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**Literature search results**

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**Search details**

Respiratory disorders in pregnancy

**Resources searched**

NICE Evidence; TRIP Database; Cochrane Library; CINAHL; EMBASE; MEDLINE; Google Scholar

*Database search terms*: (pregnant* OR perinatal* OR obstetric*), (respiratory OR pulmonary OR asthma* OR lung*)

*Evidence / Google Scholar search string(s)*: (pregnant OR pregnancy) (respiratory OR pulmonary OR asthma OR lung)

**Guidelines and Policy**

**ACOG practice bulletin: clinical management guidelines for obstetrician-gynecologists number 90, February 2008: asthma in pregnancy.**

Citation: Obstetrics and gynecology, Feb 2008, vol. 111, no. 2 Pt 1, p. 457-464, 0029-7844 (February 2008)

Author(s): Dombrowski, Mitchell P, Schatz, Michael, ACOG Committee on Practice Bulletins-Obstetrics

Abstract: Asthma is a common, potentially serious medical condition that complicates approximately 4-8% of pregnancies. In general, the prevalence of and morbidity from asthma are increasing, although asthma mortality rates have decreased in recent years. The purpose of this document is to review the best available evidence about the management of asthma during pregnancy.
Current guidelines for the management of asthma during pregnancy.
Citation: Immunology and allergy clinics of North America, Feb 2006, vol. 26, no. 1, p. 93-102, 0889-8561 (February 2006)
Author(s): Namazy, Jennifer Altamura, Schatz, Michael
Abstract: Over the past few years, much has been learned that is relevant to the management of asthma in pregnancy. Although the studies that were reviewed here in provide more insight into the mechanisms that are involved and the treatment of asthma during pregnancy, there are more questions to be answered. It is hoped that the updated guidelines, which address the safety of contemporary asthma medications during pregnancy, will be a helpful resource in the treatment of our pregnant asthmatic patients.
Source: Medline

RCOG
Reducing the Risk - Thrombosis and Embolism during Pregnancy and the Puerperium, 2015

The Acute Management of Thrombosis and Embolism during Pregnancy and the Puerperium, 2015

SIGN
Guideline 141: British Guideline on the Management of Asthma - Full guideline, 2014
Mentions pregnancy throughout

Evidence Reviews

BestBETs

Towards evidence based emergency medicine: best BETs from the Manchester Royal Infirmary. BET 2: Imaging for the diagnosis of pulmonary embolism in pregnant women.
Citation: Emergency medicine journal : EMJ, Mar 2013, vol. 30, no. 3, p. 251-252 (March 2013)
Author(s): Bordeleau, Simon
Abstract: A short-cut review was carried out to establish whether CT pulmonary angiography (CTPA) or ventilation-perfusion (VQ) scanning offer advantages in imaging the pregnant woman with a possible deep vein thrombosis. A total of 80 papers was found using the reported search, of which four represented the best evidence to answer the clinical question. The author, date and country of publication, patient group studied, study type, relevant outcomes, results and study weaknesses of these best papers are tabulated. The clinical bottom line is that a ventilation-perfusion (or perfusion) scan should be prioritised if the chest x-ray is normal. In the case of an abnormal chest x-ray, a CT pulmonary angiography scan will be better in finding an alternative diagnosis.
Source: Medline

Towards evidence-based emergency medicine: best BETs from the Manchester Royal Infirmary. BET 4: current evidence does not support the use of a negative D-dimer to rule out suspected pulmonary embolism in pregnancy.
Citation: Emergency medicine journal : EMJ, Mar 2011, vol. 28, no. 3, p. 245-246
There is currently a limited and incomplete body of evidence from randomised trials assessing the effects of interventions for managing asthma during pregnancy, which is insufficient to make firm conclusions about optimal interventions. The ability to draw conclusions is limited particularly by variability in the quality of the trials conducted to date, by the small sample sizes of many of these trials, and by variation in characteristics of the interventions assessed in the trials.

The results from five trials in this review assessing pharmacological interventions did not provide clear evidence of benefits or harms to support or refute current practice (Badawy 2012; Caramez 1998; Dombrowski 2004; Silverman 2005; Wendel 1996). While inhaled magnesium sulphate was shown to reduce asthma exacerbations for pregnant women with acute asthma, this was in one small trial, of unclear quality (Badawy 2012), and thus this evidence is insufficient to guide practice. While no clear effect on asthma exacerbations was seen with the addition of inhaled beclomethasone to routine asthma therapy in two trials (Caramez 1998; Wendel 1996), these trials were also both of unclear methodological quality, and had small sample sizes.

Similarly, the randomised evidence for non-pharmacological interventions for asthma management in pregnancy accumulated to date is not sufficient to support widespread implementation or practice change. The three included trials provided some support for the use of such strategies, however were not powered to detect differences in important maternal and infant outcomes (Lim 2012; Nickel 2006; Powell 2011). While a FENO-based algorithm to adjust asthma therapy reduced exacerbations for pregnant women, the effects on perinatal outcomes were less certain, and thus widespread implementation into the clinical practice setting is not yet likely to be appropriate (Powell 2011). Similarly, though positive effects on asthma control were shown with PMR (Nickel 2006) and a pharmacist-led, multi-disciplinary approach to asthma management for pregnant women (Lim 2012), the evidence to date is insufficient to guide practice change.
level. At our center patients are managed using a multidisciplinary approach at a high risk obstetric center with preference for intravenous prosta
cyclin therapy. Women of child bearing age with possible signs and symptoms of PAH must be promptly diagnosed and managed expectantly with an emphasis on maternal-fetal safety.

**Publication type:** Journal: Review  
**Source:** EMBASE

**Title:** Asthma and pregnancy: therapeutic challenges.  
**Citation:** Archives of gynecology and obstetrics, Oct 2014, vol. 290, no. 4, p. 621-627 (October 2014)  
**Author(s):** Mihălţan, Florin Dumitru, Antoniu, Sabina Antonela, Ulmeanu, Ruxandra  
**Abstract:** Asthma in pregnancy represents a complex therapeutic challenge as it can have unfavourable consequences on both the mother and the fetus. Pregnancy can have a variable impact on asthma, and there is no general rule to predict in whom is going to be better, stable or worse. On the other hand, asthma can increase the risks of fetal malformations, low birth weight or premature birth. The review of the literature regarding the asthma pathogenic maternal and fetal effects and the current therapeutic recommendations. A multidisciplinary team is needed to appropriately follow up a pregnant woman with asthma and this should involve a pulmonary disease physician, a neonatologist, an obstetrician and, if necessary, an allergologist. Most of the medications used in asthma outside pregnancy can safely be used during it. An appropriate management according to existing guidelines can minimize both maternal and fetal risks.

**Source:** Medline

**Title:** Inhaled beclomethasone in pregnant asthmatic women--a systematic review.  
**Citation:** Allergologia et immunopathologia, Sep 2014, vol. 42, no. 5, p. 493-499 (2014 Sep-Oct)  
**Author(s):** de Aguiar, M M, da Silva, H J, Rizzo, J Â, Leite, D F B, Silva Lima, M E P L, Sarinho, E S C  
**Abstract:** The aim of this study was to systematically review the safety and efficacy of inhaled beclomethasone for asthma treatment in pregnant women. We performed a systematic review in Medline, LILACS and SciELO electronic databases in December 2012. A total of 3433 articles were found by using the keywords asthma, pregnancy and beclomethasone. Among these, 1666 were from Medline, via PubMed, and 1767 were from LILACS and SciELO. Nine of these articles were selected. Only one paper suggested an increased foetal risk for congenital malformations, and one other for offspring endocrine and metabolic disturbances. Data are mostly reassuring, supporting the use of glucocorticoid inhalants during pregnancy, and we found no evidence of inferiority in relation to efficacy and safety of beclomethasone compared to other drugs used in pregnant asthmatic women. Copyright © 2013 SEICAP. Published by Elsevier Espana. All rights reserved.  
**Source:** Medline  
**Full text:** Available [Free Access Content](http://www.allergologia-immunopathologia.com) at Allergologia et Immunopathologia

**Title:** Systematic review and meta-analysis of pregnant patients investigated for suspected pulmonary embolism in the emergency department.  
**Citation:** Academic emergency medicine : official journal of the Society for Academic Emergency Medicine, Sep 2014, vol. 21, no. 9, p. 949-959 (September 2014)  
**Author(s):** Kline, Jeffrey A, Richardson, Danielle M, Than, Martin P, Penaloza, Andrea, Roy, Pierre-Marie  
**Abstract:** Pregnancy causes a small increase in risk of venous thromboembolism (VTE), but a large increase in concern upon presentation to an emergency
Department (ED) with symptoms of pulmonary embolism (PE), which may cause physicians to employ a low test threshold. This was a systematic review with the hypothesis that symptomatic pregnant patients in the ED have a low relative risk (RR) for VTE outcome. Studies in all languages were identified by structured search of PubMed, EMBASE, the Cochrane library, and bibliographies in February 2014. Papers with ED patients evaluated for possible PE that included pregnancy status, and had adequate reference standards, were included. An outcome of VTE (either deep venous thrombosis [DVT] or PE) was considered disease-positive (VTE+). Papers were assessed for selection and publication bias, and heterogeneity (I^2). The random effects model was used if I^2 > 24%. Seventeen full-length studies of 25,339 patients were analyzed. Pooled data showed I^2 = 0% with a symmetrical funnel plot. Two small studies with less than 1% of all patients had evidence of selection bias. The frequency of VTE+ rate among the 506 pregnant patients was 4.1% (95% confidence interval [CI] = 2.6% to 6.0%), compared with 12.4% (95% CI = 9.0% to 16.3%) among nonpregnant patients. The pooled RR of pregnancy for VTE+ diagnosis was 0.60 (95% CI = 0.41 to 0.87). Patients in the third trimester had a RR of 0.85 (95% CI = 0.40 to 1.77), and patients of childbearing age (<45 years) had a RR of 0.56 (95% CI = 0.34 to 0.93). In the ED setting, physicians test for PE in pregnant patients at a low threshold, resulting in a low rate of VTE diagnosis and a RR of VTE that is lower than that for nonpregnant women of childbearing age who are tested for PE in the ED setting. © 2014 by the Society for Academic Emergency Medicine.

Source: Medline

Title: Pulmonary arterial hypertension in pregnancy.
Citation: Seminars in perinatology, Aug 2014, vol. 38, no. 5, p. 289-294 (August 2014)
Author(s): Običan, Sarah G, Cleary, Kirsten L
Abstract: Pulmonary hypertension is a medical condition characterized by elevated pulmonary arterial pressure and secondary right heart failure. Pulmonary arterial hypertension is a subset of pulmonary hypertension, which is characterized by an underlying disorder of the pulmonary arterial vasculature. Pulmonary hypertension can also occur secondarily to structural cardiac disease, autoimmune disorders, and toxic exposures. Although pregnancies affected by pulmonary hypertension and pulmonary arterial hypertension are rare, the pathophysiology exacerbated by pregnancy confers both high maternal and fetal mortality and morbidity. In light of new treatment modalities and the use of a multidisciplinary approach to care, maternal outcomes may be improving. Copyright © 2014 Elsevier Inc. All rights reserved.
Source: Medline

Title: The risk of maternal and placental complications in pregnant women with asthma: a systematic review and meta-analysis.
Citation: The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians, Jun 2014, vol. 27, no. 9, p. 934-942 (June 2014)
Author(s): Wang, Gang, Murphy, Vanessa E, Namazy, Jennifer, Powell, Heather, Schatz, Michael, Chambers, Christina, Attia, John, Gibson, Peter G
Abstract: To investigate if maternal asthma is associated with an increased risk of maternal and placental complications in pregnancy. Electronic databases were searched for the following terms: (asthma or wheeze) and (pregnan* or perinat* or obstet*). Cohort studies published between January 1975 and March 2012 were considered for inclusion. Forty publications met the inclusion criteria, reporting at least one maternal or placental complication in pregnant women with and without asthma. Relative risk (RR) with 95% confidence intervals (CIs) was calculated. Maternal asthma was associated with a significantly increased risk of cesarean
section (RR = 1.31, 95%CI = [1.22-1.39]), gestational diabetes (RR = 1.39, 95%CI = [1.17-1.66]), hemorrhage (antepartum: RR = 1.25, 95%CI = [1.10-1.42]; postpartum: RR = 1.29, 95%CI = [1.18-1.41]), placenta previa (RR = 1.23, 95%CI = [1.07-1.40]), placental abruption (RR = 1.29, 95%CI = [1.14-1.47]) and premature rupture of membranes (RR = 1.21, 95%CI = 1.07-1.37). Moderate to severe asthma significantly increased the risk of cesarean section (RR = 1.19, 95%CI = [1.09-1.31]) and gestational diabetes (RR = 1.19, 95%CI = [1.06-1.33]) compared to mild asthma. Bronchodilator use was associated with a significantly lowered risk of gestational diabetes (RR = 0.64, 95%CI = [0.57-0.72]). Pregnant women with asthma are at increased risk of maternal and placental complications, and women with moderate/severe asthma may be at particular risk. Further studies are required to elucidate whether adequate control of asthma during pregnancy reduces these risks.

Source: Medline

Title: Pregnancy and pulmonary hypertension.
Citation: Best practice & research. Clinical obstetrics & gynaecology, May 2014, vol. 28, no. 4, p. 579-591 (May 2014)
Author(s): Pieper, Petronella G, Lameijer, Heleen, Hoendermis, Elke S
Abstract: Pulmonary hypertension during pregnancy is associated with considerable risks of maternal mortality and morbidity. Our systematic review of the literature on the use of targeted treatments for pulmonary arterial hypertension during pregnancy indicates a considerable decrease of mortality since a previous review in 1998 (16% v 38%), and a further non-significant decrease in mortality since the latest review in 2009 (16% v 25%). In addition to the use of targeted treatments, the timely institution of these treatments, and early planned delivery, may contribute to better outcome. Furthermore, research suggests that women with mild pulmonary hypertension or favourable functional class may have a better prognosis, but there is yet no proof of decreased mortality among these women. Despite an improved prognosis, pregnancy is contra-indicated in women with pulmonary hypertension and, when pregnancy occurs, termination should be considered. When pregnancy continues, management by a multidisciplinary team in a specialist centre is indicated. Copyright © 2014 Elsevier Ltd. All rights reserved.

