

# ALTERNATIVE THERAPIES IN WOMEN'S HEALTH

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## Acupuncture and Pregnancy

*By Carmen Tamayo, MD*

*"Natures differ, and needs with them, hence the wise men of old did not lay down one measure for all."*

— Chuang Tse, 4th century B.C.

ACUPUNCTURE IS AN ANCIENT METHOD OF HEALING COMING FROM traditional Chinese medicine (TCM). TCM theorizes that more than 2,000 acupuncture points on the human body connect with 12 main and eight secondary pathways, called meridians. Chinese medicine practitioners believe these meridians conduct energy, or *qi*, between the surface of the body and internal organs. Acupuncture stimulates and alters the flow of *qi* through these pathways.

Acupuncture is the insertion on the body's surface of very fine needles, sometimes in conjunction with electrical stimulus, that influence physiological functioning of the body. An estimated 5,000 physicians and more than 7,000 Oriental medicine practitioners practice acupuncture in the United States.<sup>1</sup>

According to the NIH Consensus Statement on acupuncture, this treatment modality has been shown effective for adult postoperative and chemotherapy nausea and vomiting and for postoperative dental pain. Acupuncture may be useful as an adjunct treatment or an acceptable alternative to be included in a comprehensive management program for conditions such as addiction, stroke rehabilitation, headache, menstrual cramps, tennis elbow, fibromyalgia, myofascial pain, osteoarthritis, low back pain, carpal tunnel syndrome, and asthma.<sup>2</sup>

The use of acupuncture for gynecological conditions is well established among TCM practitioners. Research from China has found that acupuncture has a regulatory effect on the menstrual cycle, regulating the production of luteinizing hormone, follicle-stimulating hormone, and estradiol.<sup>3,4</sup> In addition, acupuncture has been used effectively to prevent nausea and vomiting during pregnancy,<sup>5</sup> to treat menorrhagia,<sup>6,7</sup> dysmenorrhea,<sup>8</sup> premenstrual syndrome, and infertility,<sup>9</sup> to restore breech presentation,<sup>10</sup> and to shorten labor time, relieve labor pain, and induce or stimulate labor by ripening the cervix.

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The World Health Organization mentions acupuncture as a non-pharmacological method of pain relief that can be used during labor and emphasizes the need for critical review and adequate studies "to improve acceptability and extend the use."<sup>11</sup>

### Patterns of Use

In a U.S. survey of 575 patients consulting acupuncturists, 17.4% received acupuncture for gynecological conditions; 92% of that group reported that their symptoms had either "disappeared" or "improved."<sup>12</sup>

Another U.S. survey evaluated the prevalence and type of complementary and alternative medicine (CAM) therapies used by certified nurse midwives in North Carolina. Acupressure was used by 52% of nurse midwives and almost 20% reported use of acupuncture during pregnancy, with 6% of responders specifically recommending its use to ripen the cervix and/or induce labor.<sup>13</sup>

### Labor Pain

Labor presents a physiological and psychological challenge for women. Pain associated with labor has been described as one of the most intense forms of pain that can be experienced. Labor pain is caused by uterine

contractions, the dilatation of the cervix, and, in the late first stage and second stage, by stretching of the vagina and pelvic floor to accommodate the baby. Effective and satisfactory pain management needs to be individualized for each woman.

Acupuncture points used to reduce labor pain are located on the hands, feet, and ears. Few studies have evaluated the use of acupuncture to relieve pain during labor.

A Cochrane review examined the available evidence supporting the use of CAM therapies for pain management in labor on maternal and perinatal morbidity. The review included seven trials involving 366 women and reviewed the following modalities: acupuncture (n = 100), audio-analgesia (n = 25), aromatherapy (n = 22), music (n = 30), and hypnosis (n = 189). According to the findings, only acupuncture and hypnosis seem to have a positive effect in pain management during labor.<sup>14</sup>

In the acupuncture trial, the need for pain relief was reduced. In this parallel, single-blind, controlled trial, 100 women in the first and second stages of labor were randomized to receive acupuncture (n = 51) or no acupuncture (n = 49) during labor as a complement or alternative to conventional analgesia. All women in the trial received routine midwifery care. Randomization occurred in the delivery room; the midwives individualized and administered the acupuncture treatment. Needles were inserted at 45 or 90 degrees, stimulated manually until *de qui* (needling sensation) was obtained. Needles were left in situ and removed after 1-3 hours. Pain intensity and degree of relaxation were assessed once every hour and prior to and 15 minutes after administration of any analgesic. Only 90 women were included in the analysis because 10 women did not meet the inclusion criteria. The primary outcomes were maternal satisfaction and use of analgesia. Other outcomes included pain, relaxation, use of analgesics, augmentation of labor with oxytocin, duration of labor, outcome of birth, antepartum hemorrhage, Apgar scores, and infant birth weight.

