Adverse Events in Community Care: Implications for Practice, Policy and Research

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Abstract

Adverse events in community care constitute a system-wide issue that warrants attention from all healthcare system stakeholders. Improving patient safety and preventing adverse events will require policy at multiple levels that addresses (1) local healthcare system integration, (2) competition and financing, (3) technology and electronic records, (4) collaboration and communication among providers, (5) organizational culture and (6) education for clinicians, patients and caregivers. This article describes the results of a symposium in which 31 healthcare professionals from 18 organizations were asked to discuss adverse events and to identify important implications for practice, policy and research. Results include prioritized lists of what providers can do to prevent adverse events, suggested policy changes and information needed from research.

Table 1. Definitions of adverse events in home care settings

"Low frequency-negative or untoward events that potentially reflects a serious health problem or decline in health status for an individual patient." (Madigan and Tullai-McGuinness 2004: 257)
"Events or occurrences, which become apparent during the delivery of homecare services and which have a negative or potentially negative impact on: patient care, patient outcomes, family or support care, and resources utilization." (Masotti et al. 2007: 63)
"Any harm to the client that negatively affects their overall health and/or functioning and is the result of care actions and/or inactions rather than the client's underlying condition." (Johnson 2006: 128)
"An unintended injury or complication that results in disability, death or increased use of health care resources and is caused by health care management." (Sears 2008: 33)

Background

Adverse events (AEs) is a term that is frequently used in healthcare and patient safety literature. However, operational definitions for the term vary, and at this time there does not appear to be a generally accepted standardized definition for AEs in home care. For example, Table 1 lists four different definitions used for AEs in home care settings.

Despite the apparent lack of a standardized operational definition, consensus does appear to exist regarding the perception that AEs occur frequently and have significant health and economic consequences, particularly for hospitalized patients (Baker and Norton 2001; Kohn et al. 1999). A smaller body of literature suggests problems are also found in the delivery of primary care (Dovey et al. 2002; Makeham et al. 2002; Rosser et

al. 2005; Sandars and Esmail 2003; Wilson and Sheikh 2002). Unfortunately, there is little overall published documentation on the occurrence of AEs in home care (Ahrens et al. 2002). However, recent evidence suggests that AEs occur frequently in home care settings. For example, Gray et al. (1999) found that 20% of elderly patients in home care in Wisconsin experienced adverse drug events within one month of hospital discharge; in another study, Malani et al. (2005) found an adverse drug event rate of 72% in patients receiving amphotericin B infusion therapy. In addition, in one of the few published Canadian studies, Johnson (2006) found a 5.5% incident rate of AEs in a sample of Winnipeg home care clients.

Patient safety and AEs in Canadian home care have emerged as primary policy issues for health policy decision-makers and healthcare managers. Home care is politically popular, and demand and costs are increasing. For example, home care spending per capita in Canada (constant 1997 dollars) rose from $53.20 in 1994–1995 to $91.15 in 2003–2004 (CIHI 2007). With the exception of drugs, home care expenses have increased more rapidly than all other healthcare expenditures (Coyte and McKeever 2001; Health Canada 2005).

Home care also has characteristics that suggest an increased risk of AEs compared with acute care (Woodward et al. 2002). Thus, it is possible that more AEs occur in home care compared with acute care. Canadian evidence suggests that (in hospitals) about 36.9% of AEs are preventable and that AEs are more likely to be experienced by older patients (Baker et al. 2004). Given these, there is a need to better understand the characteristics of AEs in home care in order to be better positioned to prevent the occurrence or reduce their impact.

In addition, Canadians have indicated they want increased accountability in the healthcare system and more research on ways to improve treatment and manage health systems (*Health Care in Canada Survey* 2004). One suggestion for improving quality (and thus preventing AEs) in Canadian healthcare is to focus at the local level by improving communication, developing collaborative partnerships and facilitating better local healthcare system integration (Masotti et al. 2006).

