

The development of a quality assessment tool for ambulance patient care records

Erin Smith, Mal Boyle and James MacPherson

Abstract

A retrospective cohort study of the 2002 Victorian prehospital emergency care documentation completed by ambulance paramedics had the objectives: (i) to design and implement a quality assessment tool to determine the quality of the ambulance patient care record (PCR) information; and (ii) to identify critical demographic and clinical items on the ambulance PCR that needed improvement. The study outcomes included a functioning quality assessment tool and associated user guide for prehospital use, and the identification of three critical PCR components requiring improvement. Ninety percent of PCRs passed the quality assessment; 10% (approximately 5 300) contained measurably poor or incomplete documentation.

Keywords: *Quality; patient care record; ambulance; prehospital; documentation*

Introduction

Over the past 10 years the focus of prehospital care has shifted dramatically from simple treatment and transport roles to complex and sophisticated clinical interventions. This shift in focus has led to an increasing emphasis in the prehospital setting on basing policy, practice and delivery decisions on evidence. The development of an evidence base for paramedic practice requires rigorous research to identify the impact of current ambulance clinical practice guidelines on patient morbidity and mortality. International literature reports the lack of this kind of evidence. (Spaite 1993; Spaite, Criss et al. 1995; Callaham 1997; McClean, Maio et al. 2002). While existing prehospital research has been predominantly related to cardiac care and resuscitation, cardiac arrests account for only 2% of total ambulance responses (Spaite, Benoit et al. 1995).

One of the reasons for this lack of evidence is the difficulty of conducting randomised controlled trials for prehospital care interventions. The emergency care environment is highly unpredictable and uncontrollable, and therefore not conducive to strictly controlled studies. Consequently, many prehospital research studies rely on the information documented in the ambulance patient care record (PCR).

The PCR is a vital communication tool in the prehospital environment. While the design and format of the PCR may vary between ambulance services, the information captured on the PCR is inherently similar both nationally and internationally. With the information documented on the PCR forming the basis of many prehospital studies, the need for high quality data capture is paramount. So far, no quality assessment tools have been designed specifically to assess the quality of ambulance PCR documentation or the impact of documentation on the overall outcomes of prehospital research. Victorian Ambulance Services have quality audit systems that are used to monitor individual paramedic PCR documentation. These quality audit systems are designed specifically to assess paramedic performance and adherence to protocols. Consequently, these tools are not suitable for use as a quality assessment tool for prehospital research projects.

The primary objective of this study was to design, develop and implement a quality assessment tool to

determine the quality of information completed on the PCR, not to assess the actual quality of the clinical processes or procedures documented. The secondary objective of this study was to identify areas on the ambulance PCR where patient details, observations and management could be improved, thereby making the PCR a more useful document in the continuum of healthcare for the patient. This information would be passed on to the associated ambulance services.

Methodology

In 2002 a prehospital trauma triage study was developed to answer two significant prehospital care questions that remained unresolved following the *Review of Trauma and Emergency Services in Victoria* in 1999 (Department of Human Services 1999). The project was designed to capture information on all trauma patients who were transported by ambulance in Victoria in 2002.

As there is no electronic ambulance data repository in Victoria, each ambulance PCR for 2002 was manually reviewed by a research assistant to establish eligibility for project inclusion. The PCR documentation was the sole source of information for these trauma cases. To ensure high quality data capture for the project, a quality assessment tool suitable for ambulance trauma patient care records needed to be developed.

A Health Information Manager appointed a steering group to develop the quality assessment tool. The steering group included the Health Information Manager, a Research Fellow and four Research Assistants. Following appointment of the steering group, the following specific project objectives were developed:

- consult Health Information Managers, quality managers and researchers who have worked with, and/or developed quality assessment tools
- consult Victorian Ambulance Services to discuss the quality audit systems currently in place at those services, and to gain copies of the checklists used
- conduct a comprehensive literature review for existing quality assessment tools
- assess the format of the ambulance patient care record

- identify essential criteria that a trauma PCR must have documented
- identify the remaining criteria that a trauma PCR must have documented
- develop a rank order for the criteria to be included in the checklist
- decide on the total overall mark
- determine the pass mark and any conditions
- develop a scoring system and guidelines for assessors
- consult with a statistician to determine minimum required sample size
- determine sampling size
- consult with an epidemiologist to develop a random sampling system
- determine who would assess the PCRs
- conduct a trial assessment on 2 months worth of data
- analyse results of the trial assessment
- make any required adjustments to the checklist identified by the trial
- commence quality assessment for the trauma project PCRs
- analyse data at monthly intervals, at a 6 month interval, and finally at 12 months.

