



Date of Search: 06 Feb 2017

Sources Searched: Medline, Embase.

## Respiratory Failure and Pregnancy/Neonatal Outcomes

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### 1. Maternal co-morbidities and neonatal outcomes associated with cystic fibrosis

**Author(s):** Jelin A.C.; Sharshiner R.; Caughey A.B.

**Source:** Journal of Maternal-Fetal and Neonatal Medicine; Jan 2017; vol. 30 (no. 1); p. 4-7

**Publication Date:** Jan 2017

**Publication Type(s):** Journal: Article

Available in full text at [Journal of Maternal-Fetal and Neonatal Medicine, The](#) - from Taylor & Francis

**Abstract:**Objective: To evaluate maternal co-morbidities and adverse perinatal outcomes associated with cystic fibrosis (CF). Methods: This is a retrospective cohort study of 2 178 954 singleton pregnancies at >20 weeks' gestation with and without CF in the state of California during the years 2005-2008. ICD-9 codes and linked hospital discharge and vital statistics data were utilized. Rates of maternal co-morbidities, fetal congenital anomalies and adverse perinatal outcomes were compared in those with CF and those without. Maternal co-morbidities included gestational hypertension, preeclampsia, gestational diabetes and primary cesarean delivery. Perinatal outcomes included neonatal demise, preterm birth, intrauterine growth restriction, macrosomia, anomaly, fetal demise, asphyxia, respiratory distress syndrome, jaundice, intraventricular hemorrhage, hypoglycemia and necrotizing enterocolitis. Results: The cohort included 2 178 954 pregnancies of which 77 mothers had CF. Mothers with CF were more likely to have pre-gestational diabetes and had higher rates of primary cesarean delivery. Neonates delivered to mothers with CF were more likely to be born preterm and have congenital anomalies but otherwise were not at increased risk for significant neonatal morbidity or mortality when adjusted for gestational age. Conclusion: Mothers with CF are more likely to have pre-gestational diabetes, deliver preterm (<37 weeks gestation) and have a primary cesarean delivery. Infants are more likely to have congenital anomalies. In addition to early diabetic screening and genetic counseling, a detailed fetal anatomy ultrasound should be performed in women with CF. Copyright © 2016 Informa UK Limited, trading as Taylor & Francis Group.

**Database:** EMBASE

### 2. Pulmonary Disorders Complicating Pregnancy: An Overview.

**Author(s):** Leidecker, Katie; Dorman, Karen

**Source:** The Journal of perinatal & neonatal nursing; 2016; vol. 30 (no. 1); p. 45-53

**Publication Date:** 2016

**Publication Type(s):** Journal Article Review

Available in full text at [Journal of Perinatal and Neonatal Nursing](#) - from Ovid

**Abstract:**Awareness of pulmonary complications and the timely execution of appropriate interventions are critical to maintaining adequate oxygenation for the pregnant woman and the fetus. Clinicians have an opportunity during prenatal visits to provide women with education regarding pulmonary complications during pregnancy to promote positive maternal and fetal outcomes. The pulmonary conditions to be addressed in this article include asthma, tuberculosis, cystic fibrosis, and pneumonia. The purpose of this manuscript is to provide an overview of specific pulmonary conditions, as well as interventions related to each disorder and its impact on pregnancy.

**Database:** Medline

### **3. Maternal and perinatal outcomes of pregnancies in women with cystic fibrosis--A single centre case-control study.**

