ADVANCES

Implementation of a novel prehospital advance directive protocol in southeastern Ontario

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ABSTRACT

Introduction: Do not resuscitate (DNR) orders are commonly accepted in most health care settings, but are less widely recognized in the prehospital setting. We describe the implementation of and satisfaction with a prehospital DNR protocol that allows paramedics to honour verbal and non-standard written DNR requests.

Methods: This prospective observational study reviewed all cardiac arrests in southeastern Ontario between March 1, 2003 and September 31, 2005. Following a verbal or non-standard written DNR request, paramedics completed a questionnaire and a follow-up structured telephone interview was conducted with surrogate decision makers (SDMs).

Results: There were 1890 cardiac arrests during the study period, of which 86 met our inclusion criteria. Paramedic surveys were available for 82 cases (95%), and surrogate decision makers (SDMs) were successfully contacted in 50 (58%) of them. Two SDMs declined to be interviewed. The mean patient age was 72.7 (standard deviation 13.8) years and 65% were male. Sixty-three (73%) of DNR requests were verbal, and 23 (27%) were written. The mean paramedic comfort was rated 4.9 on a 5-point Likert scale (with 5 being "very comfortable") (95% confidence interval [CI] 4.9–5.0). The mean SDM comfort was rated by paramedics as 4.9 (95% CI 4.8–4.9). SDMs reported comfort in withholding CPR in 47 of 48 cases (98%), and with paramedic care in all cases. One SDM stated that although it was consistent with the patient's wishes, she was uncomfortable having to make the DNR request.

Conclusions: Satisfaction with this novel prehospital DNR protocol was uniformly high among paramedic and SDM respondents. It appears that such a protocol is feasible and acceptable for the prehospital setting. Our conclusions are limited by a small sample size, the lack of a comparison group, and limited follow-up.

Key words: prehospital care, paramedics, emergency medical services, advance directives, do-not-resuscitate orders, ethics, cardiac arrest

RÉSUMÉ

Introduction : Les ordonnances de non-réanimation sont généralement acceptées dans la plupart des établissements de santé, mais elles sont moins reconnues en milieu préhospitalier. Nous décrivons ici la mise en œuvre d'un protocole préhospitalier de non-réanimation, et le taux de sat-

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isfaction qui en découle, qui permet au personnel paramédical d'honorer les demandes verbales et non standard écrites de non-réanimation.

Méthodes : Cette étude d'observation prospective a porté sur l'ensemble des arrêts cardiaques survenus dans le sud-est de l'Ontario entre le 1er mars 2003 et le 31 septembre 2005. Suite à une demande verbale ou non standard écrite de non-réanimation, le personnel paramédical a répondu à un questionnaire, et une entrevue téléphonique structurée de suivi a eu lieu auprès des mandataires.

Résultats : On a dénombré 1890 arrêts cardiaques pendant la période à l'étude, dont 86 répondaient à nos critères d'inclusion. Les questionnaires remplis par le personnel paramédical étaient disponibles pour 82 cas (95 %) et on a pu rejoindre avec succès 50 mandataires (58 %). Deux de ceux-ci ont refusé l'entrevue. L'âge moyen des patients s'établissait à 72,7 ans (écart-type de 13,8) et 65 % étaient de sexe masculin. Soixante-trois (73 %) demandes de non-réanimation ont été faites de vive voix et 23 (27 %), par écrit. On a évalué à 4,9 sur l'échelle de Likert de 5 points le taux de confort moyen du personnel paramédical (la note 5 correspondant à «très confortable») (intervalle de confiance [IC] à 95 % , 4,9–5,0). Le personnel paramédical a évalué à 4,9 (IC à 95 % de 4,8–4,9) le taux de confort moyen des mandataires, et ceux-ci se sont dit à l'aise d'ordonner la non-réanimation cardiorespiratoire dans 47 cas sur 48 (98 %), et dans tous les cas en ce qui concerne les soins apportés par le personnel paramédical. Un mandataire a indiqué que même si elle avait suivi en cela les désirs du patient, la demande de non-réanimation l'a laissée inconfortable.

Conclusions : Le taux de satisfaction à l'égard de ce nouveau protocole préhospitalier de non-réanimation a été très élevé chez le personnel paramédical et les mandataires. Un tel protocole semble faisable et acceptable en milieu préhospitalier. Nos conclusions sont limitées par la petite taille de l'échantillon, l'absence d'un groupe témoin et le suivi limité.

