



Master in Evidence-Based Practice e Metodologia della Ricerca Clinico-assistenziale



**Centro Studi EBN**

**Azienda Ospedaliero - Universitaria di Bologna**

**Policlinico S. Orsola - Malpighi**

**Direttore del corso: Paolo Chiari**

In collaboration:

The [Joanna Briggs Institute](#) (Australia): Tiffany Conroy

Thames Valley University (Gran Bretagna): Carol Pellowe

**Protocol Sistematic Review**  
**The educational interventions to patients to**  
**prevent the infections development of Central**  
**Venous Catheter insertion site in adult patients**

**AUTHOR INFORMATION:**

Antonio Nappo

Facca Valentino

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## **A Systematic Review title**

The educational Interventions to prevent development the infection of Central Venous Catheter insertion site in adult patients: a Systematic Review.

## **Centre Conducting Review**

Centro Studi EBN- Università degli Studi di Bologna – Bologna – Italy  
and Joanna Briggs Institute – Australia –

## **Primary Reviewer**

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## **Secondary Reviewer**

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## **Background**

Central Venous Catheter (CVC) means a vascular catheter inserted (from a variety of sites) with the tip located in the superior vena cava. CVC are used for giving multiple infusions, medication or chemotherapy, temporary haemodialysis, monitoring of central venous pressure and frequent blood sampling. There are different type of CVC i.e. made by different materials, have one or more lumens, coated or impregnated with antimicrobial or antiseptic agents or heparin-bonded, cuffed and designed to be tunnelled, having totally implantable ports.

The selection of the most appropriate CVC for each individual patient can reduce the risk of subsequent CR-related infection (CR-infection). [[R.J. Pratt, C.M. Pellowe, J.A. Wilson, H.P. Loveday, P.J. Harper, S.R.L.J. Jones, C. McDougall, M.H. Wilcox, 2007]]

In this Systematic Review it be analyzed all type of CVC that present insertion site on the skin (i.e. Groshong, PICC) and there are excluded the CVC without it (i.e Port).

It's possible to classify the catheter about the time of permanence:

- Short term when they stay inside for 3-4 weeks
- Medium term when they stay inside from 1 to 6 months (i.e. PICC);

- Long term when they stay inside more than 6 months (i.e. Port-a-Cath®, Groshong®)[[ Registered Nurses Association of Ontario. , 2004]]

The benefits of these devices far outweigh the risks.

The most common complications are thrombosis [[Cobos E, Dixon S, Keung YK., 1998]] and bloodstream infections (BMA) associated with the insertion and maintenance of CVC that called catheter related bloodstream infections (BMA-CR) .

The BMA-CR are among the most dangerous complications of healthcare that can occur, worsening the severity of the patients underlying ill health, prolonging the period of hospitalisation and increasing the cost of care. Approximately 3 in every 1000 patients admitted to hospital in the UK acquires a bloodstream infection, and nearly one third of these infections are related to central venous access devices.[[R.J. Pratta, C.M. Pellowea, J.A. Wilsona,b, H.P. Lovedaya, P.J. Harpera, S.R.L.J. Jonesa, C. McDougallb, M.H. Wilcox, 2007]].

To avoid these complications is necessary that patient and health workers are trained to handle both the catheter is the system infusional.[[ National Institute for Clinical Excellence , 2003]]

In the real work of authors one infection on four of nosocomial infections is represented by infections of the point of listing cvc.

### **Review Question/Objective**

The educational interventions can prevent the site's infections in adult patients with long-term Central Venous Catheter?

Specific objectives:

- to determine if patient education is an effective tool for preventing infection of the long term Central Venous Catheter insertion site;
- to identify the educational methods for improving/increasing self-care of insertion site's in patients with long term Central Venous Catheter;

### **Review instrument**

MASTARI

### **Type of participant:**

The quantitative component of this review will consider studies that include adult patients with CVC medium and long term (to 1month ago) that present insertion site on the skin (i.e. Groshong, PICC).