Source: Medline

Title: Pulmonary embolism in pregnancy.
Citation: Journal of thrombosis and thrombolysis, Apr 2014, vol. 37, no. 3, p. 251-270 (April 2014)
Author(s): Conti, E, Zezza, L, Ralli, E, Comito, C, Sada, L, Passerini, J, Caserta, D, Rubattu, S, Autore, C, Moscarini, M, Volpe, M
Abstract: Venous thromboembolism (VTE) is a major cause of maternal morbidity and mortality during pregnancy or early after delivery, remaining a diagnostic and therapeutic challenge in both states. The absolute incidence of pregnancy-associated VTE has been reported as 1 in 1,000 to 1 in 2,000 deliveries. With 5-6 million new births computed in Europe in 2010, the potential clinical relevance of diagnosing and treating gravidic VTE is immediately evident. Fivefold higher in a pregnant as compared with a non-pregnant woman, VTE risk is also higher in postpartum than antepartum period. Ranked absolute and relative thrombotic risk may be described in the several thrombophilic conditions experienced by women at risk, according to which specific prophylactic and therapeutic recommendations have been formulated by recent guidelines. The main purpose of the present review article was to emphasize the most recent findings and recommendations in diagnostic strategies, discussing thrombophilic risk evaluation, as well as risks and benefits of various diagnostic techniques for both mother and fetus.

Source: Medline
Full text: Available EBSCOhost at Journal of Thrombosis & Thrombolysis
Title: Asthma in pregnancy: a hit for two.
Citation: European respiratory review : an official journal of the European Respiratory Society, Mar 2014, vol. 23, no. 131, p. 64-68 (March 1, 2014)
Author(s): Murphy, Vanessa E, Schatz, Michael
Abstract: Asthma commonly occurs in pregnant females, and recent data have outlined the risks of adverse perinatal outcomes among this population. There is an increased risk of low birth weight and small for gestational age, particularly among females with moderate-to-severe asthma and exacerbations during pregnancy. There is also an increased risk of preterm birth, especially with oral steroid use, a small but statistically significant increased risk of congenital malformations, particularly of cleft lip with or without cleft palate, and an increased risk of neonatal hospitalisation and death. Active management may reduce these risks, possibly through reductions in exacerbations. Additional reassuring data have been presented for asthma medication use, which support the benefits outweighing the risks of indicated asthma medication use in pregnancy. Viral infections are an important trigger of asthma exacerbations in pregnancy, and recent data provides possible immunological changes that may explain this. Poor medication adherence despite worsening asthma symptoms in pregnancy is a problem which continues to be demonstrated in the literature. Improving asthma control in pregnancy has the potential to improve not only the mother’s health but also that of her child.
Source: Medline

Title: Restrictive lung disease in pregnancy.
Citation: Chest, Feb 2014, vol. 145, no. 2, p. 394-398 (February 2014)
Author(s): Lapinsky, Stephen E, Tram, Carolyn, Mehta, Sangeeta, Maxwell, Cynthia V
Abstract: Restrictive lung disease is uncommon in pregnancy. We reviewed 15 pregnancies in 12 women with restrictive disease due to kyphoscoliosis, neuromuscular disease, or parenchymal lung disease. Median FVC was 40% predicted, and six women (50%) had an FVC < 1.0 L. In the 14 pregnancies in which at least two spirometry readings were available, FVC increased in three pregnancies, decreased in three, and remained stable in eight, with maximal changes of 0.4 L. Three women required supplemental oxygen, and one woman with neuromuscular disease required noninvasive ventilation. Premature delivery occurred in nine pregnancies (60%), and 10 deliveries (67%) were by cesarean section. Neuraxial anesthesia was used in 10 of 15 deliveries but was limited in the others by difficult spinal anatomy. There was no maternal or neonatal mortality. Women with restrictive lung disease tolerate pregnancy reasonably well, but many have premature delivery. A multidisciplinary approach is essential, with monitoring of spirometry and oxygenation and planning for labor and delivery.
Source: Medline
Full text: Available Free Access Content at Chest

Title: Interventions for managing asthma in pregnancy.
Citation: The Cochrane database of systematic reviews, Jan 2014, vol. 10, p. CD010660. (2014)
Author(s): Bain, Emily, Pierides, Kristen L, Clifton, Vicki L, Hodyl, Nicolette A, Stark, Michael J, Crowther, Caroline A, Middleton, Philippa
Abstract: Asthma is the most common respiratory disorder complicating pregnancy, and is associated with a range of adverse maternal and perinatal outcomes. There is strong evidence however, that the adequate control of asthma can improve health outcomes for mothers and their babies. Despite known risks of poorly controlled asthma during pregnancy, a large proportion of women have sub-optimal asthma control, due to concerns surrounding risks of pharmacological agents, and uncertainties regarding the effectiveness and safety of different management strategies. To assess the effects of interventions (pharmacologic and
non-pharmacologic) for managing women's asthma in pregnancy on maternal and fetal/infant outcomes. We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (2 June 2014) and the Cochrane Airways Group’s Trials Register (4 June 2014). Randomised and quasi-randomised controlled trials comparing any intervention used to manage asthma in pregnancy, with placebo, no intervention, or an alternative intervention. We included pharmacological and non-pharmacological interventions (including combined interventions). Cluster-randomised trials were eligible for inclusion (but none were identified). Cross-over trials were not eligible for inclusion. We included multi-armed trials along with two-armed trials. We also included studies published as abstracts only. At least two review authors independently assessed trial eligibility and quality and extracted data. Data were checked for accuracy. We included eight trials in this review, involving 1181 women and their babies. Overall we judged two trials to be at low risk of bias, two to be of unclear risk of bias, and four to be at moderate risk of bias. Five trials assessed pharmacological agents, including inhaled corticosteroids (beclomethasone or budesonide), inhaled magnesium sulphate, intravenous theophylline, and inhaled beclomethasone versus oral theophylline. Three trials assessed non-pharmacological interventions, including a fractional exhaled nitric oxide (FENO) - based algorithm versus a clinical guideline-based algorithm to adjust inhaled corticosteroid therapy, a pharmacist-led multi-disciplinary approach to management versus standard care, and progressive muscle relaxation (PMR) versus sham training. The eight included trials were assessed under seven separate comparisons. Pharmacological interventions Primary outcomes: one trial suggested that inhaled magnesium sulphate in addition to usual treatment could reduce exacerbation frequency in acute asthma (mean difference (MD) -2.80; 95% confidence interval (CI) -3.21 to -2.39; 60 women). One trial assessing the addition of intravenous theophylline to standard care in acute asthma did not report on exacerbations (65 women). No clear difference was shown in the risk of exacerbations with the use of inhaled beclomethasone in addition to usual treatment for maintenance therapy in one trial (risk ratio (RR) 0.36; 95% CI 0.13 to 1.05; 60 women); a second trial also showed no difference, however data were not clearly reported to allow inclusion in a meta-analysis. No difference was shown when inhaled beclomethasone was compared with oral theophylline for maintenance therapy (RR 0.88; 95% CI 0.59 to 1.33; one trial; 385 women). None of these trials reported on neonatal intensive care admissions. Inhaled magnesium sulphate in acute asthma was shown to improve lung function measures (one trial, 60 women); intravenous theophylline in acute asthma was not associated with benefits (one trial, 65 women). No clear differences were seen with the addition of inhaled corticosteroids to routine treatment in three trials (374 women). While inhaled beclomethasone, compared with oral theophylline, significantly reduced treatment discontinuation due to adverse effects in one trial (384 women), no other differences were observed, except for higher treatment adherence with theophylline. Four of the five trials did not report on adverse effects. Non-pharmacological interventions Primary outcomes: in one trial, the use of a FENO-based algorithm was shown to significantly reduce asthma exacerbations (RR 0.61; 95% CI 0.41 to 0.90; 220 women); and a trend towards fewer neonatal hospitalisations was observed (RR 0.46; 95% CI 0.21 to 1.02; 214 infants). No exacerbations occurred in one trial assessing pharmacist-led management; this approach did not reduce neonatal intensive care admissions (RR 1.50; 95% CI 0.27 to 8.32; 58 infants). One trial (64 women) assessing PMR did not report on exacerbations or neonatal intensive care admissions. The use of a FENO-based algorithm to adjust therapy led to some improvements in quality of life scores, as well as more frequent use of inhaled corticosteroids and long-acting β-agonists, and less frequent use of short-acting β-agonists (one trial, 220 women). The FENO-based algorithm was associated with fewer infants with recurrent episodes of bronchiolitis in their first year of life, and a trend towards fewer episodes of croup for infants. Pharmacist-led management improved asthma control scores at six
months (one trial, 60 women); PMR improved lung function and quality of life measures (one trial, 64 women). No other differences between comparisons were observed. Based on eight included trials, of moderate quality overall, no firm conclusions about optimal interventions for managing asthma in pregnancy can be made. Five trials assessing pharmacological interventions did not provide clear evidence of benefits or harms to support or refute current practice. While inhaled magnesium sulphate for acute asthma was shown to reduce exacerbations, this was in one small trial of unclear quality, and thus this finding should be interpreted with caution. Three trials assessing non-pharmacological interventions provided some support for the use of such strategies, however were not powered to detect differences in important maternal and infant outcomes. While a FENO-based algorithm reduced exacerbations, the effects on perinatal outcomes were less certain, and thus widespread implementation is not yet appropriate. Similarly, though positive effects on asthma control were shown with PMR and pharmacist-led management, the evidence to date is insufficient to draw definitive conclusions. In view of the limited evidence base, further randomised trials are required to determine the most effective and safe interventions for asthma in pregnancy. Future trials must be sufficiently powered, and well-designed, to allow differences in important outcomes for mothers and babies to be detected. The impact on health services requires evaluation. Any further trials assessing pharmacological interventions should assess novel agents or those used in current practice. Encouragingly, at least five trials have been identified as planned or underway.

Source: Medline

Title: The effectiveness of non-pharmacological healthcare interventions for asthma management during pregnancy: a systematic review.

Citation: BMC pulmonary medicine, Jan 2014, vol. 14, p. 46. (2014)

Author(s): Zairina, Elida, Stewart, Kay, Abramson, Michael J, George, Johnson

Abstract: While reviews have been published on asthma management in pregnant women, none has examined the effectiveness of non-pharmacological healthcare interventions for optimizing asthma management during pregnancy and to examine their effects on maternal asthma control and neonatal outcomes. The Cochrane Central Register of Controlled Trials (CENTRAL, Cochrane Library), MEDLINE, EMBASE, PsycINFO, CINAHL Plus and International Pharmaceutical Abstracts (IPA) were searched. Two reviewers independently assessed the identified studies against the eligibility criteria and extracted relevant information. The effects of the intervention were assessed qualitatively. Nine studies were identified, of which six were rejected according to the exclusion criteria. The three studies included in the final review described an education program, progressive muscle relaxation (PMR) and Fraction of exhaled Nitric Oxide (FeNO) guided management of asthma in pregnant women. The PMR and FeNO-guided interventions showed significant improvements in maternal asthma control (lung function and quality of life) and neonatal outcomes (birth weight). Further evidence from well-designed studies evaluating non-pharmacological healthcare interventions for optimizing asthma management in pregnant women is required.

Source: Medline

Full text: Available National Library of Medicine at BMC Pulmonary Medicine

Title: Safety of bronchodilators and corticosteroids for asthma during pregnancy: What we know and what we need to do better

Citation: Journal of Asthma and Allergy, November 2013, vol./is. /6(117-125), 1178-6965 (15 Nov 2013)

Author(s): Gregersen T.L., Ulrik C.S.

Language: English
Abstract: Asthma is a common medical condition complicating pregnancy with potentially serious effects on pregnancy outcome. The aim of this review is to provide an update on efficacy and safety of asthma medications, primarily bronchodilators and corticosteroids, used during pregnancy with focus on pregnancy outcome, and, furthermore, to discuss limitations of available studies and point to possible improvements in future studies. A planned series of systematic searches was conducted using the PubMed database. Use of short-acting beta<sub>2</sub>-agonists has generally been established as safe, and the few studies stating otherwise appear to have, perhaps critical, methodological limitations. The safety of long-acting beta<sub>2</sub>-agonists remains to be further investigated, and the few available studies have methodological limitations and, therefore, provide no definite answers, although a very recent study supports the safety of add-on long-acting beta<sub>2</sub>-agonists to inhaled corticosteroids. Inhaled corticosteroids are generally found to be safe, although further research is needed to investigate both the efficacy and safety of high dose therapy with inhaled corticosteroids. Studies have reported associations between the use of systemic corticosteroids and adverse perinatal outcomes, such as preterm birth, low birth weight, and pre-eclampsia. This must, however, be weighed against the potential serious impact of severe, uncontrolled asthma itself on pregnancy outcome. The main obstacle to a valid interpretation of several of the available studies is the inadequate stratification for asthma severity and control. Overall, asthma in itself and not just poor asthma control poses a greater risk to pregnancy outcomes than asthma medication. Nonetheless, more studies focusing on disentangling the effects of asthma alone and asthma medications are needed. Increased use of stratified risk assessments, taking the concept of asthma severity into greater consideration, is much warranted in future studies.

Publication type: Journal: Review
Source: EMBASE

Title: Managing asthma during pregnancy.
Citation: Journal of the American Association of Nurse Practitioners, Oct 2013, vol. 25, no. 10, p. 513-521 (October 2013)
Author(s): Rance, Karen, O'Laughlen, Mary C
Abstract: Pregnant women with asthma have many concerns about their respiratory health, as well as the health of their baby. A woman's respiratory system experiences many physiological changes during pregnancy and when a diagnosis of asthma is present, the clinical effect of pregnancy on asthma is variable. Regardless of disease years, when asthma patients become pregnant, both patients and healthcare providers want to know how pregnancy affects asthma and how asthma may affect pregnancy outcomes. This article will review how to optimally manage asthma during pregnancy using an evidence-based approach that recognizes the patient's changing needs. Literature collected from sources identified through searches of PubMed and CINAHL covering the periods from 1996 to 2012. With the implementation of evidence-based management and treatment, pregnant patients who have asthma can be positioned to better control their symptoms and avoid unwanted complications that may affect the health of their baby. Pregnant patients with asthma may be cared for in a variety of healthcare settings ranging from primary care to specialty care to the emergency department. Consequently, it is imperative that healthcare providers across the array of clinical venues be proficient on how to optimize the asthma outcomes of their pregnant patients. ©2013 The Author(s) ©2013 American Association of Nurse Practitioners.
Source: Medline
Full text: Available EBSCOhost at Journal of the American Association of Nurse Practitioners

Title: Birth control and pregnancy management in pulmonary hypertension.
**Citation:** Seminars in respiratory and critical care medicine, Oct 2013, vol. 34, no. 5, p. 681-688 (October 2013)

**Author(s):** Olsson, Karen M, Jais, Xavier

**Abstract:** Pregnancies in patients with pulmonary arterial hypertension (PAH) are associated with serious complications and mortality rates of more than 50%. Advanced medical therapies for PAH have been developed during the past years resulting in improved hemodynamics, exercise capacity, quality of life, and outcome. However, despite these advances, pregnancy in women with PAH is still associated with excessive maternal mortality. Consequently, all current guidelines strongly discourage pregnancy and recommend an effective method of contraception in women of childbearing age. If this fails, early pregnancy termination is advised. Those patients who choose to continue pregnancy should be treated with targeted PAH therapies including prostacyclin analogues and/or phosphodiesterase type 5 inhibitors. The care of the pregnant women with PAH requires a planned, multidisciplinary approach, preferably in a dedicated pulmonary hypertension referral center, focusing on close monitoring before, during and after delivery. Thieme Medical Publishers 333 Seventh Avenue, New York, NY 10001, USA.