This article describes the results of a Change Foundation–funded symposium that was attended by 31 professionals. The one-day symposium was designed to determine what a broad array of professionals believed were important issues relating to AEs and patient safety in home/community care and the implications for (1) practice by providers in the field, (2) policy at multiple levels – provider, organization and provincial and federal governments – and (3) research funding and applied research projects.

Study Setting

Thirty-one participants attended the symposium, held in Kingston, Ontario, on April 29, 2008. The invited experts came from Southeastern Ontario, where home care delivery is financed and administered regionally by two main provincially governed organizations. Local Health Integration Networks are responsible for planning, integration activities and funding a range of health services providers and organizations such as community care access centres (CCACs) (Ontario Ministry of Health and Long-Term Care 2007). CCACs act as the access vehicles for services such as home care. CCACs do not provide care but act to identify local population needs and to contract with regional high-quality service providers (CCAC 2007).

Methods

Overview

We were interested in addressing the research questions from the broad perspective of professionals, who worked in different organizations and whose knowledge and experiences in the areas of AEs and patient safety were comprehensive and diverse. First, we identified professionals with different combinations of expertise in areas that include front-line home care services, home care services organization/delivery, health services policy/decision-making and research. Second, we recruited the services of a trained facilitator, from the Queen's University Executive Decision Centre, who directed the symposium activities by combining an electronic meeting system (EMS) approach with a modified nominal group technique (NGT) (Jones and Hunter 1995; Lloyd-Jones et al. 1999).

Participants and Invited Panel Presenters

Participants and presenters were identified in a collaborative effort that included members of the investigative team (Southeast Community Care Access Centre and Queen's University) and the funding organization (the Change Foundation). Participants and presenters came from a variety of Southern Ontario locations and were invited because they were considered experts in one or more areas that include home care administration, provision of home care services, primary care, patient safety, health policy and health services/policy research. The 31 participants came from 18 different organizations and could be described as fitting into the following organizational categories: home care service providers and front-line clinical staff, program managers, government and organization decision-makers, administrative executives, community nurses, family physicians and academic researchers.

Research Questions

Symposium participants were asked to identify issues and reach consensus on three main questions:

1. What can providers do to prevent or diminish the impact of AEs?
2. What policy changes are needed to enhance patient safety?

3. What additional information do we need from research to better understand AEs and patient safety in home care?

Design

The facilitator from the Queen's University Executive Decision Centre directed the symposium activities by combining a modified NGT with the EMS approach (Jones and Hunter 1995; Lloyd-Jones et al. 1999). The investigative team specified the research questions and symposium objectives and developed the symposium protocol and agenda with the facilitator.

Prior to the symposium, participants were provided with the research questions, symposium objectives and a relevant background publication. To initiate the symposium and to contextualize the issues, two sets of panel presentations were provided by invited experts that addressed two main relevant topic areas: (1) current research on AEs and (2) patient safety issues from both provider and patient perspectives. Panel presentations and research questions were followed by facilitated discussions and consensus generating and ranking activities. We did not pre-determine criteria for individual responses to the research questions because it was believed that doing so would limit the possible range of relevant responses.

The EMS approach combines expert facilitation with a state-of-the-art group decision support system to enable groups to rapidly accelerate idea generation and consensus building. It consists of a network of laptops accessing software designed to support idea generation, idea consolidation, idea evaluation and planning. EMS supports but does not replace verbal interaction. Reported benefits of this approach are that meeting times can be cut in half, participation increases, there is better idea generation and alternative evaluation, there is a more structured process and documentation of deliberations is automatic. We believed the EMS approach would complement and augment the use of the NGT.

