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CRITICAL APPRAISAL OF "EVIDENCE-BASED LABOR AND DELIVERY MANAGEMENT"

The ability to critically appraise research reports is an essential skill for contemporary health professional practice. This applies equally to reports of single studies and reviews described as "evidence-based." Review articles compile all relevant research findings into one place and help resolve varied or conflicting results of individual studies. However, reviews themselves are subject to bias. Of highest quality are systematic reviews, using meta-analysis to clarify uncertainty by increasing power and precision around estimates of effect. Narrative reviews also discuss and summarize the literature on a topic of interest, but do so without reporting or reliably applying prespecified criteria. Due to their inherent subjectivity, narrative reviews are included in the same level of evidence as expert opinion. A comprehensive new guidebook for health professionals seeking to undertake or assess the quality of a review provides resources to identify potential bias and evaluate the quality of review recommendations.¹

A recent article aimed to identify "evidence-based labor and delivery management" to make recommendations for clinical practice, education, and research.² This article presented criteria for study selection, data abstraction, and data synthesis, and cited the US Preventive Services Task Force rating system for quality of evidence, giving the appearance of a systematic review.

A closer look at the content of the review reveals areas for concern. Reviewed aspects of labor and delivery were highly selective and excluded, for example, common interventions such as labor induction and intrapartum fetal monitoring. The authors reported including studies from 1966 to 2008, but discussed earlier studies in their narrative synthesis of data. Relative risk was the predetermined outcome measure; however, incidence rates and odds ratios were reported for selected topics. Confidence intervals were not reported. It is unclear whether results represent pooled data, or what method was used to arrive at summary statistics or to assess heterogeneity or publication bias. The article aimed to evaluate principally randomized controlled trials; however, it included discussion of observational studies for selected topics where experimental

data are sparse, but not for others. The authors state they followed the guidelines of the Quality of Reporting of Meta-Analyses (QUOROM) conference "as appropriate" but that they could not be totally applied. Inconsistent adherence to a priori systematic review standards provided many opportunities for introducing bias, calling into serious question the review conclusions.

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FROM COCHRANE DATABASE OF SYSTEMATIC REVIEWS (CDSR), ISSUE 1, 2009

New Systematic Reviews

- Antibiotics for mastitis in breastfeeding women
- Chinese herbal medicine for premenstrual syndrome
- Hormone therapy for endometriosis and surgical menopause
- Interventions for preventing late postnatal mother-to-child transmission of HIV
- Interventions for treating painful sickle cell crisis during pregnancy
- Maintenance therapy with oxytocin antagonists for inhibiting preterm birth after threatened preterm labour
- Oral lactoferrin for the treatment of sepsis and necrotizing enterocolitis in neonates
- Paracervical local anaesthesia for cervical dilatation and uterine intervention
- Post-operative radiotherapy for ductal carcinoma in situ of the breast
- Prenatal education for congenital toxoplasmosis
- Regimens of fetal surveillance for impaired fetal growth
- Theory-based interventions for contraception
- Treatments for suppression of lactation

UPDATED SYSTEMATIC REVIEWS

- Antenatal perineal massage for reducing perineal trauma
- Episiotomy for vaginal birth

- Fetal electrocardiogram (ECG) for fetal monitoring during labour
- Hormone therapy in postmenopausal women and risk of endometrial hyperplasia
- Magnesium sulphate for women at risk of preterm birth for neuroprotection of the fetus
- Multiple versus single doses of exogenous surfactant for the prevention or treatment of neonatal respiratory distress syndrome
- Newborn screening for cystic fibrosis
- Number of embryos for transfer following in-vitro fertilization or intra-cytoplasmic sperm injection
- Open retropubic colposuspension for urinary incontinence in women
- Oral misoprostol for induction of labour
- Restricted versus liberal oxygen exposure for preventing morbidity and mortality in preterm or low birth weight infants
- Vitamin D and vitamin D analogues for preventing fractures associated with involution and post-menopausal osteoporosis

Cochrane Reviews are available by subscription to *The Cochrane Library*, and review abstracts are available without charge. See <http://www.thecochranelibrary.com>

FROM DATABASE OF ABSTRACTS OF REVIEWS OF EFFECTS (DARE)

Recent Abstract Entries Assessing Quality of Systematic Reviews

- Accuracy of mean arterial pressure and blood pressure measurements in predicting pre-eclampsia: Systematic review and meta-analysis
- Duration of intrapartum prophylaxis for neonatal group B Streptococcal disease: A systematic review
- Effect of raloxifene therapy on venous thromboembolism in postmenopausal women: A meta-analysis
- Effectiveness of secondary pregnancy prevention programs: A meta-analysis
- Evidence-based review of oral sucrose administration to decrease the pain response in newborn infants
- Hormone replacement therapy and cognitive performance in postmenopausal women: A review by cognitive domain
- Single-dose azithromycin versus erythromycin or amoxicillin for Chlamydia trachomatis infection during pregnancy: A meta-analysis of randomised controlled trials
- Soy isoflavone intake increases bone mineral density in the spine of menopausal women: Meta-analysis of randomized controlled trials
- The diagnostic role of stress echocardiography in women with coronary artery disease: evidence based review
- The effect of second-trimester antibiotic therapy on the rate of preterm birth

- Unassisted pelvic floor exercises for postnatal women: A systematic review
- What type of urinary incontinence does this woman have?