**Source:** Medline

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**Title:** Improving asthma during pregnancy with dietary antioxidants: the current evidence.

**Citation:** Nutrients, Aug 2013, vol. 5, no. 8, p. 3212-3234 (August 2013)

**Author(s):** Grieger, Jessica A, Wood, Lisa G, Clifton, Vicki L

**Abstract:** The complication of asthma during pregnancy is associated with a number of poor outcomes for the mother and fetus. This may be partially driven by increased oxidative stress induced by the combination of asthma and pregnancy. Asthma is a chronic inflammatory disease of the airways associated with systemic inflammation and oxidative stress, which contributes to worsening asthma symptoms. Pregnancy alone also intensifies oxidative stress through the systemic generation of excess reactive oxidative species (ROS). Antioxidants combat the damaging effects of ROS; yet antioxidant defenses are reduced in asthma. Diet and nutrition have been postulated as potential factors to combat the damaging effects of asthma. In particular, dietary antioxidants may play a role in alleviating the heightened oxidative stress in asthma. Although there are some observational and interventional studies that have shown protective effects of antioxidants in asthma, assessment of antioxidants in pregnancy are limited and there are no antioxidant intervention studies in asthmatic pregnancies on asthma outcomes. The aims of this paper are to (i) review the relationships between oxidative stress and dietary antioxidants in adults with asthma and asthma during pregnancy, and (ii) provide the rationale for which dietary management strategies, specifically increased dietary antioxidants, might positively impact maternal asthma outcomes. Improving asthma control through a holistic antioxidant dietary approach might be valuable in reducing asthma exacerbations and improving asthma management during pregnancy, subsequently impacting perinatal health.

**Source:** Medline

**Full text:** Available Free Access Content at [Nutrients](https://www.nutrients.org)

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**Title:** Pulmonary embolus in pregnancy.

**Citation:** Seminars in perinatology, Aug 2013, vol. 37, no. 4, p. 225-233 (August 2013)

**Author(s):** Donnelly, Jennifer C, D’Alton, Mary E

**Abstract:** Venous thromboembolism remains in the top three leading causes of maternal death in the US, representing 10.2% of pregnancy-related deaths. Risk of developing a pulmonary embolus appears to increase throughout pregnancy, with a peak in incidence in the early postpartum period. Overall the incidence of VTE is 0.6-1.8 VTEs per 1000 deliveries. Diagnosis and management of pulmonary
embolus can prove challenging, but the aim should be to optimize maternal outcome while minimizing hemorrhagic complications. Low-molecular-weight heparin is a safe and effective treatment for the majority of cases of pregnancy-related pulmonary embolus. Copyright © 2013 Elsevier Inc. All rights reserved.

**Source:** Medline

**Title:** Pulmonary hypertension in pregnancy.

**Citation:** Cardiology in review, Jul 2013, vol. 21, no. 4, p. 167-173 (2013 Jul-Aug)

**Author(s):** Martínez, Mariella Vélez, Rutherford, John D

**Abstract:** The presence of pulmonary arterial hypertension (PAH) in pregnancy is rare and signifies a high-risk pregnancy. Although the majority of mothers have knowledge of their condition before pregnancy, approximately one-third of patients are diagnosed during pregnancy. Termination of pregnancy should be discussed, and is often advised; however, a significant proportion of patients will choose to proceed with the pregnancy despite increased maternal and fetal mortality. Currently, most pregnant patients receive advanced therapy for treatment of PAH, particularly prostacyclin analogues. Particular attention is paid to volume status and blood loss and there has been a major trend toward delivery by cesarean section under controlled conditions involving an expert multidisciplinary team. The time of greatest maternal risk is in the first month after delivery. Transplantation of these patients in the nonpregnant state may be considered when those with idiopathic pulmonary hypertension have poor functional status despite optimal therapy and their projected 2-year survival is less than 50%. For patients with Eisenmenger syndrome, severe symptoms and an unacceptable quality of life may lead to transplantation.

**Source:** Medline

**Title:** Management of asthma during pregnancy.

**Citation:** Therapeutic advances in respiratory disease, Apr 2013, vol. 7, no. 2, p. 87-100 (April 2013)

**Author(s):** Maselli, Diego J, Adams, Sandra G, Peters, Jay I, Levine, Stephanie M

**Abstract:** Asthma is an inflammatory lung condition that is the most common chronic disease affecting pregnancy. The changes in pulmonary physiology during pregnancy include increased minute ventilation, decreased functional residual capacity, increased mucus production, and airway mucosa hyperemia and edema. Pregnancy is also associated with a physiological suppression of the immune system. Many studies have described the heterogeneous immune system response in women with asthma during pregnancy, which partly explains why asthma has been shown to worsen, improve, or remain stable in equal proportions of women during pregnancy. Asthma may be associated with poor maternal and fetal outcomes. However, better maternal and fetal outcomes are observed with better asthma control. Asthma controller medications are generally thought to be safe during pregnancy, but limited data are available for some of the medicines. Newer medications like omalizumab open avenues for the treatment of asthma, but also pose a challenge, as there is limited experience with their use. Therefore, a multidisciplinary approach, including obstetricians, asthma specialists, and pediatricians should collaborate with the patient to carefully weigh the risks and benefits to determine an optimal management plan for each individual patient. The aim of this review article is to summarize the most recent literature about the immunological changes that occur during pregnancy, physiological and clinical implications of asthma on pregnancy, and asthma management and medication use in pregnant women.

**Source:** Medline

**Title:** Does an upper respiratory tract infection during pregnancy affect perinatal outcomes? A literature review

**Citation:** Current Infectious Disease Reports, April 2013, vol./is. 15/2(143-147),
Upper respiratory tract infection (URTI) is a ubiquitous but often benign pathology most commonly of viral etiology. This review focuses on perinatal outcomes following URTI during pregnancy. Few data exist on the explicit topic of URTI and adverse perinatal outcomes. The entire URTI burden among pregnant women is not properly represented by the studies included in this review, because only those infections severe enough to warrant hospitalization have been studied. Most probably, the number of URTIs in pregnant women not requiring hospitalization is far larger, but this has yet to be quantified. Clearly, there are logistical barriers to obtaining such statistics. Severe URTI requiring hospitalization during pregnancy was noted to be associated with adverse perinatal complications. URTI was found to be positively correlated with preterm delivery (PTD; less than 37 weeks gestation), lower birth weight, and cesarean deliveries, without a significant effect on the rates of perinatal mortality or low Apgar scores. There appears to be a possible link between various infectious processes that occur during pregnancy and the outcome of a PTD. The inflammatory environment present during infection includes high levels of cytokines that are known to increase prostaglandins, which, in turn, can induce preterm birth. Further studies should evaluate whether URTI not requiring hospitalization has any effect on perinatal outcomes. © 2013 Springer Science+Business Media New York.

Title: Pulmonary embolism and amniotic fluid embolism in pregnancy.

Abstract: Amniotic fluid embolism and pulmonary embolism are 2 of the most common causes of maternal mortality in the developed world. Symptoms of pulmonary embolism include tachycardia, tachypnea, and shortness of breath, all of which are common complaints in pregnancy. Heightened awareness leads to rapid diagnosis and institution of therapy. Amniotic fluid embolism is associated with maternal collapse. There are currently no proven therapies, although rapid initiation of supportive care may decrease the risk of mortality. Copyright © 2013 Elsevier Inc. All rights reserved.

Title: New directions in the diagnosis and treatment of pulmonary embolism in pregnancy.

Abstract: The diagnosis and management of pulmonary embolism in pregnancy is difficult, because diagnostic procedures and the use of anticoagulants potentially can expose mother and fetus to adverse effects. This article reviews evidence for current best practice and emerging novel techniques for the diagnosis of pulmonary embolism in pregnancy and includes clinical prediction models, biomarkers, and diagnostic imaging that may offer improvement in the diagnosis and investigation of pulmonary embolism in pregnancy in the future. The usefulness of new anticoagulant agents (fondaparinux, rivaroxaban, and dabigatran) in managing pulmonary embolism in future pregnancies is also explored. Crown Copyright © 2013. Published by Mosby, Inc. All rights reserved.
Title: Pulmonary arterial hypertension in pregnant women.
Citation: Therapeutic advances in respiratory disease, Feb 2013, vol. 7, no. 1, p. 51-63 (February 2013)
Author(s): Safdar, Zeenat
Abstract: Pulmonary arterial hypertension (PAH) is characterized by pulmonary vascular remodeling that limits the ability of the pulmonary vascular bed to withstand the physiological changes of pregnancy. Historically, pregnancy in PAH carries a high risk to the parturient. Normal pulmonary vasculature can withstand the hemodynamic and physiological changes associated with pregnancy without the development of respiratory symptomatology. However, in the presence of pulmonary vascular remodeling the capacity to handle these changes is compromised. During pregnancy, increase in cardiac output from the increased intravascular volume can lead to right heart failure. Therefore, all patients with PAH of childbearing potential should receive preconception counseling and be advised to use two methods of contraception. Patients with PAH should be advised against continuing pregnancy if they do become pregnant. According to the literature, deterioration in pregnancy mainly occurs in the second trimester and early in the third trimester; immediately postpartum is the most critical time for patients with PAH. In this review, we will discuss the recent advances in the management of parturient patients with PAH.
Source: Medline

Title: Use of thrombolytic agents to treat pulmonary embolism in pregnancy.
Citation: Reviews in obstetrics & gynecology, Jan 2013, vol. 6, no. 3-4, p. 182-184, 1941-2797 (2013)
Author(s): Beebeejaun, Mohammad Yusuf, Adenugba, Olumayowa
Abstract: Pulmonary embolism in pregnancy is a major cause of maternal mortality and morbidity. We describe the case of a 27-year-old pregnant woman who underwent successful thrombolysis. Our patient presented to the emergency department after a fainting episode and complaining of shortness of breath. A computed tomography pulmonary angiogram revealed a pulmonary embolism, which was found to be causing significant right ventricular strain. After examination by our gynecologic and medical teams, she underwent successful thrombolysis, made a successful recovery, and carried an uneventful pregnancy.
Source: Medline
Full text: Available National Library of Medicine at Reviews in Obstetrics and Gynecology

Title: Asthma in pregnancy: management strategies.
Citation: Current opinion in pulmonary medicine, Jan 2013, vol. 19, no. 1, p. 13-17 (January 2013)
Author(s): McCallister, Jennifer W
Abstract: Asthma is one of the most prevalent chronic medical conditions to complicate pregnancy. With approximately one-third of women experiencing a worsening of control during the course of their pregnancy, identifying those at greatest risk has the potential to improve maternal and fetal outcomes for a large number of pregnancies. Similarly, active management strategies that prioritize asthma control in this vulnerable population can have a far-reaching impact. Demographic characteristics and patient noncompliance place certain populations of pregnant women at increased risk of poor asthma control during pregnancy. In addition, undertreatment and disparities in care of acute exacerbations during pregnancy likely contribute. Targeted educational interventions and treatment algorithms using objective markers of disease activity have shown improved outcomes in asthma control. Active management strategies which focus on identifying patient-specific risk factors, patient and provider education, and targeted treatment interventions can improve asthma care for women during pregnancy.
Source: Medline
| Title: Problem based review: pulmonary embolism in pregnancy. |
| Citation: Acute medicine, Jan 2013, vol. 12, no. 4, p. 239-245 (2013) |
| Author(s): Neuberger, F, Wennike, N |
| Abstract: Pulmonary embolism (PE) in pregnancy carries a significant mortality. Pregnant patients often present via the acute medical take with symptoms of possible PE and require timely assessment and investigation. The symptoms of PE are sometimes very difficult to differentiate from those of normal pregnancy and the vast majority of patients will require imaging. The radiation risks to mother and foetus from imaging may cause considerable anxiety (to both patients and healthcare providers) and need to be explained to patients in the context of a potentially life-threatening condition so they can be actively involved in decision-making on how best to proceed. When PE is diagnosed in pregnancy, there are obstetric considerations around the time of delivery and women should receive specialist follow-up. |
| Source: Medline |

| Title: Incidence and risk factors for exacerbations of asthma during pregnancy |
| Citation: Journal of Asthma and Allergy, 2013, vol./is. /6(53-60), 1178-6965 (2013) |
| Author(s): Ali Z., Ulrik C.S. |
| Language: English |
| Abstract: Background: Asthma is one of the most common chronic diseases among pregnant women. Acute exacerbations of asthma during pregnancy have an unfavorable impact on pregnancy outcome. This review provides an overview of current knowledge of incidence, mechanisms, and risk factors for acute exacerbations of asthma during pregnancy. Methods: A narrative literature review was carried out using the PubMed database. Results: During pregnancy, up to 6% of women with asthma are hospitalized for an acute exacerbation. The maternal immune system is characterized by a very high T-helper-2:T-helper-1 cytokine ratio during pregnancy and thereby provides an environment essential for fetal survival but one that may aggravate asthma. Cells of the innate immune system such as monocytes and neutrophils are also increased during pregnancy, and this too can exacerbate maternal asthma. Severe or difficult-to-control asthma appears to be the major risk factor for exacerbations during pregnancy, but studies also suggest that nonadherence with controller medication and viral infections are important triggers of exacerbations during pregnancy. So far, inconsistent findings have been reported regarding the effect of fetal sex on exacerbations during pregnancy. Other risk factors for exacerbation during pregnancy include obesity, ethnicity, and reflux, whereas atopy does not appear to be a risk factor. Discussion: The incidence of asthma exacerbations during pregnancy is disturbingly high. Severe asthma - better described as difficult-to-control asthma - nonadherence with controller therapy, viral infections, obesity, and ethnicity are likely to be important risk factors for exacerbations of asthma during pregnancy, whereas inconsistent findings have been reported with regard to the importance of sex of the fetus. |
| Publication type: Journal: Review |
| Source: EMBASE |
| Full text: Available Directory of Open Access Journals at Journal of Asthma and Allergy |

| Title: Pulmonary thromboembolism in pregnancy: Diagnostic imaging and related consideration |
| Citation: Journal of Research in Medical Sciences, 2013, vol./is. 18/3(255-259), 1735-1995;1735-7136 (2013) |
| Author(s): Moradi M. |
| Language: English |
| Abstract: Pulmonary thromboembolism (PTE) in pregnancy as a common cause of maternal death has been a challenge for both clinicians and radiologists. |
Choosing the appropriate modality in each case has been under question and there are also related imaging pitfalls and hesitancy about radiation exposure and using contrast media for a pregnant mother. The aim of this article is to review the imaging modalities used to investigate PTE in pregnancy, related pitfalls, and recommendations for optimizing them.

