Assessment of Advanced Care Paramedic Versus Enhanced Skills Set Primary Care Paramedic in a Rural and Remote Setting

Dr. Andrew Affleck, CCFP(EM) FIFEM, Medical Director, NW Region Base Hospital Program, LHIN 14 ED LHIN Lead
Norm Gale, CD, MBA, CMMIII, Chief, Superior North Emergency Medical Service

Introduction:

The skills set required for a paramedic in a rural and remote setting is challenging. There is a need to provide acute care in an isolated environment versus the training, skills retention and continuing medical education required to provide medical care. To date, there is a lack of evidence to give decision-makers direction as to whether an Advanced Care Paramedic (ACP) or Primary Care Paramedic (PCP) with enhanced skills is ideal.

Armstrong is a rural and remote community with a population of 300 and also serves two first nation communities of 350 and 315 residents. It is 250km north of Thunder Bay with a travelling time of over three hours. Superior North EMS (SNEMS) provides ambulance service for the communities and has traditionally been staffed by PCP's. There is access to the Ornge air ambulance, however the response time can be over an hour and access is often restricted by the weather. This community is an ideal environment to assess the practicality of placing an ACP in a rural and remote community versus an enhanced skill set PCP.

Methods:

SNEMS deployed an ACP to Armstrong from 2007 to 2010. The ACP crew alternated with the PCP crew with both providing 24 hour coverage for a week at a time. The sample for the study included all patients assessed and transported by the paramedics during the time of the study. Using the iMEDIC data base all of the Ambulance Call Reports (ACRs) for each call were analyzed for the outcome measures. The ACP and PCP calls were then compared.

Two outcome measures were used for the study. The first was the Change in Patient Status (CPS) with a range of 1 (much worse) to 7 (much better). The CPS numerical value was assigned to the individual patient and a mean value for CPS determined for the ACP and PCP patients. The difference was assessed by a t-test.

The second outcome measure was the judgement of two subject matter experts (SME's), one a veteran ACP and the second the Medical Director of the Base Hospital Program. The ACP SME reviewed all PCP calls and made a judgement as to whether the patient would have benefited from any of the Schedule II Acts that an ACP could perform. The medical SME then reviewed these calls. Unsuccessful IV attempts were excluded. Descriptive results were obtained from the SME reviews.

Results:

During the study period 1,384 calls were attended by the paramedics. Of this 428 calls were undertaken by the ACP crew and 956 by the PCP crew.

The CPS values were assigned as follows: much better=7, moderately better=6, slightly better=5, no change=4, slightly worse=3, moderately worse=2 and much worse=1. The mean CPS for the PCP crews was 4.64 and for the ACP crew 4.60.

There was no significant difference found between the PCP versus the ACP CPS (p=.352).

After assessing all PCP calls the ACP SME judged that 103 calls completed by a PCP could have used one or more of an ACP's Schedule II Acts. The Medical SME reviewed these calls and agreed that in 79 of these calls a Schedule II act could have bee performed by an ACP. During the study period 46 patients received Schedule II Acts by the ACP. Thus the total number of patients an ACP performed or could have performed a Schedule II act was 125. As the study period was 3 years this means an ACP could expect to perform Schedule II Acts on 44 patients per year. A summary of the Schedule II Acts performed by the ACP are as follows:

Schedule II Act	# of Times Used
IV Normal Saline	39
Saline Lock	32
Fluid Bolus	14
Morphine	35
Dimenhydrinate	14
Atropine	4
Midazolam	5
D50W	3
Furosemide	3

Discussion:

The opportunity to use the full set of the ACP Schedule II Acts was limited in this rural and remote community. Several Schedule II Acts were not performed during the 3 year study period (e.g. intubation, interosseous access). To have an ACP full time in this rural and remote setting would not be practical as the opportunity to use the full skills set was very limited and as such extensive Continuous Medical Education (CME) would be required. Furthermore ACP confidence would erode. Since the time of this study PCP's have taken on some of the Schedule II Acts. They can give Dimenhydrinate and most PCP's are IV certified. The Schedule II Act that stands out as a frequent need is Morphine. Morphine is used for pain control and in a rural and remote setting transport times are significant, in this case over 3 hours; the ability to administer morphine could enhance patient care.

Conclusion:

Placing an ACP in a rural and remote setting does not appear to be practical due to the ability to maintain all of their Schedule II skills set. Having a PCP with IV skills in a rural and remote setting would be beneficial and the addition of the ability to administer Morphine would benefit patient care. Further studies are required using a broader sample of rural and remote communities to provide more information to guide decision makers on the skills set required by paramedics in these settings.

