Paramedic CAT (Critically Appraised Topic)

Title: Recognition of sepsis by paramedics

Report by: Logan Battaglia

Clinical Scenario:

Paramedics respond for a 72-year-old male complaining of shortness of breath and feeling unwell with acute onset late last night. The patient is found sitting on his sofa presenting with an unproductive hacking cough. His vital signs are all within normal limits, he has a history of COPD, and his daughter reports that he had a urinary tract infection 1-week prior.

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

Do paramedic's have the necessary knowledge and tools to treat patients presenting with sepsis in a pre-hospital setting?

Search Strategy: (Paramedics) and (Sepsis) and (Recognition) Limit: last 5 years

Search Outcome: 11

Author Date:	Population: Sample Characteristics	Design:	Outcomes:	Results:	Strengths/Weaknesses:
Green, S. R., et al, 2016.	956 patients enrolled that requested ems presenting with abdominal, breathing, and chest pain /problems.	Prospective observational study.	Using a pre-hospital sepsis assessment tool there was over 70% accuracy of paramedic diagnoses.	629 patients were used in the final results of this study. The sepsis assessment tool showed 73% sensitivity, 78% specificity, and 78% accuracy. Overall, paramedics diagnosed 27% of the patients in this study with sepsis.	Strengths- Took into consideration different vital signs and diagnoses that could contribute to or rule out sepsis. Multiple charts to display characteristics relating to the study. Weaknesses- The sample size is a moderate size, but could be bigger

					to get more results. Only used one ems service, in the future could include another service to see if there is a difference in results from different locations.
Lane et al, 2016.	3885 papers were reviewed and only 16 were used for the study. 8 outline identification, 7 outline management, and 1 outlines both.	Systematic review.	The accuracy of methods used by paramedics to identify sepsis via knowledge, physiologic signs, and tools are all significantly low.	The ability of paramedics to provide identification of sepsis without tools or methodologies was unable to be calculated, but was reported to be low. Physiologic signs included about 8% of people with sepsis identified by paramedics using vital signs and other physiologic factors. Screening tools used to identify sepsis were unable to be calculated but were reported to have a moderate effect of sepsis diagnosis.	Strengths- Looked at multiple different sources to find the most accurate and relevant sources for the study. Took into consideration that some of the publications found could be biased. Weaknesses- Not including the population sizes from other studies in this one. There were values for the paramedic's recognition of sepsis using different methods displayed in the tables, but without knowing the size of population it's hard to justify if it is accurate. Due to there not being enough literature on paramedics recognition of sepsis ability it is hard to accurately and effectively display the paramedics ability to identify sepsis as needing improvement.

| Smyth, A. M., Brace-Mcdonnell, J. S., Perkins, D. G., 2016. | 2958 papers were reviewed and only 8 were kept for use in this study. Patients from studies that originate from multiple other countries contribute to a total of 147,320 people with 1123 patients actually enrolled in this study. | Systematic review. | Used a sepsis screening tool to test for sepsis and compared its accuracy to screening tools used in the emergency department. | Overall paramedics had an inconsistent recognition of sepsis before arriving at the hospital. There were several different methods outlined, but it was not the goal to determine which one was superior.

 The emergency department had a higher diagnosis rate as they have access to perform more tests like white blood cell and lactate testing to confirm sepsis occurrence. | Strengths- Used a wide variety of resources to provide necessary literature to support the study.

Implemented the use of charts to display information from multiple sources.

Weaknesses- There were articles included that were classified as low quality due to there not being enough higher quality research.

In the studies used there were no randomized control groups identified, so this could be a factor leading to inaccurate results of diagnoses.

Within many studies there were only limited sized groups of participants with no specified control. |
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Comments:

The research shows that paramedics have difficulty in recognizing sepsis within the pre-hospital setting just based off of clinical knowledge and judgment. However, with using certain screening tools to assist them in identifying this condition it can be beneficial for the recognition of sepsis, and also for the correct mode of treatment that the patient should receive from paramedics and emergency room staff.

Consider: Why would you NOT change practice, based on this article?

Based on the literature of the articles presented there is not enough evidence-based research to be able to change clinical based protocols. However, there is some indication that sepsis-screening tools can be beneficial in the identification process, but more future research is required to ensure all aspects of the tools are adequately examined.

Clinical Bottom Line:

The research presented shows that paramedic's clinical judgment is not very accurate in diagnosing sepsis and that sepsis screening tools can be a suitable method to use. However, without further research to look into exactly how beneficial it really is then paramedics should continue to do what their local clinical protocols require.

References:

Green, S. R., et al. (2016). Paramedic Recognition of Sepsis in the Prehospital Setting: A Prospective Observational Study. Emergency Medicine International. Doi: 10.1155/2016/6717261

Lane, D., et al. (2016). Prehospital management and identification of sepsis by emergency medical services: a systematic review. Emergency Medicine Journal, Vol 33, Issue 6. https://emj.bmj.com/content/33/6/408

Smyth, A. M., Brace-McDonnell, J. S., Perkins, D. G. (2016). Identification of adults with sepsis in the prehospital environment: a systematic review. Emergency Medicine Journal, Vol 6, Issue 8. https://bmjopen.bmj.com/content/6/8/e011218