**Publication type:** Journal: Review  
**Source:** EMBASE  
**Full text:** Available Free Access Content at Journal of Research in Medical Sciences : The Official Journal of Isfahan University of Medical Sciences

**Title:** Pulmonary embolism in pregnancy. Consensus and controversies.  
**Citation:** Minerva ginecologica, Oct 2012, vol. 64, no. 5, p. 387-398, 0026-4784 (October 2012)  
**Author(s):** Benson, M D

**Abstract:** Venous thrombotic events (VTE) occur 1-2 per 10,000 pregnancies and remain one of the leading causes of maternal mortality in the developed world. The two largest risk factors are a personal history of VTE and heritable thrombophilias. D-dimer tests for VTE in pregnancy have a high false positive rate and at least some false negatives have been reported. Compression ultrasound should be used to evaluate pregnant women for deep venous thrombosis followed by magnetic resonance imaging of the pelvis for a negative test and strong remaining clinical suspicion. For pulmonary embolism, a chest x-ray should be used to triage the patient to either a ventilation/perfusion study after a normal X-ray or a CT pulmonary angiogram after an abnormal one. Treatment generally consists of low molecular weight heparin through a minimum of six weeks post-partum. Thrombolysis might have merit in life-threatening, massive pulmonary embolism. VTE prophylaxis in at-risk populations remains a major area of uncertainty. Mechanical prophylaxis for all women undergoing cesarean, in particular, has a paucity of supportive evidence.

**Source:** Medline

**Title:** Contraception, pregnancy and rare respiratory diseases.  
**Citation:** Archivos de bronconeumología, Oct 2012, vol. 48, no. 10, p. 372-378 (October 2012)  
**Author(s):** Lara, Beatriz, Fornet, Inocencia, Goya, María, López, Francisco, De Miguel, José Ramón, Molina, María, Morales, Pilar, Quintana, Esther, Salicrú, Sabina, Suárez, Elena, Usetti, Piedad, Zurbano, Felipe

**Abstract:** Three percent of rare diseases are pneumopathies. Improvements in survival and quality of life have led to a new situation where patients with rare respiratory diseases want to plan their reproductive lives. The intention of this review is to present the experience accumulated in the field of the reproductive health of these women. In several rare respiratory diseases, a genetic base has been identified. The combination of preimplantation genetic diagnosis, assisted reproduction and molecular biology techniques enable embryos to be studied genetically before being transplanted into the uterus. Therefore, the risk for transmitting a certain disease or chromosome alteration may be avoided in high-risk couples, and prenatal diagnoses may be done by chorionic villus sampling or amniocentesis. As a general rule, contraceptive methods should be personalized by evaluating the general state of female patients as well as their possibilities for pregnancy, complications and the future possibility of lung transplantation. In lymphangioleiomyomatosis and primary pulmonary hypertension, pregnancy is considered a contraindication. In the former, there is a very high risk for pneumothorax and loss of lung function. In the latter, mortality reaches 33%. In cystic fibrosis, it is estimated that each year 4% of patients become pregnant and there is no observed loss in lung function. There are special circumstances in childbirth that should be considered as well as specific anesthesia risks. The present review suggests that the decision about contraceptive methods, pregnancy
as a contraindication or conditions for managing a pregnancy should be both individualized and multidisciplinary. Copyright © 2012 SEPAR. Published by Elsevier España, S.L. All rights reserved.

Source: Medline

Title: Respiratory disease in pregnancy
Citation: Obstetrics, Gynaecology and Reproductive Medicine, October 2012, vol./is. 22/10(290-298), 1751-7214;1879-3622 (October 2012)
Author(s): Stone S., Nelson-Piercy C.
Language: English
Abstract: Breathlessness in the absence of an underlying pathology is common in pregnancy. Asthma affects about 7% of women of child-bearing age. Treatment is the same as for the non-pregnant population and most drugs are safe in pregnancy. Educating women to continue preventer inhaled corticosteroid therapy will reduce the risk of attacks. Respiratory infections are associated with a higher morbidity in pregnancy and should be treated aggressively. Most chronic pulmonary diseases do not alter fertility. Large reserves in respiratory function allow the fetus and mother to survive without compromise in most cases. The use of chest X-rays should not be avoided in pregnancy. Women with a chronic respiratory disease should receive pre-pregnancy counselling and education. Women should be managed in a multidisciplinary setting with the respiratory team. The presence of pulmonary hypertension and cor pulmonale is associated with a high risk of death in pregnancy. © 2012 Elsevier Ltd.

Publication type: Journal: Review
Source: EMBASE

Title: Asthma and pregnancy.
Citation: Clinical reviews in allergy & immunology, Aug 2012, vol. 43, no. 1-2, p. 45-56 (August 2012)
Author(s): Vatti, Rani Reddy, Teuber, Suzanne S
Abstract: Asthma is probably the most common serious medical disorder that may complicate pregnancy. A third of pregnant women with asthma will experience worsening of their symptoms, a third will see improvement of their symptoms and a third will see no change. The primary goal is to maintain optimal control of asthma for maternal health and well-being as well as fetal maturation. Vital patient education should cover the use of controller medication, avoidance of asthma triggers and early treatment of asthma exacerbations. Proper asthma management should ideally be started in the preconception period. Since smoking is probably the most modifiable risk factor of asthma, pregnant woman should avoid active and passive smoking. Acute asthma exacerbation during the first trimester is associated with an increased risk of congenital malformations. Poorly controlled asthma is associated with low birth weight, preeclampsia, and preterm birth. Medications used for asthma control in the non-pregnant population are generally the same in pregnancy with a few exceptions. Inhaled corticosteroids (ICS) are the preferred controller therapy. Budesonide is the preferred ICS. Long-acting B-agonists (LABA) are the preferred add-on therapy to medium to high dose ICS. Major triggers for asthma exacerbations during pregnancy are viral infections and ICS nonadherence.
Source: Medline

Full text: Available EBSCOhost at Clinical Reviews in Allergy & Immunology

Title: Acute pulmonary oedema in pregnant women.
Citation: Anaesthesia, Jun 2012, vol. 67, no. 6, p. 646-659 (June 2012)
Author(s): Dennis, A T, Solnordal, C B
Abstract: Acute pulmonary oedema in pregnant women is an uncommon but life-threatening event. The aims of this review are to address why pulmonary oedema occurs in pregnant women and to discuss immediate management. We performed
A systematic literature search of electronic databases including MEDLINE, EMBASE and the Cochrane Library, using the key words obstetrics, pregnancy, acute pulmonary oedema, pregnancy complications, maternal, cardiac function and haemodynamics. We present a simple clinical classification of acute pulmonary oedema in pregnancy into pulmonary oedema occurring in normotensive or hypotensive women (i.e. without hypertension), and acute pulmonary oedema occurring in hypertensive women, which allows focused management. Pre-eclampsia remains an important cause of hypertensive acute pulmonary oedema in pregnancy and preventive strategies include close clinical monitoring and restricted fluid administration. Immediate management of acute pulmonary oedema includes oxygenation, ventilation and circulation control with venodilators. Pregnancy-specific issues include consideration of the physiological changes of pregnancy, the risk of aspiration and difficult airway, reduced respiratory and metabolic reserve, avoidance of aortocaval compression and delivery of the fetus.

Source: Anaesthesia © 2012 The Association of Anaesthetists of Great Britain and Ireland.

Full text: Available Wiley at Anaesthesia

Title: Pulmonary embolism evaluation in the pregnant patient: a review of current imaging approaches.

Citation: Seminars in ultrasound, CT, and MR, Feb 2012, vol. 33, no. 1, p. 11-17 (February 2012)

Author(s): Cogley, Jonathan R, Ghobrial, Peter M, Chandrasekaran, Bharanidhar, Allen, Steven B

Abstract: Pregnancy is characterized by a higher incidence of pulmonary embolism (PE) than in age-matched nonpregnant women. However, the diagnosis of PE during pregnancy might prove to be more difficult than in the general population. Clinicians strongly rely on imaging studies to establish a prompt diagnosis. On reviewing this article, the reader will learn the pros and cons of the 2 main imaging studies used in the evaluation for PE, computed tomography of the pulmonary arteries and lung scintigraphy. Radiation dose and other important factors to consider during the evaluation for PE in pregnancy are highlighted so that clinicians and radiologists can choose the most appropriate imaging study for diagnosis. Copyright © 2012 Elsevier Inc. All rights reserved.

Source: Medline

Title: Recommendations for the diagnosis and treatment of deep venous thrombosis and pulmonary embolism in pregnancy and the postpartum period.

Citation: The Australian & New Zealand journal of obstetrics & gynaecology, Feb 2012, vol. 52, no. 1, p. 14-22 (February 2012)

Author(s): McLintock, Claire, Brighton, Tim, Chunilal, Sanjeev, Dekker, Gus, McDonnell, Nolan, McRae, Simon, Muller, Peter, Tran, Huyen, Walters, Barry N J, Young, Laura, Councils of the Society of Obstetric Medicine of Australia and New Zealand, Australasian Society of Thrombosis and Haemostasis

Abstract: Venous thromboembolism (VTE) in pregnancy and the postpartum is an important cause of maternal morbidity and mortality; yet, there are few robust data from clinical trials to inform an approach to diagnosis and management. Failure to investigate symptoms suggestive of pulmonary embolism (PE) is a consistent finding in maternal death enquiries, and clinical symptoms should not be relied on to exclude or diagnose VTE. In this consensus statement, we present our recommendations for the diagnosis and management of acute deep venous thrombosis (DVT) and PE. All women with suspected DVT in pregnancy should be investigated with whole leg compression ultrasonography. If the scan is negative and significant clinical suspicion remains, then further imaging for iliofemoral DVT maybe required. Imaging should be undertaken in all women with suspected PE, as the fetal radiation exposure with both ventilation/perfusion scans and CT pulmonary angiography is within safe limits. Low-molecular-weight heparin
(LMWH) is the preferred therapy for acute VTE that occur during pregnancy. In observational cohort studies, using once-daily regimens appears adequate, in particular with the LMWH tinzaparin; however, pharmacokinetic data support twice-daily therapy with other LMWH and is recommended, at least initially, for PE or iliofemoral DVT in pregnancy. Treatment should continue for a minimum duration of six months, and until at least six weeks postpartum. Induction of labour or planned caesarean section may be required to allow an appropriate transition to unfractionated heparin to avoid delivery in women in therapeutic doses of anticoagulation. © 2011 The Authors. ANZJOG © 2011 The Royal Australian and New Zealand College of Obstetricians and Gynaecologists.

Source: Medline
Full text: Available EBSCOhost at Australian & New Zealand Journal of Obstetrics & Gynaecology

Title: Pulmonary hypertension in pregnancy: Critical care management
Citation: Pulmonary Medicine, 2012, 2090-1836;2090-1844 (2012)
Author(s): Bassily-Marcus A.M., Yuan C., Oropello J., Manasia A., Kohli-Seth R., Benjamin E.
Language: English
Abstract: Pulmonary hypertension is common in critical care settings and in presence of right ventricular failure is challenging to manage. Pulmonary hypertension in pregnant patients carries a high mortality rates between 30-56. In the past decade, new treatments for pulmonary hypertension have emerged. Their application in pregnant women with pulmonary hypertension may hold promise in reducing morbidity and mortality. Signs and symptoms of pulmonary hypertension are nonspecific in pregnant women. Imaging workup may have undesirable radiation exposure. Pulmonary artery catheter remains the gold standard for diagnosing pulmonary hypertension, although its use in the intensive care unit for other conditions has slowly fallen out of favor. Goal-directed bedside echocardiogram and lung ultrasonography provide attractive alternatives. Basic principles of managing pulmonary hypertension with right ventricular failure are maintaining right ventricular function and reducing pulmonary vascular resistance. Fluid resuscitation and various vasopressors are used with caution. Pulmonary-hypertension-targeted therapies have been utilized in pregnant women with understanding of their safety profile. Mainstay therapy for pulmonary embolism is anticoagulation, and the treatment for amniotic fluid embolism remains supportive care. Multidisciplinary team approach is crucial to achieving successful outcomes in these difficult cases. Copyright © 2012 Adel M. Bassily-Marcus et al.
Publication type: Journal: Review
Source: EMBASE
Full text: Available Directory of Open Access Journals at Pulmonary Medicine

Title: The challenge of diagnosing pulmonary embolism in children, pregnant women, and elderly patients: a descriptive review of the literature.
Citation: Seminars in thrombosis and hemostasis, Nov 2011, vol. 37, no. 8, p. 908-917 (November 2011)
Author(s): Tufano, Antonella, Di Capua, Mirko, Coppola, Antonio, Arturo, Claudia, Ieranò, Paola, Cerbone, Anna Maria, Di Minno, Giovanni
Abstract: The prompt and accurate diagnosis of pulmonary embolism (PE) greatly influences patient outcomes. However, diagnosing PE is one of the most difficult challenges confronting physicians, even more so when the clinical suspicion is addressed in children, during pregnancy, or in elderly patients. In these patient groups, symptoms and signs from concomitant conditions or diseases may mimic PE and make difficult defining clinical probability categories for PE as usually applied to general adult patients. Moreover, the diagnostic techniques show wider, specific limitations in these settings. PE is considered rare in children. The diagnostic management of a child with suspected PE is largely extrapolated from
the knowledge achieved in adult patients. An increased risk of venous thromboembolism is reported in all trimesters of pregnancy and in the puerperium. An accurate diagnosis of PE in pregnancy has important implications, including the need for prolonged anticoagulation, delivery planning, and prophylaxis during future pregnancies, as well as concerns about future oral contraceptive use and estrogen therapy. Although incidence, morbidity, and mortality increase steadily with age, PE remains an underdiagnosed disease in elderly patients. About 40% of PE found at necropsy were not suspected antemortem. In the present article, challenges in diagnosing PE in children, during pregnancy, and in the elderly will be discussed, reviewing the available clinical, laboratory, and instrumental diagnostic strategies. © Thieme Medical Publishers.