The investigative team used a modified version of the NGT described by Jones and Hunter (1995) and further illustrated by Lloyd-Jones et al. (1999). Jones and Hunter described a general strength of the NGT, which is an approach used to generate consensus, as the "ability to overcome some of the disadvantages normally found with decision making in groups or committees, which are commonly dominated by one individual or by coalitions representing vested interests" (Jones and Hunter 1995: 376). In addition, Carney et al. (1996) suggested that additional strengths of NGT include the following: (1) it has a highly structured format that involves no preliminary discussion and provides opportunity to do a substantial amount of work in a short time period, (2) it is highly democratic and (3) it avoids interference or interpretation by the moderator. The modified NGT that we used to address all three research questions is illustrated in Table 2.

Table 2. Modified nominal group technique

1. Introduction and presentation of the question

2. The silent phase
Participants were seated at tables of five or six. Each participant thought and generated on paper multiple (no limits) responses to the questions.

3. Item generation or round-robin phase
Participants at each table presented their top-five responses, thus generating a small-group list.

4. Item clarification
Each table discussed the items on their list, edited overlapping items and eliminated duplicates.

5. Small-group voting
From the small-group list, each table selected a top-five list. The items on this list were typed into the keyboards and automatically displayed on screen to all participants in the room.

6. Reassembly of the group
All top-five identified items generated by the individual tables were displayed on screen for the whole group. These ideas were then discussed and categorized into common themes. The facilitator worked with the whole group to eliminate duplicates and match items that had significant overlap. This resulted in a consolidated large group list.

7. Large-group voting
After viewing and discussing the items on the large group list, the facilitator directed individual participants to answer the following question: "If we could only address five of these in the next year, which ones would be most critical?" Participants selected their top five, and the overall results were then displayed to the group and further discussed. The answers were scored and ranked based upon the total number of votes. This generated a final rank-ordered list for each of the three questions.

Data Analysis

Data analysis consisted of three main steps, the first two of which were completed during the symposium. The first step took place during the different whole group sessions, where the modified NGT and the EMS approach were used. In this step, individual items and policy suggestions were evaluated by the whole group. As part of the analysis, redundant suggestions were eliminated and similar suggestions were identified and then merged. This resulted in the large-group lists for each research question. The second step consisted of individual electronic voting for the identified items. This resulted in the final top-ranked lists for each of the three research questions. The third step, content analysis, took place following an evaluation of the computer-generated symposium report that was provided by the Queen's Executive Decision Centre. Patton has described content analysis as a "qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings" (Patton 2002: 453). Complete lists of all large-group responses, merged (similar) responses, voting results and top-ranked responses

were evaluated to identify emerging themes and to synthesize the main take-home messages.

Results

Overview

The participants generated a large number of individual responses in a relatively short period of time. The ranked large-group responses to the three questions are presented in Appendices 1–3. An analysis of the ranked responses to the three research questions revealed that participants believed the best approach to addressing AEs in home care required responding to issues or making changes to address variables associated with seven theme categories that are illustrated in Table 3.

What Can Providers Do to Prevent or Diminish the Impact of AEs?

Table 4 lists the top-five ranked items identified in response to research question 1: what can providers do to prevent or diminish the impact of AEs?

A review of responses to the *provider question* (see Appendix 1) indicates that most of the 12 top-ranked items fit into response theme categories one to three (see Table 3). Communication within an organization and among local healthcare system providers was clearly identified as an area that, if improved, could positively affect AE rates and outcomes. An improved understanding of the variables associated with the occurrences of AEs, including assessing patient risk, was also identified as an important area to address. Thus, data collection, analysis and the use of benchmarks (to compare outcomes) were considered a required component of improved understanding. Increased activity in these areas would provide information that could be used to support the second-ranked item: provide education and training to professional staff and clients/informal caregivers on best practices and risk factors. Additional provider-level characteristics that were considered important targeted provider culture and capacity: (1) using a system-wide approach to identify/prevent AEs in a non-blame environment and (2) monitoring and regularly assessing risks associated with the occurrences of AEs.

What Policy Changes Are Needed to Enhance Patient Safety?

