

Transfer of care and offload delay: continued resistance or integrative thinking?

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ABSTRACT

The disciplines of paramedicine and emergency medicine have evolved synchronously over the past four decades, linked by emergency physicians with expertise in prehospital care. Ambulance offload delay (OD) is an inevitable consequence of emergency department overcrowding (EDOC) and compromises the care of the patient on the ambulance stretcher in the emergency department (ED), as well as paramedic emergency medical service response in the community. Efforts to define transfer of care from paramedics to ED staff with a view to reducing offload time have met with resistance from both sides with different agendas. These include the need to return paramedics to serve the community versus the lack of ED capacity to manage the patient. Innovative solutions to other system issues, such as rapid access to trauma teams, reducing door-to-needle time, and improving throughput in the ED to reduce EDOC, have been achieved by involving all stakeholders in an integrative thinking process. Only by addressing this issue in a similar integrative process will solutions to OD be realized.

RÉSUMÉ

Le champ des soins paramédicaux et celui de la médecine d'urgence ont tous deux évolué au même rythme au cours des quarante dernières années, liés qu'ils sont par des urgentologues rompus aux soins préhospitaliers. Toutefois, les retards de déchargement des ambulances (RDA) sont une conséquence inévitable de l'encombrement des services d'urgence (SU), ce qui a pour effet de mettre en péril les soins aux patients couchés sur des civières d'ambulance au SU ainsi que les services médicaux d'urgence (SMU) fournis par les paramédicaux dans la collectivité. Les efforts visant à définir

le concept de transfert des services de soins depuis les SMU au SU, dans l'optique de réduire le temps de déchargement, se heurtent à la résistance des deux parties du fait que les intervenants ont des points de vue différents; en effet, il est question, pour les uns, de la nécessité de renvoyer les ambulanciers paramédicaux afin qu'ils puissent répondre aux besoins de la collectivité; pour les autres, du manque de capacité des SU à traiter les patients. La participation de toutes les parties intéressées dans un processus de pensée globale a permis de trouver des solutions novatrices à d'autres problèmes systémiques tels que l'accès rapide aux équipes de traumatologie, la réduction du temps d'attente depuis l'arrivée jusqu'au moment de la ponction et l'amélioration de la capacité de traitement des patients au SU pour en diminuer l'encombrement; ce n'est que par un processus similaire de pensée globale que l'on trouvera des solutions au problème de RDA.

HISTORICAL BACKGROUND—HOW DID WE GET HERE?

In Canada, the development and evolution of the science and practice of paramedicine have paralleled those of emergency medicine (EM) over the last 4 decades. Paramedics with advanced skills, such as manual defibrillation and endotracheal intubation, began practicing on air and land ambulances in the 1970s, becoming more prevalent in the 1980s. The Royal College of Physicians and Surgeons and the College of Family Physicians Canada established their fellowship and certificate programs, respectively, in EM over the same period. These disciplines evolved in synchrony, linked by the leadership of emergency physicians with experience and expertise in prehospital care, and paramedics were considered

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the “eyes and hands” of emergency physicians in the community.

Transfer of care (TOC), namely the formal handover of primary responsibility for the patient from a paramedic to the hospital emergency department (ED), was intuitive and defined neither in regulation nor in practice. It transpired at the time when the patient was moved off of the ambulance stretcher to the gurney or chair in the ED, and the report was given by the paramedic to the charge nurse. Alternatively, it occurred if emergency staff began performing life-saving procedures on the ambulance stretcher, taking over from paramedics prior to physical movement of the patient. Either way, this almost always happened within minutes of arrival of the ambulance at the ED. A formal definition of TOC was not contemplated until offload delay (OD) emerged as a sentinel marker of emergency department overcrowding (EDOC).

