Dr John Nebecker back in Utah at the Veterans' Administration Hospital, has documented that about 45% of all hospitalised patients on careful retrospective review. So reviewing charts at discharge, about 45% of patients had a significant adverse drug event. Even more important than that though, it just went unrecognised, even by a good database trigger system as I described earlier. John examined those patients who suffered severe ADEs, which means that the patient's life was at risk. Physicians and nurses recognised those less than half the time. They just didn't recognise the patient was at that significant risk, and on review, many of them argued that it really wasn't a risk, where the true experts, pharmacists and physicians who are trained in adverse drug events, clearly saw significant risk to the patient clinical team said Well this is just normal routine part of care.

Norman Swan: Looking at it with different eyes.

Brent James: Completely different eyes.

Norman Swan: So people don't recognise these common events, even when they're before them, which presumably is a major barrier because if you say Look, let's deal with bedsores, they say Well that's not my problem. It's not a big problem in my hospital.

Brent James: Well for example the average length of stay in an American hospital is about 4-1/2 days, and nurses believe that 4-1/2 days is not enough time to develop a bedsore. On the other hand, Dr Jane Wallace, a nurse actually with a doctorate in nursing, at LDS Hospital just completed a careful scientific investigation of the prevalence and the incidence of pressure sores. She discovered that 23% of all patients in LDS Hospital had pressure sores.

Norman Swan: 23%?

Brent James: 23%. Now most of those were Stage 1s and Stage 2s so a decreased capillary feeling initial start of skin breakdown, or that initial surface erosion only. I think about 25% of them were Stage 3s and 4s where you have an active ulcer, a necrotic ulcer where it's really getting to be dangerous.

Norman Swan: But nonetheless, they're starting early.

Brent James: Yes, and where you stop them is really when they're starting, that's when you really get on top of them.

Norman Swan: So what have you done about it?

Brent James: Well it turns out that we have a pretty good protocol. It requires for pressure sores that we train the nurses to first assess risk on admission. And for high risk patients you assess them every day. The second thing is that we have special bed surfaces and special management techniques that greatly reduce the incidence of new ulcers; in a carefully controlled study we were able to reduce the incidence of new ulcers by more than three-quarters. I recognised something, this isn't just better care. For massive cost savings associated with that, it's far cheaper to prevent pressure ulcers than it is

to deal with them after they've occurred. And you have some very impressive work happening in Australia right now, along very similar channels.

Norman Swan: But there are formidable barriers to actually getting change. I mean let's just through them. One is you've just said people say, 'Well you might have that Intermountain Care, but here in Sydney, or here in Melbourne, or even here in Utah, we don't have that problem, it doesn't fit because we don't see it. So you've got the perception issues. I'll just go through the issues. Another is the fear of reporting because of litigation, and even now in the civil courts there's a consultant surgeon in Wales who's up for manslaughter charges not because he took out the wrong kidney but because his registrar took out the wrong kidney. So that's another potential issue, fear and litigation. And a third issue is the hospital managers and the politicians who say That doctor injected the wrong thing into the patient, we've got to make an example of them and punish it and we've got to be able to show that our injury rates are coming down because of public pressure or the media.

Brent James: There are other problems as well as the ones that you've listed, it's hard to detect them, you need a good detection system. You need to be able to analyse those failures so you can figure out how in the world to prevent them.

Norman Swan: So give me an idea of what a good way of solving the problem is. What are you going to do?

Brent James: One of the first things you have to do is you have to prioritise. It turns out that some sources of injury are much, much more common than other sources of injury. For example, my current Big Six list, this is based upon expert opinion, so it's probably going to get changed. Top of the list is adverse drug events, drug reactions. Second is hospital acquired infections. Third is pressure sores. Fourth is something called Venous thromboembolism, or blood in the body spontaneously clots and can cause damage when it blocks blood vessels. Fifth on the list is patient falls and injuries, usually associated with the use of restraints, either physical restraints, tying a patient in a bed, or chemical restraints where you sedate them. Number six on my list is blood product transfusions, inappropriate blood product transfusions. While for those big things the first thing you need is a good tracking system to pick them up. That means that I'm going to build good database clinical trigger systems to find the injuries to begin with. I also have to have in parallel with that, a good voluntary reporting system. Some of the rare events, equipment failures for example, or a patient's suicide, or a wrong side surgery, you still want to know about them, so I need a good voluntary reporting system. One of the best things we found for those voluntary reporting systems is something we call a culture of safety, and it seems to consist of four main elements: The first, you re-emphasise to physicians and nurses their ethical commitment to their patients required by their professions. And that injury reporting is right at the top of that list, and you have to continually reinforce that concept and remind them of their ethical commitments. Second, you make it safe.

Norman Swan: You mean safe to report?

Brent James: Safe to report.

Norman Swan: How do you do that in a litigation environment?

Brent James: You put the institution between the physicians and nurses and the litigants. It's fairly easy, for I see as a big system, to take those hits, to withstand the legal attacks, as compared to an individual physician or individual nurse. It's appropriate too that we should because most of the failures are systems based.

Norman Swan: So if somebody reports an event to you, you acquire the liability?