**Author(s):** Girault, Aude; Blanc, Julie; Gayet, Vanessa; Goffinet, François; Hubert, Dominique

**Source:** Respiratory medicine; Apr 2016; vol. 113 ; p. 22-27

**Publication Date:** Apr 2016

**Publication Type(s):** Journal Article

Available in full text at [Respiratory Medicine](#) - from ProQuest

**Abstract:**Due to increased survival, more women with cystic fibrosis become pregnant. However, studies on the specificities of pregnancy in CF versus healthy women are lacking. In this retrospective case-control study, we compared the maternal and perinatal outcomes of 33 pregnancies in CF women who delivered in our maternity ward from December 2000 to December 2013 and were matched to 66 controls. The median term of delivery was similar in cases and controls ( $38.1 \pm 1.6$  vs  $38.4 \pm 1.1$  weeks gestation). Assisted reproductive technology pregnancies were more frequent in CF women (51% vs 3%,  $p < 0.001$ ). In CF women, the initial BMI was lower (mean BMI  $19.5 \pm 2.4$  vs  $22.4 \pm 4.9$  kg/m<sup>2</sup>;  $p = 0.001$ ) and pre-existing diabetes was more frequent (30% vs 3%;  $p < 0.001$ ). Those differences persisted during pregnancy for weight gain ( $9.1 \pm 7.1$  kg vs  $13.3 \pm 6.4$  kg;  $p = 0.001$ ) and diabetes (48% vs 8%;  $p < 0.001$ ). Spontaneous labor and vaginal deliveries were less frequent in CF than in controls (respectively 45% vs 70%,  $p = 0.002$ ; 51% vs 70%,  $p = 0.11$ ). There was an equal number of caesarean sections (24% vs 21%;  $p = 0.80$ ). Neonatal outcomes were similar in both groups, including birth weight ( $3042 \pm 91$  g vs  $3119 \pm 92$  g). Multidisciplinary care of pregnancy in women with CF resulted in maternal and perinatal outcomes similar to those found in women in the general population. Copyright © 2016 Elsevier Ltd. All rights reserved.

**Database:** Medline

### **4. Acute respiratory failure in pregnancy.**

**Author(s):** Lapinsky, Stephen E

**Source:** Obstetric medicine; Sep 2015; vol. 8 (no. 3); p. 126-132

**Publication Date:** Sep 2015

**Publication Type(s):** Journal Article Review

Available in full text at [Obstetric Medicine](#) - from National Library of Medicine

**Abstract:**Respiratory failure affects up to 0.2% of pregnancies, more commonly in the postpartum period. Altered maternal respiratory physiology affects the assessment and management of these patients. Respiratory failure may result from pregnancy-specific conditions such as preeclampsia, amniotic fluid embolism or peripartum cardiomyopathy. Pregnancy may increase the risk or severity of other conditions, including thromboembolism, asthma, viral pneumonitis, and gastric acid aspiration. Management during pregnancy is similar to the nonpregnant patient. Endotracheal intubation in pregnancy carries an increased risk, due to airway edema and rapid oxygen desaturation following apnea. Few data are available to direct prolonged mechanical ventilation in pregnancy. Chest wall compliance is reduced, perhaps permitting slightly higher airway pressures. Optimizing oxygenation is important, but data on the use of permissive hypercapnia are limited. Delivery of the fetus does not always improve maternal respiratory function, but should be considered if benefit to the fetus is anticipated.

**Database:** Medline

### **5. Pregnancy outcomes in cystic fibrosis: a 10-year experience from a UK centre**

**Author(s):** Renton M.; Priestley L.; Bennett L.; Mackillop L.; Chapman S.J.

**Source:** Obstetric Medicine; Jun 2015; vol. 8 (no. 2); p. 99-101

**Publication Date:** Jun 2015

**Publication Type(s):** Journal: Article

Available in full text at [Obstetric Medicine](#) - from National Library of Medicine

**Database:** EMBASE

### **6. Cystic fibrosis and pregnancy: counseling, obstetrical management and perinatal outcome.**

**Author(s):** Grigoriadis, Charalampos; Tympa, Alik; Theodoraki, Kassiani

**Source:** Investigacion clinica; Mar 2015; vol. 56 (no. 1); p. 66-73

**Publication Date:** Mar 2015

**Publication Type(s):** Journal Article

**Abstract:**The progress in research of in vitro fertilization and fetal-maternal medicine allows more women and men, with fertility problems due to cystic fibrosis, to have a baby. In the majority of cases, pregnancy in women with cystic fibrosis results in favorable maternal and fetal outcomes. However, the incidence of preterm delivery, intrauterine growth restriction, caesarean section and deterioration of the maternal health are increased. Pre-pregnancy counseling is a crucial component of overall obstetric care, especially in women with poor pulmonary function. Additionally, closer monitoring during pregnancy with a multidisciplinary approach is required. The value of serial ultrasound scans and fetal Doppler assessment is important for the control of maternal and fetal wellbeing, as well as for the definition of the appropriate timing of delivery. In this article, clinical issues of pregnant women with cystic fibrosis are reviewed; counseling, obstetrical management and perinatal outcomes are being discussed.