Source: Medline


Citation: American journal of respiratory and critical care medicine, Nov 2011, vol. 184, no. 10, p. 1200-1208 (November 15, 2011)


Abstract: Pulmonary embolism (PE) is a leading cause of maternal mortality in the developed world. Along with appropriate prophylaxis and therapy, prevention of death from PE in pregnancy requires a high index of clinical suspicion followed by a timely and accurate diagnostic approach. To provide guidance on this important health issue, a multidisciplinary panel of major medical stakeholders was convened to develop evidence-based guidelines for evaluation of suspected pulmonary embolism in pregnancy using the Grades of Recommendation, Assessment, Development, and Evaluation (GRADE) system. In formulation of the recommended diagnostic algorithm, the important outcomes were defined to be diagnostic accuracy and diagnostic yield; the panel placed a high value on minimizing cumulative radiation dose when determining the recommended sequence of tests. Overall, the quality of the underlying evidence for all recommendations was rated as very low or low, with some of the evidence considered for recommendations extrapolated from studies of the general population. Despite the low-quality evidence, strong recommendations were made for three specific scenarios: performance of chest radiography (CXR) as the first radiation-associated procedure; use of lung scintigraphy as the preferred test in the setting of a normal CXR; and performance of computed-tomographic pulmonary angiography (CTPA) rather than digital subtraction angiography (DSA) in a pregnant woman with a nondiagnostic ventilation-perfusion (V/Q) result. The recommendations presented in this guideline are based upon the currently available evidence; availability of new clinical research data and development and dissemination of new technologies will necessitate a revision and update.

Source: Medline

Full text: Available Free Access Content at American Journal of Respiratory and Critical Care Medicine

Title: Pulmonary embolism in pregnancy: a diagnostic dilemma.

Citation: Annals of nuclear medicine, Nov 2011, vol. 25, no. 9, p. 603-608 (November 2011)

Author(s): Fatima, Nosheen, uz Zaman, Maseeh, Sajjad, Zafar, Hashmi, Ibrahim

Abstract: The diagnosis of PE in pregnancy poses a challenge due to pregnancy-related physiological changes. Missing the PE or wrongly treating a pregnant woman for PE has serious clinical consequences. There has been concern over
the use of radiation-based imaging modalities due to risk of teratogenicity and oncogenicity. This review is focused on various diagnostic options and risks of radiation to the fetus and mother from radiation-based procedures.

Source: Medline
Full text: Available Free Access Content at Annals of Nuclear Medicine

Title: Asthma and rhinitis during pregnancy.
Citation: The Mount Sinai journal of medicine, New York, Sep 2011, vol. 78, no. 5, p. 661-670 (2011 Sep-Oct)
Author(s): Namazy, Jennifer A, Schatz, Michael
Abstract: Pregnancy may be complicated by new-onset or preexisting rhinitis, or asthma. This article reviews the recognition and management of rhinitis and asthma during pregnancy, as well as general principles of medication use during pregnancy. Asthma is one of the most common potentially serious medical problems to complicate pregnancy, and chronic rhinitis is even more common in pregnant women. Both conditions may substantially affect maternal quality of life and directly or indirectly affect the pregnancy. Optimal management of asthma and rhinitis during pregnancy is thus important for both mother and baby. This article reviews the assessment and management of rhinitis and asthma in pregnant women. © 2011 Mount Sinai School of Medicine.

Source: Medline

Title: Asthma, asthma medications and their effects on maternal/fetal outcomes during pregnancy.
Citation: Reproductive toxicology (Elmsford, N.Y.), Sep 2011, vol. 32, no. 2, p. 189-197 (September 2011)
Author(s): Rocklin, Ross E
Abstract: Maternal asthma may increase the risk of adverse fetal and maternal outcomes such as low birth weight, perinatal mortality, preterm birth, preeclampsia, hypertensive disorders, maternal mortality, uterine hemorrhage, and gestational diabetes. Controlling asthma during pregnancy with appropriate medications leads to improved intrauterine growth of the fetus and fewer adverse perinatal outcomes. Prospective population or birth cohort studies have shown that the medications used to treat asthma, such as bronchodilators (short-acting β2-agonists) and controller medications (inhaled corticosteroids, cromones, theophylline, leukotriene inhibitors), have no or minimal effects on fetal growth, and perinatal complications are reduced when maternal asthma is adequately controlled. However, taking oral corticosteroids during pregnancy may confer increased risk of lower birth weight and congenital malformations. Therefore, managing pregnant asthmatics requires a careful benefit-risk analysis, and when indicated, the benefits of a medication that may have increased risks can dictate its use in severe uncontrolled asthma. Copyright © 2011 Elsevier Inc. All rights reserved.

Source: Medline

Title: The management of pregnancy and pregnancy-related medical conditions in pulmonary arterial hypertension patients.
Citation: International journal of clinical practice. Supplement, Aug 2011, no. 172, p. 6-14, 1368-504X (August 2011)
Author(s): Hsu, C-H, Gomberg-Maitland, M, Glassner, C, Chen, J-H
Abstract: Pulmonary arterial hypertension (PAH) is a complex disorder in which pulmonary arterial obstruction leads to elevated pulmonary arterial resistance and right ventricular failure. Normal physiologic changes that occur during pregnancy and immediately postpartum may produce fatal consequence in PAH patients. Pregnancy in patients with PAH has a high maternal mortality, estimated at 30-56%. Contemporary estimates of mortality are better but still prohibitively high. Current guidelines recommend that pregnancy be avoided or terminated early in women with PAH. Some patients, despite counselling by their physician, choose to
continue with their pregnancy. In addition, some women first present with PAH during pregnancy leading to complex management issues in a high-risk patient. PAH-specific therapies may allow patients to better tolerate pregnancy. These patients should be treated by experienced physicians at tertiary care centres. This review article will focus on the management of the pregnant PAH patient and the preventative options available for this high-risk cohort. © 2011 Blackwell Publishing Ltd.

**Source:** Medline  
**Full text:** Available EBSCOhost at International Journal of Clinical Practice (Supplement)

**Title:** Systematic review of the safety of regular preventive asthma medications during pregnancy.  
**Citation:** The Annals of pharmacotherapy, Jul 2011, vol. 45, no. 7-8, p. 931-945 (July 2011)  
**Author(s):** Lim, Angelina, Stewart, Kay, König, Kai, George, Johnson  
**Abstract:** To review the safety of regular preventive asthma medications during pregnancy. The following databases were searched from inception to February 2011: Ovid MEDLINE, PubMed, Cochrane Library, EMBASE and CINAHL Plus. The search was limited to human studies published in the English language. Titles of all articles were screened for relevance. Abstracts of relevant articles were scrutinized to confirm relevance before obtaining full text. Selected articles were read by 2 authors and the accuracy of the data extracted was confirmed. Thirty-three articles were included in the final review. Small sample size, missing data, inadequate control for confounding factors, and poor documentation of dosage range were common limitations of the studies reviewed. The use of inhaled corticosteroids, cromolyns, and long-acting β(2) agonists during pregnancy was not associated with any particular adverse event, although the fluticasone/salmeterol combination has been associated with poor outcomes in postmarketing studies. Congenital malformations have been reported with leukotriene receptor antagonist exposure during pregnancy, but those women also had exposure to other medications, including oral corticosteroids. Some negative outcomes of preventive asthma medications have been reported, although their direct link with medication use is inconclusive. Selection of preventive medications for asthma management during pregnancy should be based on an assessment of the risks and benefits of medication use versus the risks of poorly controlled asthma.  
**Source:** Medline

**Title:** Prevention and treatment of allergic asthma in pregnancy: from conventional drugs to new therapeutical approaches.  
**Citation:** Current pharmaceutical biotechnology, May 2011, vol. 12, no. 5, p. 758-764 (May 2011)  
**Author(s):** Cadavid, Angela P, Bannenberg, Gérard L, Arck, Petra C, Fitzgeral, Justine S, Markert, Udo R  
**Abstract:** Different conventional anti-asthmatic and anti-allergic drugs are commonly used in pregnancy, including inhaled corticosteroids, long- and short-acting β-agonists, leukotriene modifiers, cromolyn, and theophylline. Alternatively, immunotherapy with allergens before and during pregnancy is accepted as a causal treatment of allergies, but the allergy specificity and severity in combination with a variety of application protocols and procedures cause wide heterogeneity of this treatment principle. Furthermore, the pharmacokinetic characteristics and the US Food and Drug Administration (FDA) classification of conventional anti-allergic drugs and immunological implications of immunotherapy are summarized in this review, and insights on fetal programming of allergies are introduced. We propose a potential perspective of treatment with anti-inflammatory and pro-resolving mediators, such as lipoxins, resolvins and protectins; these are lipid mediators physiologically generated during the immune response from arachidonic acid,
eicosapentaenoic acid and docosahexaenoic acid. This proposal fits with the recently appreciated approaches to allergy prevention for the newborn child by a balanced maternal nutrition and omega-3 long-chain polyunsaturated fatty acid consumption.

**Source:** Medline

**Full text:** Available EBSCOhost at [Current Pharmaceutical Biotechnology](http://www.currentpharmaceuticalbiotechnology.com)

**Title:** Asthma in pregnancy.

**Citation:** Clinics in chest medicine, Mar 2011, vol. 32, no. 1, p. 93-111 (March 2011)

**Author(s):** Murphy, Vanessa E, Gibson, Peter G

**Abstract:** Worldwide the prevalence of asthma among pregnant women is on the rise, and pregnancy leads to a worsening of asthma for many women. This article examines the changes in asthma that may occur during pregnancy, with particular reference to asthma exacerbations. Asthma affects not only the mother but the baby as well, with potential complications including low birth weight, preterm delivery, perinatal mortality, and preeclampsia. Barriers to effective asthma management and opportunities for optimized care and treatment are discussed, and a summary of the clinical guidelines for the management of asthma during pregnancy is presented. Copyright © 2011 Elsevier Inc. All rights reserved.

**Source:** Medline

**Title:** Infiltrative lung diseases in pregnancy.

**Citation:** Clinics in chest medicine, Mar 2011, vol. 32, no. 1, p. 133 (March 2011)

**Author(s):** Freymond, N, Cottin, V, Cordier, J F

**Abstract:** Pregnancy may affect the diagnosis, management, and outcome of infiltrative lung disease (ILD). Conversely, ILD may affect pregnancy. ILD may occur as a result of drugs administered commonly or specifically during pregnancy. Most ILDs predominate in patients older than 40 years and are thus rare in pregnant women. During pregnancy ILD may arise de novo and preexisting ILD may be exacerbated or significantly worsened. Some ILDs generally do not alter the management of pregnancy, labor, or delivery. Preexisting ILD no longer contraindicates pregnancy systematically, but thorough evaluation of ILD before pregnancy is required to identify potential contraindications and adapt monitoring. Copyright © 2011. Published by Elsevier Inc.

**Source:** Medline

**Title:** Pregnancy and pulmonary hypertension.

**Citation:** Clinics in chest medicine, Mar 2011, vol. 32, no. 1, p. 165 (March 2011)

**Author(s):** Lane, C Randall, Trow, Terence K

**Abstract:** When pulmonary hypertension (PH) occurs in pregnancy, physiologic stress can overwhelm an already strained right ventricle resulting in right ventricular failure and death. Mortality remains unacceptably high (25%-30%). Patients with PH should be counseled to avoid pregnancy. This article discusses the physiologic changes of pregnancy that make it difficult for patients with PH, the pitfalls of transthoracic echocardiography in diagnosing PH in pregnancy, and the historical data regarding mortality. The causes of development of PH during pregnancy are discussed, and the limited data on management of patients with PH who choose to carry their pregnancy to term are reviewed. Copyright © 2011 Elsevier Inc. All rights reserved.

**Source:** Medline

**Title:** Asthma in pregnancy--immunological changes and clinical management.

**Citation:** Respiratory medicine, Feb 2011, vol. 105, no. 2, p. 159-164 (February 2011)

**Author(s):** Tamási, Lilla, Horváth, Ildikó, Bohács, Anikó, Müller, Veronika, Losonczy, György, Schatz, Michael
Abstract: Asthma is one of the most common diseases complicating pregnancy and a risk factor for several maternal and fetal complications, posing a special challenge for physicians treating asthmatic pregnant women. Asthma influences the outcome of pregnancy and, vice versa, pregnancy affects asthma severity, with bidirectional immunological interactions that are currently being examined. Supporting pregnancy-induced immunotolerance is the observation that attenuation of allergic responses can be detected in controlled asthmatic pregnant patients. However, uncontrolled asthmatic pregnant women show significant asthma-associated immune reactions, such as diminished pregnancy specific regulatory T cell proliferation, that may - besides other factors - influence fetal growth. Uncontrolled, symptomatic asthma may increase the risk of adverse perinatal outcomes; thus adequate regular anti-asthmatic treatment resulting in optimal asthma control represents a vital need during pregnancy. This review summarizes immunological changes characterizing pregnancy in asthmatic women together with the clinical implications of asthma management during pregnancy. Copyright Â© 2010 Elsevier Ltd. All rights reserved.

Source: Medline

Title: Imaging evaluation of the pregnant patient with suspected pulmonary embolism.