Acupuncture treatment during labor significantly reduced the need of epidural analgesia (12% vs. 22%, relative risk [RR] 0.52, 95% confidence interval [CI] 0.30 to 0.92) although the two groups assessed the same degree of pain intensity (mean difference -0.29, 95% CI -0.90 to 0.32). Patients who received acupuncture assessed a significantly better degree of relaxation compared with the control group (mean difference -0.93, 95% CI -1.66 to -0.20). No negative effects of acupuncture given during labor were found in relation to delivery outcome. There was no difference in maternal satisfaction of pain management between the acupuncture and control groups (RR 1.08, 95% CI 0.95 to 1.22).

**Alternative Therapies in Women's Health**, ISSN 1522-3396, is published monthly by American Health Consultants, 3525 Piedmont Rd., NE, Bldg. 6, Suite 400, Atlanta, GA 30305.

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**GST Registration Number:** R128870672.

Periodical rate postage pending at Atlanta, GA.

**POSTMASTER:** Send address changes to **Alternative Therapies in Women's Health**, P.O. Box 740059, Atlanta, GA 30374.

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However, 54 women who received acupuncture required no additional analgesic compared with 12 women in the control group ( $P < 0.0001$ ). Of the secondary outcomes, there was no difference in spontaneous vaginal delivery (RR 0.98, 95% CI 0.89 to 1.08), instrumental vaginal delivery (RR 1.91, 95% CI 0.18 to 20.36), caesarean section (RR 0.96, 95% CI 0.06 to 14.83), duration of labor (-0.25, 95% CI -1.75 to -1.26), or the need for augmentation with oxytocin (RR 1.02, 95% CI 0.58 to 1.80) between the acupuncture and control groups. No infants in either group had an Apgar score of  $> 7$  at five minutes and there was no difference in infant birthweight. These results suggest that acupuncture could be a good alternative or complement to parturients who seek an alternative to pharmacological analgesia in childbirth. The authors conclude that further trials with a larger number of patients are required to clarify if the main effect of acupuncture during labor is analgesia or relaxation.<sup>15</sup>

In a controlled, single-blind study, 210 healthy parturients in spontaneous, active labor at term were randomly assigned to receive either real acupuncture ( $n = 106$ ) or false acupuncture ( $n = 104$ ). Visual analog scale (VAS) assessments were used to evaluate subjective effect on pain (0 = no pain, 10 = worst possible pain). Insertion of needles started at a pretreatment VAS pain score equivalent to 3 or higher. Subsequently, the degree of pain was recorded 30 min, 1 hour, and 2 hours after start of treatment. The objective outcome parameter was the need for analgesic medication in each group. There were significantly lower mean pain scores and significantly less need for pharmacological analgesia in the study group compared with the control group. Women given real acupuncture spent less time in active labor and needed less augmentation than the control group. Through its analgesic effect, real acupuncture reduced the requirement for analgesic medications that usually are accompanied by adverse side effects. The results indicate that acupuncture reduces the experience of pain in labor. A secondary outcome of acupuncture was a shorter delivery time. No adverse effects of the needle insertions were recorded during labor or stay in hospital, and none of the participants reported skin infections after arriving home.<sup>16</sup>

Other forms of acupuncture—such as electro-acupuncture, in which small amounts of current (1-3 mA) are applied to the acupuncture needles, and acupressure, a form of acupuncture that applies to stimulation of points by means of pressure applied by the practitioner's hands, thumbs, fingers, elbows, and knees on the patient's body—have been used to relieve pain in labor. In one study, electro-acupuncture administered repeatedly as needed at four sites for 20 minutes was

shown to provide analgesia for a mean of six hours.<sup>17</sup> Midwives commonly use acupressure to relieve labor pain and various points may be tried until one is located that feels good to the individual patient.<sup>18</sup>

In light of the limited data available to support the use of acupuncture to relieve pain in labor and birth, Eappen and Robbins conducted a review of acupuncture in labor trials. They concluded that: "Although there has been much evidence for the rational use of acupuncture for many pain states, labor analgesia is not one of them yet."<sup>19</sup> These authors also point out that acupuncture rarely is associated with complications.