We did not pre-determine criteria (e.g., policy levels) for individual responses to the question regarding what policy changes are needed to enhance patient safety because it was believed that doing so would limit the range of relevant responses. Participants could present policy suggestions that addressed policy a multiple levels such as individual providers, home care organizations, local healthcare system and provincial and federal governments. The top-five items identified by the 31 participants in response to the *policy question* are listed in Table 5.

Table 3. Main themes identified in the responses to the research questions

1. Education/training, knowledge transfer and best practices
2. Communication, collaboration and system integration
3. Measurement, data collection and variables associated with the occurrence of adverse events (e.g., risk assessment, setting and patient-/provider-/system-level characteristics)
4. Reporting, standardized definitions and accreditation
5. Technology
6. Providers (culture, capacity, human resources, workloads and contracts/fee schedules)
7. Funding and support

Table 4. Top-five responses to question 1: what can providers do to prevent or diminish the impact of adverse events?

1. Improve communication between different providers
2. Provide education and training to professional staff and clients/informal caregivers on best practices and risk factors
3. Increase measurement and data collection and develop benchmarks to better understand variables associated with the occurrence of adverse events
4. Implement prompt reporting and collaboration among local healthcare system providers
5. Improve communication with clients and family members to inform their understanding of their care plan and team

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Table 5. Top-five responses to question 2: what policy changes are needed to enhance patient safety?

1. Implement provincial standardization and a required outcome reporting system to develop benchmarks and inform policy and practices
2. Evaluate fee structures and contract policy; healthcare should be driven by need versus arbitrary limits (to ensure appropriate care and cost-effectiveness while allowing flexibility for crisis issues)
3. Develop and implement standardized adverse event definitions and require mandatory reporting of adverse events and other outcome data
4. Reform managed competition to promote co-operation and sharing of data
5. Fund more Canadian research on safety and adverse events in community/home care

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Two main themes emerged following a review of responses to the policy question (see Appendix 2). First, most (10 of 14) of the top-ranked policy suggestions fit into two response theme categories (see Table 3), where category four, *reporting, standardized definitions and accreditation*, primarily addresses provincial-

level policy, and category six, *providers*, is clearly more appropriate for organization-level policy that, in Ontario, would include organizations that deliver home care (e.g., home care agencies) or that organize the regional delivery of care (e.g., CCACs).

The second theme that emerged in response to the policy question is that all of the 14 policy suggestions addressed either organization-level or system-level changes. Specifically, none of the 14 suggested policy that would be designed to identify individual human errors and change their behaviours. This result is rather interesting because it deviates from historical approaches (to preventing AEs or medical errors), which tended to focus more on identifying errors, the people involved and the individual behaviours that were believed to have contributed to the errors. For example, supporting this assertion were responses to both the provider and policy questions: (1) use a system-wide approach to identify and prevent adverse events (in a non-blame environment); and (2) work toward developing a non-punitive culture with a continuous quality improvement focus at all provider agencies.

What Additional Information Do We Need from Research to Better Understand AEs and Patient Safety in Home Care?

There were two interesting results from this group activity. First, symposium participants quickly generated large numbers of research questions and identified areas of need. And, second, participants were clearly excited and interested in the activity and would have continued working if the facilitator had not stopped the process to begin the consolidation and ranking activities. This suggests that *among a broad array of healthcare system stakeholders, there exists a strong need for more Canadian research that specifically addresses AEs in home care.* The top-five items identified by the 31 participants in response to the *research question* are listed in Table 6.

Table 6. Top-five responses to question 3: what additional information do we need from research to better understand Adverse Events and patient safety in home care?