Introduction

Advance directives (ADs) are one method in which patients can exert their autonomy in health care decision making, and are now commonly recognized in hospitals, nursing homes and most health care settings. In Ontario, patients are afforded the right to make a "do-not-resuscitate" (DNR) request under the Health Care Consent Act (HCCA). However, paramedics in Ontario are not recognized under the HCCA. Under current legislation, and in the absence of a medical directive to the contrary, paramedics are not permitted to honour any type of DNR request made outside of a hospital or nursing home setting. As a result, paramedics are often faced with the difficult ethical dilemma of having to either initiate resuscitation despite clear requests to the contrary or to disregard legislation that requires them to attempt it.[1,2]

The majority of prehospital DNR policies utilize a standardized DNR document or identification device kept on or near the patient.[3–19] Most of these policies limit DNR candidacy to specific patient subgroups, and only 3 states in the United States allow emergency medical services (EMS) personnel to recognize patient-initiated standardized prehospital DNR forms without a physician's signature.[17,18,20] Descriptions of Canadian prehospital DNR policies are limited.[21–23]

Prehospital DNR policies that allow paramedics to honour verbal or non-standard written DNR requests made by the patient or a legally recognized surrogate decision maker (SDM) are limited. A non-standard written DNR request includes any type of written DNR request and could include an AD or living will drawn up through legal counsel, a letter from an attending physician or a signed patient-initiated document. A 1993 survey of US state prehospital DNR policies reported that some services in Kentucky are permitted to recognize written or verbal DNR orders based on local protocol.[15] However, there is no further elaboration in the literature regarding these protocols. In 2006, Feder and colleagues described a prehospital guideline implemented in King County, Washington allowing paramedics to honour verbal or written DNR requests in cases of cardiac arrest in adults with a known terminal illness.[24]

The Regional Base Hospital for Southeastern Ontario (RBHSEO) is designated by the Ontario Ministry of Health and Long-Term Care (MOHLTC) to provide medical direction for paramedics in the region. In 1999, the MOHLTC developed an Interfacility DNR Policy permitting paramedics to honour pre-existing DNR orders during transfers of patients between health care facilities (nursing homes or hospitals).[25] In 2001, the MOHLTC authorized the Medical Advisory Committee of the Ontario Base Hospitals Group to develop medical directives that would allow paramedics to honour DNR requests outside of health care facilities. A series of discussions brokered by the

RBHSEO ascertained that there was broad support in the medical, prehospital, palliative care and medicolegal communities for such an initiative. Therefore, a medical directive allowing paramedics to honour verbal or non-standard written prehospital DNR requests outside of health care facilities was designed (see Box 1) and implemented in the second quarter of 2002. This paper describes the implementation of and evaluates the acceptability of a prehospital DNR protocol among paramedics and SDMs.

Methods

Study location

Southeastern Ontario paramedics serve approximately 516 600 citizens in a variety of urban, suburban and rural settings covering a geographical area of almost 20 000 km^2. The enhanced 9-1-1 system responds to approximately 50 000 calls per year and is staffed by approximately 420 Primary Care Paramedics (PCP) and 40 Advanced Care Paramedics (ACP). PCPs are trained in basic airway management, defibrillation and the administration of a limited number of symptom relief medications. ACPs are trained in advanced airway management, cardioversion, cardiac pacing, peripheral vascular access and administration of advanced cardiac life support and symptom relief medications. ACPs are able to establish physician contact for permission to withhold or terminate resuscitation. PCPs work with standing orders only and do not have the ability to make physician contact. The original prehospital DNR protocol was intended for PCPs, but the medical director felt it reasonable to extend it to all paramedics in April 2003.

Box 1. Prehospital do-not-resuscitate (DNR) directive

A paramedic may withhold or withdraw resuscitative efforts if the following criteria are met:

1. A DNR order is present and reasonable effort has been made to verify the identity of the patient named in the order;
2. In the absence of a written DNR, a legally recognized surrogate decision maker is present and states that the patient expressed a desire not to be resuscitated in this type of circumstance" or presents reasons why the patient should not be resuscitate while maintaining the patient's best interests; and
3. The paramedic has no concerns about the appropriateness of withholding resuscitation based on:
    - doubts about the patient's best interest
    - the validity of the DNR order
    - the identity of the person making the request
    - the patient's family being unable to reach an agreement about withholding resuscitation

If the paramedic has any concerns, he or she will start resuscitative efforts as per the Ambulance Act

Design, implementation and evaluation of the protocol

Design of the DNR protocol for southeastern Ontario involved review and approval by the Hotel Dieu Hospital ethics committee and consultation between the Base Hospital medical director, prehospital care providers, palliative care physicians, emergency physicians, regional and local coroners, and hospital counsel. Implementation of the protocol entailed dissemination of information to community physicians associated with each of the hospitals within the catchment area of the RBHSEO through their respective medical advisory committees. No public education was conducted as part of this DNR protocol.