Acupuncture also has been used to achieve relaxation during labor but no randomized controlled trials have been conducted with relaxation as a primary outcome.

### **Labor Induction**

In parts of Europe and Asia, acupuncture has been used to stimulate the onset of labor. However, there is a dearth of scientific studies on the use of acupuncture to stimulate or induce labor. It has been suggested the mechanism may involve stimulation of the uterus by hormonal changes (increasing oxytocin levels) or stimulating the parasympathetic nervous system.<sup>20</sup>

Some observational studies conducted in the late 1970s suggest acupuncture for induction of labor appears safe, has no known teratogenic effects, and may be effective.<sup>21-23</sup> The success rate ranged from 68% to 83% in the three studies and average induction to delivery time was 13 hours in one study.<sup>22</sup>

A case-control study of 120 women reported that acupuncture shortened the first stage of labor. Median duration of the first stage of labor was 196 min in the acupuncture group (Group A) compared with 321 min in the control group (Group B) (Wilcoxon 2-sample test,  $P < 0.0001$ ). In addition, women in Group B received oxytocin significantly more often during the first stage of labor compared with Group A (85% and 15%, respectively,  $\chi^2$  test,  $P = 0.01$ ), as well as during the second stage of labor (72% and 28%, respectively,  $\chi^2$  test,  $P = 0.03$ ).<sup>24</sup>

Two non-randomized trials examined whether electro-acupuncture could initiate contractions in women at term.<sup>25,26</sup> In both studies, an increase in the intensity of labor contraction frequency was observed and time to labor was reduced. However, randomized, placebo-controlled, or double-blind clinical trials have not been conducted to confirm these results.

The Cochrane Pregnancy and Childbirth Group attempted to do a systematic review of clinical trials evaluating the efficacy of acupuncture for third trimester cervical ripening or labor induction, but only two studies were found and neither evaluated labor induction.<sup>27</sup> The

first study compared electrical acupuncture stimulation or placebo acupuncture on the onset of uterine contractions in 20 post-date pregnant women.<sup>28</sup> There was evidence of strong contractions in the treatment group; however, the trial did not report on whether women proceeded to spontaneous labor. The other study recruited 98 women and compared acupuncture with placebo acupuncture or a no acupuncture control group. Women were recruited to the trial at 37-38 weeks' gestation and the effect of acupuncture in ripening the cervix was evaluated. The authors did not report whether labor was induced.<sup>29</sup>

A non-blinded, randomized study was designed to evaluate whether acupuncture at term can influence cervical ripening, induce labor, and, thus, reduce the need for postdate induction. Data for 45 women were evaluated. The cervical length in the acupuncture group (n = 25) was shorter than in the control group (n = 20) on day 6 and day 8 after estimated date of confinement (P = 0.04 for both). Labor was induced in 20% of women in the acupuncture group (n = 5) and in 35% in the control group (n = 7) (P = 0.3). Acupuncture at points Hegu (Large Intestine 4) and Sanyinjiao (Spleen 6) supports cervical ripening at term and shortens the time interval between the estimated date of confinement and the actual time of delivery.<sup>30</sup>

A randomized clinical trial to evaluate the influence of acupuncture stimulation on the induction of labor was begun in 1998 at the Department of Obstetrics and Gynaecology, Adelaide University, in Australia. The results have not been published.<sup>27</sup>

### **Breech Presentation**

Breech presentation is common in the mid trimester of pregnancy, with the incidence of breech decreasing as the pregnancy approaches term. The incidence of breech presentation at term is reported to be 4%.<sup>31</sup> Current management options to correct breech presentation include external cephalic version and postural management. A third treatment, moxibustion, utilizes heat generated by burning herbal preparations containing the plant *Artemisia vulgaris* to stimulate acupuncture points.<sup>32</sup> This technique involves holding moxa sticks (1.5 cm in diameter and 20 cm in length) or burning moxa cones on or over the acupuncture point Zhiyin (Bladder 67) located at the tip of the fifth toe. The heat should be warm but not uncomfortable. Treatment is administered for 15 minutes, once or twice a day for a specified number of treatments. Anecdotal evidence suggests that moxibustion may correct breech presentation and no side effects have been reported.<sup>10</sup> It has been proposed that this technique stimulates the production of maternal hormones (placental estrogens and prostaglandin), thus encouraging the

uterine lining to contract, which in turn stimulates fetal activity.<sup>32,33</sup>

