



“Central line maintenance (CLM) for intensive care unit (ICU) patients is a task through which error or non-adherence to protocols can cause central line-associated bloodstream infections (CLABSIs). We conducted an economic analysis of an adherence engineering CLM kit designed to improve the CLM task and reduce the risk of CLABSI” Nelson et al (2015).

Reference:

Nelson, R.E., Angelovic, A.W., Nelson, S.D., Gleed, J.R. and Drews, F.A. (2015) An Economic Analysis of Adherence Engineering to Improve Use of Best Practices During Central Line Maintenance Procedures. Infection Control and Hospital Epidemiology. March 16th. .

Improving clinical practice outcomes during central line maintenance procedures  
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Abstract:

OBJECTIVE: Adherence engineering applies human factors principles to examine non-adherence within a specific task and to guide the development of materials or equipment to increase protocol adherence and reduce human error. Central line maintenance (CLM) for intensive care unit (ICU) patients is a task through which error or non-adherence to protocols can cause central line-associated bloodstream infections (CLABSIs). We conducted an economic analysis of an adherence engineering CLM kit designed to improve the CLM task

and reduce the risk of CLABSI.

**METHODS** We constructed a Markov model to compare the cost-effectiveness of the CLM kit, which contains each of the 27 items necessary for performing the CLM procedure, compared with the standard care procedure for CLM, in which each item for dressing maintenance is gathered separately. We estimated the model using the cost of CLABSI overall (\$45,685) as well as the excess LOS (6.9 excess ICU days, 3.5 excess general ward days).

**RESULTS** Assuming the CLM kit reduces the risk of CLABSI by 100% and 50%, this strategy was less costly (cost savings between \$306 and \$860) and more effective (between 0.05 and 0.13 more quality-adjusted life-years) compared with not using the pre-packaged kit. We identified threshold values for the effectiveness of the kit in reducing CLABSI for which the kit strategy was no longer less costly.

**CONCLUSION** An adherence engineering-based intervention to streamline the CLM process can improve patient outcomes and lower costs. Patient safety can be improved by adopting new approaches that are based on human factors principles.

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