



## Centre for CLINICAL EFFECTIVENESS

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Does massage given to patients in intensive care improve clinical outcomes?

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**Request made by:**

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ICU MMC Clayton

**Report prepared by:**

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**Date of report:**

5 August 1999

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### DISCLAIMER

The information in this report summarises the best available current evidence. It is primarily designed to give readers a starting point to consider the currently available research evidence. Readers should not use the comments made in isolation and should have read the literature suggested. Readers should also be aware that more appropriate research might have become available since the request was dealt with.

## CENTRE FOR CLINICAL EFFECTIVENESS

The Centre for Clinical Effectiveness exists to enhance patient outcomes through the clinical application of evidence-based research. The Public Health Division, Department of Human Services, Victoria, and the Southern Health Care Network fund the Centre. The Centre is also affiliated with the Faculty of Medicine, Monash University. Amongst other programs, the Centre operates an Evidence Centre that accepts requests to identify and critically appraise the available evidence on particular clinical topics. It offers this service to staff of the Southern Health Care Network, especially Program Directors, who will use the information provided to influence medical planning and decision-making.

## SEARCH RATIONALE

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 NHMRC criteria (see Appendix).

First we search for systematic reviews, clinical practice guidelines or 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. If the identified studies have appropriate comparison groups we include them in our critical appraisal reports. While we cite less methodologically rigorous studies (e.g. observational studies, case series, narrative reviews) 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 REQUEST

A literature search plus critical appraisal was requested for evidence concerning whether massage has been shown to be effective in improving clinical outcomes of patients in intensive care. The purpose of the question is to provide support for introducing massage into the Intensive Care Unit, Clayton.

## RESULTS

The search for evidence yielded the following research:

<i>Systematic reviews or meta-analyses</i>	0
<i>Randomised controlled trials</i>	3
<i>Well-designed controlled trials, cohort or case-control analytic studies</i>	N/S
<i>Consensus reports, narrative reviews, case series</i>	N/S

N/S = Not Searched for, because it was of lower methodological quality than what was found.

We are reasonably confident that this is the current best available evidence able to be obtained using available resources. However, updated information should always be sought when considering the results of this report at a future date.

## REPORTING CONSTRAINTS

We have included items of evidence that were available up to 30 July 1999.

## METHODOLOGY

### SEARCH STRATEGY

Patients	- intensive care, critical care
Intervention terms	- massage, aromatherapy, alternative medicine/ complementary therapies
Comparison terms	- none (no limitation)
Outcome terms	- none (no limitation)
Publication terms	- systematic review/randomized controlled trial/clinical trial comparative study/evaluation study
Limitations	- English language, published 1994 or later

### RESOURCES SEARCHED

The following database and websites were searched:

Cochrane Library  
Best Evidence  
Medline  
CINAHL  
BioMedNet  
Medscape  
Current Contents  
DARE – National Health Service UK  
National Institute of Health/National Library of Medicine  
Agency for Health Care Policy and Research (AHCPR)  
Internet Database of Evidence-Based Abstracts and Articles (IDEA)  
Bandolier  
Turning Research into Practice (TRIP)

## EVIDENCE SUMMARIES

### FORMAT

Evidence Summaries are in the form of a spreadsheet and are used to present a critical appraisal of the research being reported. Each spreadsheet contains the article citation, the study design with level of evidence available according to NHMRC guidelines (see Appendix), a description of the study subjects, details of the intervention, and outcomes. This is followed by details concerning the validity of the study according to specified criteria. The remaining columns describe the results and pertinent remarks from the authors and the Centre for Clinical Effectiveness reviewer as required.

## REFERENCES FOR CRITICALLY APPRAISED ARTICLES

Dunn, C., Sleep, J. and Collett, D. (1995) Sensing an improvement: an experimental study to evaluate the use of aromatherapy, massage and periods of rest in an intensive care unit. *Journal of Advanced Nursing*, **21**, 34-40.

- Richards, K.C. (1998) Effect of a back massage and relaxation intervention on sleep in critically ill patients. *American Journal of Critical Care* **7**, 288-299.
- Stevensen, C.J. (1994) The psychophysiological effects of aromatherapy massage following cardiac surgery. *Complementary Therapies in Medicine*. **2**, 27-35.

