

Maintaining continuity of care: a look at the quality of communication between Ontario emergency departments and community physicians

Andrew P. Stiell, BSc;* Alan J. Forster, MD, MSc;*† Ian G. Stiell, MD;*‡
Carl van Walraven, MD, MSc*†§

ABSTRACT

Background: To maintain continuity of care when a patient's care is transferred between physicians, continuity of patient information is required. This survey determined how, and how well, Ontario emergency departments (EDs) communicate patient information to physicians in the community.

Methods: We surveyed Ontario ED chiefs to determine the most common media and methods used for disseminating information. We measured the perceived quality of their system, which was regressed against the hospital teaching status and community size using generalized logits modelling. Finally, we elicited the components of an ideal communication system for the ED.

Results: One hundred and forty-three (85.6%) Ontario ED chiefs participated. The ED record of treatment was the most commonly used medium (95%). Postal service was the most common (55%) method of disseminating information. Thirty-three chiefs (23%) perceived the quality of communicating patient information from their ED as unsatisfactory or inadequate. This perception was significantly more prevalent in larger communities (excellent v. unsatisfactory [odds ratio (OR) 44.9, 95% confidence interval (CI) 13.9–140] and satisfactory v. unsatisfactory [OR 2.9, 95% CI 1.6–5.1]) and in teaching hospitals (satisfactory v. unsatisfactory [OR 9.7, 95% CI 4.7–20.3]). Seventy-eight percent of responding chiefs felt that patient information should be disseminated using electronic means, either through email or server access.

Conclusions: To communicate patient information to community physicians, Ontario ED chiefs report that a copy of the ED record of treatment is sent by postal service. More than one-fifth of ED chiefs perceived communication from their department as unsatisfactory or inadequate. Studies that assess the completeness and accuracy of the record of treatment are required as a first step for measuring the quality of patient information communication in the Ontario ED system.

Key words: continuity of care; inter-physician communication; survey

RÉSUMÉ

Contexte : Pour assurer la continuité des soins lorsqu'un patient est transféré d'un médecin à un autre, il faut aussi assurer la continuité des renseignements à son sujet. La présente enquête a permis d'établir comment et dans quelle mesure les services d'urgence (SU) de l'Ontario arrivent à communiquer les renseignements sur les patients aux médecins dans la communauté.

Méthodes : Nous avons interrogé les chefs des SU de l'Ontario pour déterminer quels sont les supports et les méthodes de communication des renseignements auxquels on a recours le plus sou-

From the *†‡§Clinical Epidemiology Program, Ottawa Health Research Institute, Ottawa, Ont.; the †Department of Medicine, University of Ottawa; the ‡Department of Emergency Medicine, University of Ottawa; and the §Institute for Clinical Evaluative Sciences, Toronto, Ont.

Received: Sept. 4, 2004; final submission: Feb. 20, 2005; accepted: Feb. 25, 2005

This article has been peer reviewed.

Can J Emerg Med 2005;7(3):155-61

vent. Nous avons mesuré la qualité perçue des systèmes des SU, qui a fait l'objet d'une régression en fonction du statut d'hôpital d'enseignement et de la taille de la communauté au moyen de modèles logits généralisés. Enfin, nous avons établi quels seraient les éléments d'un système de communication idéal dans le contexte du SU.

Résultats : Cent quarante-trois (85,6 %) chefs de SU de l'Ontario ont participé. Le registre des traitements administrés en SU était le support le plus courant (95 %), et le service postal était la méthode la plus courante (55 %) de communication de ces renseignements. Selon les perceptions de trente-trois chefs de SU (23 %), la qualité du système de communication des renseignements sur les patients au sein de leur SU était insatisfaisante ou insuffisante. Cette perception était considérablement plus répandue dans les plus grandes communautés (excellente c. insatisfaisante [coefficient de probabilité (CP) 44,9; intervalle de confiance (IC) à 95 % 13,9–140] et satisfaisante c. insatisfaisante [CP 2,9; IC à 95 % 1,6–5,1]) ainsi que dans les hôpitaux d'enseignement (satisfaisante c. insatisfaisante [CP 9,7; IC à 95 % 4,7–20,3]). Soixante-dix-huit pour cent des chefs ayant participé à l'enquête estimaient qu'il faudrait communiquer les renseignements sur les patients par voie électronique, au moyen du courrier électronique ou d'un serveur.