Women with a breech presentation may seek treatment with moxibustion from 32 to 38 weeks since it seems to be a cheap, safe, simple, self-administered, non-invasive, painless, and generally well-tolerated technique. There are very few scientific or controlled clinical studies of this method of treatment but a Cochrane review has been proposed to evaluate the available evidence.<sup>34</sup>

A recent study reported that breech presentation was corrected successfully by stimulating acupuncture points with moxibustion or low-frequency electrical current. The authors conclude that acupuncture stimulation, especially with moxibustion, is expected to serve as a safe and effective modality in the management of breech presentation in a clinical setting.<sup>35</sup>

### **Adverse Effects**

Acupuncture is a very safe intervention in the hands of competent practitioners and rarely is associated with complications.<sup>36</sup> The most common include minor bruising and dizziness. As required by the United States Food and Drug Administration, sterile or disposable needles should be used to avoid any infectious risks.

### **Conclusion**

Acupuncture does have an effect in the gynecological system due to the central effect of neuropeptides on the hypothalamic-pituitary-ovarian axis and peripherally on the uterus. Various clinical studies show that acupuncture is effective in relieving acute or sudden pain, but the effect in labor pain has not been thoroughly evaluated. Acupuncture can induce uterine activity in pregnant women and seems to reduce the intensity of labor pain. Although acupuncture appears helpful in reducing labor pain, only two randomized, single-blind studies were found in the literature. Therefore, randomized controlled studies are needed to evaluate the efficacy of acupuncture in the induction of labor and to confirm its effect in diminishing labor pain, reducing the need for analgesics, and achieving relaxation during labor.

In addition, treatment protocols can differ widely in acupuncture studies, depending on the type of acupuncture used, the selection of points, skill of the acupuncturist, and the needling techniques used (duration and depth of needling, type of needle, number of needle insertions, number of points used, type of stimulation, and point selection). It is important that any future clinical trials of acupuncture report the treatment regimen (number of sessions and frequency of treatment) and needling described in the STRICTA (STandards for

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## Ginger for Nausea in Pregnancy

**Sources:** Keating A, Chez RA. Ginger syrup as an antiemetic in early pregnancy. *Altern Ther Health Med* 2002;8:89-91.

**Abstract:** Ginger (*Zingiber officinale*) has been used to ameliorate symptoms of nausea. A beverage containing ginger in a syrup may be easier to consume than a capsule or solid food. The objective of this double-blind, placebo-controlled, randomized clinical trial was to determine if ginger syrup mixed in water is an effective remedy for the relief of nausea and vomiting in the first trimester of pregnancy. Twenty-six subjects in the first trimester of pregnancy were enrolled from the University of South Florida department of obstetrics and gynecology private practice office. The authors concluded that the ingestion of 1 g of ginger in syrup in a divided dose daily may be useful in some patients experiencing nausea and vomiting in the first trimester of pregnancy.

Blumenthal M. Ginger as an antiemetic during pregnancy [letter]. *Altern Ther Health Med* 2003;9:9-20.

**Source:** Vutyavanich T, et al. Ginger for nausea and vomiting in pregnancy: Randomized, double-masked, placebo-controlled trial. *Obstet Gynecol* 2001;97:577-582.

**Abstract:** The authors in this trial sought to determine the effectiveness of ginger for the treatment of nausea and vomiting of pregnancy. Women with nausea and vomiting of pregnancy, who first attended an antenatal clinic at or before 17 weeks' gestation, were invited to participate in the study. During a five-month period, 70 eligible women gave consent and were randomized in a double-masked design to receive either oral ginger 1 g per day or an identical placebo for 4 days. Subjects graded the severity of their nausea using visual analog scales and recorded the number of vomiting episodes in the previous 24 hours before treatment, and again during four consecutive days while taking treatment. At a follow-up visit seven days later, five-item Likert scales were used to assess the severity of their symptoms. The authors concluded that ginger is effective for relieving the severity of nausea and vomiting of pregnancy.