EDOC is a multifaceted issue. The root causes and potential solutions are now well documented.¹ In the 1990s, the overwhelming perception among decision makers and the public was that EDOC was caused by high volumes of low acuity patients overwhelming the capacity of hospitals. Evidence that has emerged since the turn of this century has shown that this is not the case.² It is well established that the primary cause of EDOC is access block rather than the use of ED by low-acuity patients.³ This issue is not unique to Canada or the United States. International researchers have reached similar conclusions.^{4,5} It stands to reason that the walk-in clinics and hospital-based urgent-care centres implemented to reduce the number of low-acuity patients in affected EDs could not be, and have not been, effective in reducing EDOC.^{2,4} Ambulance diversion strategies that were designed to temporarily relieve crowded EDs were also found to be ineffective in solving a complex problem.⁶ As evidence mounted and medical-legal concerns dampened enthusiasm for ambulance diversion,⁷ efforts to reduce diversion resulted in increased ambulance offload times.⁸ Emergency health services systems in Canada adapted to a new homeostasis, namely OD. OD may be defined as an interval exceeding the time (usually about 30 minutes) reasonably required to achieve TOC between ambulance arrival at the ED and patient movement to the ED stretcher.⁹

This adaptation created unintended consequences. First, paramedics faced a new responsibility to care for patients for a longer period of time (up to hours rather than minutes during assessment and transport) in an

unfamiliar environment where they did not have legal authority to practice and deliver controlled medical acts. Second, it created an increased burden on emergency medical service (EMS) systems which, due to OD, now had to cope with fewer resources to respond to 911 calls. The latter consequence, more than any other, brought EDOC, a decades-old problem, into political focus. Although the Canadian Association of Emergency Physicians (CAEP) and other professional bodies had sounded an alarm on EDOC for several years,¹⁰ ED wait times were not seen as important enough to warrant action by policymakers. For example, Canada's first ministers' 2004 agreement on wait times did not consider this issue.¹¹

In Ontario, municipally based EMS operators lobbied for more provincial funding, citing increased response times due to lack of crews related to OD. The Minister of Health and Long-term Care responded by convening two separate and complementary advisory panels on EDOC.^{9,12} Other provinces created their own expert panels and advisory bodies, resulting in a number of initiatives.^{13,14} EDOC made its way onto the national wait times agenda.¹⁵

EDOC INITIATIVES AND IMPACTS—WHERE ARE WE NOW?

Over the last decade, root causes have been identified and potential solutions to EDOC implemented, largely using the input-throughput-output model proposed by CAEP.^{1,3} EDOC remains a challenge related to an aging population, increased burden of chronic disease, and relative paucity of home-care resources and long-term care facilities to keep patients in the community and out of acute-care hospitals. EDOC is associated with adverse outcomes as the result of delays in treatment of patients with cardiac presentations, pain, and pneumonia, to name a few.¹⁶⁻¹⁹ Although solutions to improve EDOC may be expected to and often do reduce OD,²⁰ it is possible that OD may independently contribute to these outcomes. Cooney et al. stated that, although patient-level consequences of OD have not been well studied, OD may exacerbate EDOC-related impacts on clinical outcomes, such as poor pain control, delayed time to antibiotics, and increased morbidity and mortality.²¹ This extends to psychiatric patients attended by paramedics and/or police, further depleting community resources and lowering the perceived urgency of psychiatric assessment (personal communication, Dr. Howard Ovens, September 24, 2014).

OD results in a paradox of paramedics unable to perform their primary roles in the community while potentially having to perform unfamiliar and possibly inappropriate roles in the ED. Responsibility for care within the ED has therefore become a subject of contention during OD.

When does transfer of care actually occur?

The National Ambulatory Care Reporting System defines the TOC process as: “the date and time when the ambulance personnel turn over the care of the patient to ED/hospital staff.”²² This is a flexible definition that has resulted in conflicting interpretations. It implies ED staff acceptance of responsibility for the patient but could be interpreted otherwise by paramedics. The definition has been elaborated to note that “this can occur when the patient is transferred to an ED stretcher, bed, chair, or any other area in the ED, with the consent of the ED staff or when care of the patient has been assumed by other ambulatory care staff (for example, day surgery or clinic).”²³ The differently reported data points for the physical movement of the patient and the time at which hospital staff accepted full responsibility (often after a verbal report by paramedics) illustrate the complexity of the health care provider interaction. Inevitably, this leads to differing interpretations and resistance in coming to an agreement on who actually has responsibility at any given moment during the TOC process.

Who is primarily responsible for the care of the patient between the time of ambulance arrival and completion of transfer of care? Why does it matter?