Citation: International journal of obstetric anesthesia, Jan 2011, vol. 20, no. 1, p. 51-59 (January 2011)

Author(s): Durán-Mendicuti, A, Sodickson, A

Abstract: Pulmonary embolism is the leading cause of maternal death in the developed world. The clinical diagnosis of pulmonary embolism is particularly challenging in pregnant patients as physiologic changes of pregnancy can mimic symptoms of pulmonary embolism or deep venous thrombosis. Clinical decision and imaging algorithms for venous thromboembolic disease have been proposed in the literature for the general population, but have not undergone wide-scale validation in pregnant patients. Laboratory evaluation of D-dimer levels has likewise been established as a viable screening method in the general population but remains controversial in pregnant patients. Regardless of whether D-dimer levels are used in this population, the clinician must often rely on imaging tests to confirm or exclude a clinical suspicion of pulmonary embolism. Additional factors beyond test performance must be weighed during pregnancy: radiation exposure to the fetus and maternal breast tissue, the safety of intravenous contrast administration and the diagnostic accuracy of the various testing options so that diagnosis and proper management are not delayed. The epidemiology of pregnancy-related venous thromboembolic disease and the different diagnostic methods are reviewed, with emphasis on the pregnant patient. Finally, a diagnostic imaging algorithm is proposed for the evaluation of the pregnant patient when a clinical suspicion of pulmonary embolism exists. Copyright Â© 2010 Elsevier Ltd. All rights reserved.

Source: Medline

Title: Asthma in pregnancy - From immunology to clinical management

Citation: Multidisciplinary Respiratory Medicine, August 2010, vol./is. 5/4(259-263), 1828-695X;2049-6958 (August 2010)

Author(s): Tamasi L., Bohacs A., Horvath I., Losonczy G.

Language: English

Abstract: Asthma is one of the most common chronic medical conditions that may complicate pregnancy. Asthma influences the outcome of pregnancy and, vice versa, pregnancy affects asthma severity, but the underlying immunological mechanisms of this interaction are not fully understood. As a sign of pregnancy-induced immunotolerance, attenuation of allergic responses can be detected in controlled asthmatic pregnant patients; however non controlled asthmatic pregnant women show significant asthma-associated immune reactions that may, beside
other factors, influence fetal growth. Generally, although uncontrolled asthma may increase the risk of adverse perinatal outcomes, women with well-controlled and adequately treated disease during pregnancy do not develop maternal or fetal complications.

**Publication type:** Journal: Review  
**Source:** EMBASE  
**Full text:** Available National Library of Medicine at [Multidisciplinary Respiratory Medicine](https://www.ncbi.nlm.nih.gov/pubmed/20538975)

**Title:** Pulmonary physiology in pregnancy.  
**Citation:** Clinical obstetrics and gynecology, Jun 2010, vol. 53, no. 2, p. 285-300 (June 2010)  
**Author(s):** Bobrowski, Renee A  
**Abstract:** This section reviews anatomic and functional changes of the respiratory system during pregnancy. Pulmonary function during exercise in pregnancy and in the obese gravida, sleep-disordered breathing during pregnancy, and pulmonary changes in the pregnant woman living at altitude are discussed in detail. Assessment of pulmonary function and interpretation of the arterial blood gas during pregnancy are also discussed.  
**Source:** Medline  
**Full text:** Available [the ULHT Library and Knowledge Services' eJournal collection](https://www.ncbi.nlm.nih.gov/pubmed/20538975) at [Clinical Obstetrics and Gynecology](https://www.ncbi.nlm.nih.gov/pubmed/20538975)

**Title:** Asthma in pregnancy: pathophysiology, diagnosis and management.  
**Citation:** Obstetrics and gynecology clinics of North America, Jun 2010, vol. 37, no. 2, p. 159-172 (June 2010)  
**Author(s):** Hardy-Fairbanks, Abbey J, Baker, Emily R  
**Abstract:** Asthma is a common, potentially serious, even life-threatening, chronic medical condition seen amongst nearly all groups of patients, regardless of ethnicity and socioeconomic circumstances. This article addresses the group of pregnant women with symptomatic asthma as well as those whose asthma is asymptomatic as a result of good control. The incidence, the pathophysiologic changes of pregnancy, and the interplay between these changes and asthma are reviewed in this article. The classification of these patients and appropriate management strategies are discussed. Copyright 2010 Elsevier Inc. All rights reserved.  
**Source:** Medline

**Title:** Pulmonary imaging during pregnancy.  
**Citation:** Clinical obstetrics and gynecology, Jun 2010, vol. 53, no. 2, p. 337-344 (June 2010)  
**Author(s):** Disher, Anthony C, Geary, Franklyn H  
**Abstract:** The diagnosis of pulmonary disorders associated with pregnancy is complicated by concerns about maternal/fetal radiation exposure, administration of contrast media, and medicolegal issues. This article reviews diagnostic imaging modalities, radiation exposure policy statements and provides a brief review of radiographic findings in selected pulmonary disorders associated with pregnancy. Clinicians should familiarize themselves with the benefit/risk of imaging modalities. Institution-specific imaging algorithms that minimize maternal/fetal radiation exposure are recommended. Institutional system-wide protocols would minimize confusion among healthcare providers.  
**Source:** Medline  
**Full text:** Available [the ULHT Library and Knowledge Services' eJournal collection](https://www.ncbi.nlm.nih.gov/pubmed/20538975) at [Clinical Obstetrics and Gynecology](https://www.ncbi.nlm.nih.gov/pubmed/20538975)

**Title:** Pregnancy outcome in patients with complex pulmonary atresia: case report and review of the literature.
Citation: European journal of heart failure, Feb 2010, vol. 12, no. 2, p. 202-207 (February 2010)

Author(s): Stangl, Verena, Bamberg, Christian, Schröder, Torsten, Volk, Thomas, Borges, Adrian Constantin, Baumann, Gert, Stangl, Karl

Abstract: Pulmonary atresia, a rare and complex congenital heart disease, is characterized by the absence of the central pulmonary artery and by the presence of a ventricular septal defect and aortopulmonary collaterals. Pregnancy reports concerning maternal and offspring outcome after palliative operation or repaired pulmonary atresia are sparse. We report here on the outcome of pregnancy in a woman, aged 36, with complex pulmonary atresia in whom palliative operation had been performed at the age of 23. We review the medical literature on pregnancy course as well as maternal and foetal outcome in cases involving this maternal congenital heart disease.

Source: Medline

Full text: Available Highwire Press at European Journal of Heart Failure

Title: The effects of pregnancy on the exacerbation and development of maternal allergic respiratory disease.

Citation: Journal of immunotoxicology, Dec 2009, vol. 6, no. 4, p. 276-284 (December 2009)

Author(s): Pucheu-Haston, Cherie M, Copeland, Lisa B, Haykal-Coates, Najwa, Ward, Marsha D W

Abstract: The T-helper 2 (TH2) bias associated with pregnancy may predispose the pregnant mother to the development or exacerbation of allergic disease. To determine the effects of pregnancy on pre-existing maternal sensitization, we sensitized BALB/c mice before breeding by two intratracheal aspiration (IA) exposures to the fungal allergen, Metarhizium anisopliae crude antigen (MACA). Some mice also received three IA exposures to MACA on gestational days 11, 15, and 19. After weaning, all mice were challenged IA with MACA on gestational days 11, 15, and 19. After weaning, all mice were challenged IA with MACA before killing. To determine the effects of pregnancy on susceptibility to future sensitization, naive parous and nulliparous BALB/c mice were sensitized by three IA exposures to MACA or to Hank's buffered salt solution vehicle control. Pregnancy did not have a significant effect on individual inflammatory parameters (airway responsiveness to methacholine, total serum and bronchoalveolar lavage fluid (BALF) IgE, BALF total protein, lactate dehydrogenase activity, and total and differential cell counts) following allergen challenge in sensitized mice, regardless of post-breeding allergen exposure. In conclusion there was a weak inhibition of the overall response in mice exposed to allergen during pregnancy compared to identically treated nulliparous mice. In contrast, parous mice that did not encounter allergen post-breeding tended to have exacerbated responses. Parity had no significant impact on future susceptibility to sensitization.

Source: Medline

Full text: Available EBSCOhost at Journal of Immunotoxicology

Title: Pulmonary hypertension in pregnancy: two cases and review of the literature.

Citation: Internal medicine journal, Nov 2009, vol. 39, no. 11, p. 766-770 (November 2009)

Author(s): Higton, A M, Whale, C, Musk, M, Gabbay, E

Abstract: Pulmonary arterial hypertension (PAH) in pregnancy carries a mortality of 30-56%. There are few published data to guide clinicians in its management. Two pregnant women with severe PAH have been treated at Royal Perth Hospital with a successful result in both. Their presentation and management are described. We review the physiological changes in pregnancy, pathophysiology in PAH, and review the literature describing treatment of PAH in pregnancy.

Source: Medline

Full text: Available EBSCOhost at Internal Medicine Journal
Title: Asthma and pregnancy: emerging evidence of epigenetic interactions in utero.

Citation: Current opinion in allergy and clinical immunology, Oct 2009, vol. 9, no. 5, p. 417-426 (October 2009)

Author(s): Prescott, Susan L, Clifton, Vicki

Abstract: Pregnancy is arguably the most critical period of developmental programming. Here, we particularly focus on the emerging paradigm that disease propensity is epigenetically determined by maternal exposures that have the capacity to activate or silence fetal genes through alterations in DNA and histone methylation, histone acetylation, and chromatin structure. The most notable recent candidate to emerge in this role has been dietary folate, a methyl donor clearly associated with changes in gene expression and disease susceptibility through gene hypermethylation. Animal studies also provide the first evidence that the allergy protective effects of microbial exposure in pregnancy may be mediated by changes in methylation of Th1 genes of the offspring. There is also emerging evidence that perinatal differences in immune function of allergy-prone newborns extend beyond previously recognized differences in effector T cell (Th1/Th2) function, to also include differences in neonatal regulatory T cell (Treg) and Th17 function, and moreover, that these pathways are also epigenetically regulated. New studies reinforce the importance of in-utero exposures (including dietary nutrients, microbial products, cigarette smoking, and certain maternal mediations) in fetal immune development and in programming the susceptibility to asthma and allergic disease.

Source: Medline

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Title: Treatment options in massive pulmonary embolism during pregnancy; a case-report and review of literature.

Citation: Thrombosis research, May 2009, vol. 124, no. 1, p. 1-5 (May 2009)

Author(s): te Raa, G Doreen, Ribbert, Lucie S M, Snijder, Repke J, Biesma, Douwe H

Abstract: Systemic thrombolysis with recombinant tissue plasminogen activator (rt-PA), streptokinase or urokinase is considered as high-risk treatment in pregnancy. However, several reports have described the successful use of systemic thrombolysis in pregnant patients with massive pulmonary embolism and haemodynamic instability. We describe a 34-year old, pregnant female, who presented at 25 weeks of gestation with an acute collapse with reduced consciousness and shortness of breath caused by massive pulmonary embolism. Because of significant haemodynamic instability, increased right ventricular pressure and no improvement after intravenous heparin, thrombolytic therapy was administered. The response to thrombolytic therapy was excellent. No severe haemorrhagic complications were observed. Anticoagulant therapy with LMWH was continued until delivery. A healthy child was born at term. In English literature, 13 patients received thrombolysis during pregnancy because of pulmonary embolism. No maternal deaths, four non-fatal maternal major bleeding complications, 30.8%;95%CI(9.1-61.4), two fetal deaths, 15.4%;95%CI(1.9-45.5), and five preterm deliveries, 38.5%;95%CI(13.9-68.4), were observed. Surgical embolectomy and catheter embolectomy or catheter thrombolysis has only been performed in 12 patients. The number of reports on thrombolytic therapy, surgical embolectomy and catheter embolectomy or thrombolysis for massive pulmonary embolism during pregnancy are limited. We suggest an international registry for pregnant patients undergoing thrombolysis or embolectomy to gain more information about these treatment options. Nevertheless, complication rates of thrombolytic therapy are acceptable in the light of the underlying disease, and in the meantime, current data do not justify withholding pregnant women from thrombolytic therapy in case of life-threatening PE.

Source: Medline
**Title:** Pulmonary hypertension and pregnancy.

**Citation:** International journal of obstetric anesthesia, Apr 2009, vol. 18, no. 2, p. 156-164 (April 2009)

**Author(s):** Madden, B P

**Abstract:** Pulmonary hypertension is defined by a mean pulmonary artery pressure of greater than 25 mmHg at rest or 30 mmHg with exercise. It can occur in association with a variety of medical conditions. The most serious elevation in pulmonary artery pressures are seen in a group of conditions that share the histological entity of plexogenic pulmonary arteriopathy. Pulmonary hypertension may be missed or diagnosed late in the course of the illness. It is associated with a poor prognosis. Pulmonary hypertension carries a significant risk to mother and child during pregnancy and pregnant women with pulmonary hypertension require careful monitoring within the framework of a multidisciplinary team. Specific targeted therapy for pulmonary hypertension may be required during pregnancy. Many agents are contraindicated because of risks of teratogenicity or secretion into breast milk. The optimum mode of delivery is not clear but early input from the high-risk obstetric anaesthesia team is essential.

**Source:** Medline

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**Title:** Clinical practice. Asthma in pregnancy.

**Citation:** The New England journal of medicine, Apr 2009, vol. 360, no. 18, p. 1862-1869 (April 30, 2009)

**Author(s):** Schatz, Michael, Dombrowski, Mitchell P

**Source:** Medline

**Full text:** Available the ULHT Library and Knowledge Services' eJournal collection at New England Journal of Medicine

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**Title:** Pulmonary cryptococcosis in late pregnancy and review of published literature.

**Citation:** Mycopathologia, Mar 2009, vol. 167, no. 3, p. 125-131, 0301-486X (March 2009)

**Author(s):** Nakamura, Shigeki, Izumikawa, Koichi, Seki, Masafumi, Kakeya, Hiroshi, Yamamoto, Yoshihiro, Yanagihara, Katsunori, Miyazaki, Yoshitsugu, Kohno, Shigeru

**Abstract:** Naturally occurring maternal immunosuppression increases the risk of infection by a variety of pathogens during pregnancy and the postpartum period. Pulmonary cryptococcosis during pregnancy is relatively rare. Here, we report on two cases of pulmonary cryptococcosis during pregnancy and puerperium. Both cases were successfully treated using oral fluconazole after parturition to avoid fetal toxicity. For the two patients, the placentas were checked and found to be pathologically normal, and the cryptococcal serum antigen in both infants was negative. Pulmonary cryptococcosis should be considered during differential diagnosis as a possible cause of abnormal chest shadow in pregnant patients.