**Database:** Medline

### **7. Medical and obstetric complications among pregnant women with cystic fibrosis.**

**Author(s):** Patel, Emily M; Swamy, Geeta K; Heine, R Phillips; Kuller, Jeffrey A; James, Andra H; Grotegut, Chad A

**Source:** American journal of obstetrics and gynecology; Jan 2015; vol. 212 (no. 1); p. 98

**Publication Date:** Jan 2015

**Publication Type(s):** Journal Article

**Abstract:**The objective of this study was to estimate the nationwide prevalence of cystic fibrosis (CF) in pregnancy and determine what medical complications exist at delivery among pregnant women with CF. The Nationwide Inpatient Sample (NIS) was queried for all delivery-related discharges. Women with CF were identified by International Classification of Diseases, 9th revision, Clinical Modifications codes and compared with women without CF. The prevalence of selected severe medical complications was compared between the 2 groups (NIS years 2008-2010) using multivariable logistic regression and the linear change in prevalence of CF at delivery determined (NIS years 2000-2010). From 2000 to 2010, there was a significant linear increase in the prevalence of CF at delivery from 3.0 to 9.8 per 100,000 deliveries, in 2000 and 2010, respectively ( $R^2 = 0.92$ ,  $P < .0001$ ). From 2008-2010, there were 1119 deliveries to women with CF and 12,627,627 to women without CF. Women with CF were more likely to be white ( $P < .0001$ ) and have diabetes (odds ratio [OR], 14.0; 95% confidence interval [CI], 11.8-16.7) or asthma (OR, 5.1; 95% CI, 4.3-6.1).

Multivariable logistic regression demonstrated that women with CF were more likely to die (adjusted OR [aOR], 76.0; 95% CI, 31.6-183), require mechanical ventilation (aOR, 18.3; 95% CI, 10.8-31.2), or have pneumonia (aOR, 56.5; 95% CI, 43.2-74.1), acute renal failure (aOR, 17.3; 95% CI, 9.1-32.6), preterm labor (aOR, 2.2; 95% CI, 1.9-2.6), or an adverse composite CF outcome (aOR, 28.1; 95% CI, 21.8-36.3). Pregnant women with CF are more likely to die, require mechanical ventilation, and have infectious complications compared with women without CF, although the absolute risks are low and these events are relatively rare. Copyright © 2015 Elsevier Inc. All rights reserved.

**Database:** Medline

## **8. Cystic fibrosis and maternal morbidity**

**Author(s):** Jelin A.; Sharshiner R.; Caughey A.

**Source:** American Journal of Obstetrics and Gynecology; Jan 2015; vol. 212 (no. 1)

**Publication Date:** Jan 2015

**Publication Type(s):** Journal: Conference Abstract

**Abstract:**OBJECTIVE: To evaluate maternal comorbidities and preterm delivery associated with cystic fibrosis. STUDY DESIGN: A retrospective cohort of preterm infants delivered in California was evaluated for an underlying diagnosis of maternal cystic fibrosis. The incidence of maternal comorbidities and outcomes in patients with and without cystic fibrosis were then evaluated. Fetal morbidity was also assessed. Outcomes included maternal morbidity: preterm delivery, chronic hypertension, gestational hypertension, preeclampsia, severe preeclampsia, gestational diabetes, diabetes, primary cesarean delivery and fetal morbidity and mortality: IUGR, macrosomia, anomaly, demise, asphyxia, RDS, jaundice, IVH, hypoglycemia and necrotizing enterocolitis. RESULTS: The cohort included 2,039,678 pregnancies, of which 66 mothers had cystic fibrosis. Mothers with CF were more likely to have diabetes, a preterm delivery <37 weeks and a cesarean delivery (Table 1). Neonates delivered to mothers with cystic fibrosis were not at increased risk for significant neonatal mortality or morbidity. CONCLUSION: Mothers with CF are at increased risk for diabetes and a preterm delivery <37 weeks by cesarean. Further understanding the indications for these early cesarean deliveries may improve maternal and fetal outcomes. (Table Presented).