Conclusions : Les chefs des SU en Ontario signalent qu'afin de communiquer les renseignements sur des patients aux médecins dans la communauté, un exemplaire du registre des traitements administrés en SU est envoyé par la poste. Plus du cinquième des chefs de SU estiment que le système de communication de leur service est insatisfaisant ou insuffisant. En vue de mesurer la qualité de la communication des renseignements sur les patients dans le système de SU en Ontario, il faudrait d'abord et avant tout réaliser des études évaluant l'exhaustivité et l'exactitude du registre des traitements.

Introduction

Communication of patient information between physicians is an important part of patient care. Patients are often seen by several physicians in different sectors of the health system. Such separation of care may create a discontinuity of patient information, which, in turn, decreases continuity of patient care.¹ It is uncertain how often this occurs. Numerous reports have found that important information is frequently not transmitted between health professionals who are treating the same patient.^{2–4} Such discontinuity of patient information has been documented for patients who have been discharged from the hospital^{5,6} and for patients treated in emergency departments (EDs).⁹

Since ED physicians rarely see patients in follow-up, ED encounters decrease continuity of care if patient information is poorly communicated to community physicians. There is a perception among some family physicians (FPs) that this is the case.¹⁰ Communication from the ED is becoming even more important because of the increased use of EDs. Ontario EDs saw an average increase of 9.7% in patient-visits per ED between 1993 and 2000,¹¹ and EDs in the United States saw a 14% increase in the number of ED visits per capita.¹¹ Also, with the public's perception of the decreased availability of FPs,¹² EDs are being used increasingly as stop-gaps in the care of patients with chronic illnesses.

Some research describes the communication of information from EDs. Several authors have suggested that a com-

puterized, standardized discharge system would improve current methods.^{10,13–15} Jansen and Grant¹⁶ cited the potential benefits of computerized discharge communication but noted that almost one-third of such reports were incomplete or misleading. Others found that computerization did little to address poor communication between primary care physicians and the ED.¹⁷ Williams and coworkers¹⁸ surveyed primary care physicians in the UK and found they preferred a brief summary of the diagnosis and disposition rather than a copy of the ED record of treatment (ROT). Fax transmissions have been associated with improved communication between EDs and primary care physicians.¹⁰ Johnson and colleagues¹⁹ found that faxed communication was associated with improved follow-up rates with primary care physicians in asthma patients. In an intervention study, Harris and cohorts¹⁴ found that EDs infrequently used fax transmission for ED ROTs and that the most common method of their transferral was by way of the patient. This is concerning because Sherry and associates²⁰ found that only 60% of ED notes were delivered to the FP within 2 weeks.

To our knowledge, no one has described the methods used by the EDs in an entire health system to communicate information to community physicians. Emergency departments in Ontario provide care to patients with injuries, acute disease and exacerbations of chronic disease. In addition, they provide patients an alternative to primary care when an FP is unavailable. Therefore, EDs interact directly with primary care givers, the pre-hospital system, in-hospital care, home care and long-term care services. In this

study we surveyed all ED chiefs in Ontario, Canada. We conducted this study to determine how, and how well, patient information was communicated from their ED to community physicians.

Methods

Study sampling frame

We compiled a complete list of all active EDs in Ontario, Canada ($n = 167$), using the *Atlas Report of Emergency Department Services in Ontario*.¹¹ This list was cross-referenced with a list provided by the Canadian Association of Emergency Physicians. Each hospital with an ED was then contacted by phone to determine the name and contact information of the physician in charge of their department. In smaller hospitals, where there were no designated chiefs of emergency, the chief of staff was surveyed. All chiefs of staff surveyed worked regular shifts in their ED. Twelve (8.4%) of the respondents were chiefs of staff. None of the survey responses was statistically associated with the position of the emergency head. Twelve physicians were recorded as chief of two EDs, but were only surveyed once in this study.

The survey

A 5-question survey (Appendix 1) was prepared after an informal focus group involving 5 individuals (4 physicians, 1 research assistant). The questions were designed to determine how each ED communicated information with the community, for which types of patients communication was used, the ED chiefs' perceived quality of their system, and the components of an ideal communication system. The survey included 4 multiple-choice questions and 1 free-text question.

