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Assessing Patient Safety In Manitoba Hospitals

MANITOBA CENTRE FOR HEALTH POLICY

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based on the report:
*Application of Patient
Safety Indicators in
Manitoba: A First Look*
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It's been estimated that in the US, from 48,000 to almost 100,000 patients die each year in hospital due to medical error. This sobering finding was released in 2000. Since then, patient safety has come under increased scrutiny. Today, some studies estimate that an "adverse event" (not necessarily fatal) occurs in 5% to almost 20% of hospitalizations in North America.

Understandably, numbers like these cause alarms to go off. Here in Manitoba, a lot of people wondered what the patient safety record is in our hospitals.

Happily, the frequency of adverse events in Manitoba is quite low. That doesn't mean there's nothing to be concerned about. Any adverse event is not a good one. And depending on the illness, some Manitoba hospitals have better safety records than others.

That being said, it is almost impossible to eliminate all adverse events. Some are unavoidable, such as when a patient has an allergic reaction to a new antibiotic. On the other hand, there are avoidable adverse events, like giving an antibiotic to a patient known to be allergic to it.

We also hasten to point out that adverse events are not always due to medical error. And this report is not about finger-pointing. MCHP was asked by Manitoba Health to assess Manitoba's in-hospital patient safety. This is a preliminary look at adverse events: Can we measure them? How often do they happen? Which are the most common?

Step one was to develop a set of useable, locally relevant indicators (measures) covering medical, obstetric and

surgical patients. And since patient safety has been looked at elsewhere, we wondered what types of indicators had been used and whether they would be applicable to the Manitoba situation.

Measuring Patient Safety

Our study uses administrative data—the most cost-effective means of measuring patient safety. Other research using such data has focussed on specific types of events, such as stroke-related fatalities. But the Agency for Healthcare Research and Quality (US) has developed a wide set of indicators of patient safety. They cover a number of conditions and possible related adverse events—such as blood clot, hemorrhage, accidental puncture or cut. They allow for comparisons between regions, hospitals, sexes and age groups.

We borrowed 10 of those indicators. Because they were developed for US hospitals, some modifications were needed. After some fine-tuning, we had a set of indicators that had been tested elsewhere, that we felt would work in Manitoba.

In deciding which indicators would most accurately reflect what's going on here, we had the assistance of a working group—a cross-section of health professionals, practicing clinicians, Manitoba Health, and the Winnipeg Regional Health Authority.

Our study looks at five years of data, from April 1, 1999 to March 31, 2004. We look mostly at events related to surgery, because previous studies show these events to be the most commonly reported.



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An important feature of the patient safety indicators is that they don't look at all patients. Rather, what they do is ask, For what kind of treatment or procedure does a particular complication seem unlikely and/or preventable?

Take, for example, a collapsed lung; patients having lung surgery are the most likely candidates for this, so they are excluded. On the other hand, for patients having, say, knee surgery, a lung collapse is highly unlikely, so they are included.

Again, the goal of this report is not to point fingers. In fact, because our indicators are in the development stage, results are presented anonymously. So while rates may be given for hospital types (teaching, community, rural), no hospital is named.

In a sense, this is a "test drive." Can these indicators be used as screening tools; tools that can be used to identify practices that may increase the risk to patients of adverse events?

The ten indicators we used are:

- ❑ Death in medical cases with typically low death rates
- ❑ Death in surgical cases with typically low death rates
- ❑ Collapsed lung
- ❑ Bleeding after surgery
- ❑ Post-op blood clot
- ❑ Stitches letting go (wound opening) after abdominal or pelvic surgery
- ❑ Accidental puncture or laceration during surgery
- ❑ Birth injury to the baby
- ❑ Birth injury to mother (vaginal deliveries without instruments)
- ❑ Birth injury to mother (vaginal deliveries with instruments)

Perspectives

This study considers patient safety mainly from the point of view of the event—like a blood clot—with all surgeries combined. For a change in perspective, we wanted to look at one procedure in particular, and some common safety issues associated with it. Our working group suggested gall bladder removal—a high number of these surgeries are performed

each year in hospitals across Manitoba—and two common related safety concerns: post-op bleeding and accidental puncture/laceration.

As part of this gall bladder perspective, we've included bile duct repair (biliary surgery), which must be done if the duct gets nicked. It's important to note that when the surgery is done to repair accidental damage, we assign it to the hospital that performed the gall bladder removal.

Because some hospitals typically treat the more serious and complicated cases, our results are presented by hospital type, and from most to least complex: the teaching hospitals, the community hospitals, and for gall bladder only, the many major and intermediate rural hospitals. Comparisons are also made between hospitals of the same type, and to add some perspective, contrasted with US rates.