A comprehensive literature review was conducted to identify existing quality assessment tools which may have been suitable for the ambulance trauma PCRs. The search strategy included the key words 'quality', 'quality scale', 'quality tool', 'quality assessment' and 'quality appraisal' in addition to medical subject headings (MeSH) and text terms for the prehospital setting. Initial searching failed to identify any relevant quality assessment tools. However, the search strategy retrieved several tools and scales that could potentially be modified to achieve the checklist required for the trauma project.

After reviewing the potentially relevant quality assessment tools identified by the literature search, the Maryland Practitioner Clinical Medical Record Audit by Amerigroup was identified as the quality assessment tool most suited to the projects needs (<http://www.amerigroupcorp.com/>). The quality audit developed by Amerigroup was specifically designed for hospital medical records. The format and scoring system of the Maryland Practitioner Clinical Medical Record Audit consequently required modification to meet the needs of a prehospital quality audit tool.

In developing the quality assessment tool, key data fields from the PCR were assigned scores. The total score possible for the quality assessment was 100. Some fields were allocated higher maximum scores than others due to the essential nature of the information. Several data fields were classified as essential (patient identification details, medications, allergies, treating paramedic's signature). To pass the assessment, the PCR had to receive a total score greater than 80% and meet all essential criteria. If PCRs failed to document essential criteria but still scored over 80%, they were still classified as a fail.

Using the Maryland checklist and Victorian Ambulance Services quality audit checklist as a guide, the ambulance trauma PCR quality assessment checklist was developed. The ambulance trauma PCR quality checklist went through a drafting process, with four

versions developed and updated, with version five the final checklist that was implemented as the quality assessment tool for the project.

The primary version of the checklist included a set of scoring guidelines attached to each checklist. The guidelines are four pages long, and attaching them to every checklist was considered to be a waste of paper. It was determined that each quality assessor would be given a single copy of the checklist scoring guidelines. This reduced the quality assessment checklist to a double-sided A4 sheet. In addition to saving paper, the new double-sided format also required less storage room in filing cabinets.

On completion of the Ambulance Trauma PCR Quality Audit Checklist, the steering group were required to determine an adequate sample size for the project, and develop a random sampling method for the PCRs. An epidemiologist and statistician were consulted in regard to project design, random sampling methods and sample size determination. The sample size was set at five PCRs per day for both ambulance services. Following consultation with an epidemiologist, it was determined that every 10th PCR per day would be sampled, per subgroup, until the necessary number of PCRs were obtained.

On completion of the checklist, random sampling method, and determination of an adequate sample size, a trial of 2 months of ambulance trauma data recording was performed. This trial was to provide a preliminary quality analysis of the trauma data, and to highlight and rectify any application problems of the checklist. The results of the 2 month trial were discussed at the next steering committee meeting, and the final version of the quality checklist, sampling procedure and scoring system were implemented. The quality audit for the remaining 10 months of trauma PCRs commenced. It was determined that data would be analysed at 3 month, 6 month and 12 month intervals.

Outcomes

The quality assessment tool was designed and used for the prehospital trauma triage study (see Appendix). In addition to the quality assessment tool, a user's guide was developed. The results of the quality assessment were communicated to the ambulance services and were included in the project report to the funding body and project steering committee.

The quality assessment tool identified three main areas on the PCR where patient details, observations and management can be improved so that the PCR is a more useful document in the continuum of healthcare for the patient. This information has been communicated to the ambulance services and has provided target areas for quality improvement initiatives when teaching and evaluating paramedic PCR documentation.

For the year 2002, the ambulance services transported 53 039 trauma patients to hospitals within Victoria. The quality assessment of the PCRs for this cohort of patients identified that 90% of all PCRs passed the quality assessment, indicating that these PCRs provided high quality information and enhanced the overall quality of the study outcomes. However, 10% of the PCRs assessed did not pass the quality checklist. As the sample of PCRs that were analysed

were randomly selected, we hypothesise that our results are generalisable to the entire study group. Therefore, approximately 5 300 PCRs provided poor documentation and were incomplete in essential components.

