

Medical error in rural practice

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The issue of error in medicine has attracted worldwide attention in the past few years. Initiatives to define the nature and full extent of the problem have failed, thus far, to address the issues particular to rural medicine. This article provides an overview of what is known about medical error in this setting and suggests strategies by which the rural medical community can approach this important subject.

La question des erreurs en médecine attire l'attention dans le monde entier depuis quelques années. Les initiatives visant à cerner la nature et l'ampleur du problème n'ont pas jusqu'ici abordé les enjeux particuliers à la médecine rurale. Cet article présente un aperçu de ce que l'on sait sur l'erreur médicale dans ce contexte et propose des stratégies qui permettraient aux milieux de la médecine rurale d'aborder cette question importante.

Introduction

In November 1999, the Institute of Medicine of the National Academies published a report¹ *To Err is Human: Building a Safer Health Care System* that suggested that up to 98 000 fatalities a year in the United States may occur as a result of medical error. (This is equivalent to a 747 aircraft crashing every 3 days.) There was significant public reaction, and the report attracted both congressional and presidential attention. A number of publications devoted to the topic followed,

including the entire Mar. 8, 2000, issue of BMJ and Academic Emergency Medicine's November 2000 issue. Canadian interest has been demonstrated with several articles in Canadian publications²⁻⁵ and medical error symposia held in Halifax in August 2001 and October 2002. These symposia focused on clinical error in frontline practice and were two of the first to be driven exclusively by clinicians. Landmark studies in the US^{6,7} and Australia⁸ and a preliminary study in the UK⁹ have all unearthed evidence of a significant incidence of preventable adverse events in health care systems. A similar study will commence shortly in Canada. An important question yet to be addressed is: "Where does rural medicine fit in all of this?"

The landmark studies⁶⁻⁸ were all performed using retrospective audits of hospital charts. Hospitals with less than 3000 admissions per year and psychiatric hospitals were excluded, essentially eliminating non-urban centres from consideration. In estimating the incidence of error in the US, the Institute of Medicine totally excluded error in outpatients from their analyses, acknowledging that "very little is known about the extent of adverse events in ambulatory care."¹ Error in family practice and in emergency medicine, the 2 disciplines where the majority of doctor-patient encounters occur, was also excluded from consideration in the major studies.

Indicators of the quality of preventive or primary medical care popular in the US, such as regional admission rates for chronic diseases, may not be transferable to the rural arena, where reasons for admission frequently differ strongly from those in urban areas.¹⁰

Nature of rural medicine puts it at higher risk for error

Canadian rural physicians manage the vast majority of their patients without specialist support. Studies of rural emergency departments showed that over 97% of patients are managed without transfer to referral centres.¹¹⁻¹³ There are few comparative studies¹⁴ and although, for example, rural death rates for trauma are double those experienced in an urban environment, it is believed that rural physicians provide a standard of service comparable to that delivered in the cities.¹⁴⁻¹⁶ The paradigm of practice, however, differs significantly. Rural practitioners work in potentially error-prone environments, and clearly these settings have features qualitatively and quantitatively different from those of their urban counterparts ([Table 1](#)).

Continuing medical education opportunities are frequently limited by time and

distance. Specialist, and particularly subspecialist, backup is often sparse. The scope of a rural practitioner's duties is generally broader when compared with urban practice and is associated with a correspondingly higher risk. The relative isolation in which many rural physicians practise often means less opportunity to benchmark their practice against that of their peers, and the constructiveness of feedback from peers or consultants may be diminished by the closer personal and working relationships that develop between colleagues who work interdependently. Urban consultants, to whom rural patients may be referred, are often unfamiliar with the realities of rural living and medical practice, and their advice may not be appropriate in the rural setting. Decreased accessibility for rural doctors to technological and diagnostic support may create inertia against pursuing accepted practices in patient workups and may lead to more emphasis on clinical judgement than might occur in an urban setting. Reason¹⁷ has termed this "flesh and blood" decision-making, reflecting a greater reliance on clinical acumen in the face of less accessible technological support. An Australian study found that the association between lack of access to resources and incidents of error involving fatalities was particular to rural settings.¹⁸

Personal characteristics and expectations of rural patients often appear to differ from urban ones.¹⁴ Personal and anecdotal experience suggests that rural patients are frequently more stoical and their expectations are less rigid, which may mean that poor outcomes are accepted with more tolerance. Patients who live in economically disadvantaged and remote communities sometimes suffer from a lowered sense of self-worth; this can also affect their expectations. These factors may erode patient perception of what constitutes an adequate outcome.

