TITLE: Screening for Endovascular Therapy Eligibility for Stroke Patients: Clinical Evidence, Cost-Effectiveness and Guidelines

DATE: 08 August 2016

RESEARCH QUESTIONS

1. What is the clinical evidence regarding screening for endovascular therapy eligibility for stroke patients in the prehospital setting?

2. What is the cost-effectiveness of screening for endovascular therapy eligibility for stroke patients in the prehospital setting?

3. What are the evidence-based guidelines regarding screening for endovascular therapy eligibility for stroke patients in the prehospital setting?

KEY FINDINGS

Two systematic reviews were identified regarding screening for endovascular therapy eligibility for stroke patients in the prehospital setting.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2011 and July 26, 2016. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.
SELECTION CRITERIA

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

<table>
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<th>Table 1: Selection Criteria</th>
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<td><strong>Population</strong></td>
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<td><strong>Intervention</strong></td>
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| **Comparator**              | Q1 & Q3: No comparator  
Q2: No screening;  
Screening tools or criteria compared to each other |
| **Outcomes**                | Q1: Clinical evidence regarding screening (e.g., existing screening tools, criteria for assessing endovascular therapy eligibility, clinical utility of this screening)  
Q2: Cost-effectiveness (e.g., QALY, cost savings or increased costs in identifying these patients, downstream costs avoided or incurred due to further screening)  
Q3: Guidelines and recommendations regarding screening stroke patients for eligibility for endovascular therapy (e.g., what criteria should be used for screening these patients, how to implement screening for endovascular therapy) |
| **Study Designs**           | Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies, economic evaluations, evidence-based guidelines |

QALY=quality-adjusted life year.

RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, economic evaluations, and evidence-based guidelines.

Two systematic reviews were identified regarding screening for endovascular therapy eligibility for stroke patients in the prehospital setting. No relevant health technology assessments, meta-analyses, randomized controlled trials, non-randomized studies, economic evaluations, or evidence-based guidelines were identified.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

Two systematic reviews\(^1\)-\(^2\) were identified regarding the screening for endovascular therapy eligibility for patients with stroke in the prehospital setting. Rudd et al. described the performance characteristics of published stroke identification instruments when used in any clinical setting, including the prehospital setting.\(^1\) In total, seven instruments were identified with studies varying considerably in terms of quality, patient demographics, characteristics of false-negative patients, and service context. The authors concluded that available data do not allow a strong recommendation to be made about the selection of a particular stroke recognition technique.
instrument over another.\textsuperscript{1} The second systematic review by Brandler et al. compared the operating characteristics of prehospital stroke scales to predict true strokes in the hospital.\textsuperscript{2} Inconsistencies in the performance of various scales were identified and the authors suggested that this could be related to sample size disparity, variability in stroke scale training, and divergent provider educational standards. Up to 30% of acute strokes may be missed with the use of prehospital stroke scales.\textsuperscript{2} The results of the systematic reviews are summarized in Table 2.

### Table 2: Summary of Included Systematic Reviews

<table>
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<tr>
<th>First Author, Year</th>
<th>Studies Included</th>
<th>Intervention and Comparators</th>
<th>Results and Conclusions</th>
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</table>
| Rudd, 2015\textsuperscript{1} | 18 papers and 3 conference abstracts | 7 instruments were identified: FAST ROBIE LAPSS MASS OPSS MedPACS CPSS | - Cohorts varied between 50 and 1225 individuals, with 17.5% to 92% subsequently receiving a stroke diagnosis  
- Sensitivity and specificity for the same instrument varied across clinical settings  
- CPSS and FAST generally report the highest level of sensitivity, with more complex instruments such as LAPSS reporting higher specificity at the cost of lower detection rates.  

Conclusions: available data do not allow a strong recommendation to be made about the superiority of a stroke recognition instrument. Choice of instrument depends on intended purpose, and the consequences of a false-negative or false-positive result. |
| Brandler, 2014\textsuperscript{2} | 8 studies | 7 scales were identified: CPSS LAPSS MASS MedPACS OPSS ROBIE FAST | - Although the point estimates for LAPSS accuracy were better than CPSS, they had overlapping confidence intervals on the symmetric summary ROC curve; LAPSS and CPSS had similar diagnostic capabilities based on graphical analysis.  
- OPSS performed similar to LAPSS whereas MASS, MedPACS, ROBIE, and FAST had less favorable overall operating characteristics.  

Conclusions: inconsistencies in performance of various prehospital stroke scales were found; these scales varied in their accuracy and missed up to 30% of acute strokes. |

CPSS = Cincinnati Prehospital Stroke Scale; FAST = Face Arm Speech Test; LAPSS = Los Angeles Prehospital Stroke Screen; MASS = Melbourne Ambulance Stroke Scale; MedPACS = Medic Prehospital Assessment for Code Stroke; OPSS = Ontario Prehospital Stroke Screening tool; ROC = receiver operating characteristic; ROSIER = Recognition of Stroke in the Emergency Room.
REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses


Randomized Controlled Trials
No literature identified.

Non-Randomized Studies
No literature identified.

Economic Evaluations
No literature identified.

Guidelines and Recommendations
No literature identified.

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APPENDIX – FURTHER INFORMATION:

Systematic Reviews/Meta-Analyses – Not Pre-Hospital Setting or Unknown Setting


Non-Randomized Controlled Trials – Not Pre-Hospital Setting or Unknown Setting


**Guidelines and Recommendations – Not Pre-Hospital Setting or Unknown Setting**

Clinical Practice Guidelines and Opinion Statements – Unspecified Methodology


Endovascular Therapy Not Specified


Review Articles