**Database:** EMBASE

## **9. Asthma during pregnancy in a population-based study--pregnancy complications and adverse perinatal outcomes.**

**Author(s):** Rejnö, Gustaf; Lundholm, Cecilia; Gong, Tong; Larsson, Kjell; Saltvedt, Sissel; Almqvist, Catarina

**Source:** PloS one; 2014; vol. 9 (no. 8); p. e104755

**Publication Date:** 2014

**Publication Type(s):** Research Support, Non-u.s. Gov't Journal Article

Available in full text at [PLoS One](#) - from ProQuest

Available in full text at [PLoS ONE](#) - from National Library of Medicine

**Abstract:**Asthma is one of the most common chronic diseases, and prevalence, severity and medication may have an effect on pregnancy. We examined maternal asthma, asthma severity and control in relation to pregnancy complications, labour characteristics and perinatal outcomes. We retrieved data on all singleton births from July 1, 2006 to December 31, 2009, and prescribed drugs and physician-diagnosed asthma on the same women from multiple Swedish registers. The associations were estimated with logistic regression. In total, 266 045 women gave birth to 284 214

singletons during the study period. Maternal asthma was noted in 26 586 (9.4%) pregnancies. There was an association between maternal asthma and increased risks of pregnancy complications including preeclampsia or eclampsia (adjusted OR 1.15; 95% CI 1.06-1.24) and premature contractions (adj OR 1.52; 95% CI 1.29-1.80). There was also a significant association between maternal asthma and emergency caesarean section (adj OR 1.29; 95% CI 1.23-1.34), low birth weight, and small for gestational age (adj OR 1.23; 95% CI 1.13-1.33). The risk of adverse outcomes such as low birth weight increased with increasing asthma severity. For women with uncontrolled compared to those with controlled asthma the results for adverse outcomes were inconsistent displaying both increased and decreased OR for some outcomes. Maternal asthma is associated with a number of serious pregnancy complications and adverse perinatal outcomes. Some complications are even more likely with increased asthma severity. With greater awareness and proper management, outcomes would most likely improve.

**Database:** Medline

### **10. The risk of maternal and placental complications in pregnant women with asthma: a systematic review and meta-analysis.**

**Author(s):** Wang, Gang; Murphy, Vanessa E; Namazy, Jennifer; Powell, Heather; Schatz, Michael; Chambers, Christina; Attia, John; Gibson, Peter G

**Source:** 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

**Publication Date:** Jun 2014

**Publication Type(s):** Research Support, Non-u.s. Gov't Meta-analysis Journal Article Review

Available in full text at [Journal of Maternal-Fetal and Neonatal Medicine, The](#) - from Taylor & Francis

**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.

**Database:** Medline

### **11. Breathing for two: pregnancy, asthma and respiratory failure.**

**Author(s):** Gaga, Mina; Zervas, Eleftherios

**Source:** European respiratory review : an official journal of the European Respiratory Society; Mar 2014; vol. 23 (no. 131); p. 5-7

**Publication Date:** Mar 2014

**Publication Type(s):** Editorial Comment

Available in full text at [European Respiratory Review](#) - from Highwire Press

Available in full text at [European Respiratory Review](#) - from Free Access Content