Rural practitioners often have a higher status in the community than do physicians who practise in cities, and their isolation from the greater medical community tends to place them more under the scrutiny of their patients than their peers. This may lead to an increased use of defence mechanisms (denial, projection, blaming) in an effort to minimize personal stress, and to maintain the confidence necessary to practise in a relatively unsupported environment. While their increased familiarity with their patients carries advantages it may, nevertheless, compromise clinical decision-making in subtle ways.

The nature and extent of error in rural practice

Very little work has been done in the field of error in rural practice. Ely and colleagues¹⁹ conducted a survey of 70 physicians who practised in "rural areas and small cities" in the US to ascertain their perception of their most memorable error.

Interestingly, 10% declined to participate because they could not remember any error they had made, perhaps demonstrating the extent of denial amongst rural physicians. The 53 physicians who did complete the survey were asked to identify the contribution(s) to their error from a list of causes, divided into 4 categories. Physician stressors were identified as contributing factors by 91% of physicians, most commonly, haste, distraction and time of visit. Process of care factors, such as being too focused on one diagnosis, or not managing the case aggressively enough, were identified by 91% of physicians. Patient-related factors, such as normal blood tests or patient influence, were identified by 72%, and physician characteristics, such as ignorance of the medical aspects of the case or the physician reaching beyond his or her capabilities, by 62%. These findings yield only a preliminary picture of the demographics of error in rural practice. Nevertheless, awareness of, and insight into, when these processes are operating may help physicians modify their practice in order to minimize the risk of error.

There are limited data on how rural physicians are responding to an atmosphere in which the discovery of error is feared. Summerton surveyed 300 general practitioners in the UK, of which half practised in non-urban areas.²⁰ Although he did not compare changes in practice between rural and urban physicians, he did find that 98% of respondents claimed to have changed their practice as a result of the possibility of a patient complaining or of being sued. Over 50% "sometimes" and 30% "often" worried about being sued. Although changes were often felt to be positive in that they potentially improved the standard of care offered, negative changes, which entailed unnecessary interventions to patients and increased costs to the system, occurred more frequently.

In spite of the neglect of rural medicine in the literature, several assumptions can be made with reasonable comfort. It is likely that a significant source of error in rural medicine is missed or delayed diagnoses. The benchmark studies identified 3 areas in particular where such errors arise: family practice, emergency medicine and internal medicine.^{6,8} All 3 operate with different paradigms but all share the common feature of an increased uncertainty about diagnosis and, therefore, an increased reliance on clinical judgement that might not exist in other settings (e.g., orthopedics, general surgery, obstetrics/gynecology, oncology). In these specialties, the clinical diagnosis is usually better defined and the errors more closely associated with procedural problems than with diagnostic ones. Such data as there are in family practice clearly indicate that the majority of errors resulting in litigation arise from within the diagnostic process,²¹ and it is well accepted that these diagnostic errors largely derive from predictable cognitive errors.²²⁻²⁴ Given the intrinsic features of rural medicine described above, such cognitive errors

would be expected to be even more prevalent in the rural setting. The important point is that while cognitive errors are often associated with the most devastating outcomes, they are at the same time highly preventable. This is an area where significant gains can be made. Greater insights must be developed into the sources of cognitive error and efforts made to find the optimal strategies to prevent them.²³ The process should rightly start with medical undergraduate education²⁵ and with special training offered for those planning a career in rural medicine.

Another assumption that can be drawn from the literature is that rural physicians frequently suffer significantly as a result of recognizing their errors.^{17,26,27} Physicians are poorly trained in dealing with error, both at a personal level and in how they communicate the error to patients. One author²⁸ has stated that physicians are actually taught not to deal with our errors! In many cases, the defence mechanisms mentioned above are subconsciously perceived as the most efficient way of coping with the realization that someone is suffering as a result of our error. The only "positive" aspect of error — that it may serve to teach us how to avoid its repetition — is lost forever, and nagging doubts about our competency may linger for years.