A quality assurance process to monitor the performance of the protocol was planned as part of its implementation. It consisted of evaluating paramedic satisfaction after the call and SDM satisfaction immediately and again at 30 to 60 days after the cardiac arrest. The immediate evaluation of SDM satisfaction was assessed by having paramedics rate apparent SDM comfort. Subsequent direct evaluation of SDM comfort took place at 30 to 60 days by telephone interview.

Paramedic training

Paramedic training in the region involved delivery of a 2-hour didactic session that began in spring 2002 and was completed by September 2002. The cost of the initial training and continuing education was covered in the regular schedule of paid continuing medical education hours. There were no additional training costs related to the DNR protocol. Training included discussion of patient autonomy, the HCCA, methods of initiating DNR discussion, identification of legally recognized SDMs, death notification and completion of survey questionnaires after a cardiac arrest. Paramedic training specifically covered the legislated list and rank order of importance of legally recognized SDMs (i.e., legal guardian, Power of Attorney for personal care, spouse or partner, child or parent, sibling or any other relative) as set out in the HCCA. A 6-month run-in period was conducted to allow paramedics to gain comfort with the new protocol.

Application of the protocol

The DNR protocol applied to all patients encountered in non-traumatic cardiac arrest, and was defined by the presence of apnea and the absence of a pulse. Exclusion criteria included cardiac arrest secondary to a suicide attempt or sudden reversible catastrophe (such as choking, anaphylaxis, adverse reaction to medication or submersion).

When DNR requests were made before cardiac arrest,

paramedics were instructed to provide supportive care (e.g., oxygen, airway support and comfort measures) and transport to hospital.

There was no scripted process for initiating discussion regarding use of the protocol. Upon confirmation of cardiac arrest, paramedics were instructed to prepare to resuscitate and to clearly communicate to the SDM that the patient's breathing and heart had stopped and they were about to begin resuscitation. If at any point the SDM indicated that he or she did not feel it was in the patient's best interests to be resuscitated or that the patient did not wish to be resuscitated, then paramedics would confirm the identity of the SDM and act accordingly. Paramedics were not permitted to suggest that resuscitation be withheld. If there was any doubt as to the identity of the SDM or appropriateness of the DNR request, paramedics were required to proceed with resuscitation.

Study design and methodology

The study design was a prospective observational trial conducted 6 months after paramedic training and the implementation of the DNR protocol. After a DNR request was honoured, paramedics were required to complete a paramedic questionnaire (Fig. 1) and attach it to the Ambulance Call Report (ACR). The paramedic questionnaire included information on the crew's level of training, comfort level with the protocol and the paramedics' perception of SDM comfort at the time of the call. Other than the 5-point scale, paramedics were not provided with a specific rating tool to facilitate the assessment of SDM comfort. The bottom portion of the questionnaire was given to SDMs to inform them of the study and follow-up contact. In addition, paramedics verbally informed SDMs that they would be contacted by investigators within 30 to 60 days and gave them the option to refuse the follow-up interview. Any such refusal was documented on the ACR or paramedic questionnaire.

All cardiac arrests between March 1, 2003 and September 30, 2005 were reviewed. Only ACRs that had a paramedic questionnaire attached or described the existence of a DNR request were included. Calls in which paramedics ceased or did not attempt resuscitation due to Base Hospital physician orders or cardiac arrests meeting obvious death criteria (defined as rigour mortis, dependent lividity, gross charring, injuries incompatible with life and decomposition) were excluded. Cardiac arrests in health care facilities (including nursing homes and hospitals) were also excluded, because the Interfacility DNR Protocol already existed for use in these settings.

In cases where paramedic questionnaires were not available, the Base Hospital sent follow-up letters to the paramedics involved to request that a questionnaire be completed. If the questionnaire remained unavailable, missing data (excluding comfort ratings) was abstracted from the narrative on the ACR. Multiple attempts were made to contact every SDM. In the event that contact information was not recorded or was incorrect, several strategies, including use of telephone directories, internet search engines, and contacting family physicians of the deceased, were employed to contact SDMs.