We should also point out that while data can tell us a lot, it can't tell us everything. So when a hospital appears to have a higher than average rate of, say, post-op blood clots, we can't know for sure why. Many factors outside of treatment can play a part. The point is, it doesn't necessarily mean the hospital is doing something wrong.

1. Patient Safety Indicators & Rates per 100 Included Patients: April 1, 1999 to March 31, 2004			
PSI	Patients	Events	%
Death in medical cases with low death rate	41,584	455	1.17
Death in surgical cases with low death rate	50,063	140	.38
Collapsed lung	211,708	216	.10
Bleeding after surgery	104,531	258	.26
Blood clot after surgery	113,483	778	.74
Wound opening after pelvic or abdominal surgery	28,231	109	.46
Accidental puncture or laceration after surgery	113,737	1,538	1.36
Birth injury to baby	52,556	126	.24
Birth injury to mother (vaginal delivery without instruments)	38,410	1,153	3.00
Birth injury to mother (vaginal delivery with instruments)	3,442	735	21.34

Good and not so good

Overall, rates of adverse events in Manitoba hospitals are very low (Fig. 1). The one exception that seems to jump out is the 21.34% rate of injury to mother during instrument-assisted delivery. Some of you are probably wondering why that number is so high. Is that something to worry about?

The answer is no. When we look at all live births, the rate of even the slightest injury to the baby is around 1%, which is comparable to rates elsewhere. The reason the rate is so high for instrument-assisted birth is that when instruments are used, it means the birth has become more complicated; the instruments are used to prevent further harm to the baby. But this rate is lower than those reported in US hospitals, and close to or lower than rates for other Canadian hospitals.

With the aforementioned aside, rates range from 0.10% to 2.96%—a very respectable safety record for these measures. Some of the rates are lower than US rates, some higher.

Hospital to hospital, the news is good and not so good. At both teaching

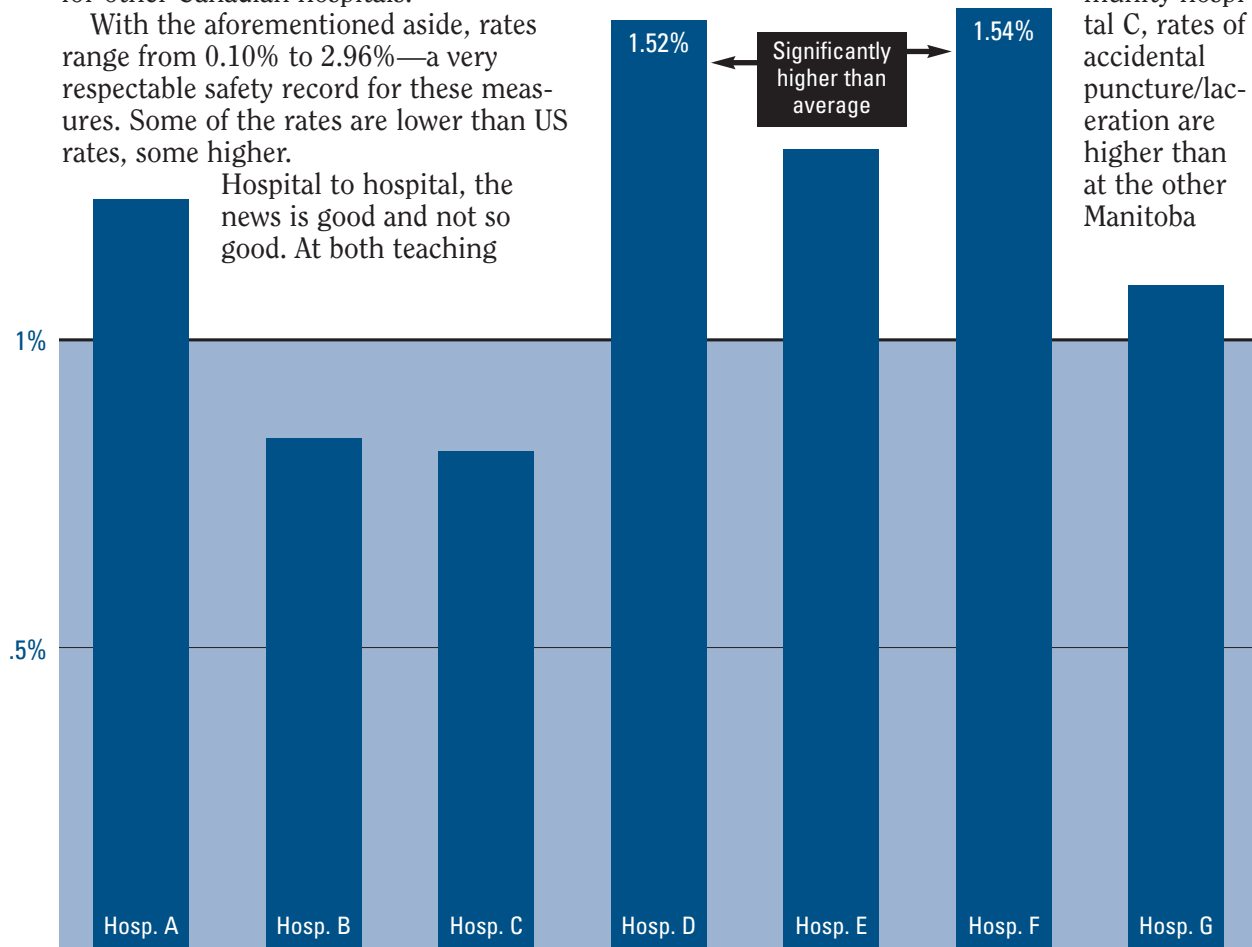
hospitals, rates of post-op blood clotting, birth injury to the baby, and birth injury to mother (with or without instruments) are lower than US rates.