The survey was formatted for fax, postal service and email. The email format was based on one used in a previous study.²¹ Prior to sending the survey, we delivered a notification email or fax to the physicians clarifying the survey's objective. If there was no response from the initial survey, a second copy was sent 1 to 2 weeks later. This second copy was sent by fax to all doctors who did not reply by fax or email. If there was no response to the second survey after 1 week, a third copy was sent by fax.

Analysis

Basic descriptive statistics were used to describe survey results. Hospitals were classified as Teaching or Non-teaching. The population of each town or city in which the hospital was located was determined from the 2001 Canadian Census and was dichotomized at the median of the group.

Emergency department volume was measured using the total number of patient encounters in the National Ambulatory Care Reporting System (NACRS) database for each ED between April 2002 and April 2003 and was also dichotomized at the median of the group. The perceived quality of each ED's communication was elicited with a 4-level ordinal scale (see Question 4, Appendix 1). For the analysis, we collapsed the 2 lower responses (Unsatisfactory and Inadequate) to create a 3-level ordinal response. The association of this outcome with ED descriptors was determined using a generalized logits model.²² Polytomous logistic regression was not used because the proportional odds assumption between the separate strata was invalid. We used SAS 8.2 (Cary, NC) for all analyses.

Results

All 167 active Ontario ED chiefs were surveyed, and 143 (85.6%) responded. Twelve of the ED chiefs responded for more than 1 hospital and 7 of those 12 provided a common response for their two EDs. We applied these responses to both ED sites because the EDs were very similar in all cases. There were no missing data in returned surveys, but in 7 cases the physician did not include his or her name and therefore could not be associated with a hospital. These surveys were included in the descriptive analysis but were left out of the regression model associating ED characteristics with perceived communication quality.

Table 1 shows that respondents represented EDs of differing annual census, community size and teaching status. Responding and non-responding hospitals were similar except for mean community population (respondent mean = 316 854; non-respondent mean = 27 155; $p = 0.0009$).

Table 1. Characteristics of the 167 Ontario hospital emergency departments that were sent the survey

Variable	Non-responding ($n = 24$)	Responding ($n = 143$)
% of total sample	14.4%	85.6%
Town/City population		
Mean	27 155	316 854
Median (IQR)	6159 (2641–28 815)	16 605 (4233–113 914)
No. of annual visits		
Mean	24 948	30 881
Median	22 393 (10 230–35 399)	27 309 (13 187–44 595)
No. (and %) of teaching hospitals	0 (0)	17 (11.9)

IQR = interquartile range

Media used for communication

A copy of the ED record (i.e., ROT) was the medium most often used by the ED (Table 2). For the 115 EDs indicating that only 1 medium was used regularly, the ROT was the highest ranked in 109 (94.8%). A dictated letter was the second most common medium (36.6% used it "Occasionally"); it was the highest ranked medium for only 1 hospital. Voice messages, special forms and administrative notification were much less commonly used.

Methods of dissemination

Compared to the choice of media, the methods used were more varied (Table 3). Postal service was the most common method, used regularly by 55.2%. Of the 107 EDs indicating they only use 1 dissemination method regularly, postal service was the method of dissemination for 65 (60.7%). Physicians' hospital mailboxes were the next most common method and had the highest rank for 12

(11.2%) EDs. However, it was used exclusively at hospitals in smaller communities. Despite being used regularly in only 9.9% of hospitals, transfer of information by way of the patient was the next highest ranked method (14 [13.1%] hospitals). The other dissemination methods were less frequently used.

Types of patients for whom communication from ED is attempted

Most respondents ($n = 73$, 51.0%) indicated that their ED attempts communication for "All patients with community physicians." Forty-one respondents (28.7%) reported attempts to communicate for "All patients," 15 (10.5%) for "All patients with community physicians who need follow-up," 12 (8.4%) for "All patients who need follow-up" and 2 (1.4%) reported communication attempts for "None."

Perceived quality of communication

Table 4 shows that most ED chiefs perceived the communication of patient information as either Excellent ($n = 20$, 14.1%) or Satisfactory ($n = 89$, 62.8%); however, 33 (23.2%) considered the quality of communication from their ED as Unsatisfactory or Inadequate.