Data was abstracted according to a standardized template by 2 of the authors. Following retrieval of contact information of the person who made the DNR request, a follow-up structured telephone interview was conducted within 30 to 60 days of the original 9-1-1 call (Fig. 2). In all situations, SDMs were given the option to decline participation before commencing the interview.

A 2-sided unpaired t test was used to determine the significance of the difference in the normally-distributed mean age of patients with a verbal compared with a written DNR. A threshold for statistical significance of $p < 0.05$ was employed. Mean paramedic comfort and SDM comfort, as assessed by the paramedics on scene, was reported with 95% confidence intervals (CIs).

Results

There were 1890 cardiac arrests during the study period. No resuscitations were attempted in 759 of cases due to obvious signs of death. Of the remaining 1131 cardiac arrests, paramedics were presented with verbal or written DNR requests in 141 cases. Eighty-six of these DNR requests (7.6% of the cardiac arrests that did not meet obvious death criteria) were made outside health care facilities and met inclusion criteria for analysis.

The ACRs of all 86 cases that met inclusion criteria were retrieved for analysis. Paramedic questionnaires were available for 82 cases (95%) and surviving family members were successfully contacted in 50 cases (58%). Two family members, when contacted, declined to participate in the follow-up interview. The mean age of the patients was 72.7 years (standard deviation 13.8, range 44–98 yr), of which 65% were males. Sixty-three (73%) of the DNR requests were verbal, and 23 (27%) were in writing. There was no statistically significant difference in the mean age of patients with a verbal compared with a written DNR ($p = 0.46$). Sixty-seven (78%) DNRs were honoured by PCP crews, and 19 (22%) by ACP crews.

The SDM was the patient's spouse in 50 (58%) cases, the patient's child in 21 (24%) cases, the parent in 1 case (1%),

Paramedic Questionnaire – Prehospital DNR

Please attach to yellow copy of ACR.

Call number _____Vehicle _____Date _____
Level of cardiac care? ☐ BLS/defibrillation crew ☐ Intubation capable ☐ ALS crew

Was the patient's code status clearly expressed to you, verbally or in writing? ☐ Yes ☐ No

At what point during the resuscitation were these wishes made known to you?

- ☐ Prior to resuscitation
- ☐ After airway/breathing checked
- ☐ After intubation/ventilation
- ☐ After CPR/defibrillation initiated
- ☐ After ALS/drug interventions initiated

Who was making the decision?

NAME and TELEPHONE NUMBER

How was the decision conveyed to paramedics?

- ☐ Living will/written document
- ☐ Power of attorney for personal care
- ☐ Substitute decision maker

Who was left at scene with the deceased?
Please document disposition of the deceased on ACR.

Were you comfortable with stopping the Resuscitation?

- ☐ Very comfortable
- ☐ Somewhat comfortable
- ☐ Neither comfortable nor uncomfortable
- ☐ Somewhat uncomfortable
- ☐ Very uncomfortable

Did the survivors of the arrest appear comfortable with stopping resuscitation?

- ☐ Very comfortable
- ☐ Somewhat comfortable
- ☐ Neither comfortable nor uncomfortable
- ☐ Somewhat uncomfortable
- ☐ Very uncomfortable

Any comments on this call?_____
Please note if family declined further contact. To be completed by paramedic attending on the call.

--------- Detach here: Bottom portion to be provided to surviving family/friends after a prehospital DNR----------

We respect your wishes regarding resuscitation.

Until now, paramedics were required to attempt resuscitation in similar cases. We would like to contact you again in several weeks to ask about your feelings about not having attempted resuscitation today.

Our deepest sympathies on your loss.

Sincerely,

Fig. 1. Paramedic questionnaire.

the sibling in 3 (3%) cases, a non-relative Power of Attorney for Personal Care in 2 (2%) cases and non-specified "family" in 9 (10%) cases. Comments by SDMs regarding paramedic care were overwhelmingly positive. Examples of these include: "I was impressed by the paramedics' grace and courtesy," "they were supportive, professional, and understanding," "they talked about grieving, and were very comforting. . . stayed for a while. . . went above and beyond," "the paramedics phoned the funeral parlor and made me coffee," "I just couldn't praise them enough. . . " and "I was pleased the paramedics agreed with our wishes."

