With therapeutic properties based on their chemical composition, essential oils—extracts from herbs, flowers, and other plant materials—have been used to treat symptoms and diseases for thousands of years. However, the term aromatherapy was not used until French chemist Gattefosse published a text in 1936. Clinical aromatherapy is defined as the use of essential oils for therapeutic purposes that encompass mind, body, and spirit. Although aromatherapy is a newer technique in the United States, essential oils have long been part of nursing practice in countries like the United Kingdom, Switzerland, Germany, Canada, and Australia.

Essential oils are administered via inhalation (whereby oils travel directly through the olfactory bulb to the limbic system, where aromas are processed) or topically with or without massage enhancement (with rapid absorption through the skin into the bloodstream within 10-30 minutes). When essential oils are used, their purpose should be made explicit with therapeutically targeted outcomes that are measurable by objective and subjective means.

This clinical review summarizes current evidence related to the following question: How effective are essential oils in management of symptoms in critically ill patients?

Key words included essential oils, aromatherapy, massage, symptom management, anxiety/stress, insomnia/sleep, pain, and intensive care unit (ICU). All types of evidence (nonexperimental, experimental, systematic reviews, case reports) were included, but only evidence from studies that enrolled critically ill patients was analyzed.

Results

From 1992 to 1998, five studies were published, along with 1 systematic review, 11 literature review, and 1 ICU case report. All studies were quantitative, and all but one of the studies were conducted in the United Kingdom. Sample sizes ranged from 25 to 122. Targeted symptoms included anxiety, stress, mood/coping, disrupted sleep, and pain. The effects of aromatherapy accompanied by massages of the whole body (lavender oil) or foot (neroli oil) were tested against massages with carrier oils (sweet almond, grapeseed, apricot, spike lavender). One study solely examined the effects of lavender inhalation.

Intervention duration and frequency included one inhalation or massage treatment, two 20-minute massages on consecutive days or in 1 week, or three 15- to 30-minute massages 24 hours apart. The effect on symptoms was assessed by measuring vital signs and having patients complete self-report scales immediately before and after treatments, as well as at intervals of 20 and 30 minutes, thirty to 60 minutes, and 1 and 2 hours after treatment and upon awakening the next day. Based on these intervals, short-term benefits of the intervention were expected.
Table 1 provides a summary of the evidence. In 3 studies, researchers found significantly reduced anxiety or stress; in 2 studies, researchers found improved restfulness; and in 1 study, researchers found decreased pain. No effect on coping or mood was found. The 2 large randomized controlled trials represent class IIb evidence (Table 2) for positive immediate effects of a 15- to 30-minute aromatherapy massage on anxiety and stress, with no evidence of harm. However, in the study by Dunn et al., anxiety was reduced only in the first of 3 sessions. Furthermore, although Stevenson caution that the mechanism of action of essential oils is unclear. Even though the oils were applied topically, did smell or psychological association play any role in their effect? Furthermore, essential oils are often practiced with massage, confounding results and making it difficult to determine the specific source of the treatment effect. Some argue that the effects of aromatherapy massage are only transient, without sustained benefit.

**Table 1**

<table>
<thead>
<tr>
<th>Study</th>
<th>N and location</th>
<th>Design/intervention</th>
<th>Results</th>
<th>Level of evidence, class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woolfson and Hewitt*</td>
<td>36 General ICU</td>
<td>Comparative Foot massage (lavender), foot massage (almond), vs control</td>
<td>+ Physiological stress (heart rate/systolic blood pressure/respiratory rate) + Wakefulness + Pain</td>
<td>IIb</td>
</tr>
<tr>
<td>Buckle*</td>
<td>28 Cardiac surgery ICU</td>
<td>Comparative Massage (English lavender) vs massage (spike lavender)</td>
<td>0 Anxiety</td>
<td>III</td>
</tr>
<tr>
<td>Stevenson†</td>
<td>100 Cardiac surgery ICU</td>
<td>Randomized controlled trial Foot massage (neroli), foot massage (apricot), vs control</td>
<td>+ Anxiety + Physiological stress (respiratory rate) + Subjective perceptions (relaxing, restful)</td>
<td>IIb</td>
</tr>
<tr>
<td>Dunn et al†</td>
<td>122 General ICU</td>
<td>Randomized controlled trial Aromatherapy massage (1% lavender), massage (grapeseed) vs control</td>
<td>+ Anxiety 0 Mood/coping 0 Physiological stress (heart rate, systolic and diastolic blood pressure)</td>
<td>IIb</td>
</tr>
<tr>
<td>Borromeo†</td>
<td>25 Coronary care</td>
<td>Randomized controlled trial Aromatherapy inhalation (9-hour passive diffusion of lavender) vs control</td>
<td>0 Anxiety 0 Sleep quality</td>
<td>III</td>
</tr>
<tr>
<td>Cooke and Ernst†</td>
<td>488 (3 ICU studies)</td>
<td>Systematic review Heterogeneous</td>
<td>+ Anxiety</td>
<td>Indeterminate</td>
</tr>
</tbody>
</table>

Abbreviation: ICU, intensive care unit.

Table 1 provides a summary of the evidence. In 3 studies, researchers found significantly reduced anxiety or stress; in 2 studies, researchers found improved restfulness; and in 1 study, researchers found decreased pain. No effect on coping or mood was found. The 2 large randomized controlled trials represent class IIb evidence (Table 2) for positive immediate effects of a 15- to 30-minute aromatherapy massage on anxiety and stress, with no evidence of harm. However, in the study by Dunn et al., anxiety was reduced only in the first of 3 sessions. Furthermore, although Stevenson caution that the mechanism of action of essential oils is unclear. Even though the oils were applied topically, did smell or psychological association play any role in their effect? Furthermore, essential oils are often practiced with massage, confounding results and making it difficult to determine the specific source of the treatment effect. Some argue that the effects of aromatherapy massage are only transient, without sustained benefit.