**Source:** Medline

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**Title:** Asthma in pregnancy - Don't lose control

**Citation:** Current Allergy and Clinical Immunology, March 2009, vol./is. 22/1(4-9), 1609-3607;1609-3607 (March 2009)

**Author(s):** Davel S., Irusen E.M., Hall D.

**Language:** English

**Abstract:** Asthma is the most common chronic medical condition encountered in pregnancy. The clinical course of asthma may change during pregnancy and severe asthma carries the risk of acute exacerbation. Uncontrolled asthma is associated with adverse pregnancy outcomes and can be avoided by timeously adjusting treatment according to current guidelines. Asthma control should be reassessed throughout pregnancy. Treatment should not be limited to pharmacotherapy, but also include patient education and treatment of comorbid...
Title: Has there been any progress made on pregnancy outcomes among women with pulmonary arterial hypertension?

Citation: European heart journal, Feb 2009, vol. 30, no. 3, p. 256-265 (February 2009)

Author(s): Bédard, Elisabeth, Dimopoulos, Konstantinos, Gatzoulis, Michael A

Abstract: Pregnancy in women with pulmonary arterial hypertension (PAH) is considered to be associated with prohibitive maternal mortality. During the past decade, new advanced therapies for PAH have emerged and progress in high-risk pregnancy management has been made. We examined whether these changes have improved outcomes in parturients with PAH. A systematic review of all cases of parturients with idiopathic pulmonary hypertension (iPAH), congenital heart disease associated with PAH (CHD-PAH), or PAH of other aetiology (oPH) published in the past decade (1997-2007) was performed. Outcome data from this study were then compared with relevant data published between 1978 and 1996. Forty-eight case reports or case series met the inclusion criteria, totalling 73 parturients with PAH. Seventy-two per cent of patients with iPAH were receiving advanced therapies, compared with 52% of CHD-PAH and 47% of oPH. Although a publication bias cannot be excluded, overall maternal mortality was significantly lower compared with previous era (25 vs. 38%, P = 0.047) and was 17% in iPAH, 28% in CHD-PAH, and 33% in oPH. Seventy-eight per cent of deaths occurred within the first month after delivery. Primigravidae and parturients who received general anaesthesia were at higher risk of death (OR 3.70, 95% CI 1.15-12.5, P = 0.03 and OR 4.37, 95% CI 1.28-16.50, P = 0.02, respectively). Maternal mortality in parturients with PAH remains prohibitively high, despite lower death rates than previous decades. Early advice on pregnancy risks, including contraception, remains paramount. Women with PAH who become pregnant warrant a multidisciplinary approach with consideration of advanced therapies.

Source: Medline
Full text: Available EBSCOhost at European Heart Journal

Title: Providing specialist care for pregnant women with asthma.

Citation: Nursing standard (Royal College of Nursing (Great Britain) : 1987), Jan 2009, vol. 23, no. 20, p. 43-48, 0029-6570 (2009 Jan 21-27)

Author(s): Kennedy, Siobhan

Abstract: This article evaluates the care provided by respiratory nurse specialists to pregnant women with asthma. The effect of asthma on pregnancy and the effect of pregnancy on asthma are discussed with reference to relevant literature. This article focuses on education relating specifically to asthma and pregnancy and the personalised asthma action plan.

Source: Medline
Full text: Available EBSCOhost at Nursing Standard

Title: Management of two pregnancies in a woman with mixed connective tissue disease, pulmonary fibrosis, frequent pneumothorax and oxygen inhalation therapy along with a published work review.

Citation: The journal of obstetrics and gynaecology research, Aug 2008, vol. 34, no. 4 Pt 2, p. 613-618, 1341-8076 (August 2008)

Author(s): Hoshino, Tatsuji, Kita, Masato, Takahashi, Takayuki, Nishimura, Takashi, Yamakawa, Masaru

Abstract: Two pregnancies in a woman on oxygen inhalation therapy before pregnancy, due to pulmonary fibrosis and frequent pneumothorax that are secondary to mixed connective tissue disease, were managed safely. As usual for
this condition, the patient was rather older and her ordinary daily life was restricted. This is a truly very rare case of a successful pregnancy in these circumstances. In a published work review using key words such as "pregnancy", "mixed connective tissue disease" and "oxygen inhalation therapy", no similar case could be found. For the management of such high-risk patients, close cooperation of the obstetrician, clinical immunologist, clinical pneumologist and neonatologist in the same hospital is indispensable.

**Source:** Medline  
**Full text:** Available EBSCOhost at [Journal of Obstetrics & Gynaecology Research](https://www.ebscohost.com)

**Title:** Acute and chronic respiratory diseases in pregnancy: associations with spontaneous premature rupture of membranes.  
**Citation:** The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians, Sep 2007, vol. 20, no. 9, p. 669-675, 1476-7058 (September 2007)  
**Author(s):** Getahun, Darios, Ananth, Cande V, Oyelese, Yinka, Peltier, Morgan R, Smullan, John C, Vintzileos, Anthony M  
**Abstract:** To examine whether acute and chronic respiratory diseases are associated with an increased risk of spontaneous premature rupture of the membranes (PROM). We used the 1993-2004 National Hospital Discharge Survey data of singleton deliveries in the USA (N = 41 250 539). The International Classification of Diseases Ninth Revision was utilized to identify acute (acute upper respiratory diseases, viral/bacterial pneumonia, and acute bronchitis/bronchiolitis) and chronic (chronic bronchitis and asthma) respiratory conditions and spontaneous PROM. All analyses were adjusted for potential confounders. The incidence of PROM was 5%, and rates of acute and chronic respiratory conditions were 2.1 and 9.5 per 1000 pregnancies, respectively. Chronic bronchitis was associated with a reduced risk of PROM (RR 0.39, 95% CI 0.31, 0.48). Asthma was significantly associated with PROM at preterm (RR 1.15, 95% CI 1.14, 1.17) and term (RR 1.27, 95% CI 1.23, 1.30). Stratification by race showed that acute upper respiratory disease was associated with preterm PROM in whites (RR 1.90, 95% CI 1.71, 2.11) and blacks (RR 6.76, 95% CI 5.67, 8.07). Viral/bacterial pneumonia was associated with preterm PROM in blacks and term PROM in both races. Asthma was associated with term PROM in blacks but not whites. Acute respiratory diseases and asthma during pregnancy are associated with spontaneous PROM, with substantially stronger association among blacks than whites. We speculate that timely diagnosis and treatment, coupled with closely mentoring of pregnant women may help reduce the rate of PROM and associated complications.  
**Source:** Medline  
**Full text:** Available EBSCOhost at [Journal of Maternal-Fetal & Neonatal Medicine](https://www.ebscohost.com)

**Title:** Viral respiratory disease in pregnancy.  
**Citation:** Current opinion in obstetrics & gynecology, Apr 2007, vol. 19, no. 2, p. 120-125, 1040-872X (April 2007)  
**Author(s):** Longman, Ryan E, Johnson, Timothy R B  
**Abstract:** Recently there has been an increased concern over viral respiratory infections and their potential for a pandemic. This concern makes it important to review the most current guidelines for the management of viral respiratory diseases in pregnancy. The topics covered are influenza, avian influenza, and severe acute respiratory syndrome. Pregnant women have an increased susceptibility to viral respiratory diseases. The most common respiratory virus to infect pregnant women is influenza. All women who intend to become pregnant or are pregnant should receive the influenza vaccine. If a pregnant woman develops influenza she should be treated with supportive care. Antiviral medications should be reserved for cases where the benefits outweigh the risks. Avian influenza
(H5N1) is a new emerging virus usually contracted from direct contact with diseased birds. There is no commercially available vaccine at this time to prevent infection. Pregnant women should be treated aggressively with supportive care and antiviral medications, as the significant risk of maternal mortality outweighs the potential fetal risks. Pregnant women diagnosed clinically with severe acute respiratory syndrome should be treated empirically, as a serologic diagnosis can take weeks to confirm. The treatment of pregnant women with severe acute respiratory syndrome should be without ribavirin.

Source: Medline

Title: Pregnancy and chronic progressive pulmonary disease.
Citation: American journal of respiratory and critical care medicine, Feb 2007, vol. 175, no. 4, p. 300-305, 1073-449X (February 15, 2007)
Author(s): Wexler, Isaiah D, Johannesson, Marie, Edenborough, Frank P, Sufian, Beth S, Kerem, Eitan
Abstract: Progressive pulmonary disease may preclude the option of pregnancy for a number of women in their child-bearing years due to the severity of the disease. For a subset of women with chronic lung disease including cystic fibrosis, pregnancy is possible, but can have a devastating effect both on the prospective mother and fetus. The potential hazards of pregnancy in cystic fibrosis or other progressive pulmonary diseases may trigger a moral conflict between physician and patient. The female patient may argue that her autonomy cannot be circumscribed and that the physician is obliged to assist her reproductive efforts. The physician can counter that his/her participation in potentially harmful interventions is not consistent with professional norms requiring adherence to the principles of beneficence and nonmaleficence. Whenever possible, the ethical conflict between physician and patient should be resolved before initiation of pregnancy. We propose that this best be done through structured negotiations between physician and patient with the goal of constructing an ethical framework for reducing the moral tension between the two. Steps in the negotiating process include defining the therapeutic alliance, information exchange, dialog, and deliberation. As part of the information exchange, it is important to discuss alternatives to pregnancy such as adoption and surrogacy, especially when there are strong contraindications to pregnancy. If negotiations reach a satisfactory conclusion for both sides, there should be a well-delineated consensual agreement to commence the pregnancy with the full support of the medical team.

Source: Medline
Full text: Available Free Access Content at American Journal of Respiratory and Critical Care Medicine

Title: Investigating suspected pulmonary embolism in pregnancy.
Citation: BMJ (Clinical research ed.), Feb 2007, vol. 334, no. 7590, p. 418-419 (February 24, 2007)
Author(s): Scarsbrook, Andrew Frederick, Gleeson, Fergus Vincent

Source: Medline

Title: The safety of asthma medications during pregnancy.
Citation: Expert opinion on drug safety, Jan 2007, vol. 6, no. 1, p. 15-26 (January 2007)
Author(s): Källén, Bengt
Abstract: This article reviews the literature on asthma or use of antiasthmatic drugs during pregnancy, the impact on pregnancy and delivery outcome, and on the infant born. Some anomalies have been demonstrated. It is unclear if these are due to asthma or are the effect of antiasthma drug use. The former explanation appears to be most likely, and the outcome appears to co-vary with the severity of the disease. Therefore, an adequate therapy of asthma is important during pregnancy, and although a small increase in certain congenital malformations may
exist, this is of little significance for the individual patient. Further efforts should be made to isolate the possible specific effects of antiasthmatic drugs, notably for recent additions to the therapeutic arsenal.

**Source:** Medline

**Title:** Maternal asthma during pregnancy and fetal outcomes: potential mechanisms and possible solutions.

**Citation:** Current opinion in allergy and clinical immunology, Oct 2006, vol. 6, no. 5, p. 307-311, 1528-4050 (October 2006)

**Author(s):** Clifton, Vicki

**Abstract:** Asthma exacerbations during pregnancy can be a serious complication that have detrimental consequences for both mother and fetus. The pathophysiological mechanisms that cause worsening asthma during pregnancy are only just starting to be examined. This review will examine the recent literature on immune function in pregnant women, immune function in nonpregnant asthma patients and studies conducted on asthma during pregnancy. Fifty-five percent of women with asthma will experience at least one exacerbation during pregnancy. This has significant effects on fetal growth and survival, especially if the fetus is male. A number of factors that may contribute to the development of worsening asthma during pregnancy include pregnancy-induced changes in maternal immune function, increased maternal susceptibility to infection, female fetal sex, noncompliance with medication and prepregnancy asthma severity. Interestingly, the immune changes in the maternal system in response to the presence of the fetus and placenta are very similar to the immune changes described in nonpregnant asthma patients with noneosinophilic asthma. These studies highlight that worsening asthma during pregnancy cannot be attributed to pregnancy alone or asthma alone and may be a complex combination of factors and events.

**Source:** Medline

**Title:** Acute and chronic respiratory diseases in pregnancy: associations with placental abruption.

**Citation:** American journal of obstetrics and gynecology, Oct 2006, vol. 195, no. 4, p. 1180-1184 (October 2006)

**Author(s):** Getahun, Darios, Ananth, Cande V, Peltier, Morgan R, Smulian, John C, Vintzileos, Anthony M

**Abstract:** This study was undertaken to examine the associations between maternal respiratory diseases and placental abruption. A population-based, retrospective cohort study was conducted to examine the associations between maternal respiratory diseases and abruption in the United States. Data on women who delivered singleton births (n = 37,314,022) were derived from the National Hospital Discharge Survey for the years 1993 to 2003. International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes were used to identify pregnant women hospitalized for acute upper respiratory diseases, viral and bacterial pneumonia, acute bronchitis, and acute bronchiolitis, chronic bronchitis, asthma, and abruption. Relative risk (RR) and 95% CI were derived from multivariable logistic regression models to evaluate the associations after adjusting for maternal age, race, marital status, smoking, cocaine use, adequacy of prenatal care, maternal insurance status, geographic location, and year of birth (although data on smoking and cocaine use are likely underreported). The rate of abruption was 9.7 per 1,000 singleton births. The overall rate for acute respiratory conditions was 2.2 per 1000 pregnancies. Acute upper respiratory diseases (RR 3.2, 95% CI 3.0-3.4) and viral/bacterial pneumonia (RR 2.2, 95% CI 1.9-2.4) were associated with abruption. The rate of chronic respiratory conditions was 9.0 per 1,000 pregnancies. Chronic bronchitis was strongly associated with abruption (RR 31.8, 95% CI 29.6-34.3), but the association between asthma and abruption was modest (RR 1.1, 95% CI 1.0-1.2). Stratified analysis by maternal race showed that asthma was associated with abruption among black women but not white women.
Pregnancies complicated by acute and chronic respiratory diseases requiring hospitalization are associated with placental abruption.