In 51 (59%) cases the DNR request was made before the initiation of resuscitation. Of the remaining cases, 14 (16%) DNR requests were made after assessment of airway and breathing, 2 (2%) following intubation or ventilation (or both) and 19 (22%) following initiation of cardiopulmonary resuscitation (CPR) or defibrillator use.

The mean paramedic comfort was rated as 4.9 on a 5-point Likert scale (95% CI 4.9–5.0), with a rating of 5 considered "very comfortable" with the DNR protocol. The mean apparent SDM satisfaction was rated by paramedics immediately after the call as 4.8 (95% CI 4.8–4.9).

Survivor questionnaire (30 – 60 days post arrest) – Prehospital DNR

Investigator: _____

Call number: _____

Date of call: _____

Date of follow-up contact: _____

What was your relationship with the deceased? _____

Who was the decision-maker for medical issues for the deceased?
☐ Substitute decision maker (identify relationship) _____
☐ Power of attorney for personal care
☐ Living will/other written document

Was the decision to stop/not start CPR in accordance with their wishes? ☐ Yes ☐ No

How were these wishes made known to you? _____

_____

Were you comfortable with the paramedics stopping/not starting CPR? ☐ Yes ☐ No

Was the paramedics' care conducted in accordance with what the patient would have wanted? ☐ Yes ☐ No

If not, in what way did it depart from their wishes? _____

_____

Any comments on how the situation was handled? _____

_____

_____

Fig. 2. Survivor questionnaire.

Paramedics left the patient with police in 40 (47%) cases, with a health care worker or physician in 21 (24%) cases and with family in 7 (8%) cases; they transported the patient to the hospital in 18 (21%) cases. In Ontario, a deceased individual may be left with a "responsible adult." The handling of the body was left to the discretion of responding police or paramedic staff. Pronouncement of death was completed by the patient's family physician or by the coroner.

When contacted after the call, SDMs reported having been made aware of the patients' prior wishes regarding resuscitation through informal discussion in 27 of 48 cases (56%) and through a living will in 15 (31%) cases. In 6 cases there was no prior discussion and SDMs reported having arrived at their decision by using their judgment at the time of the cardiac arrest. SDMs who agreed to be interviewed reported comfort with the decision to withhold CPR in 47 out of 48 cases (98%) and with paramedic care in all cases. The one SDM who reported discomfort with withholding CPR stated that the DNR request was consistent with the patient's prior stated wishes, but that she was uncomfortable with having to make the request.

Discussion

Under current legislation, and in the absence of a medical directive to the contrary, paramedics in Ontario are not permitted to honour DNR requests made outside of health care facilities. This results in a clear ethical conflict in performing resuscitation following requests to the contrary. The medical literature reflects the paucity of practice guidelines surrounding the recognition of non-standard DNR requests in the prehospital setting.

Guru and colleagues reported that in Toronto, DNR requests were made in 62.5% of cases of prehospital cardiac arrests involving patients with terminal illness. These accounted for 9.4% of all cardiac arrests over a 10-month period. PCPs initiated CPR in 86% of these cases and ACPs initiated CPR in 71% of cases. Although ACPs are permitted to withhold resuscitation after consultation with a medical control physician, 22% of DNR patients underwent unwanted attempted resuscitation. In addition, this study found that in 23.6% of cardiac arrests where a DNR request was made, paramedics did not follow current regulations mandating resuscitation, and honoured the request. The authors urged that formal prehospital DNR protocols be developed.[26] The practice of providing unwanted prehospital resuscitation is widely reported in the literature and further illustrates the need for comprehensive prehospital DNR policies.[3,21,26–28]

A 1998 survey of paramedics and emergency medical technicians (EMTs) in the northeastern United States revealed that 97% of personnel support the enactment of prehospital advance directive statutes.[29] A 2003 survey of EMTs in the United States demonstrates that termination of resuscitation at a scene is a relatively common event, yet only 77% of respondents have guidelines for termination. Of those EMTs reporting termination of resuscitation guidelines in their jurisdiction, 23% consider them inadequate. Although 89% of EMTs reported they would honour state-approved official advanced directives, only 14% would withhold resuscitation if presented with an "unofficial" written document or a verbal request for termination.[30] In a 1993 survey of physicians from 50 states in the United States, Puerto Rico and 2 Canadian provinces, 65% of the 136 respondents reported that they do not have a prehospital DNR policy in their system and 65% felt that there was a need for such a protocol to be developed.[31]