There are a number of considerations related to paramedics’ responsibility for patient care in the ED. First, paramedics have not been trained to provide such care. They generally provide care in an austere environment, with limited tools and resources designed to provide initial assessment, stabilization, and treatment while transporting the patient safely to the ED. Protracted conditions, such as persistent or recurrent pain, repeated seizures, and the need for urinary catheterization, are poorly managed by an armamentarium and skill set suited to the out-of-hospital environment. Second, life-threatening issues, such as early sepsis, fluid depletion or overload, or myocardial ischemia, may not be detected, especially if hospital staff has a false sense of

security that patients are being monitored at an ED level rather than that within the paramedic scope and skill set. Finally, there is a question of legal responsibility and liability for care within a hospital facility, in which only credentialed physicians or their delegates are permitted to practice, including ordering and administering medications and conducting procedures. To my knowledge, this has not been addressed by legislation nor tested in case law in Canada. In contrast, the Emergency Medical Treatment and Active Labor Act in the United States requires ED staff to assess every patient who arrives by ambulance to determine whether an emergency condition or active labour is present.

The question is important because patients should receive optimal care in the ED. Although paramedics could be trained to provide such care, it should ideally be provided by ED staff. The either/or approach has led to resistance from both EMS and ED to explore alternative and more innovative approaches.

WHERE ARE WE HEADED?

How can OD be reduced to allow the patient to both receive optimal care in the ED and facilitate the return of EMS resources back into the community?

Efforts to address OD have appropriately been directed to reducing EDOC. These include output strategies, such as improving inpatient bed availability and throughput initiatives, including reducing time to diagnostic procedures and consultations. Ambulance ED input may be reduced by implementing strategies to divert ambulances to urgent care or detoxification centres, non-transport options with community follow-up, and developing community paramedicine specialists and teams that can manage minor or chronic problems outside of the hospital,²⁴ all reducing the need for transport. Another innovative solution has been to consolidate EMS patients under the care of fewer health care providers, such as Ontario’s Ambulance Offload Nurse program, which uses supernumerary staff to manage multiple ambulance patients in a designated area, freeing up paramedics to return to ambulance-based prehospital care. In other jurisdictions, care has been consolidated under one or more specially trained paramedics.²⁵

The notion of a shared-care model may have appeal. Is it possible for paramedics and hospital nurses to

provide care together, each under their own scope of practice? This is the model for inter-facility transfers of acutely-ill patients in many jurisdictions in which a nurse or physician is the primary caregiver in the unfamiliar environment of an ambulance, but paramedics are able to orient and assist the primary provider and may sometimes provide care within their scope of practice.

These remedies, while promising, have not been implemented in a systematic manner and remain unevaluated and unproven. By continuing these one-off practices, EM and EMS providers risk doing to our emergency health system what we did to individual patients in the early days of our respective specialties, namely using treatments that intuitively feel right and lead to short-term success but do not lead to better long-term outcomes. We need only examine our historical medical treatments for cardiac arrest (i.e., isoproterenol, lidocaine), congestive heart failure (i.e., morphine and furosemide), and penetrating trauma (i.e., high-volume fluid resuscitation) for lessons in using solutions that have not been adequately studied. Conversely, evidence-based system initiatives (i.e., field triage of trauma patients to designated trauma centres and, more recently, the direct transport of patients with ST-elevation myocardial infarction [MI] to cardiac catheterization centres) have been studied, developed, implemented, and evaluated with impressive results. A key success factor in both initiatives was the integrative approach to the issue and involvement of stakeholders across the system, including EMS dispatchers, paramedics, EDs, trauma, or catheterization laboratory staff and surgical/cardiology departments in the development of protocols, processes, training, outcome measurement, and evaluation. Furthermore, the definition of roles and responsibilities of all players was essential.

In his book, *The Opposable Mind*, Roger Martin, Dean of the Rotman School of Management at University of Toronto from 1998 to 2013, described how integrative thinkers keep their options open.²⁶ Martin noted that we create models of thinking to simplify and understand reality; however, when the models *become* reality in our minds, solutions are limited to those paradigms. Conversely, when we redefine reality from another perspective, it allows us to integrate what were seen previously to be opposing views. In the ST-elevation MI example, if the traditional model of patient transport to the closest ED followed by emergency physician assessment prior to cardiology consultation was seen as

reality, no progress would be made in decreasing door-to-balloon time. Only when reality was framed in a new model based on a new patient-centred paradigm was progress made to develop policies to enable bypass of the closest ED with direct transport to a cardiac catheterization laboratory in a safe, effective, and efficient manner. As soon as participants in the continuum of care endorsed the overall strategy, they defined roles and responsibilities, developed protocols and training, and successfully implemented the program.