**Source:** Medline

**Title:** Investigating suspected pulmonary embolism during pregnancy.

**Citation:** Respiratory medicine, Oct 2006, vol. 100, no. 10, p. 1682-1687, 0954-6111 (October 2006)

**Author(s):** Mallick, Srikumar, Petkova, Dimitrina

**Abstract:** Pulmonary embolism (PE) is the commonest cause of maternal death in the UK. It is a frequently occurring diagnostic challenge. The false negative and false positive rates for the diagnosis of PE are spectacularly high. Undiagnosed PE has a mortality rate as high as 30%, which falls to 2-8% if the condition is diagnosed and treated appropriately. [Rodger M, Wells PS. Diagnosis of pulmonary embolism. Thromb Res 2001;103:v225-38; Guidelines on Diagnosis and Management of Acute Pulmonary Embolism. Task Force on Pulmonary Embolism, European Society of Cardiology. Eur Heart J 2000;21(16):1301-36]. Physiologic changes of pregnancy further complicate the diagnosis of PE. Although the danger of maternal and foetal death secondary to maternal PE and unnecessary anticoagulation far outweighs the risk of radiation involved in scanning, doctors still hesitate to request appropriate investigation because of concern regarding radiation exposure to the foetus and the absence of any clear, updated guideline. Worried parents need to be counselled appropriately before tests to alleviate anxiety and misunderstanding.

**Source:** Medline

**Title:** Asthma and pregnancy.

**Citation:** Obstetrics and gynecology, Sep 2006, vol. 108, no. 3 Pt 1, p. 667-681, 0029-7844 (September 2006)

**Author(s):** Dombrowski, Mitchell P

**Abstract:** Asthma complicates 4-8% of pregnancies. Mild and well-controlled moderate asthma can be associated with excellent maternal and perinatal pregnancy outcomes. Severe and poorly controlled asthma may be associated with increased prematurity, need for cesarean delivery, preeclampsia, growth restriction, other perinatal complications, as well as maternal morbidity and mortality. Optimal management of asthma during pregnancy includes objective monitoring of lung function, avoiding or controlling asthma triggers, patient education, and individualized pharmacologic therapy. Those with persistent asthma should be monitored by peak expiratory flow rate, spirometry to measure the forced expiratory volume in 1 second, or both. Step-care therapeutic approach uses the least amount of drug intervention necessary to control a patient's severity of asthma. Inhaled corticosteroids are the preferred treatment for the management of all levels of persistent asthma during pregnancy. It is safer for pregnant women with asthma to be treated with asthma medications than it is for them to have asthma symptoms and exacerbations. The ultimate goal of asthma therapy is maintaining adequate oxygenation of the fetus by prevention of hypoxic episodes in the mother. Asthma exacerbations should be aggressively managed, with a goal of alleviating asthma symptoms and attaining peak expiratory flow rate or forced expiratory volume in 1 second of 70% predicted or more. Pregnancies complicated by moderate or severe asthma may benefit from ultrasound for fetal growth and accurate dating and antenatal assessment of fetal well-being. Asthma medications should be continued during labor, and parturients should be encouraged to breastfeed.

**Source:** Medline

**Full text:** Available Free Access Content at Obstetrics & Gynecology

**Title:** The effects of rhinitis, asthma, and acute respiratory distress syndrome as acute or chronic pulmonary conditions during pregnancy.

**Citation:** The Journal of perinatal & neonatal nursing, Apr 2006, vol. 20, no. 2, p.
Pulmonary complications from both obstetrical and non-obstetrical causes contribute to a mortality rate as high as 80% in the pregnant population. The effect of numerous mechanical and biochemical physiologic alterations during pregnancy can influence the maternal and fetal outcomes in a woman with a pulmonary complication. Progesterone, the primary hormone of pregnancy, is a respiratory stimulant that enhances carbon dioxide release and alters the maternal pH in favor of releasing oxygen to the fetus. During systemic compromise, which may be experienced as an acute asthmatic attack or respiratory distress syndrome, desaturation and carbon dioxide retention ensue. Under these conditions, the fetus is at risk for perinatal hypoxemia. Although prompt recognition and treatment are important to minimize maternal, fetal, and neonatal morbidity and mortality, evidence-based literature regarding critical care techniques that promote optimal obstetrical outcomes is limited. Therefore, a collaborative approach to the care of these women is warranted. In addition to critical care, emergency medicine, and obstetrical nurses, the medical team may include an obstetrician, a perinatologist, a neonatologist, a pulmonologist, an intensivist, and an immunologist.

Source: Medline

Diagnosis of deep vein thrombosis and pulmonary embolism in pregnancy is challenging. Many of the common diagnostic tests, including compression ultrasonography (CUS), ventilation-perfusion scintigraphy (VQ scan) and helical computed tomography (hCT) that have been extensively investigated in non-pregnant patients, have not been appropriately validated in pregnancy. Extrapolating results of diagnostic studies of DVT and PE in non-pregnant patients to those who are pregnant may not be correct because during pregnancy, physiologic and anatomic changes may affect diagnostic test results, presentation and natural history of VTE. We performed a systematic analysis of published studies addressing accurate diagnostic testing for DVT and PE in pregnancy to determine the accuracy of these tests in pregnancy. Our initial search yielded 530 articles of which four remained for inclusion, three studies investigating diagnostic testing in patients with a clinical suspicion of DVT or PE and one study in patients with a clinical suspicion of PE. From our systematic analysis of published studies investigating diagnostic testing for a clinical suspicion of DVT in pregnancy we conclude that; (i) two studies support withholding anticoagulant therapy in pregnant women with a clinical suspicion of DVT and normal results on serial IPG (impedance plethysmography), however, IPG is no longer used; (ii) one study demonstrated that a normal CUS at presentation combined with a normal D-dimer test or an abnormal D-dimer test combined with normal serial CUS appears promising for safely excluding DVT in pregnant patients, but too few patients were included in this pilot-study to draw firm conclusions; and (iii) one study investigated pregnant patients with a clinical suspicion of PE and this study concluded that in patients with normal or non-diagnostic VQ scans, withholding anticoagulant therapy might be safe, but this needs confirmation in larger studies.

Recommendations on diagnostic testing of pregnant patients with a clinically suspected DVT or PE are provided.

Source: Medline

Respiratory physiologic changes in pregnancy.

Citation: Immunology and allergy clinics of North America, Feb 2006, vol. 26, no.
Author(s): Wise, Robert A, Polito, Albert J, Krishnan, Vidya

Abstract: In summary, the major physiologic changes that occur in pregnancy are the increased minute ventilation, which is caused by increased respiratory center sensitivity and drive; a compensated respiratory alkalosis; and a low expiratory reserve volume. The vital capacity and measures of forced expiration are well preserved. Patients who have many lung diseases tolerate pregnancy well, with the exception of those who have pulmonary hypertension or chronic respiratory insufficiency from parenchymal or neuromuscular disease.

Source: Medline

Title: The effect of pregnancy on the course of asthma.

Citation: Immunology and allergy clinics of North America, Feb 2006, vol. 26, no. 1, p. 63-80, 0889-8561 (February 2006)

Author(s): Gluck, Joan C, Gluck, Paul A

Abstract: The course of asthma is changed by pregnancy in variable ways for unknown reasons. Although the prospective studies used different criteria to stratify the severity of the patients' asthma, their conclusions were remarkably similar. Over-all, an equal number of women have asthma symptoms that improve, worsen, or are unchanged through pregnancy. Asthma symptoms can worsen during pregnancy because of identifiable factors, such as infection, gastroesophageal re-flux disease, reduction of appropriate medications by physician or patient, and smoking. Undertreatment, which remains a problem during pregnancy, can lead to continued difficulty with asthma. Severe asthmatics tend to have increased symptoms compared with mild asthmatics. If symptoms worsen, it usually occurs in the second and third trimesters, with the peak in the sixth month. Generally, there is improvement in asthma in the last 4 weeks of pregnancy. During labor and delivery, only 10% to 20% of asthmatics have symptoms; severe asthmatics are more likely to have exacerbations. Asthma tends to return to the prepregnancy state within 3 months post partum. Successive pregnancies tend to have a similar course in each individual. Every asthmatic woman should be maintained on appropriate medications and followed carefully.

Source: Medline

Full text: Available National Library of Medicine at Thorax

Title: Asthma exacerbations during pregnancy: incidence and association with adverse pregnancy outcomes.

Citation: Thorax, Feb 2006, vol. 61, no. 2, p. 169-176, 0040-6376 (February 2006)

Author(s): Murphy, V E, Clifton, V L, Gibson, P G

Abstract: Exacerbations of asthma during pregnancy represent a significant clinical problem and may be related to poor pregnancy outcomes. A systematic review of the literature was conducted for publications related to exacerbations during pregnancy. Four studies with a control group (no asthma) and two groups of women with asthma (exacerbation, no exacerbation) were included in meta-analyses using fixed effects models. During pregnancy, exacerbations of asthma which require medical intervention occur in about 20% of women, with approximately 6% of women being admitted to hospital. Exacerbations during pregnancy occur primarily in the late second trimester; the major triggers are viral infection and non-adherence to inhaled corticosteroid medication. Women who have a severe exacerbation during pregnancy are at a significantly increased risk of having a low birth weight baby compared with women without asthma. No significant associations between exacerbations during pregnancy and preterm delivery or pre-eclampsia were identified. Inhaled corticosteroid use may reduce the risk of exacerbations during pregnancy. Pregnant women may be less likely to receive oral steroids for the emergency management of asthma. The effective management and prevention of asthma exacerbations during pregnancy is important for the health of both the mother and fetus.

Source: Medline

Full text: Available National Library of Medicine at Thorax
throughout pregnancy, especially in the second and third trimesters. Asthma specialists should be available for collaborative care when asthma is uncontrolled, or if there is an exacerbation. A timely adjustment in treatment for any changes in asthma course that might occur ensures the best control of the disease in the face of complex multiple influences.

**Source:** Medline

**Title:** The management of respiratory infections during pregnancy.

**Citation:** Immunology and allergy clinics of North America, Feb 2006, vol. 26, no. 1, p. 155, 0889-8561 (February 2006)

**Author(s):** Laibl, Vanessa, Sheffield, Jeanne

**Abstract:** Respiratory infections that complicate pregnancy are encountered frequently, and they encompass a broad range of disorders. Although respiratory infections usually are not seen more commonly in pregnancy, they often result in greater morbidity and mortality secondary to the physiologic adaptations that occur during pregnancy. Pregnant patients who have one of these disorders require higher level of surveillance and intervention.

**Source:** Medline

**Title:** Outcomes of pregnancy in asthmatic women.

**Citation:** Immunology and allergy clinics of North America, Feb 2006, vol. 26, no. 1, p. 81-92, 0889-8561 (February 2006)

**Author(s):** Dombrowski, Mitchell P

**Abstract:** Mild and moderate asthma can be associated with excellent maternal and perinatal pregnancy outcomes, especially if patients are managed according to contemporary NAEPP recommendations. Severe and poorly controlled asthma may be associated with increased mild prematurity (<37 weeks' gestation), a need for cesarean delivery, preeclampsia, and growth restriction. Poorly controlled asthma and severe asthma exacerbations can result in maternal morbidity and mortality, which can have commensurate adverse pregnancy outcomes.

**Source:** Medline

**Title:** The epidemiology of asthma during pregnancy: prevalence, diagnosis, and symptoms.

**Citation:** Immunology and allergy clinics of North America, Feb 2006, vol. 26, no. 1, p. 29-62, 0889-8561 (February 2006)

**Author(s):** Kwon, Helen L, Triche, Elizabeth W, Belanger, Kathleen, Bracken, Michael B

**Abstract:** We demonstrated that asthma remains a common condition among pregnant women and that the prevalence of self-reported asthma in the United States is between 8.4% and 8.8%. In addition, approximately 4.1% of all pregnant women experienced an asthma attack in the previous year. Prevalence rates in other countries seem to be higher or substantially lower; however, further characterization of international trends using nationally representative data is needed. Data from a large prospective cohort study in the northeastern United States and national data demonstrate continued opportunities for population-level improvement in well-managed asthma during pregnancy. Finally, asthma diagnosis and asthma control seem to differ by population characteristics (eg, age, race/ethnicity, socio-economic status), and further research and clinical involvement are needed to ad-dress potentially systematic variation in reporting and management of the disease.

**Source:** Medline

**Title:** Safety of asthma and allergy medications in pregnancy.

**Citation:** Immunology and allergy clinics of North America, Feb 2006, vol. 26, no. 1, p. 13-28, 0889-8561 (February 2006)

**Author(s):** Chambers, Christina

**Abstract:** Given the unique nature of pregnancy with respect to obtaining safety
data regarding medication exposures, developing comprehensive information on the wide variety of medications that might be of clinical benefit during pregnancy is a challenging and on-going task. For many of the most commonly used asthma and allergy medications that were covered in this article, there is at least limited human data are available. Even for relatively well-studied medications, there are many unanswered questions, and few studies exist that are large enough to rule out at least a doubling of risk for specific outcomes, particularly congenital anomalies. This challenge becomes even more daunting when evaluating risks of individual products is considered the optimal goal, as opposed to “lumping” all medication exposures within a class. All of these issues call for more human pregnancy data that are collected more efficiently so that the answers that clinicians and pregnant women need are available more readily. In the meantime, health care providers and pregnant women must work with the information that is available to evaluate the risks and benefits of a particular medication and alternative choices for treatment of asthma or allergy during pregnancy, while considering the potential for adverse effects if the woman with severe or uncontrolled asthma is under-treated. To assist in making a risk/benefit assessment, the clinician can draw on existing resources that provide systematic periodic review of new data on medications in pregnancy as it becomes available, and synthesize the entire body of data on a particular drug into concise summary statements. Two such resources are TERIS (Teratogen Information System) [38] and Reprotox [39]; both on-line services are managed by experts in the field of teratology. An additional resource for clinicians and pregnant women is the Organization of Teratology Information Specialists [40], a network of risk assessment counselors in the United States and Canada who specialize in research and the communication of risks that are associated with exposures in pregnancy.

**Source:** Medline

**Title:** Acute asthma during pregnancy.

**Citation:** Immunology and allergy clinics of North America, Feb 2006, vol. 26, no. 1, p. 103-117, 0889-8561 (February 2006)

**Author(s):** Cydulka, Rita K

**Abstract:** In addition to preventing maternal and fetal hypoxia, the goals of treating acute asthma exacerbation during pregnancy mirror those in the nongravid patient: rapid reversal of airflow obstruction with aerosolized bronchodilators, reduction of likelihood of recurrence by the addition of corticosteroids, and ongoing assessment of mother and fetus. Disposition decisions are multifaceted and must take into account the health and well-being of the pregnant patient and that of her fetus. Discharge planning includes prescription of scheduled 3-2 agonist treatments until symptoms resolve, intensification of daily treatment as needed, prescriptions for systemic and ICSs, as well provision of patient education, a personalized action plan, and close follow-up.

**Source:** Medline

**Google Scholar**

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