Prehospital care providers in a number of jurisdictions have reported mixed success with DNR protocols involving the use of standardized DNR documents or personal identification devices (including bracelets or necklaces).[10,12,14] Candidacy for such DNR programs is variable and is often limited to adult patients, terminally ill patients, hospice patients, nursing home patients or those meeting one or more other medical preconditions.[17,24] In addition, the majority of existing prehospital DNR policies are physician-initiated, with only 3 state policies recognizing patient-initiated DNR orders.[17,18,20]

Even in the presence of a state or province-wide approved DNR document, there would exist a subset of patients who would not have the time or the ability to obtain such a document. A 1999 survey of 5117 Health Maintenance Organization members revealed that less than one-third of seniors aged 65 years and older had an AD on file.[32] Additional studies reveal AD completion rates ranging from 7%–15%.[33–35] AD completion rates among emergency department patients ranges from 7.9% to 27%, with the latter figure including written directives and the designation of a health care proxy. As such, the percentage of patients with an actual written directive of care would be less than 27%.[36–38] Protocols that only recognize written standardized DNR orders are likely to lead to unwanted resuscitation efforts in a large proportion of patients.

Proponents of prehospital DNR programs advocate the development of policies that are simplified (i.e., identification strategies and requirements for pronouncement of death) and all-inclusive (i.e., unlimited candidacy and recognition of patient-initiated DNR requests).[14,20,39,40] Although scarce, support for recognition of patient-initiated non-

standard written DNR requests or verbal requests made by legally recognized SDMs is present in the literature.[24,40]

Despite compelling reasons to develop more liberal prehospital DNR policies, Jecker and Schneiderman contend that paramedics are unprepared to evaluate victim competency and the applicability and legality of living wills and DNR requests. They reason that the summoning of paramedic care may represent the patient's or SDM's desire to override a previous DNR document or request, and that an emergency situation is not an appropriate setting for discussion of DNR requests where there has been no previous discussion.[41] Our literature search did not reveal any documentation of errors, lives lost, lawsuits or any such consequence related to prehospital DNR recognition.

Guru and colleagues vividly described the need for a DNR protocol to resolve the ethical conflict between a paramedic's desire to honour a patient's DNR request and their obligations to initiate resuscitation under current Ontario legislation.[26] To our knowledge, ours is the first study that evaluates the feasibility and acceptability of a verbal or non-standard written prehospital DNR protocol that is not limited to terminally ill patients (or other similarly defined subgroups of patients) and recognizes physician, SDM or patient-initiated DNR requests.

In southeastern Ontario, verbal and non-standard written prehospital DNR requests were made in a large subset of patients with cardiac arrest during the study period. Seventy-three percent of DNR requests were verbal. Paramedics classified themselves and SDMs as "comfortable" or "very comfortable" with the withholding or withdrawal of resuscitation in all cases. In no cases did paramedics classify themselves or SDMs as "somewhat uncomfortable" or "very uncomfortable" with the DNR decision. SDMs, when surveyed after the fact, were also clearly supportive of allowing paramedics to honour prehospital DNR requests and many expressed concern that paramedics in most prehospital care systems are mandated to initiate resuscitation in such situations. This study demonstrates that paramedics and SDMs are comfortable withholding or withdrawing resuscitation in the prehospital setting based on perceived or stated patient wishes. These findings cannot be extrapolated to all cardiac arrest situations, as they might not apply in the setting of pediatric cardiac arrest, absence of chronic illness or in situations where futility is uncertain.

Current legislation in Ontario regarding prehospital resuscitation does not address the needs of patients outside a health care institution who do not wish to be resuscitated. An increasing number of patients are choosing to die at home and the number of instances where paramedics are summoned to attend expected deaths is anticipated to increase.

Families are often instructed not to call 9-1-1 at the time of an expected death. In our opinion, summoning paramedic care should remain one option for families seeking assistance with end-of-life care. Paramedics may be able to relieve patient distress, providing analgesia or other comfort measures, to confirm that death has occurred and to provide support to surviving family members.[42] It is incumbent upon medical directors and prehospital care providers to offer compassionate, rational end of life care in the presence of a DNR request. Efforts should therefore be made to enact and expand policies and educate paramedics to deal with these requests in a manner that offers dignity and autonomy to patients and their families and provides an ethically acceptable option to paramedics who are summoned to attend these calls.