**Database:** Medline

### **12. Restrictive lung disease in pregnancy.**

**Author(s):** Lapinsky, Stephen E; Tram, Carolyn; Mehta, Sangeeta; Maxwell, Cynthia V

**Source:** Chest; Feb 2014; vol. 145 (no. 2); p. 394-398

**Publication Date:** Feb 2014

**Publication Type(s):** Case Reports Journal Article

Available in full text at [Chest](#) - from Free Access Content

**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.

**Database:** Medline

### **13. Medical complications among pregnant women with cystic fibrosis**

**Author(s):** Patel E.; Swamy G.; Heine R.P.; Kuller J.; Grotegut C.; James A.

**Source:** American Journal of Obstetrics and Gynecology; Jan 2014; vol. 210 (no. 1)

**Publication Date:** Jan 2014

**Publication Type(s):** Journal: Conference Abstract

**Abstract:** OBJECTIVE: Cystic fibrosis (CF) is an autosomal recessive condition caused by mutations in the CFTR gene resulting in the accumulation of thick, viscous secretions within the respiratory, gastrointestinal and reproductive tracts. As CF therapies and overall survival improve, women with CF are living well into their reproductive years. The objective of this study was to estimate the nationwide prevalence of CF in pregnancy and determine what medical complications exist at delivery among pregnant women with CF. STUDY DESIGN: The Nationwide Inpatient Sample (NIS) was queried for all delivery-related discharges. Delivery information was available for the years 2008-2010. Women with CF were identified by ICD-9- CM codes and compared to women without

CF. The prevalence of selected severe medical complications during admission for delivery were compared between the two groups using multivariable logistic regression. RESULTS: From 2000 to 2010, there was a significant linear increase in the prevalence of CF at delivery from 3.0 to 9.8 per 100,000 deliveries, in 2000 and 2010 respectively ( $R^2=0.92$ ,  $p<0.0001$ , Figure). Based on delivery data from 2008-2010, there were 1,119 deliveries to women with CF and 12,627,627 to women without CF (8.9 per 100,000 deliveries). Women with CF were more likely to be Caucasian ( $p<0.0001$ ) and have diabetes (OR 14.0, 95% CI 11.8, 16.7) or asthma (OR 5.5, 95% CI 4.0, 7.6). Controlling for age, race/ethnicity, diabetes, asthma, hypertension, preeclampsia, multiple gestation, and mode of delivery, women with CF were more likely to die (adjusted OR [aOR] 84, 95% CI 31, 179), require mechanical ventilation (aOR 24, 95% CI 14, 40), or have pneumonia (aOR 61, 95% CI 46, 79), acute renal failure (aOR 22, 95% CI 12, 41), preterm labor (aOR 2.3, 95% CI 1.9, 2.7) or endometritis (aOR 3.6, 95% CI 2.7, 4.7). CONCLUSION: Pregnant women with CF are more likely to die, require mechanical ventilation, and have infectious complications compared to women without CF. Women with CF should be counseled preconceptionally about these risks. (Figure presented).

**Database:** EMBASE

#### **14. Maternal and neonatal outcomes in pregnancy with respiratory failure**

**Author(s):** Hung C.-Y.; Kao K.-C.; Chen N.-H.; Yang C.-T.; Li L.-F.; Hu H.-C.; Chang C.-H.; Huang C.-C.

**Source:** American Journal of Respiratory and Critical Care Medicine; 2013; vol. 187

**Publication Date:** 2013

**Publication Type(s):** Journal: Conference Abstract

Available in full text at [American Journal of Respiratory and Critical Care Medicine](#) - from ProQuest Av

