

## 2004 Chief Health Officer Seminar Series

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#### **Abstract:**

#### ***Use of Portable Digital Technology to Enhance Professionalism and Quality and Safety Training in Medical Students***

The percentage of hospitalised patients suffering an adverse incident during admission is not declining. Major inquiries into publicised revelations of substandard healthcare performance continue to find one of the major contributing factors is an institutional and professional culture opposed to self-reporting and open disclosure. The costs of this continuing poor safety record safety record run to billions of dollars in most developed societies. The current quality and safety paradigm focuses on promoting adverse or sentinel incident reporting to institutional committees seeking to discover contributory causes and implement corrective strategies. Major problems, however, continue to include a poor individual reporting rate for adverse events in health care and lack of uniform clinician involvement in the related processes.

The model discussed here for use in ANU medical Students initially involves secure electronic transmission of encrypted data from the PDA to a secure database leads to automated and then supervisor analysis of the performance data. The programmed PDA will also facilitate the reporting of critical incidents in the practice of the clinician at the place and time that the incident occurs. This has led to a documented 98% incident reporting rate in ANZCA trainees with Assoc Prof S Bolsin at Geelong Hospital. Furthermore Assoc Prof Bolsin's registrars have reported incidents when 'minor' or 'no' patient harm has occurred. This is "near miss" data, which has been the 'holy grail' of health care safety experts. All critical incidents are automatically and electronically fed back by e-mail to the departmental morbidity and mortality coordinators. The presentation presents a strategy for modifying this approach for use with medical students at ANU.

#### **Transcript:**

The purpose of this talk is to give you a brief understanding of what is possible in relation to portable digital technologies, or PDAs, and where we're at in relation to actually trying to implement these things in terms of getting quality and safety data.

It's also about how the ACT, both Canberra Hospital in conjunction with the Australian National University and the Medical School, could actually very easily position itself at the forefront of what could well be a revolution in how we look at health care quality and safety.

The place to start I guess is the work that Associate Professor Steve Bolsin's been doing down in Geelong. Now Steve, as many of you know, was the whistle-blower at Bristol, though he's now moved on from that experience. He came back to Geelong for reasons that many of you will

realise related to what was going on in the United Kingdom and decided, well, there has to be a better model. There had to be a way of making sure that these sorts of mistakes don't happen. So, as a result of a trial experiment, he came up with a system of using personal digital technology, primarily in his anaesthetic trainees, because he's an associate professor of peri-operative care.

He trained his anaesthetic registrars and essentially his model was to program into PDAs a series of clinical competencies and also adverse incident reporting elements that he would then encourage his trainees to use.

For example, he devised a series of categories to report critical incidents in senior anaesthetic trainees in relation to: airway, cardio-vascular problems, respiratory, central nervous system, equipment, pharmacological, regional, procedural and temperature issues.

Subcategories were: accidental extubation, dental damage, difficult intubation, endo-bronchial intubation, failed intubation, non-ventilation, obstruction, vomit or spasm, suffering intubation, trauma and so forth.

Some of the other categories involved: awareness, strokes, delayed emergence, hiccups, seizure and so forth. You're starting to get a feeling for what he did.

The sub-categories for pharmacological incident reporting were: allergic phenomena, inappropriate drug interaction, overdose, side effects, wrong drug or sub-optimal assistance, respiratory, aspiration, bronchus spasm, desaturation, uno-thorax, cardio-vascular, anaemia, cardiac arrest, disribnia and so forth.

What I'm trying to do is categorise the sort of adverse incidents that will actually come up under each symptom.

Steve Bolsin then devised a method where the trainees would enter in data related to their performance of particular tasks such as intubation or putting in various other mainly procedural competencies at this stage.

The data would then be encrypted and sent to a secure database. It's not very easy to get these because you're really after (I would have said military level security, but I don't know whether that's really the highest standard) the highest standard of encryption. Some of this data will relate to particular patients so you need to make sure that it's safe.

Once you've got the data you can feed it back to the supervisors of those trainees and produce graphs.

Steve published an article about some of the uses that can be obtained from this particular data and some of you might find it quite interesting.