**Type of intervention (phenomena of interest):**

The quantitative component of this review will consider studies that evaluate, and educational interventions about self-management for preventing infection of the long term Central Venous Catheter insertion site

**Type of outcome:**

Quantitative :

This review will consider studies that include the following outcome measures about infection development of the medium and long term Central Venous Catheter insertion site.

**Types of study:**

The quantitative component of the review will consider any randomised controlled trials; in the absence of RCTs other research designs, such as non-randomised controlled trials and before and after studies, will be considered for inclusion in a narrative summary to enable the identification of current best evidence regarding outcome measure about infections development of the long term Central Venous Catheter insertion site.

**Search strategy:**

The comprehensive search strategy aims to find both published and unpublished studies from 1975-2008, published in the English and Italian languages. The search strategy aims to find both published and unpublished studies. A three-step search strategy will be utilised in each component of this review. An initial limited search of MEDLINE and CINAHL will be undertaken followed by analysis of the text words contained in the title and abstract, and of the index terms used to describe article. A second search using all identified keywords and index terms will then be undertaken across all included databases. Thirdly, the reference list of all identified reports and articles will be searched for additional studies.

The databases to be searched include:

CINAHL

The Cochrane Library

Health Source: Nursing/Academic Edition

Elsevier Science Direct

EMBASE

ISI Web of Science

MEDLINE

PubMed

TRIP (Turning Research Into Practice)

BioMed Central

Centre for Reviews and Dissemination (CRD)

ACP Journal

**The search for unpublished studies will include:**

Dissertations

Conference Proceedings

Index to Theses

New York Academy of Medicine - Grey Literature Report

Liverpool Health Authority - Grey Literature Bulletin

AHRQ (Agency for Healthcare Research and Quality)

Theses Canada Portal

NLM Gateway

CEEHD

GoogleScholar.com

Clinical Medicine Netprints Collection

Geneva Foundation for Medication Education and Research

HTA: Health Technology Assessment

Institute for Health & Social Care Research (IHSCR)

National Library of Health (NLH)

The Open University

World Health Organization Library (WHOLIT)

Initial keywords to be used will be:

Catheterization central venous, Infection, Patient education as topic, Education nursing, Patient education  
handout

## **Methods of the Review**

### **Assessment of Methodological Quality**

Quantitative papers selected for retrieval will be assessed by two independent reviewers for methodological validity prior to inclusion in the review using standardised critical appraisal instruments from the Joanna Briggs Institute Meta Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI) (Appendix A and Appendix C).\*

\*Any disagreements that arise between the reviewers will be resolved through discussion, or with a third reviewer.

### **Data Collections**

Quantitative data will be extracted from papers included in the review using the standardised data extraction tool from JBI-MAStARI (Appendix B and Appendix D).\*

\*The data extracted will include specific details about the interventions, populations, study methods and outcomes of significance to the review question and specific objectives.

### **Data Synthesis**

(JBI-MAStARI). All results will be subject to double data entry. Odds ratio or RR(for categorical data) and weighted mean differences (for continuous data) and their 95% confidence intervals will be calculated for analysis. Heterogeneity will be assessed using the standard Chi-square. Where statistical pooling is not possible the findings will be presented in narrative form.

### **Conflict of Interest**

There aren't conflict of interest.

### **References**

- R.J. Pratta, C.M. Pellowea, J.A. Wilsona,b, H.P. Lovedaya, P.J. Harpera, S.R.L.J. Jonesa, C. McDougallb, M.H. Wilcox c epic2: National Evidence-Based Guidelines for Preventing Healthcare-Associated Infections in NHS Hospitals in England Journal of Hospital Infection 2007 65S, S1-S64;
- Cobos E, Dixon S, Keung YK Prevention and management of central venous catheter thrombosis Current Opinion in Hematology 1998 5 (5) 335-339;