1. Local integration: How to best integrate primary care and home care to improve patient safety
2. Best practices: Identification of the best methods to get best practice information into the home care practice environment
3. Technology: How electronic records, e-health and other technologies can improve safety and prevent adverse events
4. Workloads: A better understanding of the relationship between provider workloads and adverse events
5. Adverse event characteristics: A more comprehensive understanding of the characteristics (e.g., causes, consequences and outcomes) of adverse events in home care that can be used to support patient safety

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A review of responses to the research question (see Appendix 3) reveals three main themes where additional research is needed. First, participants clearly expressed a strong need for a better understanding of patient-level and organization-level characteristics that are associated with the occurrence of AEs. For example, over 50% of the 17 top-ranked items addressed this need, which was identified in response theme category three (measurement, data collection and variables associated with the occurrence of AEs; see Table 3). The second theme that emerged was the recognition that the level of local health system integration is associated with patient safety and, consequently, AEs. Thus, there was an expressed need for more information about how improved local healthcare system-level collaboration, communication and data sharing could improve patient safety and reduce AE rates. The third theme that emerged was the need for information on how to improve education, training and the development and implementation of best practices.

Discussion

Compared to research conducted in institutional settings such as acute care hospitals, there is a paucity of AE studies, particularly Canadian studies, that address home and community care. Despite this fact, it is recognized that risk, such as the potential for AEs, is higher in the home care population. For example, Lang and Edwards (2006) have stated that we need to consider the fact that the home is designed for living and not for healthcare services. In addition, Woodward et al. (2002) suggested that the number and types of people who need to communicate with each other may rarely meet. Thus, the characteristics of home care administration and delivery create the potential for a variety of problems at multiple levels that may contribute to the occurrence of AEs. Given these, and based upon the many suggestions presented by the symposium participants, we reached several conclusions:

- AEs in home care constitute a system-wide issue that warrants attention from all healthcare system stakeholders.
- Improving healthcare system communication and integration will improve patient safety and contribute to a better understanding of the characteristics associated with AEs.
- There is a need for additional Canadian research that addresses AEs in home care.
- We should explore the development and implementation of standardized definitions for AEs and required reporting of patient outcomes that include specified types of AEs. This will contribute to improved understanding of safety and AEs, help develop benchmarks and inform policy and practice at different levels.
- Increasing patient safety and preventing AEs will require policy at multiple levels that addresses (1) local healthcare system integration; (2) competition and financing;

(3) electronic patient records, data collection and sharing; (4) improved collaboration and communication among providers; (5) organizational culture change; and (6) education and training for clinicians, patients and caregivers.

- Preventing AEs will require a continuous quality improvement approach in an environment that is more focused on improvement than on assigning blame.

Study Limitations

Study participants came from Southeastern Ontario. Thus, the specific order of the ranked items identified from the three research questions may not be what would be generated in other Canadian regions. However, home and community care in different Canadian locations share similar characteristics, such as operational and financial pressures, similar patient populations and a mix of local healthcare system providers. Therefore, many of the suggestions identified will be relevant to providers, policy decision-makers and patients across Canada.

Implications

Our findings represent consensus decisions reached from a diverse group of healthcare professionals who clearly believe that AEs in home and community care is an important patient safety issue that requires policy and approaches at multiple levels (provincial, local healthcare system and provider). The main implications of our findings include the following:

- More data are required to identify patient-, provider- and system-level characteristics associated with the occurrence of AEs.
- Conducting prospective cohort studies in different regions and in various patient subpopulations will contribute to a better understanding of AE rates and variables associated with the occurrence and impact of AEs.
- Knowledge about AE rates, patient risk factors and best practices will be improved by introducing the use of standardized definitions for specific AE types and by implementing provincially required reports. HQ

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Appendix 1. What Can Providers Do to Prevent or Diminish the Impact of Adverse Events?

