Title: Securement Devices for Peripheral and Central Venous Lines: Clinical and Cost Effectiveness

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Research question:

1. What is the evidence for the clinical effectiveness of securement devices compared to sutures to secure peripheral or central venous lines to reduce complication rates, reduce risk of loss of the line, and for patient satisfaction?

2. What is the cost effectiveness of securement devices compared to sutures to secure peripheral or central venous lines?

Methods:

A limited literature search was conducted on key health technology assessment resources, including PubMed, the Cochrane Library (Issue 1, 2008), University of York Centre for Reviews and Dissemination (CRD) databases, ECRI, EuroScan, international HTA agencies, and a focused Internet search. Results include articles published between 2003 and March 2008, and are limited to English language publications only. Filters were applied to limit the retrieval to health technology assessment, systematic reviews, guidelines, economic, randomized controlled trials (RCTs), and observational studies. Internet links are provided, where available. The summary of findings was prepared from the abstracts of the relevant information.

Results:

HTIS 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 economic evaluations, randomized controlled trials, observational studies, and evidence based guidelines.

One economic study, one observational study, and one guideline were identified pertaining to the evidence for the clinical and cost-effectiveness of securement devices to secure peripheral

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venous lines. No information on the use of securement devices specifically for central venous lines was identified. No relevant health technology assessments, systematic reviews or RCTs were found. Additional information that may be of interest has been included in the Appendix.

**Overall summary of findings:**

Pooled data from 83 product trials compared a tape stabilization method to the peripheral intravenous (PIV) StatLock® catheter stabilizing device.\(^1\) Clinically, there was a 67% (P<0.001) reduction in total patient complications with the use of the securement device when compared with catheters secured with tape. There was also a 76% (P<0.001) reduction in the need for PIV restarts for catheters with the stabilizing device. Economically, the use of the securement device resulted in a savings of US$18,000 in PIV material costs alone and a savings of US$277,000 in materials, complication costs, and nursing time combined. The authors concluded that the securement device not only reduced patient complications, but also reduced the risk of needlestick exposures for healthcare workers.

A prospective, sequential clinical trial was undertaken to determine whether any of three methods of PIV securement (non-sterile tape, StatLock®, and Hub-guard®) could extend the survival of PIV catheters to allow for a 96 hour PIV change protocol.\(^2\) Nonsterile tape securement resulted in an 8% PIV survival rate, HubGuard® produced a 9% PIV survival rate, and Statlock® produced a 52% PIV survival rate (P<0.001). The results of this observational study suggested that mechanical PIV securement devices allow for a 96 hour PIV change protocol. Additionally, the Oncology Nursing Society’s access device guidelines showed dislodgment episodes were significantly reduced and dwell times were increased up to 3.95 days with the use of StatLock®.\(^3\)

Overall, these studies suggest that securement devices are effective in reducing complications in patients and in increasing the survival time of PIV catheters.\(^1-3\) These reductions in complications and increases in PIV life-span also resulted in cost savings.\(^1\)
References summarized:

Health technology assessments
None identified

Systematic reviews and meta-analyses
None identified

Economic analyses and cost information

Observational studies

Guidelines
For Peripheral catheter, see recommendation 4.0

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Appendix – Further information:

Randomized controlled trials


Observational studies


Review articles


Additional references


Evidence shows that commercially available catheter securement devices both reduce accidental needlesticks to healthcare workers and prevent catheter-related bloodstream infections by limiting catheter movement


Protocols