Although there is a paucity of information on both the extent and cost of medical error to patients in rural practice, the starting points must be that all human behaviour is fallible and that error is inevitable. Identifying risks of error in rural practice is, therefore, an important goal and will lead to its minimization or avoidance. The medical error movement is gathering momentum, and it is likely that we will be exposed to an increasing number of strategies that have been designed to avoid error but have been developed in a non-rural environment. These may not always be appropriate, therefore, for rural practice. Rural physicians need to be active in examining the issue of error in their own practices.

What can be done?

Rural physicians need a forum at which accumulated knowledge on error in rural practice can be communicated and discussed with peers. A Web-based reporting system should be initiated, similar to that proposed for emergency medicine.² It might review cases or scenarios in which confidentiality is maintained and the physician is protected against discovery. These might reveal patterns of error that rural physicians could use to design standards and strategies for risk control that are most appropriate to rural practice and against which rural physicians might be fairly judged. Errors occurring in Canadian rural practice identified by the reporting system should be published regularly in this format. The forum should be open,

non-judgemental and forward-thinking. A reference statement similar to that proposed by the Royal Australian College of General Practitioners should outline the philosophy of dealing with error committed by rural physicians.²⁹

In order to close the decision-support gaps that currently exist between urban and rural practice, a number of initiatives will be required, such as the following:

- recognition that decreased accessibility to technological and diagnostic support may lead to more emphasis on clinical judgement than current medical standards of care dictate;
- improved communication from urban centres to the periphery¹⁶ to ensure a more efficient dissemination of evidence-based, decision support systems (clinical pathways, algorithms, other cognitive aids);
- standardized formats to guide ongoing care in patients referred home from urban treatment centres;³⁰ and
- greater use of telemedicine and more widespread availability of point-of-care testing.

Rural hospitals can effectively tailor risk management strategies developed for larger urban institutions. Introducing several different methods to identify adverse events that occur in their institutions will decrease recurrence rates by altering and improving the system that contributed to their cause.^{31,32}

Rural physicians would be well served by a means of support to assist them in dealing with their emotional responses to their error, as well as by ongoing education to find efficient ways to communicate their experiences to peers and patients. A physician workshop similar to that described by Couper²⁸ should be offered for the purposes of healing damaged emotions, learning from the mistakes of others, and providing think tanks of frontline rural physicians to further explore strategies that can be communicated to each other. Consideration should also be given to the introduction of these concepts into medical school curricula. Examples of suggestions derived from physician discussion at error workshops include those listed in [Table 2](#).²⁸

Error is inherent in virtually all man-made systems, and we should avoid the knee-jerk reflex to apportion blame when error occurs. Undoubtedly, we do need to be held accountable for our actions, but it is now well recognized that blaming a person perceived to be responsible for an adverse event does little to prevent the error happening again to other clinicians. No one can learn from unreported errors driven underground by fear of embarrassment or litigation. Reliable systems need

to be developed for monitoring and reporting medical error, and its etiology examined by systematic root cause analysis to determine its origin.

Like the public trust in the National Health Service in the UK,³³ the Canadian health care system, despite its flaws, is still regarded by Canadians as something that belongs to them. Perhaps this feeling is strongest in rural communities, where health care professionals are regarded with more affection and respect. Honest discussion with the public regarding physician limitations, as well as the limitations of the system in which they are obliged to operate, will go a long way in avoiding the litigious and defensive medical atmosphere that has developed in the US. The new science of error prevention in health care,³⁴ in which expertise is developed in the root causes of error, as well as the routine development of strategies to avoid it, will improve the quality of health care that can be delivered in rural medicine.

Conclusion

The issue of medical error in rural practice has been neglected, both in the literature and by the profession. The time has come for quantification and description of the scope of the problem.

The occurrence of error is as inevitable in medicine as it is in practically all forms of human behaviour. Managing and controlling the risk of error requires that we avoid the initial reflex to apportion blame when error occurs. Although physicians do need to be held accountable for their actions, identified errors should be recognized as valuable tools in adjusting systems to avoid the recurrence of the error by the physician or by others. Reliable systems need to be developed for the reporting, monitoring and discussion of medical error in the rural setting. Support systems should also be developed for rural physicians through which they might gain more insights into the impact of error on their own functioning and well-being.

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