## APPENDIX

### Australian National Health & Medical Research Council's Levels of Evidence

The quality of the evidence presented in this report was systematically assessed and classified according to the NHMRC's *A Guide to the Development, Implementation and Evaluation of Clinical Practice Guidelines* (1998):

- |           |   |
|-----------|---|
| 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 from well-designed pseudo-randomised controlled trials (alternate allocation or some other method).  |
| .2        | Evidence obtained from comparative studies with concurrent controls and allocation not randomised (cohort studies), case control studies or interrupted time series with a control group.             |
| .3        | Evidence obtained from comparative studies with historical controls, 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 and post-test), opinions of respected authorities, descriptive studies, reports of expert (i.e. consensus) committees, case studies. |

<p style="text-align: center;"><b>EVIDENCE SUMMARY THERAPY</b></p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: 80%;"> <p><b>Does massage in ICU patients improve clinical outcomes?</b></p> </div>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>STUDY DESIGN &amp; NHMRC LEVELS OF EVIDENCE</b></p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>DESCRIPTION:</b> Patients, Interventions, Comparisons, Outcomes, Inclusion &amp; Exclusion Criteria</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>VALIDITY:</b> Methodology, rigour, selection, opportunity for bias.</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>RESULTS:</b> Generally favourable or unfavourable, specific outcomes of interest, estimate of experimental effect and precision if appropriate</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>AUTHORS' COMMENTS:</b> Risk/benefit, limitations</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>REVIEWERS' COMMENTS:</b> Risk/benefit, methodology, conclusions</p>
<p>Richards KC. 1998 Effect of a back massage and relaxation intervention on sleep in critically ill patients. American Journal of Critical Care, 7(4), 288-299.</p>	<p>Randomised Controlled Trial. Level II</p>	<p><b>Setting:</b> hospital CCU acute care, USA  <b>Patients:</b> male patients (n=69)  <b>Intervention:</b> 6-min back massage (n=24)  <b>Comparison:</b> control group (6-min rest period) (n=17) , teaching session on relaxation + relaxation video (n=28)  <b>Outcomes:</b> sleep time, sleep efficiency index, etc.  <b>Inclusion criteria:</b> male, age 55-79, dx of cardiovascular disease, alert and oriented, English speaking, stable hemodynamic status, hospitalised ≤hours prior to study, no prior dx of obstructive sleep apnoea.</p>	<p><b>Randomisation:</b> yes, method not described  <b>All patients accounted for:</b> yes  <b>Patients treated equally:</b> one person administered all massages  <b>Similar groups:</b> not stated (demographic data presented)  <b>Potential for bias:</b> no pretest measurements, unable to blind patients to treatment group</p>	<p><b>Massage group vs Control groups:</b>  total sleep time: 62.5 min longer (sig level not provided)  latency to sleep onset: 6.8 min less (sig level not provided)  sleep efficiency index: 14.7% higher (no confounding effects) but after adjusting for heterogenic variances no significant between-group differences (p=0.06).</p>	<p>"The results provide support for the effectiveness of back massage for sleep promotion in critically ill patients. Although [there is the] problem of heterogeneity of variances ... the study provides support for clinically significant differences...Critical care nurses should offer back massage to critically ill patients."</p>	<p>Power calculation done to determine sample size. The effect size for the sample of 51 patients was 0.13. Author has determined that a slightly larger sample of 26 subjects per group would have provided sufficient power to detect statistically significant differences.</p>