**Abstract:**Rationale: Critical illnesses in pregnancy account for a unique population in intensive care unit (ICU) admissions. Pregnancy related respiratory failure can lead to maternal mortality and morbidity. In addition, these newborn babies face high risks of complication and organ dysfunction due to their pre-maturity. The present study reports maternal and neonatal outcomes in pregnancy with respiratory failure. Patients and methods: A total of 40 ante-partum pregnant patients with gestational age more than 25 weeks in ICU with respiratory failure were recorded from January 2009 to June 2012. Emergent delivery was performed within 48 hours after ICU admission. A retrospective chart review included characteristics and outcomes of mothers and fetuses were recorded and evaluated with Student's t test, Chi-square and Fisher's exact test. Results: The mean gestational age of these mothers was 31 weeks and mean maternal age was 32. The leading causes of ICU admission were severe preeclampsia in obstetric group (N=20, 34.4%) and lower respiratory tract infection (N=9, 15.4 %) in non-obstetric group. Patients with non-obstetric cause associated higher procalcitonin level (mean:  $8.4\pm 4.3$ ), more ARDS episodes (N=6, 42.9%) and longer ICU length of stay (mean:  $14.3\pm 4.2$  days), though 30 days maternal mortality is similar (Table 1). Although neonatal APGAR score and body weight at birth showed no statistic difference, mother with non-obstetric reasons of ICU admission associated higher ratio of meconium aspiration syndrome (N=6, 42.9%) and neonatal sepsis (N=6, 42.9%). Neonatal neurological development disorders showed higher trends among obstetric groups (N=13, 50%) (Table 2). Conclusion: Pregnant women with non-obstetric cause of respiratory failure had higher incidence of ARDS, longer ICU length of stay and higher procalcitonin level than obstetric group. Neonatal complication with meconium aspiration syndrome and sepsis were more common in this group. However, in obstetric cause respiratory failure group, neurological development impairment was more common. (Table Presented).

**Database:** EMBASE

### **15. Impact of cystic fibrosis on pregnancy-maternal and fetal outcomes at a specialist centre, belfast**

**Author(s):** Bhaskar S.; Hunter A.; McNeill S.; Downey D.; Elborn J.S.; Rendall J.

**Source:** Irish Journal of Medical Science; Nov 2013; vol. 182

**Publication Date:** Nov 2013

**Publication Type(s):** Journal: Conference Abstract

Available in full text at [Irish Journal of Medical Science](#) - from Springer Link Journals

**Abstract:**Quality of life and survival continues to improve in women with cystic fibrosis. Our aim was to review the consequence of pregnancy and the impact on maternal and neonatal health. A retrospective case note review of 30 pregnant women with cystic fibrosis, 1990-2012. Main outcomes measured were; maternal FEV1 and BMI, hospital admissions, gestational weeks at delivery, and birth weight. 30 pregnancies in 25 women were reviewed. 23 % had a history of miscarriage. 87 % had a normal BMI at booking. Of the 20 with full booking PFTs, 65 % had an FEV1 greater than 60 %. 29 % demonstrated a 10 % reduction in FEV1 during the third trimester. All babies were live born and there were no maternal deaths. 27 babies were born after 36 weeks of gestation and 43 % weighed less than 3000 g. Outcome for the infant is generally good, but is variable for the mother depending on disease severity. Planned pregnancy, with prior counselling and multidisciplinary care improve outcomes.

**Database:** EMBASE

### **16. Pregnancy outcomes in cystic fibrosis**

**Author(s):** Bilton D.; Thorpe-Beeston G.

**Source:** Pediatric Pulmonology; Oct 2013; vol. 48 ; p. 194-195

**Publication Date:** Oct 2013

**Publication Type(s):** Journal: Conference Abstract

Available in full text at [Pediatric Pulmonology](#) - from John Wiley and Sons

**Abstract:**The improvement in survival for people with cystic fibrosis (CF) means that women with CF are surviving in good health into their reproductive years and expecting to have children of their own. Previous theoretical concerns of decreased fertility in women with CF related to abnormal cervical mucus have not translated into a clinical problem and it appears that in the absence of very severe lung disease fertility is normal and all sexually active women with CF should be advised to use contraception unless they wish to become pregnant (1). Furthermore, the increasing number of pregnancies occurring in CF women have prompted development of consensus guidelines to aid CF teams in the management of pregnancy in CF (2). Guidelines rightly emphasise the need for women with CF to plan a pregnancy carefully and discuss the outcomes for both the foetus and the mother with their partner and the CF team. It is therefore of critical importance that the CF team and an obstetrician with expert knowledge of management of pregnancy in CF women can provide evidence based advice. Studies have tried to address the question of whether or not pregnancy has an adverse effect on the disease course in women with CF. Some smaller studies suggested that whilst women with good lung function were unaffected by pregnancy there may be an adverse effect on lung function and survival for those with poor lung function (3,4,5). A much larger study from the US registry of 680 women identified as pregnant in 1990 studied the 10 year postpregnancy survival and concluded that even in women with poor lung function their survival was not worse and may have been better than the non-pregnant matched population (6). Our recent study of the outcomes of pregnancies in women with CF cared for at the Royal Brompton Hospital Adult CF Centre between 1998 and 2011 addresses both maternal outcomes, mode of delivery and pregnancy complications