Of greater concern, of course, are the higher rates. At both hospitals, rates of post-op bleeding and wound opening are higher than rates in US teaching hospitals. At hospital A, the rate of lung collapse is also higher.

The story is much the same for community hospitals. Some rates are lower than in US community hospitals—namely birth injury to the baby and birth injury to mother, with or without instruments.

On the other hand, some rates are higher: collapsed lung at hospital E, post-op bleeding and wound opening at hospital C.

Also of note, at teaching hospital A and community hospital C, rates of accidental puncture/laceration are higher than at the other Manitoba



2. Manitoba Hospital Death Rates for Low-Mortality (around 1%) Medical Conditions: April 1, 1999 to March 31, 2004

hospitals. (Comparisons to US rates were not possible for this indicator.)

Now before anyone presses the panic button over these higher rates, several factors need to be mentioned. Patient-related factors like case-complexity (say, brain surgery vs. tonsillectomy), and patient characteristics like older age, higher level of sickness, or having concurrent illnesses can influence rates. So too, can socioeconomic background (the poorer you are, the sicker you are likely to be). In hospitals that treat a lot of these patients, one might expect a higher rate of adverse events.

And for the most part, we see that relationship in Manitoba. Hospitals with the highest rates of surgical and post-op adverse events also tend to have the highest case complexity and the sickest patients.

But there are exceptions. For procedures where the death rate is normally low at around 1%, two community hospitals (D and F) have rates well above that (Fig. 2). Yet the age and illness level of their patients is similar to the other community hospitals. At community hospital C, adverse events for some procedures are similar to those at the teaching hospitals, despite it having lower case complexity and lower patient illness levels.

To say the least, these rates are troubling; a closer look is needed. And with Patient Safety Indicators, at least we know where to point the magnifying glass.

In fairness, we should also mention that these discrepancies could be related to coding practices (the way hospitals record what happens to patients), which can vary from one hospital to another. For example, in some hospitals, perhaps a very small nick that doesn't harm the patient is not reported, whereas in other hospitals all nicks are reported, no matter how small.

Does this partially explain the higher rates we see at some hospitals? Maybe. We can't say for sure. What we can say is that hospital coding practices across Manitoba need to be evaluated and standardized—a realistic first step toward assessing and improving patient safety.

Some final points

In our glimpse at gall bladder removal and subsequent bile duct repair we found the opposite of what one might expect. We looked at hospitals at which fewer than 500 gall bladder removals were performed during the study period, then compared them to hospitals that performed between 500 and 999 procedures, and to those that performed 1,000 or more.

At the under 500 hospitals, the rate of bile duct repair was 0.50%; for the 500 – 999 hospitals, the rate was 0.25%, and for the 1,000 plus hospitals, the rate was 0.13%—the lowest of all. So it appears that the chances of injury go *down* when the number of procedures goes *up*. Practice makes perfect? Again, we can't say for sure; there's only so much the data can tell us.

Our study also highlights what may at first seem obvious: risk of death increases when adverse events occur. But it isn't that simple. While we do know that the death rate is higher among patients who experience an adverse event, we can't tell if the event caused death.

That being said, we looked at the relative risk of death for five patient safety indicators. It ranges from 3.0 times greater following accidental puncture/laceration to 7.9 times greater following post-op blood clot. Overall though, the number of deaths is low.

In the end, what do we know that we didn't before? Well, we know it is possible to measure patient safety and target possible compromises. However, since this is an initial trial in Manitoba, our safety indicators are a work in progress; further testing is needed. Yet, given their apparent usefulness, we encourage health care decision-makers at all levels to support their use, fine-tuning, and the development of more indicators across all areas of patient care.

We also know that, overall, Manitoba's patient safety record is pretty good. Still, it can always get better. Our indicators have highlighted some possible areas of concern. True, they could boil down to no more than a difference in documenting, but it's certainly worth a closer look. After all, sometimes an alarm is false. But sometimes there's a fire.

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