Additional research is required to identify these missing components so that this information can be utilised in continuing paramedic education programs, future research studies and the future development of the electronic Victorian Ambulance Clinical Information System (VACIS).

Recommendations

In a report to the Victorian Trauma Foundation, the project management committee recommended that the Victorian Ambulance Services evaluate the quality assessment tool which was designed, developed and successfully used in this project as a tool for measuring the quality of PCR documentation on an ongoing basis.

References

- Callahan, M. (1997). Quantifying the scanty science of pre-hospital emergency care. *Annals of Emergency Medicine* 30: 785-790.
- Department of Human Services, Victoria. (1999). *Review of Trauma and Emergency Services in Victoria. Report of the Ministerial Taskforce on Trauma and Emergency Services and the Department Working Party on Emergency and Trauma Services*. Melbourne, Department of Human Services.
- McLean, S.A., Maio, R.F., Spaite, D.W. and Garrison, H.G. (2002). Emergency medical services outcomes research: evaluating the effectiveness of prehospital care. *Prehospital Emergency Care* 6: S52-S56.
- Spaite, D.W. (1993). Outcome analysis in EMS systems. *Annals of Emergency Medicine* 22: 1310-1311.
- Spaite, D.W., Criss E.A., Valenzuela, T.D. and Guisto, J. (1995). Emergency medical services systems research: prob-

lems of the past, challenges of the future. *Annals of Emergency Medicine* 26: 146-152.

Spaite, D.W., Benoit, R., Brown, D., Cales, R., Dawson, D., Glass, C., Kaufmann, C., Pollock, D., Ryan, S. and Yano, E.M. (1995). Uniform prehospital data elements and definitions: a report from the Uniform Prehospital Emergency Medical Services Data Conference. *Annals of Emergency Medicine* 25: 525-534.

Erin Smith *BHlthInfoMgmt, GradCertClinTrials, MCLinEpi, MACAP*

Centre for Ambulance and Paramedic Studies
Monash University
Peninsula Campus, McMahons Rd, Frankston VIC 3199
AUSTRALIA
Phone: +61 3 9904 4213
erin.smith@med.monash.edu.au

Mal Boyle *ADipBus(GenAdmin), ADHS(AmbOfficer), MI-CA Cert, BInfoTech(Info Sys), MCLinEpi*

Centre for Ambulance and Paramedic Studies
Monash University
Peninsula Campus, McMahons Rd, Frankston VIC 3199
AUSTRALIA
Phone: +61 3 9904 4176
mal.boyle@med.monash.edu.au

James MacPherson *BBus*

Centre for Ambulance and Paramedic Studies
Monash University
Peninsula Campus, McMahons Rd, Frankston VIC 3199
AUSTRALIA
Phone: +61 3 9904 4319
james.macpherson@med.monash.edu.au

Corresponding Author: Erin Smith

Appendix

Ambulance Trauma PCR Quality Audit Checklist

1. Reviewer Name (please circle) **ES** **JM** **TB** **GD**
2. Review Date _____
3. Date of PCR _____
4. Case Number _____
5. Agency (please circle) **MAS** **RAV**

	Data item		Point value	Yes	No	N/A	Point score
1	Is date and case number filled out?	*	4				
2	Are all patient ID fields complete?	*	4				
3	Are all patient address fields complete?	*	4				
4	Is patient's charge classification specified?		1				
5	Are patient's DVA/pension details recorded where applicable?		1				
6	Are attending police officers' details recorded where applicable?		2				
7	Is patient pick up location specified?		3				
8	Is hospital destination specified?		3				
9	Are all ambulance crew details complete?		4				
10	Are call out, arrival times and incident time complete?		7				
11	Is 'case given as' field complete?		1				
12	Are observations fields complete?		5				
13	Is the main problem identified?		3				
14	Is previous history identified?		5				
15	Are medications listed?	*	5				
16	Allergies and adverse reactions to meds clearly displayed?	*	5				
17	Is a complete event history documented?		4				
18	Are on attendance observations documented?		2				
19	Are examination procedures documented?	*	5				
20	Is initial assessment documented?		2				
21	Is time critical assessment documented?		1				
22	Is road traffic section complete (for appropriate PCRs)?		3				
23	Is patient diagram clearly labelled?		1				
24	Are CPR and first aid check boxes used where appropriate?		1				
25	Are all sections of the patient management record complete?	*	5				
26	Is final assessment documented?		1				
27	Are NPT reasons documented?	*	3				
28	Are patient refusals documented with patient signature?	*	2				
29	Is handover section complete?		1				
30	Is PCR signed by ambulance officer?	*	5				
31	Is ambulance officers qualification level documented?		2				
32	Is the patients response documented?		1				
33	Is documentation legible?		4				
	TOTAL		100				