as well as foetal outcomes (7). Fortyeight pregnancies were studied in 41 women. All babies were live-born and survived with a mean gestational age at delivery of 35.9 weeks. We noted a positive correlation between the FEV1 at start of pregnancy and gestational age at delivery. Furthermore, women with an FEV1 60%. The results from our study and others show that pregnancy with good foetal outcome is possible with women with poor lung function. The large US study demonstrated that even in women with an FEV1 <40%, pregnancy was not harmful in terms of long term outcomes (6). Although women with CF who become pregnant do not seem to suffer a worse long term prognosis than matched-non pregnant females, during the course of their pregnancy they do require more hospital visits and suffer more respiratory exacerbations. These issues must be discussed and explained to the woman contemplating pregnancy. The studies addressing the long-term outcome following pregnancy in women with CF have consistently reported a higher mortality rate for women with worse pre-existing lung function. In our study, three out of seven women with FEV1 <40% died within 18 months of delivery and four out of eight women with FEV1 40-50% died between 2 and 8 years after delivery. The key issue is that women with CF undertaking a pregnancy, particularly those with poor lung function, should recognise that their days as a parent may be limited. Studies suggest that 20% of mothers with CF will be dead by their child's tenth birthday and for those with an FEV1 <40%, 40% will have died (6). As therapies and outcomes for CF improve we hope to see these outcomes improve but it remains critical to ensure that not only the woman with CF but also the family who will be left to care for the child are fully aware of the potential risk of the mother's death before the child reaches adulthood.

**Database:** EMBASE

### **17. The risk of congenital malformations, perinatal mortality and neonatal hospitalisation among pregnant women with asthma: a systematic review and meta-analysis.**

**Author(s):** Murphy, V E; Wang, G; Namazy, J A; Powell, H; Gibson, P G; Chambers, C; Schatz, M

**Source:** BJOG : an international journal of obstetrics and gynaecology; Jun 2013; vol. 120 (no. 7); p. 812-822

**Publication Date:** Jun 2013

**Publication Type(s):** Research Support, Non-u.s. Gov't Meta-analysis Journal Article Review

Available in full text at [BJOG: An International Journal of Obstetrics and Gynaecology](#) - from John Wiley and Sons

**Abstract:**There is conflicting literature on the effect of maternal asthma on congenital malformations and neonatal outcomes. This review and meta-analysis sought to determine if maternal asthma is associated with an increased risk of adverse neonatal outcomes. We searched electronic databases for: (asthma or wheeze) and (pregnan\* or perinat\* or obstet\*). Cohort studies published between 1975 and March 2012 reporting at least one perinatal outcome of interest (congenital malformations, neonatal complications, perinatal mortality). In all, 21 studies met inclusion criteria in pregnant women with and without asthma. Further analysis was conducted on 16 studies where asthmatic women were stratified by exacerbation history, corticosteroid use, bronchodilator use or asthma severity. Maternal asthma was associated with a significantly increased risk of congenital malformations (relative risk [RR] 1.11, 95% confidence interval [95% CI] 1.02-1.21, I(2) = 59.5%), cleft lip with or without cleft palate (RR 1.30, 95% CI 1.01-1.68, I(2) = 65.6%), neonatal death (RR 1.49, 95% CI 1.11-2.00, I(2) = 0%), and neonatal hospitalisation (RR 1.50, 95% CI 1.03-2.20, I(2) = 64.5%). There was no significant effect of asthma on major malformations (RR 1.31, 95% CI 0.57-3.02, I(2) = 70.9%) or stillbirth (RR 1.06, 95% CI 0.9-1.25, I(2) = 35%). Exacerbations and use of bronchodilators and inhaled corticosteroids were not associated with congenital malformation risk. Despite limitations related to the observational nature of the primary studies, this review demonstrates a small increased risk of neonatal complications