**Recommendations Based on Current Evidence**

Despite preliminary evidence, Cooke and Ernst caution that the mechanism of action of essential oils is unclear. Even though the oils were applied topically, did smell or psychological association play any role in their effect? Furthermore, essential oils are often practiced with massage, confounding results and making it difficult to determine the specific source of the treatment effect. Some argue that the effects of aromatherapy massage are only transient, without sustained benefit.
Undeniably, Stevenson7,8 found an immediate reduction in respiratory rate with no sustained effect at 2 hours. Another central question is whether individual sessions are as effective as multiple ones, or if a cumulative effect exists. The answer to this question may vary by essential oil or targeted symptom complex. Experts also suggest that the choice of an aroma is very important when psychological effects such as anxiety reduction are desired.4 Such information could prove challenging to obtain from the most critically ill patients (who may benefit the most). Although the best choice of oil, application, and duration of effect undoubtedly warrants further study, why is the transient effect of integrative therapies such as aromatherapy (whose intent is to reduce physical or psychological symptoms) any different than the need to redose analgesics or other medications regularly for symptom control? Finally, aromatherapy massage has been challenging to support with research because integrative therapies place more emphasis on subjective validation of effectiveness than on the typical Western research model that advocates objective validation.15

These and other questions about administration, safety, control of the quality of essential oils, interactions with other therapies/modalities, and effectiveness measures must be addressed before the therapeutic use of essential oils takes hold in mainstream critical care nursing practice.

Research into the therapeutic effects of essential oils is in its infancy, so this intervention is ripe for further scientific investigation. Critical care patients experience an array of disease-related symptoms, and they are subjected to numerous invasive diagnostic and therapeutic techniques. Therefore, a wide variety of symptoms could be targeted in general adult, pediatric, and neonatal patients. For instance, what effect do essential oils have on pain or anxiety associated with the insertion or removal of central catheters, chest tubes, or other indwelling tubes/catheters, or with weaning from mechanical ventilation? Do essential oils reduce nausea in postoperative patients? How effective and safe are essential oils in promoting sleep in ICU patients?16 As Jones and Kassity17 asked, does the use of peppermint in isolettes as an olfactory stimulant improve apnea and bradycardic events in premature infants, and does lavender effectively relax patients undergoing magnetic resonance imaging? Or, as McDowell18 suggested, what role can aromatherapy play in modifying the noxious aspects of the critical care environment to promote holistic healing as advocated by Florence Nightingale?

Aromatherapy has been promoted by critical care nursing leaders as an integrative therapy that can transform the ICU into a humanistic care environment.19,20 Use of aromas and touch can enhance nursing care because the intention of promoting relaxation and comfort is an essential part of nursing.21

Table 2

<table>
<thead>
<tr>
<th>Class</th>
<th>Criteria</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>Definitely recommended</td>
<td>Supported by excellent evidence, with at least 1 prospective randomized controlled trial</td>
</tr>
<tr>
<td>Class IIa</td>
<td>Acceptable and useful</td>
<td>Supported by good to very good evidence; weight of evidence and expert opinion strongly in favor</td>
</tr>
<tr>
<td>Class IIb</td>
<td>Acceptable and useful</td>
<td>Supported by fair to good evidence; weight of evidence and expert opinion not strongly in favor</td>
</tr>
<tr>
<td>Indeterminate</td>
<td>Promising, evidence lacking, premature</td>
<td>Preliminary research stage; evidence shows no harm, but no benefit; evidence insufficient to support final class decision</td>
</tr>
<tr>
<td>Class III</td>
<td>May be harmful; no benefit documented</td>
<td>Not acceptable or useful; may be harmful</td>
</tr>
</tbody>
</table>

Use of aromas and touch can enhance nursing care because the intention of promoting relaxation and comfort is an essential part of nursing.”
Indeed, aromatherapy is recognized by state boards of nursing in the United States as a legitimate part of holistic nursing, and nurses may seek certification in this specialty through the American Holistic Nurses’ Certification Corporation.

The focus of integrative therapies is on symptom control rather than cure. Nurses therapeutically use essential oils to enhance comfort, relieve pain, promote relaxation, alleviate sleep disturbances, reduce stress and anxiety, improve coping, and increase their patients’ sense of well-being. Let the studies continue so that the scientific legitimacy of these interventions can be assessed further.

FINANCIAL DISCLOSURES
None reported.

REFERENCES
11. Borromeo A. The Effects of Aromatherapy on the Patient Outcomes of Anxiety and Sleep Quality in Coronary Care Unit Patients (dissertation). Denton, TX: Texas Woman’s University; 1998.

To purchase electronic or print reprints, contact The InnoVision Group, 101 Columbia, Aliso Viejo, CA 92656. Phone, (800) 809-2273 or (949) 362-2050 (ext 532); fax, (949) 362-2049; e-mail, reprints@aacn.org.
Essential Oils for Management of Symptoms in Critically Ill Patients
Margo A. Halm

Am J Crit Care 2008;17 160-163
Copyright © 2008 by the American Association of Critical-Care Nurses
Published online http://ajcc.aacnjournals.org/

Personal use only. For copyright permission information:
http://ajcc.aacnjournals.org/cgi/external_ref?link_type=PERMISSIONDIRECT

Subscription Information
http://ajcc.aacnjournals.org/subscriptions/

Information for authors
http://ajcc.aacnjournals.org/misc/ifora.xhtml

Submit a manuscript
http://www.editorialmanager.com/ajcc

Email alerts
http://ajcc.aacnjournals.org/subscriptions/etoc.xhtml