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A Process for Determining the Skills Set for a Paramedic in a Rural and Remote Community

Dr. Andrew Affleck, CCFP(EM) FIFEM, Medical Director, NW Region Base Hospital Program, LHIN 14 ED LHIN Lead
Norm Gale, CD, MBA, CMMIII, Chief, Superior North Emergency Medical Service

Introduction:

Armstrong is a rural and remote community 250km north of Thunder Bay. It has a population of 300 with two nearby First Nations communities with populations of 350 and 315. The drive to the nearest hospital often exceeds 3 hours. Prior to 2007, the community was served by a 24 hour ambulance service under Superior North EMS (SNEMS) and was been staffed entirely by Primary Care Paramedics (PCP) . From 2007 to 2010 an Advanced Care Paramedic (ACP) was deployed in Armstrong as a pilot project. Medical oversight and the delegation of controlled medical acts were provided by the Northwest Region Base Hospital Program. To assess the effect on patient care that an ACP may have, a decision-making tool is suggested. This tool was to be developed as a resource for decision-makers to determine the optimal level of paramedic skill in any rural and remote community.

Methods:

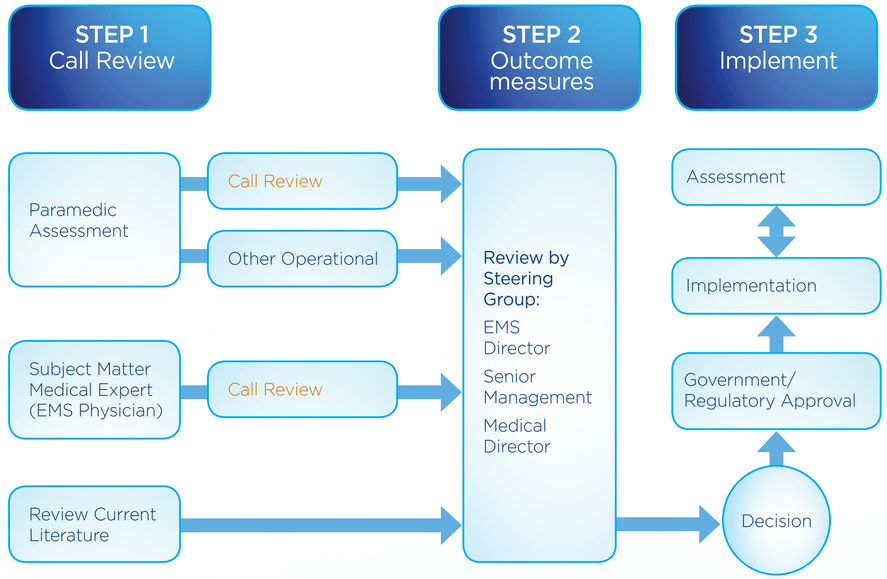
A working group consisting of a project coordinator, SNEMS senior management, a Base Hospital Medical Director and an ACP was struck to develop the tool for the pilot project. The development of the tool took place through discussions focused on the patient and the care that the patient may require. With the patient at the center of creating the assessment tool the following factors were identified as variables that would need to be taken into consideration: the rural and remote community demographics, the current paramedic service, the potential for enhanced care, the ability to recruit an ACP to work in Armstrong, the education and CME required for the individual paramedic to maintain skills, the impact on patient care with an enhanced skills set, identification of local/provincial regulations and recognition of all partners involved in the use of the tool, development of outcomes to assess the tool.

Results:

The tool was centered on call reviews in keeping with the patient being at the center of care in the tool. Call reviews are done by a veteran ACP and a subject matter medical expert (in this case a veteran EMS Physician). A steering group directed the assessment and call review process as well as the development of the outcome measures. Based upon the outcome measures from the call review and a review of the current literature and the operational factors, a decision on the optimal skills for paramedics in an individual community may be made. Once the Paramedic Chief and Medical Director (key decision-makers) agree, this decision may then be forwarded to the governing body(s) for approval. Should it be approved, the plan may then be implemented with an ongoing assessment of the outcome measures.

Discussion:

The decision tool for determining potential skills set for a paramedic in a rural and remote community needs to be patient centered and based upon the patient population and call pattern. The tool can be adjusted to take into consideration local variances. Clinical as well as operational issues including maintenance of skills must be taken into consideration and built into the implementation plan. Future studies assessing this tool would be helpful for decision makers when determining the level of paramedic service that would be most beneficial to a particular rural and remote community. Governing bodies will make decisions based on operational, financial, demographic and human resources exigencies. This decision tool supports those decisions.



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