1. Improve communication between different providers (e.g., create virtual interdisciplinary rounds, more communication of client data between different providers)
2. Provide education and training for professional staff, clients and family on best practices (e.g., to identify risk factors and actions required, guidelines for home care and transition from hospital)
3. Use measurement, bench-marking and data capture to better understand adverse events (and to allow for improvements)
4. Ensure prompt reporting and collaboration among health-care partners (use the information to advance the system, not to assign blame)
5. Improve communication with clients and family members to inform understanding of their care plan and team
6. Use a system-wide approach to identify and prevent adverse events (in a non-blame environment)
7. Provide mentorship by experienced staff with skills for managing or preventing adverse events
8. Be aware of and regularly assess risk when variables change
9. Consider clearly defined and communicated roles/responsibilities at organizational and individual levels to help efficiently deal with adverse events
10. Ensure workloads are manageable to increase safety and reduce Workplace Safety and Insurance Board costs
11. Help providers define risks and balance client needs against safety concerns
12. Improve individual decision-making: staff should be trained and feel empowered to act to improve client safety

Appendix 2. What Policy Changes Are Needed to Enhance Patient Safety?

1. Develop provincial standardization and required outcome reporting system to develop benchmarks and inform policy/practices (e.g., reporting of organization-specific outcome data to develop provincial benchmarks and compare against international data)
2. Evaluate fee structure and contract policy – healthcare should be driven by need versus arbitrary limits (e.g., review funding incentives/disincentives to ensure appropriate care and cost-

effectiveness while allowing flexibility for crisis issues)

3. Develop/implement standardized adverse event definitions and require mandatory reporting of adverse events and other outcome data
4. Reform managed competition to promote co-operation and sharing of data
5. Fund more Canadian research on safety and adverse events in community/home care
6. Fund staff training in safety and quality
7. Mandate pre-discharge communication between providers (as a criterion for accreditation)
8. Build patient safety and adverse events monitoring into request-for-proposal process
9. Work toward developing a non-punitive culture with a continuous quality improvement focus at all provider agencies
10. Evaluate and change payment methods that cause barriers and that discourage people from working together (e.g., remuneration for teamwork and efficient/timely communication)
11. Ensure stronger quality standards for provider agencies and community care access centres
12. Fund technology and training for virtual team communications
13. Ensure privacy legislation does not prevent or prohibit team communication
14. Evaluate policy that matches case manager skill level and experience with specialized populations (i.e., move away from "Jack of all trades" role)

Appendix 3. What Additional Information Do We Need from Research to Better Understand Adverse Events and Patient Safety in Home Care?

1. How to best integrate primary care and home care to improve patient safety (Does sharing data among providers decrease the impact/incidence of adverse events? When problems exist, who owns them?)
2. Identification of the best methods to get best practice information into the home care practice environment (e.g., explore best practices in other countries; which care bundles are best transferred to the community?)
3. How electronic records, e-health and other technologies can improve safety/prevent adverse events
4. A better understanding of the relationship between provider workloads and adverse events
5. A more comprehensive understanding of the characteristics (causes, consequences and outcomes) of adverse events in

home care that can be used to support patient safety (this information should come from large-sample provincial and national studies)
6. An evaluation/comparison of patient risk in home care versus hospital settings (i.e., are different patients at risk in different settings or at different points in the continuum of care?)
7. More information to help identify population-level and client-level risk characteristics (for adverse events)
8. Research that looks across a continuum of care and that is not isolated to home care environments
9. Development of a universal definition for adverse events (and types) that can be consistently applied
10. Improved understanding of the legitimate tension between acceptable risk, patient autonomy and professional accountability (how can we balance the individual autonomy [i.e., allowing a person to make a bad choice] with structured risk management strategies?)
11. How existing data from community care access centres (CCACs) and service providers can be used in a public report card for home and community care
12. How we can eliminate the culture of blame to allow CCACs and provider agencies to take a transparent, collaborative approach to using their data to improve safety and quality
13. What evidence there is for the effectiveness of different approaches to partnering with clients and caregivers to improve safety and quality (e.g., what competencies are required for clinicians to partner with clients for improved safety and to help them live with risk?)
14. Whether improved data sharing between hospitals, CCACs and providers decreases the impact and incidence of adverse events
15. How to improve communication (process and technology), which is essential to identifying adverse events and developing safeguards to prevent them
16. How to better assess client safety risk
17. An evaluation that considers the home environment to be a complex adaptive system and assesses what implications that has for adverse events