

## Bed Rest May Not Be Helpful for Threatened Miscarriage

Laurie Barclay, MD

Medscape Medical News 2006. © 2006 Medscape

April 5, 2006 — An opinion piece in the March 24 issue of *The New York Times* highlights a controversial issue in obstetrics: the value of bed rest for threatened miscarriage. Although this intervention is widely prescribed, evidence of its efficacy is limited or absent, and some experts suggest that there may be deleterious effects.

"There is no evidence that bed rest is beneficial for preserving the pregnancy in cases of threatened miscarriage," American College of Obstetrics and Gynecology fellow Robert L. Goldenberg, MD, a professor of obstetrics and gynecology at the University of Alabama at Birmingham, told Medscape. "I tell my patients to do whatever they feel more comfortable with, whether it be rest or continuing their usual activities."

Part of the problem in determining the value, if any, of bed rest in this situation is the difficulty in carrying out well-designed, methodologically sound research, according to Alexandros Sotiriadis, MD, a PhD researcher in obstetrics and gynecology at the University Hospital of Ioannina in Greece.

"Bed rest for threatened miscarriage has been used empirically in the past, when a 'detachment' of the fetus was held responsible for miscarriage or threatened miscarriage," Dr. Sotiriadis told Medscape. "This approach is currently criticized as our insight into the pathophysiology of miscarriage has improved, and it has become clear that there is lack of evidence to support the [efficacy] of bed rest in this condition."

In many cases of threatened miscarriage the causes are nonreversible, for example, those due to chromosomal abnormality, and bed rest would not be expected to have any effect. Because of the small proportion of cases of threatened miscarriage eventually resulting in actual miscarriage, statistically convincing research would require several hundreds of participants to detect small differences attributed to bed rest. Karyotype analysis in cases of miscarriage would also be essential in this setting, Dr. Sotiriadis said. After excluding those cases in which miscarriage was inevitable because of chromosomal abnormalities, the effect of bed rest would likely be so small that the number of patients needed to treat to prevent 1 miscarriage would be too great in terms of cost-effectiveness.

"Antepartum bed rest treatment is based on 2 assumptions: that bed rest treatment is (1) effective and (2) safe — ie, has no major adverse effects," Judith A. Maloni, PhD, RN, FAAN, a professor at the Frances Payne Bolton School of Nursing at Case Western Reserve University in Cleveland, Ohio, told Medscape. "There is no evidence for the first assumption, and there is increasing research to support that bed rest has major adverse effects for the mother and possibly for the fetus/infant."

Two small randomized controlled trials (RCTs) from the early 1990s showed overall lack of effect. In one of these studies, 61 women with viable pregnancies and vaginal bleeding at less than 8 gestational weeks were randomized to receive injections of human chorionic gonadotropin, injections of placebo, or bed rest. Abortion rates were 30%, 48%, and 75%, respectively (*Int J Fertil Menopausal Stud* 1993;38:160-165).

In addition, because Cochrane reviews rely primarily on data from RCTs, they have rated antepartum bed rest to prevent threatened miscarriage as a "form of care unlikely to be beneficial." Evidence from current RCTs shows no significant difference in maternal-fetal outcomes for women with twin and triplet gestations treated with hospital bed rest and those allowed to ambulate at home (Cochrane database, 2004).

"At one time bed rest was thought to be effective, but this conclusion was based on the results of older studies (not RCTs) that had serious methodologic flaws such as, for example, failure to exclude fetal and neonatal deaths from congenital anomalies that were incompatible with life," Dr. Maloni said. "In contrast, one recent study indicates that vigorous leisure activity during pregnancy, especially during the second trimester, is associated with a reduced risk of preterm birth." (*Epidemiology*. 2002;13[6]:653-659).

A retrospective study of 226 women showed that 16% of 146 women prescribed bed rest for threatened abortion eventually miscarried compared with 20% of women not prescribed bed rest ( $P = .41$ ; *Minerva Ginecol*. 2001;53:337-340). However, in an observational cohort study of 230 women with threatened miscarriage and subchorionic hematoma, 9.9% who complied with recommended bed rest miscarried compared with 23.3% of women who continued their usual activities ( $P = .03$ ; *Isr Med Assoc J*. 2003;5:422-424).

"In our practice some physicians do nothing, some prescribe bed rest for several days, and some also add vaginal progesterone," Avi Ben-Haroush, MD, an obstetrician/gynecologist at Rabin Medical Center in Petach-Tikva, Israel, and lead author of the last-mentioned study, told Medscape. "It is well acknowledged that these measures are empiric with no real evidence."

Two decades ago, 96% of general practitioners in the United Kingdom prescribed bed rest for heavy bleeding in early pregnancy (*BMJ*. 1987;295:583-586). A study published by Dr. Maloni in 1998 (*J Women's Health*. 1998;7(3):351-358) showed that about 90% of obstetricians prescribed some form of bed rest or activity restriction during the second and third trimester to prevent preterm birth in women with preterm labor, preterm rupture of membranes, placenta previa, or multiple gestation.