Multivariate generalized logits modelling suggested that EDs in smaller communities (i.e., those whose population was less than the median) were significantly more likely to rate their communication as Excellent versus Unsatisfactory (odds ratio [OR] = 44.9; 95% confidence interval [CI] 13.9–140.3) or Satisfactory versus Unsatisfactory (OR = 2.9; 95% CI 1.6–5.1). Hospital teaching status did not influence the choice of Excellent versus Unsatisfactory (OR = 0.8; 95% CI 0.2–3.4). However, non-teaching hospitals were more likely to rate their communication as Satisfactory versus Unsatisfactory (OR = 9.7; 95% CI 4.7–20.3).

Table 2. Media used by 143 Ontario hospital emergency departments when communicating with community physicians

Media	Frequency of use (and % of responding hospitals)		
	Regularly	Occasionally	Rarely or Never
ROT	120 (83.9)	15 (10.5)	8 (5.6)
Special form	8 (5.6)	13 (9.1)	122 (85.3)
Dictated letter	6 (4.2)	51 (35.7)	86 (60.1)
Administrative notification	6 (4.2)	10 (7.0)	127 (88.8)
Voice message	4 (2.8)	32 (22.4)	107 (74.8)
Other	7 (4.9)	6 (4.2)	130 (90.9)

ROT = record of treatment

Table 3. Methods of dissemination used by 143 Ontario hospital emergency departments when communicating with community physicians

Method	Frequency of use (and % of responding hospitals)		
	Regularly	Occasionally	Rarely or Never
Postal service	79 (55.2)	20 (14.0)	44 (30.8)
Physician's hospital mailbox	16 (11.2)	1 (0.7)	126 (88.1)
Delivery by patient	14 (9.9)	65 (45.8)	63 (44.4)
Person to person	12 (8.4)	54 (37.8)	77 (53.9)
Fax	12 (8.4)	46 (32.2)	85 (59.4)
Telephone	5 (3.5)	43 (30.1)	95 (66.4)
Email	1 (0.7)	3 (2.1)	139 (97.2)
Other	7 (4.9)	3 (2.1)	133 (93.0)

Table 4. Quality of communication from Ontario emergency departments (EDs) to community physicians, as rated by the ED chiefs who responded to the survey (143 of 167 hospitals)

Quality of communication	No. of EDs (and %)
Excellent – no improvement needed	20 (14.1)
Satisfactory – could use some improvement	89 (62.7)
Unsatisfactory – improvement would be very beneficial	33 (23.2)

Note: For the analysis, we collapsed the 2 lower responses (Unsatisfactory and Inadequate) to create a 3-level ordinal response.

community physicians. Forty-two respondents addressed the ideal media. Sixteen felt that the ED ROT with or without a copy of laboratory results was ideal. Fourteen chiefs felt that a consultation note should be dictated by the ED physician, transcribed, and then sent to follow-up physicians. Thirteen chiefs felt that an electronic medical record to which community physicians would have access was the ideal media for storing and disseminating information.

Eighty-three other chiefs opined about the ideal method of disseminating information. Overwhelmingly, the most commonly preferred method ($n = 65$, 78%) involved electronic dissemination either through email or server access. Seventeen cited fax transmission as the best method and fewer preferred telephone ($n = 5$) or postal service ($n = 3$).

Three other themes were raised in this section of the survey. Fourteen physicians identified the need for security of patient information as well as the tension between this issue and complete dissemination of patient information. Nine chiefs identified the problem of poor legibility of physician handwriting seriously impeding the ROT as an effective method of communication. Finally, 4 physicians pointed out the difficulty in communicating with community physicians when the phone lines of their offices are frequently busy or when there is no method for leaving a message when the office is closed.

Discussion

To our knowledge, this is the first study to describe communication of patient information from the ED within a defined health care system. In Ontario, the ED ROT is the most commonly used media and postal service is the most commonly used method of dissemination. Close to one-quarter of ED chiefs felt that communication from their site was Unsatisfactory or Inadequate.