### ■ COMMENTS BY MARY L. HARDY, MD

Morning sickness can be a difficult illness to treat in Western medicine. Therapy is limited by fear of inducing harm to the developing fetus. As a result, many women have sought relief from natural remedies. Of 70 women who called the Mother Risk Helpline for nausea, 61% reported using complementary and alternative therapies.<sup>1</sup> Vitamin B<sub>6</sub>, ginger, and acupuncture were the therapies most commonly reported. Only 8% of the women told their doctors or pharmacists what they were using. Thus, it is very important that medical professionals who see pregnant patients be prepared to discuss the use of ginger by having a sense of the efficacy and safety of ginger for nausea and vomiting of pregnancy.

Ginger is an herb that has been used medicinally by virtually every culture. Traditionally, it has been given to treat upper gastrointestinal complaints like nausea or indigestion. Clinical trials have shown that ginger is effective in reducing nausea associated with motion sickness and chemotherapy or following surgery.<sup>2</sup> To date, three clinical trials have looked at the effect of ginger on morning sickness.

The first trial showed a decrease in nausea and vomiting after 10 days of treatment with ginger, but this trial was not ideal for several reasons.<sup>3</sup> The number of women studied was small (n = 30) and they were hospitalized with relatively severe symptoms. The dosage used—250 mg dried powder twice a day—was smaller than was customarily used.

Following this trial, a group in Thailand, where ginger is used extensively as a folk treatment and dietary spice, conducted a trial to address these issues.<sup>4</sup> Seventy women complaining of first trimester nausea at an outpatient obstetrical visit were enrolled in this study. They were given a dried ginger powder (250 mg four times a day for four days), which had been prepared by the

investigators from fresh ginger root. Nausea as assessed by a visual analog scale was significantly lower in the treatment group by day 2 and continued to decrease for the next two days. Subjectively, 28 of 32 treated women also reported an improvement in symptoms compared with only 10 of 35 placebo patients. Ginger apparently was effective after a short treatment time, but it is a weakness of this trial that women were not followed for a longer time. Thus, this trial does not tell us anything about the durability of a response to ginger.

Most recently, Keating and Chez tested a commercially available ginger syrup for first trimester nausea.<sup>5</sup> This was a small pilot study and no statistical analysis was performed. However, the trend was consistent with the two previous studies. A syrup that contained the equivalent of 250 mg of ginger root was consumed four times a day for two weeks. By the tenth day, the treatment group reported a better clinical response than the placebo group. This more unusual formulation was well accepted by the patients.

Given the limited but positive data for efficacy of ginger, attention should be paid to safety. Questions have

been raised about the safety of ginger for pregnant women. Several authorities permit the use of fresh ginger, but consider dried ginger a risk to the baby. However, this view is not held universally. Ginger as a food is widely consumed in Asia in amounts much larger than the amounts tested in these trials without reports of increased risk to fetus. No adverse events to the fetus were reported in the clinical trials reported here, although they were not long enough or large enough to represent definitive safety studies. It is fair to say that with ginger doses of 1 g/d, the evidence of benefit outweighs the evidence of risk. However, additional caution would be recommended to any patient with a history of first trimester fetal loss. ❖

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3. Fischer-Rasmussen W, et al. Ginger treatment of hyperemesis gravidarum. *Eur J Obstet Gynecol Reprod Biol* 1990;38:19-24.
4. Vutyavanich T, et al. Ginger for nausea and vomiting in pregnancy: Randomized, double-masked, placebo-controlled trial. *Obstet Gynecol* 2001;97:577-582.
5. Keating A, Chez RA. Ginger syrup as an antiemetic in early pregnancy. *Altern Ther Health Med* 2002;8:89-91.

## CE Objectives

After reading *Alternative Therapies in Women's Health*, the health care professional will be able to:

1. evaluate alternative medicine and complementary therapies for women's health concerns;
2. identify risks and interactions associated with alternative therapies;
3. discuss alternative medicine options with patients; and
4. offer guidance to patients based on the latest science and clinical studies regarding alternative and complementary therapies.

## CE/CME Instructions

Physicians and nurses participate in this continuing medical education/continuing education program by reading the article, using the provided references for further research, and studying the questions at the end of the article. Participants should select what they believe to be the correct answers, then refer to the list of correct answers to test their knowledge. To clarify confusion surrounding any questions answered incorrectly, please consult the source material. After completing this activity, you must complete the evaluation form provided and return it in the reply envelope provided at the end of the semester to receive a certificate of completion. When your evaluation is received, a certificate will be mailed to you.

## CME Questions

**20. The NIH Consensus Statement on acupuncture states that acupuncture is effective for:**

- a. adult postoperative and chemotherapy nausea and vomiting.
- b. menstrual cramps.
- c. inducing or stimulating labor.
- d. relieving labor pain.