- Nursing Best practice Guideline. Assessment and device selection for vascular access. Registered Nurses Association of Ontario 2004. [www.gavecelt.info/uploads/linee\\_guida\\_rnao.pdf](http://www.gavecelt.info/uploads/linee_guida_rnao.pdf);
- National Institute for Clinical Excellence. Care of patients with central venous catheters. National Institute for Clinical Excellence 2003. [www.gavecelt.info/uploads/linee\\_guida\\_nice.pdf](http://www.gavecelt.info/uploads/linee_guida_nice.pdf) ;

**Appendix A**

**Critical Appraisal Checklist for Experimental Studies**

Reviewer \_\_\_\_\_ Date \_\_\_\_\_

Author \_\_\_\_\_ Year \_\_\_\_\_

Record Number \_\_\_\_\_

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	Yes	No	Unclear	N/A
1. Was the assignment to treatment groups random?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Were participants blinded to treatment allocation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Was allocation to treatment groups concealed from the allocator?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Were the outcomes of people who withdrew described and included in the analysis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Were those assessing outcomes blind to the treatment allocation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Were the control and treatment groups comparable at entry?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Were groups treated identically other than for the named interventions?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Were outcomes measured in the same way for all groups?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Were outcomes measured in a reliable way?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Was there adequate follow-up (>80%)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Was appropriate statistical analysis used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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**Overall Appraisal:**       Include       Exclude       Seek further info.

**Reviewer's Comments (Including reasons for exclusion):**

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**Appendix B**

**Data Extraction Form for Experimental/Observational Studies**

Reviewer \_\_\_\_\_ Date \_\_\_\_\_

Author \_\_\_\_\_ Year \_\_\_\_\_

Record Number \_\_\_\_\_

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**Study Method:**     RCT             Quasi-RCT             Longitudinal  
                                  Retrospective             Observational             Other

**Participants:**

Setting: \_\_\_\_\_

Population: \_\_\_\_\_

Sample size: \_\_\_\_\_

**Intervention:**

Intervention 1: \_\_\_\_\_

Intervention 2: \_\_\_\_\_

Intervention 3: \_\_\_\_\_

**Clinical Outcome Measures:**

Outcome Description	Scale/Measure

**Study Results:**

Dichotomous Data

Outcome	Intervention ( ) Number/Total Number	Intervention ( ) Number/Total Number

Continuous Data

Outcome	Intervention ( ) Mean and SD (Number)	Intervention ( ) Mean and SD (Number)

**Author's Conclusions:**

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**Reviewer's Comments:**

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**Appendix C**

**Critical Appraisal Checklist for Interpretive & Critical Research**

Reviewer \_\_\_\_\_ Date \_\_\_\_\_

Author \_\_\_\_\_ Year \_\_\_\_\_

Record Number \_\_\_\_\_

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	Yes	No	Unclear
1. Is the source of the opinion clearly identified?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Does the source of the opinion have standing in the field of expertise?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Are the interests of patients/clients the central focus of the opinion?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Is the opinion's basis in logic/experience clearly argued?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the argument developed analytical?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Is there reference to the extant literature/evidence and any incongruence with it logically defended?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Is the opinion supported by peers?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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**Overall Appraisal:**       Include       Exclude       Seek further info.

**Reviewer's Comments (Including reasons for exclusion):**

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**Appendix D**

**Data Extraction Form for Interpretive & Critical Research**

Reviewer \_\_\_\_\_ Date \_\_\_\_\_

Author \_\_\_\_\_ Year \_\_\_\_\_

Journal \_\_\_\_\_ Record Number \_\_\_\_\_

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**Study Description:**

Type of Text: \_\_\_\_\_

Those Represented: \_\_\_\_\_

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Stated: \_\_\_\_\_

Allegiance/Position: \_\_\_\_\_

Setting: \_\_\_\_\_

Geographical: \_\_\_\_\_

Cultural: \_\_\_\_\_

Logic of Argument: \_\_\_\_\_

Data Analysis: \_\_\_\_\_

**Author's Conclusions:**

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Conclusions	Illustration from Publication (page number)	Unequivocal	Evidence Credible	Unsupported

**Extraction of findings complete:**       Yes

**Reviewer's Comments:**

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