The model of TOC from paramedics to ED staff needs to be redefined to reflect the reality of the patient experience. Similar new models are already used within EDs (e.g., rapid response teams to enable discharge rather than hospital admission) and within prehospital care, such as alternate destination and community paramedicine initiatives. The interface of TOC between paramedics and ED staff remains to be studied and addressed. Here, a new perspective of reality may emerge by examining the problem from the global point of view of the patient experience in an integrative manner.

Canadian researchers have applied methods borrowed from industry in demonstrating integrative thinking to provide new perspectives on OD. In Nova Scotia, a Health Care Failure Mode and Effect Analysis was used to evaluate a process map of TOC that included a novel offload zone (OZ), which received multiple ambulance patients waiting for an ED bed.²⁷ Failure Modes and Effects Analysis is a “systematic, proactive method for evaluating a process to identify where and how it might fail and to assess the relative impact of different failures, in order to identify the parts of the process that are most in need of change,”²⁸ and has been adapted to health care to optimize safe practice and reduce medical error. This process was undertaken by a project team and focus groups consisting of team members and OZ staff who identified possible failures of the OZ. These results “will inform current policy and practice and future work to understand the use of the OZ to reduce OD.”²⁷

In Ontario, a multidisciplinary group of high level decision-makers from EDs and EMS applied Lean Six-Sigma principles to OD.²⁹ This resulted in substantial decreases in time from ambulance arrival to TOC, time to patient registration, and time to paramedic departure. The primary outcome was EMS cost savings.

The key learning from these initiatives is the process by which stakeholders addressed a problem in an integrative, systemic, and evaluative manner. Further research must elaborate on these findings, include

outcome measures related to patient experience to validate, and enhance the credibility and sustainability of interventions.

CONCLUSION

As our disciplines have evolved in synchrony over the past 4 decades, so can our processes of care continue to align. By using an integrative approach, EM and EMS organizations can successfully define roles in TOC, hold providers and organizations accountable, and develop innovative solutions as they have for other system issues to ultimately reduce OD and ensure quality care in the right place, in the right time, and by the right provider in the prehospital and ED environments.