Limitations and future research opportunities

This prospective observational study did not include a comparison or control group. It was conducted as a feasibility study to ascertain whether there would be any problems with implementing a protocol and does not address the question of whether this DNR protocol is superior to existing practice. Any expansion of the prehospital DNR protocol should ideally include a prospective assessment of paramedic and SDM satisfaction before implementation. This would provide a comparison group for determination of the impact of the protocol.

In a number of cases, the paramedics did not fill out their questionnaire immediately after the call, but were contacted to fill it out retrospectively. Their rating of their comfort level and the SDM comfort level may have been limited by poor recall or recall bias.

There may have been a selection bias in terms of recruitment of subjects into the study. Only those SDMs who expressed a preference for not proceeding with resuscitation were enrolled. If SDMs did not initiate a DNR request, paramedics were obliged to proceed with resuscitation unless there was evidence of obvious death. It is conceivable that SDMs who did not initiate a DNR request might have been more likely to find a DNR protocol unacceptable and these cases were not included in the study. Paramedics who were uncomfortable with the protocol might have elected to proceed with resuscitation despite the expressed wishes of the SDM. As such, it is possible that paramedics who initiated the protocol were biased toward recording elevated levels comfort or apparent SDM comfort with the policy. Finally, there was a relatively low rate of SDM fol-

low-up, which limits the strength of our conclusions. Although diligent efforts were made to contact SDMs, the loss of a family member may have prompted relocation, making contact difficult. An earlier call-back timeframe might have improved the rate of successful contact. As a result of the low rate of follow-up, it is possible that negative perceptions of this protocol by SDMs, or even paramedics, were missed. However, the RBHSEO did not receive any complaints from any members of the public or paramedic staff regarding the protocol.

This protocol does not allow paramedics to choose whether they wish to disregard a medical directive for any reason, including religious, ethical or philosophical objections. This was one reason that this feasibility study included a survey of paramedic comfort with the protocol. As indicated previously, no paramedics indicated discomfort with the prehospital DNR protocol, suggesting that the principle of prehospital DNR recognition may be acceptable to most paramedics. A survey of paramedics to determine the types of cases where withholding a DNR request would be uncomfortable may be a worthwhile area for future study.

Due to the sensitive nature of the circumstances, we elected to use paramedic perception of SDM comfort as a substitute measure of actual survivor comfort immediately following the DNR request rather than approach SDMs at the time of patient death. Actual SDM comfort was evaluated 30 to 60 days post-event and may have been limited by poor or biased recall.

There were problems with the adoption of this protocol in its early stages, with some paramedics contacting online medical control physicians (when such contact was not required) to approve of termination of resuscitation in instances where there was a clear verbal or written DNR request. This happened less frequently once paramedics became comfortable with the protocol. In cases where firefighters attended the scene as first responders, they were required to attempt resuscitation and were not able to honour a DNR request. The feasibility of including first responders in such a program has not been assessed.

There was no public education adopted as part of this protocol for a number of reasons. First, many 9-1-1 callers do not recognize the significance of premorbid events and could be expected to summon paramedic assistance even in the presence of an apparent impending death. Second, it was strongly felt that paramedics still had a role to play in relieving discomfort of dying patients and providing assistance to grieving family members. A public education program discouraging activation of paramedic care for death in the home setting would prevent paramedics from providing this service.

The DNR protocol we describe is unique in meeting many of the guidelines set forth by Schears and colleagues in their 2004 policy resource entitled "Do Not Attempt Resuscitation in the Out-of-Hospital Setting," including provisions for use in minors and recognition of various forms of DNR requests. Our prehospital DNR protocol could be further improved by expanding the protocol to include standing orders for comfort or palliative care measures, establishment of legal immunity provisions for prehospital providers acting in good faith and procedures to facilitate organ and tissue donation as per patient wishes.[18]

Conclusions

A prehospital DNR protocol implemented in 2002 in southeastern Ontario employed a broad consultative process among stakeholders. This protocol allowed paramedics to accede to a verbal or written request for cessation of resuscitation made by family members or other SDMs. Satisfaction among paramedics and SDMs with the DNR protocol was uniformly high. The small sample size, lack of comparison group and limited follow-up of family members may decrease the strength of these conclusions, however our findings suggest that implementation of a prehospital DNR protocol is a feasible and widely acceptable endeavour.

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