



Centre for Clinical Effectiveness

Enhancing patient outcomes through clinical application of the best available evidence

EVIDENCE CENTRE
CRITICAL APPRAISAL
Series 2002: Intervention

Do infection control liaison (link) programs improve patient infection rates?

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SUMMARY STATEMENT:

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REQUEST:

Do Infection Control liaison (link) programs improve patient infection rates?

REQUESTED BY:

Noleen Bennett, Infection Control Consultant, Infection Control, MMC, Clayton.

METHODOLOGY

Search Strategy

The Centre for Clinical Effectiveness defines the 'best available evidence' as that research we can identify that is least susceptible to bias. We determine this according to pre-defined National Health and Medical Research Council (NHMRC, 2000) criteria (see Appendix 1).

First, we search for systematic reviews, evidence based clinical practice guidelines, health technology assessments and randomised controlled trials. If we identify sound, relevant material of this type, the search stops. Otherwise, our search strategy broadens to include studies that are more prone to bias, less generalisable or have other methodological difficulties. We include case-control and longitudinal cohort studies in our critical appraisal reports. While we cite observational and case series studies, and narrative reviews and consensus statements, in our reports we do not critically appraise them. Such studies can produce accurate results but they are generally too prone to bias to allow determination of their validity beyond their immediate setting.

Details of Evidence Request

Patient/condition:	Infection control in a hospital setting
Intervention:	Infection control liaison (link) program, infection control liaison nurse (ICLN)
Comparison:	No infection control liaison (link) program or ICLN
Outcomes:	Infection rates, efficacy, effectiveness

Search terms (see Appendix 2 for exact search strategy)

Table 1. Search terms used in the retrieval of articles from electronic databases and websites

Field of focus	Search term
Patient/condition-related	exp infection control/ or infection control.mp
Intervention-related	Link\$.tw, liaison.tw, infection control link.tw, infection control liaison.tw, ICLN.tw
Outcome-related	Infection rate\$.mp, exp infection/or infection.mp

Resources Searched

We searched the following databases and Internet websites:

Cochrane Library CD-ROM- Issue 4, 2001

Medline (OVID)- 1966 to October week 5 2001

CINAHL (OVID) – 1982 to October week 4 2001

PreMedline (OVID)- January 14, 2002

Current contents (OVID) – 1993 week 26 to 2002 week 03

Australasian Medical Index – December 2001

Refinements, Searching & Reporting Constraints:

We included items of evidence that were available to us on 16 January 2002. The search was restricted to humans and articles published in English.

RESULTS:

From our sources we identified 12 articles related to the request and was categorised as follows:

Table 2. Study designs of articles retrieved by search

Study Design	Number
Systematic reviews or meta-analyses	0
Evidence-based clinical practice guidelines	0
Randomised controlled trials	1
Pseudo-randomised controlled trials	0
Controlled trials, cohort or case-control analytic studies	0
Case series/narrative reviews	11

Articles were excluded from further appraisal as follows:

Table 3: Reason for exclusion of article retrieved by search

Reason for exclusion	Number
Level IV studies	11

This left one article for appraisal. We are reasonably confident this article represents the most relevant finding published to date based on our refinements, searching and reporting constraints.

EVIDENCE SUMMARIES

Format

Evidence summaries are presented as spreadsheets attached to this report. Each spreadsheet contains the article citation, details of the study design, patient description, scientific validity of the article, results, and pertinent remarks from the authors and Centre for Clinical Effectiveness reviewer.

REFERENCES

ARTICLE CRITICALLY APPRAISED

Ching T.Y & Seto W.H. (1990). "Evaluating the efficacy of the infection control liaison nurse in the hospital." Journal of Advanced Nursing **15**(10): 1128-31.