Brent James: That is basically correct, or we agree that we will protect them. Now we have to work with the government in Utah to help with that, but we think it's an absolutely critical element. What we do is reward reporting. You're considered to be better if you're reporting more events, instead of worse. We know they're happening, the only question is, are you hiding them, or are you unable to recognise them, I guess. So higher reporting rates are good. We give people active protection if they report within 48 hours. Now if you fail to report you might be punished and you lose all of the protections, and so you shift the whole paradigm. Right, reporting's good, hiding them is bad. Dig them out, share them with us. And then we try to build in to place systems fixes. I should mention there are occasionally bad physicians and nurses. If we see active criminal behaviour, if we see patterns of negligence or malfeasance, we will react. It turns out the system is actually better for finding those physicians and nurses too, because as you drop the rates of injury, kind of the background rate, it makes the true problem physician stand out, and it turns out to be more effective than going directly after them.

Norman Swan: Because there's less noise in the system.

Brent James: Less noise in the system. It's easier to see them. And I have to tell you that was startling when we first encountered that. We knew we needed to go after the 95% of the system's failures but as we started to take down those rates we also knew that there were some bad physicians, it was just hard to find them, and suddenly, there they were, and we were able to take appropriate action.

Norman Swan: So remove the culture of blame, sort out the legal liability problems, without ignoring the fact that there will be the odd rogue doctor or rogue nurse who needs to be sorted out. What we should be seeing here, we haven't really emphasised it up till now, is that most of the problems that occur when injuries occur, are system problems, the hospital, the management, the organisation of the hospital, rather than an individual going wrong?

Brent James: Exactly. We know that the individuals will have problems. How do we create an environment in which it's easier to do it right, and hard to fail? That's the real issue. It's an institutional responsibility not an individual responsibility. The next thing that we need is an organisational structure. In the United States we're calling them Patient Safety Officers, and in the Institute of Medicine Report we asked that all care delivery groups appoint Patient Safety Officer, usually from existing personnel, usually a good clinician. It's their job at the front line to make sure that the fixes are put in place to help measure, to make sure that it's happening consistently, to deal with the front line issues of making safety work, but they have another critical role: they come together regularly, they look at the many injuries that have occurred, and then among those they identify common patterns. They research and discover systems fixes and then implement them. Dr Paul Barach at the University of Chicago, Paul tracks three potential responses in an organisation to an injury or an error.

The first he calls pathologic; (kill the messenger, punish the physician) the second he calls bureaucratic, write a rule. For example, in American hospitals we're required to maintain rules about nursing care, they're called Nursing Procedure Manuals. The typical one at one of our hospitals would have 1200 nursing policies in it.

Norman Swan: So impossible to implement.

Brent James: Absolutely impossible to implement. Well the second role of a Patient Safety Officer working as a group is to identify high priority areas, a relatively short list of the big sources of injury, and get them in place.

The idea that every time there's an injury we write a rule, that just makes the world so hopelessly complex, it would probably increase injury rates. And of course the third response that Paul talks about is our learning system. Learning systems look for general patterns, through which you can change systems and take down injury rates.

Norman Swan: So the system learns from its mistakes?

Brent James: The system learns from its mistakes. This is probably a task that we'll be facing forever, and will root out the big ones, health care will become much more safe. If you start to put your organisational structure in place, make the assignments, identify the high priority areas, and then you build it right into the infrastructure, so it's easy to do it right rather than do it wrong.

Norman Swan: Now you've come to Australia on several occasions. Is anyone in Australia coming close to what you're doing in Utah?

Brent James: Well the reason that I'm coming to Australia is because of the amount of effort that Australian physicians, nurses, administrators, are putting into this whole field, that's what makes it exciting and worthwhile to come.

Norman Swan: One of the issues, just to finish, in the Australian context, is that hospitals have a plaque on the wall, you know, We're accredited by the Australian Council on Health Care Standards, but my understanding is that's no guarantee of quality.

Brent James: Yes, accreditation is not a guarantee of high quality. The way to think about it is that accreditation establishes a minimum threshold, basement level. But they're never a measurement of excellence, there's a minimum standard. American hospitals have a tendency to say Well we're good enough. On the other hand, you find other hospitals that are much, much better. I think your standard has to be Are we the best we can be?

Norman Swan: How do you know that as a consumer? How do you know when your choice is to go into a variety of hospitals in your area either public or private, which ones to go into, knowing that that plaque on the wall actually means very little?

Brent James: It's very hard to tell which hospitals are best. One hospital may be very good for example at bypass grafts, but quite poor at congestive heart failure, so it's not an even best of class for a single facility. Maybe the best way to figure it out is to have a good physician or nurse who can help you through the system. It's their job to keep track of who's good and who's bad, and if you get a good physician, a good nurse that you really trust, that may be one of the key elements at

the present moment. Good data systems are on the threshold, but we don't have them yet.

Norman Swan: And there are things happening here, but it is patchy at the moment. Dr Brent James is Head of Medical Research at Intermountain Health Care in Salt Lake City.

I'm Norman Swan. Next week: exploding some myths about treating heroin addiction, and you'll meet the mother of methadone.

Reference:

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