"Currently, it is my observation that physicians are now using bed rest somewhat less," Dr. Maloni said. "They now rarely prescribe complete bed rest in the hospital (not allowed out of bed to toilet) but continue to prescribe bed rest with bathroom privileges in varying degrees. They have also tended to shift the site of bed rest from the hospital to the home."

Across the United States, prescription of bed rest is somewhat inconsistent, according to Dr. Maloni. Some practices and hospitals rarely use antepartum bed rest and others advise very strict bed rest.

"Abstinence from an active environment for a few days may make some patients feel safer, and therefore psychologically better," said Dr. Sotiriadis, who

recently wrote a review of this subject (*BMJ*. 2004;329:152-155). "Yet again, immobilization would not help even in this setting, as it would only make the patients feel ill and probably responsible for the [potentially adverse] outcome."

Dr. Maloni pointed out that there are some women with symptoms of preterm labor, such as contractions with cervical dilatation, who may need to reduce excessive or intense activity during pregnancy. Examples of such activity might include running, aerobics, or physically demanding employment.

"These women may benefit from reducing some of this activity," Dr. Maloni said. "But this does not mean that they should go on bed rest during their pregnancy. This is my clinical impression, but the idea needs to be tested by research."

Apart from the lack of evidence supporting the efficacy of antepartum bed rest for threatened abortion, there are potentially adverse effects to consider. Muscle atrophy and cardiovascular deconditioning are well documented effects of bed rest in men and nonpregnant women. Dr. Maloni and colleagues have written extensively about the physical and psychological effects of bed rest on pregnant women and even in their offspring. Antepartum symptoms may include musculoskeletal and cardiovascular deconditioning, sleep disturbances, and other changes in circadian rhythms. Additional problems may include insufficient weight gain and low birth weights.

"The effects vary by the severity of activity restriction and length of bed rest," Dr. Maloni said. "Bathroom privileges do not offset the side effects of bed rest. Psychosocial adverse effects include increased depression, stress, and family functioning difficulties."

In Dr. Maloni's longitudinal study of 106 postpartum women who had a singleton high-risk pregnancy and were treated with antepartum bed rest, duration of maternal bed rest was significantly correlated with the number of symptoms at postpartum weeks 1, 2, 4, 5, and 6. (*J Obstet Gynecol Neonatal Nurs*. 2005;34[2]:163-171). At 6 weeks, at least 40% of women continued to report fatigue, mood changes, tenseness, difficulty concentrating, back muscle soreness, dry skin, and headache.

However, Dr. Ben-Haroush said that "there are no reported adverse effects for bed rest in [threatened abortion]," and according to Dr. Sotiriadis, direct evidence regarding adverse effects of bed rest in threatened miscarriage is "quite limited." Both of these experts agree that pregnancy is associated with a hypercoagulable state. "Immobilization, especially strict and/or prolonged, can predispose to thromboembolic events," Dr. Sotiriadis pointed out.

Experts interviewed by Medscape recommend RCTs to evaluate the effects of bed rest in women with vaginal bleeding and viable pregnancy in the first trimester, preterm labor, placenta previa, and preterm rupture of membranes. Dr. Maloni also suggested additional research replication regarding the adverse effects of bed rest on maternal weight gain, infant birth weight, and maternal bone density antepartum and postpartum.

While awaiting the results of such studies, Dr. Maloni encouraged women to get a second opinion from a high-risk perinatologist or maternal-fetal medicine specialist about whether bed rest is needed and, if so, the degree of activity restriction that should occur. Women opting for bed rest should ask their obstetrician about postpartum physical therapy referral for a systematic assessment of cardiovascular and musculoskeletal weakness, and to obtain a specific planned program of supervised rehabilitation to address the deconditioning effects of bed rest, she said.

"I think this common obstetric practice should be discontinued until RCT evidence is produced to support that bed rest treatment improves fetal and maternal outcome," Dr. Maloni concluded. "If physicians do not discontinue the practice, then they should order a planned program of postpartum rehabilitation for postpartum women. Early discharge should be reconsidered in light of the adverse side effects that extend into the postpartum recovery period."

Dr. Sotiriadis suggested that physicians have a thorough discussion with the patient and her partner to explain the events and mechanisms underlying threatened miscarriage, and that they offer continuous support, ideally by a dedicated healthcare professional or early pregnancy unit.

"There cannot be evidence-based guidelines [concerning the use of bed rest for threatened abortion] as there is lack of evidence," Dr. Sotiriadis concluded.

Drs. Ben-Haroush, Maloni, Rosenberg, and Sotiriadis report no relevant financial relationships.

*Reviewed by Gary D. Vagin, MD*

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