It was published in *Quality and Safety Health Care*, 2003, Volume 12, page 295. He produced a graph showing what the student trainee's success rate had been, such as a particular trainee had done 46 catheter exertions with no failures and no complications.

This was actually used very successfully to defeat a claim that the trainee was negligent in a particular instance because they were able to show the graph and show successfully that this was quite a brilliant performance with this particular trainee.

I guess the point that I'm trying to get across with this is that we all sit back from the current crisis and think to ourselves 'well what's the gold standard of data that we want?'

The gold standard that we really want is every single item of data related to the performance of a particular task in relation to a patient. How do we get that, in this age? We must start using technology and the obvious point at which we use the technology is at the bedside.

There we are actually doing the procedures or talking to the patients and I think what Steve is getting across now is that it's possible to do this. I guess the point of today's talk is to say 'well, where does this process of education of our trainees have to start?' I suggest it has to start in medical school.

If our trainees come out of medical school not accustomed to using PDAs in this sort of way, if they're not used to correlating their own performance data or reporting adverse incidents in their own performance in the medical school, it's going to be a bit of a culture shock if they are suddenly asked to do this on the wards.

And because you're initiating a cultural change as to how you get this sort of data, the obvious place to start is in the medical school. So one of the processes that we're trying to set up to promote the idea is by encouraging meetings such as this.

One of the projects that we're trying to get involved with in the ACT is to get together various people who might be interested in trying to facilitate a program involving medical students using this kind of data recording. It could then flow through gradually to other sort of specialties - it could flow through to surgical trainees, it could flow through to medical trainees and various other sort of trainees once you've got the thing started. We think a logical place to start is with the medical students.

Now one of the problems that you're going to face, obviously, is that there will be different competencies involved with looking at medical students as distinct from senior anaesthetic trainees.

Steve's program at the moment is heavily involved with the sort of clinical competencies that advance the anaesthetic registrar's views.

When you're thinking about medical students, the sort of competencies that would be fascinating to develop would be wider concepts of professionalism - things that pick up some of the unique advocacies we're trying to develop with the training of medical students in the ACT. It could be cultural competence and our emphasis on human rights, for example.

It's not going to be easy to figure out what sort of core competencies we're going to start programming in and how you get that data back. It's not quite the same as being able to say 'yes I got the intubation' and tick yes/no.

That's the sort of task you can say you did or didn't get, something with central lines, whether you pranged a major vessel when you were trying to get it in or whether you got it in, is reasonably easy to say.

As to whether or not you actually respected a patient's cultural background, maybe the patient's spiritual values, whether you make the patient feel comfortable when you're talking to them, these are things that are a bit more problematic to get data about. And yet it is possible to do so.

One of the strategies that we're thinking of using is to get feedback from the patient or the relatives at time you have the interaction and then locking that in to your database. For example, at the moment one of the difficult things to get data about is the informed consent process and yet it's supposed to take place with every major procedure.

One thing we could train our trainees to do is simply enter information about what they've communicated in terms of risk and then, at the same time, lock in responses from the patient as to whether they understood that, whether they had any other concerns and how they felt about the way the doctor interacted.

That could be done by simply showing them the pilot and getting them to enter the data without the doctor seeing it. Or, the doctor could see it.

I guess there are various other problems that could be associated with that process. But the response could be locked in and then a supervisor could see data accumulating, not just on what the trainee says to them in the interview at the end of the term, but actually what's been happening with each patient that trainee has seen.

One of the big needs that this may help us with down the track here in the ACT is that we have a lot of doctors training in the ACT on area of needs basis.

This is a valuable resource for us, but it's also a heavy commitment in terms of training and time by our senior clinicians to get these people up to what's required, what's considered to be an adequate standard of care in Australian medical society.

One of the advantages of having this sort of program in place is that supervisors, instead of sitting down and trying to figure out, 'what has this person been doing on the wards at night when I haven't been there?' can actually look and have data shown to them, proving what the person's been doing.

There are obvious advantages in doing this with medication errors, for example, in prescribing drugs, and this is where it has already started to take off in the United States.