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<p>Dunn C <i>et al.</i> 1995 Sensing an improvement: an experimental study to evaluate the use of aromatherapy, massage and periods of rest in an intensive care unit. Journal of Advanced Nursing, 21(1), 34-40.</p>	<p>Randomised Controlled Trial. Level II</p>	<p><b>Setting:</b> general hospital, England  <b>Patients:</b> ICU patients (n=122)  <b>Intervention:</b> body massage, 1-3 sessions, 24 hrs apart (n=43)  <b>Comparison:</b> aromatherapy massage (n=41), undisturbed rest (n=38)  <b>Outcomes:</b> physiologic, behavioural, patient assessments  <b>Exclusions:</b> patients with head injury, non-English speaking/writing, hypersensitive to perfume, skin allergies (dermatitis, eczema).</p>	<p><b>Randomisation:</b> yes (concealed allocation)  <b>All patients accounted for:</b> yes  <b>Patients treated equally:</b> 1) study personnel trained in techniques and evaluated for skills 2) 'rest' group had longer therapy  <b>Similar groups:</b> not stated (data presented)  <b>Potential for bias:</b> patients could not be blinded to treatment group, substantial incomplete treatment (54% received all 3 sessions) could have underestimated effects (positive or none), intention-to treat analysis not done, psychological assessment tool inadequately described, contaminating effects of medications</p>	<p><b>Differences before and after treatment - Massage vs aromatherapy vs rest:</b>  <u>Physiologic measures (session 1 only):</u>  Systolic BP decrease: 2.8 vs 2.2 vs 0.4, n.s.  Heart rate decrease: 2.4 vs 2.9 vs -0.4, n.s.  No breaths/min, decrease: 1.6 vs 0.1 vs 0.8, n.s.  Sessions 2 and 3 also no significant differences.  <u>Psychological assessment (session 1 only):</u>  Anxiety (% pts improved): 72% vs 59% vs 44% (massage vs rest, p&lt;0.05)  Mood (% pts improved): 56% vs 49% vs 42%, n.s.  Coping (% pts improved): 50% vs 46% vs 42%, n.s.  Behavioural scores: no differences, data not presented.</p>	<p>"The evidence suggests that massage may offer a useful therapy for nurses to consider when planning the psychological care of [ICU] patients".</p>	<p>Well-designed/described trial. Power calculation used to determine required sample size.</p>

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<p>Stevenson CJ. 1994 The psychophysiological effects of aromatherapy massage following cardiac surgery. <i>Complementary Therapies in Medicine</i>, 2, 27-35.</p>	<p>Randomised Controlled Trial. Level II</p>	<p><b>Setting:</b> Intensive care unit, England <b>Patients:</b> ICU post-cardiac patients (n=100) <b>Intervention:</b> aromatherapy (neroli) foot massage on day-1 post-cardiac surgery, 1 session for 20-min. (n=25) <b>Comparison:</b> no intervention (n=25), 20-min chat(n=25), 20-min plain oil massage (n=25) <b>Outcomes:</b> comparison of pre- and post physiologic + psychological assessments, patients' perceptions of massage. <b>Exclusions:</b> intubated, mechanical BP support, cardiac pacing, non-English speaking, pedal arterial line, suppurating/infective skin conditions of foot, vital signs within specified limits</p>	<p><b>Randomisation:</b> yes, method unclear <b>All patients accounted for:</b> yes <b>Patients treated equally:</b> 1) massage personnel tested for consistency 2) instructions for chat topics <b>Similar groups:</b> no demographic data presented <b>Potential for bias:</b> unable to blind patients to treatment group, contaminating effects of medications</p>	<p><b>No treatment vs chat vs plain oil massage vs essential oil massage:</b> <u>Physiologic, pre- vs immediately post intervention:</u> heart rate, systolic/diastolic, mean arterial BP, respiratory rate: no differences; 2 control groups (no rx,chat) vs 2 massage groups: respiratory rate sig. lower (p&lt;0.05) in massage groups. No physiologic differences pre vs 2 hours after. <u>Psychological, pre-vs immediately post intervention:</u> No significant improvement in STAI scores with massage or massage+aromatherapy: 2 control groups (no rx,chat) vs 2 massage groups: sig improvement in STAI scores in massage groups compared to control groups. No psychologic difference pre vs 2 hours after. <u>Patients' evaluation of feelings questionnaire:</u> massage patients only. Generally patients preferred aromatherapy massage to plain oil massage.</p>	<p>"These results confirm the general body of research knowledge [that] physiologic effects ... are indeed transitory...following a single massage treatment...psychological effects of relaxation and the subjective improvement in psychological state were again shown in this study".</p>	<p>Although statistically significant differences were not found, generally results favoured massage therapies and the results may be clinically important.</p>