ARTICLES NOT CRITICALLY APPRAISED

Level IV evidence

1. Anonymous (2001). "Combating infection. Infection control links." Nursing **31**(11).
2. Horton, R. (1988). "Linking the chain ward sister/charge nurse as an infection control liaison nurse." Nursing Times **84**(26): 44-6.
3. Jacobsen, W. and H. Cadwallader (1999). "Implementing standard precautions in the operating theatre: the role of the infection control liaison nurse." Australian Infection Control **4**(1): 7-11.
4. James, J. (1991). "Fruitful liaison course for infection control liaison nurses." Nursing Times **87**(50 J Infect Control Nurs): 11-17.
5. Lewis, J. (2000). "Infection control liaison nurse training." Nursing Times **96**(46): 16-22.
6. Matthews, A. (1991). "A student's eye view infection control liaison nurse course." Nursing Times **87**(50 J Infect Control Nurs): 11-17.
7. Millward, S., J. Barnett, et al. (1993). "A clinical infection control audit programme: evaluation of an audit tool used by infection control nurses to monitor standards and assess effective staff training." Journal of Hospital Infection **24**(3): 219-32.
8. Ross, K. A. (1982). "A program for infection surveillance utilizing an infection control liaison nurse." American Journal of Infection Control **10**(1): 24-8.
9. Teare, E., A. Peacock, et al. (1998). "Infection control. The missing link an infection control link nurse system." Nursing Times **94**(19): 67-8.
10. Teare, E. L. and A. Peacock (1996). "The development of an infection control link-nurse programme in a district general hospital." Journal of Hospital Infection **34**(4): 267-78.
11. Teare, E. L., A. J. Peacock, et al. (2001). "Build your own infection control link nurse: an innovative study day." Journal of Hospital Infection **48**(4): 312-319.

APPENDIX 1

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Levels of Evidence

Based on "How to use the evidence: assessment and application of scientific evidence" (National Health & Medical Research Council, Canberra, 2000):

Level I	Evidence obtained from a systematic review of all relevant randomised controlled trials.
Level II	Evidence obtained from at least one properly designed randomised controlled trial.
Level III-1	Evidence obtained from well-designed pseudo-randomised controlled trials (alternate allocation or some other method).
Level III-2	Evidence obtained from comparative studies (including systematic reviews of such studies) with concurrent controls and allocation not randomized, cohort studies, case control studies, or interrupted time series with a control group.
Level III-3	Evidence obtained from comparative studies with historical control, two or more single-arm studies or interrupted time series without a parallel control group.
Level IV	Evidence obtained from case series, either post-test or pre-test/post-test.

APPENDIX 2

Search strategy (Search terms for Cochrane Library, Medline, CINAHL, PreMedline, Current contents, Australasian Medical Index)

1. exp infection control/ or infection control.mp.
2. Link\$.tw
3. liaison.tw
4. 2 or 3
5. 1 and 4
6. ICLN.tw
7. 5 or 6
8.exp infection/ or infection.mp
9. Infection rate\$.mp
10. 8 or 9
11. 7 and 10
12. Limit 11 to (human and english language)

\$ Wildcard indicating truncation

<p style="text-align: center;">Evidence Summary Therapy/Intervention</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>Does infection control liaison (link) program improve infection rate?</p> </div>	<p style="text-align: center;">Study 1</p> <p style="text-align: center;">Ching TY. Seto WH. (1990). Evaluating the efficacy of the infection control liaison nurse in the hospital. Journal of Advanced Nursing. 15(10): 1128-31.</p>
<p>STUDY DESIGN & NHMRC LEVELS OF EVIDENCE</p>	<p style="text-align: center;">Randomized Controlled Trial (Level II)</p>
<p>DESCRIPTION: Patients (subjects), Intervention, Comparisons, Outcomes, Inclusion & Exclusion Criteria</p>	<p>Setting: Queen Mary Hospital - a teaching hospital in Hong Kong with over 1000 beds (27 wards) Background: in 1989, the infection control team introduced a new guideline for urinary catheter care in 27 wards. An education program (in-service lectures and demonstration tutorials) related to the new guideline was prepared and delivered to nurses. Intervention: Test group (24 wards with a total of 838 nurses). Infection Control Liaison Nurse (ICLN) (nursing officer II) and a registered nurse as assistant were appointed for each of the 24 wards. The nurses in the test group received a 30-minute lecture on the new guideline by the Infection Control Nurse (ICN) and demonstration tutorials by the ICLNs and their assistants. Comparison: Control group consisted of surgical, medical and gynaecology wards (3 wards with a total of 101 nurses). The nurses in this group received only a 30-minute lecture on the new guideline by the Infection Control Nurse (ICN) Outcomes: Incorrect practices in urinary catheter care before and after the education programme. Incorrect patient-care practices included improper securing of catheters, the presence of kinking and use of urine bags without a drainage spigot. Five prevalence surveys were conducted to evaluate patient care practices for urinary catheter care (3 before the education program and two after the education program). Incl & Excl Criteria: All 27 wards in the hospital were included in the study.</p>
<p>VALIDITY: Methodology, rigour, selection</p>	<p>Randomisation: Yes, but lack of information on randomisation method. Blinding: Lack of information on blinding Patients/nurses treated equally: Yes, except for the intervention (Infection Control Liaison Nurse and tutorial). A 30-minute lecture on the new guideline was given to all nurses in the 27 wards by the infection control nurse (ICN). All nurses were required to attend the educational program and attendance was recorded and reported to the ICN. Similar groups: Yes, the nurses in the two groups were similar in rank, gender and number of postgraduate years. The proportion of incorrect practices in the two groups was also comparable.</p>
<p>RESULTS: Generally favourable or unfavourable, specific outcomes of interest, estimate of experimental effect and precision if appropriate</p>	<p>Incorrect practices:</p> <p>A. Between groups</p> <ul style="list-style-type: none"> • Before education: 63.1% in the test group and 68% in the control group (P = 0.40, $\chi^2 = 0.71$). The difference between the two groups wasn't significant. • After education: 36% in the test group and 48.2% in the control group (P <0.05, $\chi^2 = 4.25$). The difference between the two groups was significant. <p>B. Within group</p> <ul style="list-style-type: none"> • Control group: 67.8% before education and 48.2% after education (P <0.01, $\chi^2 = 6.8$) • Test group: 63.1% before education and 36% after education (P <0.0001, $\chi^2 = 65.3$) • The reduction in the percentage of incorrect practices in both groups was significant.

