

Paramedic – Evidence Based Medicine (P-EBP) Program

Paramedic CAT (Critically Appraised Topic) Worksheet

Title: Does EMS Charting Accuracy Improve with Electronic Reporting?

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Clinical Scenario: Two medics are on shift together. On this shift, both medics will chart each call. The first will use an electronic form and the second will use a paper based form. At the conclusion of the shift, the paper charts will be submitted to the company and compared to the electronic charts to identify differences between the two and which one more closely reflects the treatment given to the patient.

PICO (Population – Intervention – Comparison – Outcome) Question:

For recording EMS patient information (P), does electronic charting (I) versus traditional paper charting (C) lead to differences in data accuracy (O)?

Search Strategy: ((Manual Data Processing) OR (Electronic Data Processing))

Search Outcome: 621 Titles

Relevant Papers: 2 were chosen

AUTHOR, DATE	POPULATION: SAMPLE CHARACTERISTICS	DESIGN (LOE)	OUTCOMES	RESULTS	STRENGTHS/WEAKNESSES
Newgard 2012	Electronic and Manual Charts 10 EMS Agencies 21 month time period	Comparison Study LOE: 2	Compare case ascertainment, agreement, validity and missing values for 18 data points.	418 patients had both electronic data reporting and linking to trauma databases AND hand-charting, chart matching and data abstraction for the main study. Agreement was found to be good	Weaknesses <ul style="list-style-type: none"> • This was a secondary analysis of a study dataset • Study only

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	Trauma Patients			<p>between electronic and paper charts (kappa = 0.76-0.97). Data was found to be missing less often in the paper method compared to electronic (3% vs. 21%). Case ascertainment was better with electronic than paper.</p>	<p>focused on trauma patients</p> <ul style="list-style-type: none"> • Focused on a single reason • Cohort and not a clinical trial
Landman, 2012	20 EMS agencies leaders from US and Canada	Qualitative Interviews LOE: 3	<p>Motivations for adoption of ePCR Challenges associated with adoption and implementation strategies</p>	<p>Motivations for adoption</p> <ol style="list-style-type: none"> 1. Improved legibility 2. Improved billing 3. Fewer lost charts 4. Mandates requiring adoption 5. Support quality assurance <p>Challenges to Adoption</p> <ol style="list-style-type: none"> 1. Financial (High start-up costs and lack of financial resources) 2. Organizational (lack of leadership and complex organizational structures) 3. Technical (poor user interface and unreliable vendors) 4. Privacy (concerns about privacy and security) 5. Fear of increased ambulance run times 6. Difficulty integrating ePCR systems with existing ED or hospital information 	<p>Weaknesses</p> <ul style="list-style-type: none"> • LOE: 3 • No statistical information to backup results • Some information was collected through web survey while other was collected through interviews <p>Strengths</p> <ul style="list-style-type: none"> • International Sampling



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				7. Difficulty responding to unfunded mandates requiring adoption of ePCR systems	
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Comments: Because the use of ePCR systems is relatively new in the EMS field, there is limited data available in this area. The one study that examined data from electronic versus paper charts was for the purpose of a larger research study. This data focuses on only one type of patient, so it is unknown how reliable EMS ePCR data is for the entire spectrum of patients they care for. The second study explored the views of EMS leaders on implementing ePCR in their systems. Further research is needed to further validate how accurate the patient information is that is entered into ePCR systems, and if this accuracy is improved over traditional paper methods.

Clinical Bottom Line: Although there is some evidence to support that electronic charting is valuable, further research is needed. As EMS systems implement ePCR, they should consider conducting a study in which electronic and paper charting can be compared. This evidence would be valuable for other services considering such an investment.

References:

Newgard CD, Zive D, Jui J, Weathers C, Daya M. Electronic versus manual data processing: evaluating the use of electronic health records in out-of-hospital clinical research. *Acad Emerg Med* 2012 Feb;19(2):217-27. doi: 10.1111/j.1553-2712.2011.01275.x.

Landman AB, Lee CH, Sasson C, Van Gelder CM, Curry LA (2012) Prehospital Electronic Patient Care Report Systems: Early Experiences from Emergency Medical Services Agency Leaders. *PLoS ONE* 7(3): e32692. doi:10.1371/journal.pone.0032692