It is not surprising that the ROT was the most common media used for communication. Since it is generated during the routine care of all ED patients, its use as a communication document does not require any additional work by the ED physician. However, there are several questions about the utility of the ROT as a communication tool. Previous studies have found that community physicians dislike the ROT to communicate patient information. Wass and Illingworth found that 66% of 219 FPs surveyed wanted communication through a media other than handwritten reports.¹³ Williams and colleagues found that only 28% of 156 FPs surveyed were satisfied with the ROT as a communication instrument from the ED.¹⁸ Since the ROT is overwhelmingly the most commonly used media in Ontario EDs, we believe that the utility of the ROT for communicating pa-

tient information to follow-up physicians needs further study. This is especially important because all other viable alternatives require significant initial investment on the part of the hospital (in the case of an electronic medical record) or significant additional work on the part of the ED physician (in the case of a dictated consultation).

The strong association that we found between perceived communication quality and community size could be a function of several factors. First, EDs in small communities are frequently staffed by physicians who also function as FPs. As such, they may have an insight into the need of timely and accurate communication to the community physician to ensure quality of patient care. Second, there usually are a limited number of specialists in smaller communities who are regularly involved in a patient's care. This would make it easier for the ED to communicate information for all physicians involved in the patient's care. Third, there usually are a limited number of medical offices or clinics in smaller communities, thereby significantly easing the logistical issues involved in communication. Finally, community size and ED volume are tightly associated (in our sample, the Pearson correlation coefficient between the two variables was 0.27, $p = 0.0005$). Therefore, ED physicians in smaller communities may have more time to ensure complete communication of patient information.

Limitations

This study has some notable strengths and weaknesses. Strengths include its avoidance of any sampling bias by surveying all EDs in the province. This allowed us to evade any problems from generalizing our study findings to the population. We also achieved a very high response rate, which makes the results truly representative of the population. The most notable weakness of this study — which reflects that of all surveys — is the potential unreliability of its results because they are the impressions of the ED chiefs. Although we are uncertain how well these perceptions reflect reality, there would be no reasonable reason to provide misleading answers about communication media or dissemination methods. In addition, we concluded that using the impressions of ED chiefs about communication quality would, if anything, bias the results upward. That is, our survey could have overestimated the quality of communication from Ontario EDs.

Conclusions

Our study shows that ED chiefs perceive that ROTs delivered by postal service are the present standard of care for

the communication of patient information from the ED for all patients who currently have a community physician. Given the potential problems of the ROT as a communication medium,^{13,18} we believe that studies that assess the completeness and accuracy of the ROT are required as a first step for measuring the quality of patient information communication in the Ontario ED system. In addition, as has been done for patients discharged from hospital,⁵ future studies must measure the completeness of ED information disseminated to physicians who see these patients following their ED encounter.

Competing interests: None declared.

Contributors: Mr. Andrew Stiell is a medical student at the University of British Columbia. Dr. Forster is the PSI Foundation Scholar in Innovative Health Services Research. Dr. Ian G. Stiell is a Distinguished Investigator with the Canadian Institutes for Health Research. Dr. van Walraven is an Ontario Ministry of Health Career Scientist.