**21. According to the author, acupuncture points used to reduce labor pain are found on:**

- a. stomach and thighs.
- b. hands, feet, and ears.
- c. top of the head.
- d. arms, shoulders, and upper torso.

**22. In a study of women suffering from nausea and vomiting during pregnancy, the most common CAM remedies used were:**

- a. vitamin B<sub>6</sub>.
- b. acupuncture.
- c. ginger.
- d. All of the above

Answers: 20. a, 21. b, 22. d.

### **Pitt Nursing School to Study Acupuncture**

Researchers at the University of Pittsburgh School of Nursing are investigating acupuncture for reducing menopausal symptoms in women with breast cancer.

In the current study, funded by the National Cancer Institute, participants will be divided into three groups. One group will receive menopause specific acupuncture, one will receive non-menopause specific acupuncture, and one will receive usual care. Participants receiving acupuncture will have 12 acupuncture treatments, and participants in the usual care group will attend educational sessions where they will learn about non-hormonal menopausal symptom management strategies.

Before and after each session, saliva samples will be collected from each participant. The samples will be tested to measure cortisol levels. Decreases in cortisol levels indicate that acupuncture produced a relaxation effect.

The study will continue through 2004. Potential study participants can call (412) 624-4597 for information.

### **Trial Will Study St. John's Wort for Depression**

The National Institutes of Health has launched a four-year study to determine the safety and effectiveness of the herbal supplement St. John's wort and citalopram, a standard antidepressant, compared to placebo. The trial is being conducted at three sites. A total of 300 participants with minor depression will be randomly assigned a standardized extract of St. John's wort (*Hypericum perforatum*), citalopram, or placebo in a 12-week double-blind trial. Researchers will assess changes in patients' symptoms, functioning, and quality of life. Those who show no improvement will receive the active treatment they hadn't been assigned before, while patients with improved symptoms will take their assigned treatment for another 14 weeks for a total of 26 weeks.

The National Institute of Mental Health, the National Center for Complementary and Alternative Medicine, and the Office of Dietary Supplements are funding the more than \$4 million collaborative study.

Men and women ages 18-85 who meet diagnostic criteria for minor depression are eligible to participate. They must have experienced depressive symptoms for at least six months but less than two years continuously without meeting criteria for a major depressive episode or dysthymia within the past year. Additional exclusionary

criteria include other mental disorders and some active physical illnesses, such as cardiovascular, renal, respiratory, endocrine, neurological, or blood diseases.

Participants are interviewed at an initial screening visit, during the initial two-week period when they are withdrawn from all psychotropic medications, at baseline, and every two weeks thereafter during the study. At the screening visit, week 12 and week 20, patients will undergo a complete blood count with laboratory tests. Well-validated scales will be used to assess symptoms, dysfunction, and well-being.

For information, visit [www.ClinicalTrials.gov](http://www.ClinicalTrials.gov).

### **Physician's License Revoked for Practicing CAM**

The Tennessee Court of Appeals recently upheld a ruling of the Tennessee Board of Medicine to revoke the license of James E. Johnson, MD, who practiced "alternative medicine" in Nashville, TN.

A patient had seen Johnson regarding a chronic skin condition. The board says Johnson incorrectly diagnosed the patient as having a widespread yeast infection. He treated the patient with garlic, intravenous hydrogen peroxide infusions, and high-dose vitamin C injections. The treatment resulted in the patient having upper respiratory problems, pain, dizziness, blurred vision, a small stroke, infection, and an abscess that had to be surgically drained and removed.

The Tennessee Department of Health then filed charges against Johnson. After an administrative hearing, the Tennessee Board of Medical Examiners found that he had engaged in unprofessional and unethical conduct, committed acts of gross malpractice, and demonstrated a pattern of incompetence and ignorance in the course of medical practice. The board revoked Johnson's medical license and assessed civil penalties. Johnson sought judicial review of the decision in the chancery court. The chancellor affirmed the civil penalties but reversed the board's revocation of his medical license. The Tennessee Department of Health and the Tennessee Board of Medical Examiners then appealed, and the Court of Appeals supported the board's original decision, saying that the board did not act arbitrarily or capriciously, and that its revocation of the physician's medical license was supported by substantial and material evidence. ❖

## In Future Issues:

### **Biofeedback for Incontinence**