DARE abstracts are available without charge at <http://www.york.ac.uk/inst/crd/crddatabases.htm#DARE>

EVIDENCE-BASED REVIEWS FROM OTHER SOURCES

Featured reviews: (1) Grootsholten K, Kok M, Oei SG, Mol BW, van der Post JA. External cephalic version-related risks: A meta-analysis. *Obstet Gynecol* 2008;112:1143–51. (2) Kok M, Cnossen J, Gravendeel L, van der Post J, Opmeer B, Mol BW. Clinical factors to predict the outcome of external cephalic version: A metaanalysis. *Am J Obstet Gynecol* 2008;199(6):630.e1–7.

Two recent meta-analyses addressed external cephalic version (ECV). The first, based on 84 studies, quantified the risk of complications associated with attempted ECV for singleton breech pregnancies after 36 weeks' gestation. The pooled success rate, defined as cephalic position directly after the procedure, was 58% while the pooled complication rate was 6.1% and the rate of ECV-related emergency cesareans was 0.35%. Complications ranged in severity and included abnormal fetal heart rate, vaginal bleeding, ruptured membranes, cord prolapse, fetomaternal transfusion, placental abruption, and stillbirth. Twelve fetal deaths occurred among 12,955 cases; however, only two were attributable to the procedure, giving a pooled risk of 0.19%. The complication rate was unrelated to fetal position following ECV. The authors conclude that ECV is safe and should be offered to all eligible women in settings with capacity for emergency cesarean delivery. The second meta-analysis, based on 53 studies, reported on clinical factors associated with success, similarly defined, in pregnancies after 36 weeks' gestation. Odds of success were significantly higher in association with multiparity, non-engagement of the breech, uterine relaxation after tocolysis, a palpable fetal head, and maternal weight <65kg. A prospective study is needed to quantify the relationship of each of these factors to successful ECV.

Comment: The authors report that up to 1/3 of women eligible for ECV are not offered this option, and 20-75% of women who are offered ECV decline. Based on a new birth certificate item, the latest National Vital Statistics Report cited an ECV rate of 5.4/1000 births with an 80% success rate in 2005. Given high rates of cesarean delivery for breech position and known risks associated with cesarean delivery for mothers and babies, information about the safety of ECV and factors associated with success should be communicated to all women with breech pregnancies.

Featured review: Ohlsson A, Shah P. Determinants and prevention of low birth weight: A synopsis of the

evidence. Alberta, Canada, Institute of Health Economics (IHE), 2008. Available without charge from: <http://www.ihe.ca/publications/library/2009/determinants-and-prevention-of-low>

An overview of evidence from systematic reviews published in English through 2006 assessed determinants and prevention strategies for preterm birth (PTB <37 weeks) and low birth weight (LBW <2500 grams). When no systematic review for a specific variable was available, primary studies and narrative reviews were included. All studies were assessed for quality. For determinants, a strong association was one consistently identified in multiple studies of adequate quality adjusting for confounders. For interventions, strong evidence of effectiveness reflected cumulative evidence from well-designed systematic reviews. Determinants strongly associated with PTB and LBW included: short or long birth interval, previous history of PTB/LBW, maternal LBW, minority race, teen pregnancy, unmarried status, diet lacking in iron or fish oil, low body mass index, uterine and placental factors, infectious disease (malaria, genitourinary, and periodontal), stress and adverse psychological factors, poor neighborhood, smoking or tobacco exposure, heavy alcohol use, cocaine, narcotics, domestic abuse, trauma, and infertility and in vitro fertilization treatment. Interventions with strong evidence of effectiveness included: intensive smoking cessation and relapse prevention during prenatal care, prevention and treatment of infections, promotion of balanced nutrition, treatment of general medical and pregnancy-related conditions, and reduction of multiple embryos following infertility treatment and IVF.

Comment: This comprehensive review confirms the most significant determinants of PTB and LBW are complex social and behavioral factors related largely to race/ethnicity, socioeconomic status and associated disparities in overall health status. These factors are poorly addressed in US maternity care, which focuses most of its resources on acute interventions in the perinatal period. The report estimates \$20 billion could be saved annually through population-based prevention strategies that could reduce the US PTB rate by 20%.

Featured review: Moayyeri A. *The association between physical activity and osteoporotic fractures: A review of the evidence and implications for future research.* *Ann Epidemiol* 2008;18:827-35.

A review of 13 prospective observational studies exploring the relationship between physical activity and hip fracture in adults over 40 presented results stratified by gender. In pooled analysis, moderate to vigorous physical activity was associated with a 38% reduction in the risk of hip fracture in women. While meta-analysis confirmed a significant association between physical activity and reduced risk for hip fracture, it is impossible to know how well observational studies controlled for confounding between

health status and level of physical activity. No randomized controlled trials were identified. The association between physical activity and other types of fractures, fall risk, and bone mineral density was also evaluated; however, meta-analysis was not conducted for these outcome variables. These data suggested a possible trend toward increased risk of wrist fractures and a slight increase in bone mineral density of questionable clinical significance associated with physical activity in women, and a U-shaped distribution for fall risk associated with physical activity in all subjects (higher risk in the most inactive and the most active subjects).

Comment: Osteoporosis affects 200 million women globally, with half of all women sustaining a fracture related to bone fragility during their lifetime. Hip fracture is the most significant of all osteoporotic fracture types in terms of mortality, hospitalization, and functional status. While it is not possible to eliminate the potential confounding factor of better health status in physically active women in relation to hip fracture risk in this review, the prospect of improved overall status strengthens the rationale for counseling women over forty about the benefits of regular physical activity.

Recent Evidence-Based Reviews

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