References

1. Cook RI, Render M, Woods DD. Gaps in the continuity of care and progress on patient safety. *BMJ* 2000;320:791-4.
2. Gosbee J. Communication among health professionals. *BMJ* 1998;316:642.
3. Regan WA. Communications: doctors–nurse–patient triangle. *Regan report on nursing law* 1983;23:1.
4. Buckingham JK, Gould IM, Tervitt G, Williams S. Prevention of endocarditis: communication between doctors and dentists. *Br Dent J* 1992;172:414-5.
5. van Walraven C, Seth R, Laupacis A. Hospital discharge summaries infrequently get to post-hospitalization physicians. *Can Fam Physician* 2002;48:737-43.
6. van Walraven C, Weinberg AL. Quality assessment of a discharge summary system. *CMAJ* 1995;152:1437-42.
7. Mageean RJ. Study of “discharge communications” from hospital. *Br Med J (Clin Res Ed)* 1986;293:1283-4.
8. Haikio JP, Linden K, Kvist M. Outcomes of referrals from general practice. *Scand J Prim Health Care* 1995;13:287-93.
9. Stiell A, Forster AJ, Stiell IG, van Walraven C. Prevalence of information gaps in the emergency department and the effect on patient outcomes. *CMAJ* 2003;169(10):1023-8.
10. Taylor DM, Chappell-Lawrence J, Graham IS. Facsimile communication between emergency departments and GPs, and patient data confidentiality. *Med J Aust* 1997;167:575-8.
11. Chan BTB, Schull MJ, Schultz SE. Atlas Report 1993–2000. Emergency department services in Ontario. ICES Atlast Report Series. Toronto: Institute for Clinical Evaluative Sciences; 2001. p. 24-31.
12. Brown JB, Sangster LM, Ostbye T, Barnsley JM, Mathews M, Ogilvie G. Walk-in clinics: patient expectations and family physician availability. *Am Prac* 1919;202-6.
13. Wass AR, Illingworth RN. What information do general practitioners want about accident and emergency patients? *J Accid Emerg Med* 1996;13:406-8.
14. Harris MF, Giles A, O'Toole BI. Communication across the divide. A trial of structured communication between general practice and emergency departments. *Aust Fam Physician* 2002; 31(2):197-200.
15. Vukmir RB, Kremen R, Ellis GL, DeHart DA, Plewa MC, Menegazzi J. Compliance with emergency department referral: the effect of computerized discharge instructions. *Ann Emerg Med* 1993;22(5):819-23.
16. Jansen JO, Grant IC. Communication with general practitioners after accident and emergency attendance: computer generated letters are often deficient. *Emerg Med* 2003;20(3):256-7.
17. Parshuram CS, Young SJ, Phillips RJ. Communication from a computerized emergency department to general practitioners. *J Paediatr Child Health* 1998;34(6):591-2.
18. Williams MJ, Haley P, Gosnold JK. An improved method of communication between computerized accident and emergency departments and general practitioners. *Arch Emerg Med* 1991; 8:192-5.
19. Johnson PH, Wilkinson I, Sutherland AM, Johnston ID, Hall IP. Improving communication between hospital and primary care increases follow-up rates for asthmatic patients following casualty attendance. *Respir Med* 1998;92(2):289-91.
20. Sherry M, Edmunds S, Touquet R. The reliability of patients in delivering their letter from the hospital accident and emergency department to their general practitioner. *Arch Emerg Med* 1985;2(3):161-4.
21. Stiell IG, Nesbitt L, Wells GA, Campbell S, Nadkarni V, Berg R, et al. What are the most important unanswered questions for pediatric cardiac arrest? [abstract]. *Can J Emerg Med* 2004; 6(3):203.
22. Stokes ME, Davis CS, Koch GG. Logistic Regression II: Polytomous response. In: Categorical data analysis using the SAS system. Cary (NC): SAS Institute Inc; 2000. p. 241-70.

Correspondence to: Dr. Carl van Walraven, Clinical Epidemiology Program, Ottawa Hospital — Civic Campus, F660 – 1053 Carling Ave., Ottawa ON K1Y 4E9; 613 761-4903, fax 613 761-5351, carlv@ohri.ca

Appendix 1. Paper-based survey sent to the chiefs of all active Ontario emergency departments to determine the most common media and methods used for disseminating information to community physicians

1. Please indicate how frequently your ED (emergency department) uses each of the following types of communication to communicate patient information to community physicians. For options that are not used by your department, leave the boxes blank.

	Regularly	Occasionally	Rarely
a) Copy of the record of treatment / ED chart			
b) Special form			
c) Dictated letter			
d) Voice message			
e) Administrative notification of visit			
f) Other.....			

2. Please indicate how frequently your ED uses each of the following methods to transmit patient information to community physicians. For methods that are not used by your department, leave the boxes blank.

	Regularly	Occasionally	Rarely
a) Sent with patient			
b) Mailed to community physician			
c) Faxed to community physician			
d) Emailed to community physician			
e) Phoned to community physician			
f) Person to person communication			
g) Other.....			

3. For what type of patients does your ED attempt some form of communication (please select one)?

a) All patients		
b) All patients with community physicians		
c) All patients with community physicians who need follow-up		
d) All patients who need follow-up		
e) None		

4. How would you rate the communication of patient information from your ED to community physicians (please select one)?

a) Excellent, no improvement needed		
b) Satisfactory, could use some improvement		
c) Unsatisfactory, improvement would be very beneficial		
d) Inadequate, must be improved		

5. In an ideal world, how would information be transferred to community physicians?