Keywords: transfer of care, offload delay, emergency department, paramedic

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REFERENCES

- Rowe BH, Bond K, Ospina MB, et al. *Emergency department overcrowding in Canada: what are the issues and what can be done?* Technology Overview, no. 21. Ottawa: Canadian Agency for Drugs and Technologies in Health; 2006. Available at: http://www.cadth.ca/media/pdf/422_overcrowding_to_e.pdf (accessed July 6, 2014).
- Schull MJ, Kiss A, Szalai JP. The effect of low-complexity patients on emergency department waiting times. *Ann Emerg Med* 2007;49(3):257-64.
- Affleck A, Parks P, Drummond A, et al. Emergency department overcrowding and access block. *CJEM* 2013;16(6):359-70.
- Fatovich DM, Nagree Y, Sprivilis P. Access block causes emergency department overcrowding and ambulance diversion in Perth, Western Australia. *Emerg Med J* 2005;22(5):351-4.
- Pines JM, Hilton JA, Weber EJ, et al. International perspectives on emergency department crowding. *Acad Emerg Med* 2011;18(12):1358-70.
- Derlet RW, Richards JR. Overcrowding in the nation's emergency departments: complex causes and disturbing effects. *Ann Emerg Med* 2000;35(1):63-8.
- Walker A. The legal duty of physicians and hospitals to provide emergency care. *CMAJ* 2002;166(4):465-9.
- Asamoah OK, Weiss SJ, Ernst AA, et al. A novel diversion protocol dramatically reduces diversion hours. *Am J Emerg Med* 2008;26(6):670-5.
- Schwartz B, Cass D, Christian M, et al. *Improving access to emergency services: a system commitment*. The Report of the Hospital Emergency Department and Ambulance Effectiveness Working Group. Ontario Ministry of Health and Long Term Care; 2005. Available at: http://www.health.gov.on.ca/en/common/ministry/publications/reports/emerg_dept_05/emerg_dept_05.pdf (accessed June 8, 2014).
- Canadian Association of Emergency Physicians, National Emergency Nurses Affiliation. Joint Position Statement on emergency department overcrowding. *CJEM* 2001;3(2):82-4.
- Norris S. *The wait times issue and the patient wait times guarantee*. Canada Library of Parliament; 2009. Available at: <http://www.parl.gc.ca/Content/LOP/researchpublications/prb0582-e.htm> (accessed July 6, 2014).
- Bell R, Affleck A, Carew D, et al. *Improving access to emergency care: addressing system issues*. Physician Hospital Care Committee (Ontario); 2006. Available at: http://www.health.gov.on.ca/en/common/ministry/publications/reports/improving_access/improving_access.pdf (accessed June 8, 2014).
- Cheng AH, Sutherland JM. British Columbia's pay-for-performance experiment: part of the solution to reduce emergency department crowding? *Health Policy* 2013;113(1-2):86-92, doi:10.1016/j.healthpol.2013.07.010.
- Sloan L. *Emergency medical service wait times in emergency departments*. Available at: <http://webdocs.edmonton.ca/OcctopusDocs/Public/Complete/Reports/Cs/CSAM/2007-04-16/2007CSE002.doc> (accessed September 28, 2014).
- Wait Time Alliance. *Time to close the gap: report card on wait times in Canada*; 2014. Available at: <http://www.waittimealliance.ca/wp-content/uploads/2014/06/FINAL-EN-WTA-Report-Card.pdf> (accessed June 22, 2014).
- Schull MJ, Morrison LJ, Vermeulen M, Redelmeier DA. Emergency department gridlock and out-of-hospital delays for cardiac patients. *Acad Emerg Med* 2003;10(7):709-16.
- Hwang U, Richardson LD, Sonuyi TO, Morrison RS. The effect of emergency department crowding on the management of pain in older adults with hip fracture. *J Am Geriatr Soc* 2006;54(2):270-5.
- Schull MJ, Vermeulen M, Slaughter G, et al. Emergency department crowding and thrombolysis delays in acute myocardial infarction. *Ann Emerg Med* 2004;44(6):577-85.
- Bernstein SL, Aronsky D, Duseja R, et al. The effect of emergency department crowding on clinically oriented outcomes. *Acad Emerg Med* 2009;16(1):1-10.
- McRae AD, Wang D, Blanchard IE, et al. UPSTREAM relief: benefits on EMS offload delay of a provincial ED overcapacity protocol aimed at reducing ED boarding. *CJEM* 2012;14(S1):abstract.
- Cooney DR, Millin MG, Carter A, et al. Ambulance diversion and emergency department offload delay: resource document for the National Association of EMS Physicians position statement. *Prehosp Emerg Care* 2011;15(4):555-61.
- NACRS Data Elements 2014-2015*. Canadian Institute for Health Information; 2014. Available at: http://www.cihi.ca/cihi-ext-portal/pdf/internet/nacrs_data_elements_2014_15_en (accessed July 6, 2014).
- National Ambulatory Care Reporting System Manual for 2014-2015. Ottawa, ON: CIHI (Canadian Institute For Health Information); 2014. ISBN 978-1-77109-262-3.

24. Moulton D. Paramedic program reducing emergency room congestion. *CMAJ* 2011;183(10):E631-2.
25. Sun J, Silvestri S, Papa L, et al. The impact of emergency department paramedic staffing on emergency medical services unit off-load time. *Acad Emerg Med* 2007;14(5S):S81.
26. Martin R. *The opposable mind*. Boston, MA: Harvard Business Press; 2009.
27. Carter A, Gould J, Vanberkel P, et al. The offload zone as a solution to emergency medical services offload delay in the emergency department: a process map and hazard analysis. *Prehosp Emerg Care* 2014;18(1):159-60 (abstract).
28. Institute for Healthcare Improvement. *Failure Modes and Effects Analysis Tool*. Available at: <http://www.ihl.org/resources/Pages/Tools/FailureModesandEffectsAnalysisTool.aspx> (accessed July 6, 2014).
29. Cheskes S, Dundas P, Duff ME, et al. The impact of Lean Six Sigma methodology on offload delay in a Canadian EMS system. *Prehosp Emerg Care* 2014;18(1):159 (abstract).