Do proceed down this track? The plan at the moment is to have a workshop about this idea towards the end of the year. Then we could get together those in the ACT Quality and Safety community and the clinicians and the medical school – indeed, all those interested in developing a project like this, and see just what sort of nuts and bolts are required to get this thing off the ground.

It's not going to be easy because there are a lot of different stakeholders involved and presumably there would be a lot of different views about what sort of competencies we could devise. Certainly it's something that's feasible.

Steve Bolsin's got something that has been shown to work in his particular group of trainees. He's got a commercial partner with whom he's been developing the software. It would just be a question of us working out what type of modifications we need to meet our particular students.

As I said, the advantages of this are that it links up with the audit system in the sense that you've now got almost day by day data to factor into it, so you're going to have a much more effective audit system.

It's something that gives you great advantages in producing report cards on your clinicians, on your interns and on your trainees at various levels. It allows the public to have a much greater degree of confidence in the safety of the health care system.

However, there are problems to be faced in trying to develop this type of system.

It hasn't been easy, I've tried to do a literature search to find where PDAs have been used with medical students in the past and the only article I've been able to come up with is one in Medical Education, 2004, volume 38, page 628.

This was a study done at the University of Hong Kong involving Palm pilots with their medical students. They appeared to use what they called clinical decision support software that seemed to be, as far as I can understand from reading the paper, a form of evidence-based medicine.

They had evidence-based medicine algorithms and as the medical students stood at the bedside trying to work out what the diagnosis was, or what the treatment should be, they factored in whatever was going on to their Palm pilot and brought out these EBM paradigms.

This is not quite what we're proposing here. We're actually proposing lists of various adverse events that they're going to report and, in particular, intervention. The near miss adverse events - the sort of things where something hasn't really gone wrong, but could have gone wrong - they are the 'holy grail' of quality and safety data.

So it's slightly different from this study. But one of the things that they did find in the Hong Kong study was that projects such as this are only going to be successful if the actual clinicians who are supervising it are actually motivated and find this sort of technology useful.

In a situation where you've got a supervisor who rubbishes EDM or says 'don't listen to all that stuff, just listen to me, I've got the clinical wisdom', the whole system falls apart.

So that's the first problem. Not all clinicians involved in medical student training will either be conversant with or support the use of PDAs but I think that's not a huge obstacle, it's just a fact of life.

I guess that may mean modifications in terms of steering the use of these things towards rotations where a particular person in charge has a good understanding of what we're trying to do and supports it.

As I mentioned earlier, another major problem with this sort of study would be that of confidentiality and privacy of patient data, and that's a serious issue that needs to be given due weight.

Obviously with these sorts of competencies we're not necessarily looking at acquiring information about particular patients. The main focus is on what's actually happening to the doctor at the bedside. We're acquiring information primarily about the doctor or the trainee or the medical student, we're not primarily acquiring information about the patient. But there could be issues about that.

That's why at the moment the way Steve's working in Geelong is to do quick data very carefully, both from the point where it's sent to the central storage bank and sent back. So there are ways round it, but obviously this is something we need to discuss.

However, there is one major difficulty with all this. Although this sort of data can be used very well to protect trainees and clinicians from allegations that they were negligent or slipped below the standard of care, in the wrong hands and used by the wrong type of supervisor, it could be used to victimise trainees. Instead of encouraging a clinical performance by addressing deficiencies and then encouraging remedial steps to be taken it could be used to say 'well, look at your terrible graph - get out of here'.

In a sense that's the human factor and that's the conscience factor. This is something where our conscience needs to be factored in. We have to feel that the reason we're doing this is because we're all involved in an exercise where we're trying to make health care safe for patients and we're trying to take young doctors who are well motivated towards doing good for mankind and make them better.

If we have that sort of focus where we can help people by this sort of process, and that's communicated well to all the people who are involved, then we should be able to overcome that particular problem.

What I've tried to outline for you today is a new way of going about acquiring information for health care quality and safety.

I've given you some idea of how it's already been successfully used by a clinician in Australia and I've tried to indicate some of the advantages and disadvantages of using it.

I hope I have also communicated some of the enthusiasm I have for what may happen to us in the ACT if we're able to take the lead in moving ahead with something that's really at the forefront of quality and safety world wide.