*** These critical elements must be met, in addition to receiving an average score of 80%, to achieve an acceptable rating on the Clinical Medical Record Review ¹**

Final assessment: ____ / 100

____ %

(please circle) Satisfactory / Unsatisfactory
Ambulance Trauma PCR Quality Audit Checklist
- User Guidelines

This quality audit checklist has been developed at Monash University, Centre for Ambulance and Paramedic Studies. It is based on the Amerigroup model for the Maryland Practitioner Clinical Medical Record Audit.

This checklist is to be used for Metropolitan Ambulance Service (MAS) and Rural Ambulance Victoria (RAV) trauma care patient care records (PCRs) from 1 January 2002 – 31 December 2002.

Trauma care PCRs will be randomly assigned to the audit using a system collecting every tenth PCR for the day until 5 have been selected. 5 PCRs will be audited per day by both MAS and RAV.

The following key should be used when determining point values for each checklist item.

1. Total = 4 points

*** mandatory field**

- 4 points date and case number
- 2 points one of above listed
- 0 point none listed

2. Total = 4 points

*** mandatory field**

- 4 points surname, given name, gender and date of birth
- 3 points any three of above listed
- 2 points any two of above listed
- 1 point one of above listed
- 0 point none listed

3. Total = 4 points

*** mandatory field**

- 4 points street number, street name, suburb and postcode
- 3 points any three of above listed
- 2 points any two of above listed
- 1 point one of above listed
- 0 point none listed

¹ Maryland Practitioner Clinical Medical Record Audit, Amerigroup

2 points any two of above listed
 1 point one of above listed
 0 point none listed

13. Total = 3 points

3 points yes
 0 point no

14. Total = 5 points

rate on a scale from 1 (poor) – 5 (good)

15. Total = 5 points

5 points yes
 0 point no

16. Total = 5 points

*** mandatory field**

5 points yes
 0 point no

17. Total = 4 points

*** mandatory field**

4 points age, gender, presenting problem, mechanism of injury
 3 points any three of above listed
 2 points any two of above listed
 1 point one of above listed
 0 point none listed

18. Total = 2 points

2 points yes
 0 point no

19. Total = 5 points

rate on a scale from 1 (poor) – 5 (good)

20. Total = 2 points

*** mandatory field**

2 points yes
 0 point no

21. Total = 1 point

1 point yes
 0 point no

22. Total = 3 points (only use this section if applicable, if not RTA, assign 3 points)

3 points vehicle type, removal from vehicle method,
 seat belt/helmet worn

2 points any two of above listed
 1 point one of above listed
 0 point none listed

23. Total = 1 point

1 point yes
 0 point no

24. Total = 1 point

1 point yes
 0 point no

25. Total = 5 points

5 points time, action/fluid/drug, dose, route, treatment effect/reassessment
 4 points any four of above listed
 3 points any three of above listed
 2 points any two of above listed
 1 point one of above listed
 0 point none listed

26. Total = 1 point

*** mandatory field**

1 point yes
 0 point no

27. Total = 3 points (only use this section if applicable, if not NPT, assign 3 points)

3 points yes
 0 point no

28. Total = 3 points (only use this section if applicable, if not, assign 3 points)

*** mandatory field for applicable PCRs**

2 points patient refusal reason noted with patient signature, or documentation of patients refusal to sign PCR
 1 point patient refusal reason noted
 0 point patient refusal, no reason noted

29. Total = 1 point

*** mandatory field for applicable PCRs (documentation of patients refusal to sign PCR, assign 1 point)**

1 point yes
 0 point no

30. Total = 5 points

5 points yes
 0 point no

31. Total = 2 points

*** mandatory field**

2 points yes

0 point no

32. Total = 1 point

1 point yes

0 point no

33. Total = 4 points

rate on a scale from 1 (poor) – 4 (good)

4 points easily legible, can read all sections

3 points legible, some sections difficult to read

2 points poorly legible, most sections difficult to read

1 point poor, unable to read