<p>AUTHOR(S) CONCLUSIONS: Limitations, implications for practice and research</p>	<p>“ICLNs can indeed enhance the education programme for infection control”</p>
<p>OUR COMMENTS: Opportunity for bias, weakness and strength</p>	<p>Potential for bias: Randomisation method and blinding for outcome assessment not described. Method of concealing allocation not discussed.</p> <p>Weakness/es:</p> <ul style="list-style-type: none"> • Not clear how the random draw resulted in 24 wards in the test group and only 3 wards in the control group. • Lack of information on the type of 24 wards allocated to the test group • Not clear if the researchers, infection control nurses or infection control liaison nurses and their assistants were blinded. • The authors didn't explain how they calculated the percentage of incorrect practices in the two groups. • The study did not examine patient relevant outcomes i.e. reduced infections etc • Difficult to make a distinction between the effect of education program and Infection Control Liaison Nurse (ICLN) in this study. <p>Strength/s:</p> <ul style="list-style-type: none"> • Clear research question • Developed, introduced and evaluated a new guideline for urinary catheter care in a hospital setting. • All ICLNs and their assistants were trained by the infection control team prior to the implementation of the guideline. • The five prevalence surveys were all unannounced and the nursing staff in both groups were unaware of the visit. • The first trial that attempted to evaluate the efficacy of infection control liaison nurse in a hospital setting. • Acknowledged the study limitations and generalisability of the findings outside Hong Kong.

EXPLANATION OF TERMINOLOGY USED IN SPREADSHEET

Level of evidence: A hierarchy of study evidence that indicates the degree to which bias has been eliminated in the study design.

Intervention: A therapeutic procedure such as treatment with a pharmaceutical agent, surgery, a dietary supplement, a dietary change or psychotherapy.

Randomisation: A process of allocating participants to treatment or control group within a controlled trial by using a random mechanism, such as coin toss, random number table or computer-generated random numbers. Study subjects have an equal chance of being allocated to an intervention or control group; thus, the two groups are comparable. Randomisation ensures that the results are not biased by the selection of particular types of patients to receive a specific therapy.

Blinding: Blinding or masking is a process used in epidemiological studies and clinical trials in which the observers and the subjects have no knowledge as to which treatment groups subjects are assigned. It is undertaken in order to minimise bias occurring in patient response and outcome measurement.

All patients accounted for: Once patients are randomly allocated to a specific group and withdraw before study conclusion, they have to be accounted for in order to ensure that patients withdrawing from the study are not significantly different from those continuing in the study. The final analysis should be conducted on an intention-to-treat basis, which includes the results of withdrawn patients in the analysis.

Patients treated equally: To be able to attribute any difference in the observed outcome to the intervention, study patients need to be treated equally in every way except for the intervention being evaluated.

Similar groups: Baseline characteristics of patients that are also likely to affect results should be evenly distributed between the intervention and control groups. Following proper randomisation, patients' attributes would be expected to be equally distributed between groups.

Validity:

Of measurement: an expression of the degree to which a measurement measures what it purports to measure; it includes construct and content validity.

Of study: the degree to which the inferences drawn from the study are warranted when account is taken of the study methods, the representativeness of the study sample, and the nature of the population from which it is drawn (internal and external validity, applicability, generalisability).

Potential for bias: Bias is a systematic deviation of a measurement from the 'true' value leading to either an over (or under) estimation of the treatment effect. Bias can originate from many different sources (including allocation of patients, measurement, interpretation, publication and review of data).