among pregnant women with asthma. Further investigations into mechanisms and potential preventive interventions to improve infant outcomes are required. © 2013 The Authors BJOG An International Journal of Obstetrics and Gynaecology © 2013 RCOG.

**Database:** Medline

### **18. Long-term effects of pregnancy and motherhood on disease outcomes of women with cystic fibrosis**

**Author(s):** Schechter M.S.; Quittner A.L.; Konstan M.W.; Millar S.J.; Pasta D.J.; McMullen A.

**Source:** Annals of the American Thoracic Society; Jun 2013; vol. 10 (no. 3); p. 213-219

**Publication Date:** Jun 2013

**Publication Type(s):** Journal: Article

Available in full text at [Annals of the American Thoracic Society](#) - from ProQuest

**Abstract:**Rationale: Studies of pregnancy in cystic fibrosis (CF) have shown no short-term harmful effects, but there are no long-term studies on the impact of motherhood. Objectives: This study sought to evaluate longer-term physiologic and functional outcomes in women with CF reporting a pregnancy, with the intent of assessing how the demands of parenting impacted on disease course. Methods: Using 1994 to 2005 Epidemiologic Study of Cystic Fibrosis data, we developed a propensity score to match women reporting a pregnancy at a 1:10 ratio with never-pregnant control subjects and compared clinical outcomes, health-related quality of life, and health care use. Measurements and Main Results: One hundred nineteen pregnant women presumed to have become mothers were matched with 1,190 control subjects, a median of 6.0 years (range 1.8-11.1 yr) from the pregnancy. No differences were found in annualized change from baseline FEV1 and body mass index, in respiratory signs and symptoms, or in prescribed chronic therapies. Women who had been pregnant were treated for more pulmonary exacerbations and had more illness-related clinic visits but showed no increase in prescribed chronic therapies. They also reported lower health-related quality-of-life scores for Respiratory Symptoms, Physical Functioning, Vitality, and Health Perceptions. Conclusions: Pregnancy and motherhood do not appear to accelerate disease progression but lead to more illness-related visits, pulmonary exacerbations, and a decrease in some domains of quality of life. These differences presumably reflect the impact of the physical and emotional challenges of early motherhood on disease self-management. Copyright © 2013 by the American Thoracic Society.

**Database:** EMBASE

### **19. Effects of asthma severity, exacerbations and oral corticosteroids on perinatal outcomes.**

**Author(s):** Namazy, Jennifer A; Murphy, Vanessa E; Powell, Heather; Gibson, Peter G; Chambers, Christina; Schatz, Michael

**Source:** The European respiratory journal; May 2013; vol. 41 (no. 5); p. 1082-1090

**Publication Date:** May 2013

**Publication Type(s):** Meta-analysis Journal Article Review

Available in full text at [European Respiratory Journal](#) - from Highwire Press

Available in full text at [European Respiratory Journal](#) - from Free Access Content

**Abstract:**This systematic review and meta-analysis sought to investigate whether asthma exacerbations, oral corticosteroid use or asthma severity are associated with prematurity and intrauterine growth restriction. Cohort studies published between 1975 and March 11, 2012 were considered for inclusion. 138 publications were identified for possible inclusion, and nine papers met the inclusion criteria, by reporting perinatal outcomes of interest (low birth weight, <2500 g), pre-

term birth (<37 weeks gestation unless otherwise stated) and small for gestational age (<10th percentile for gestational age and sex) in groups of asthmatic patients stratified by history of exacerbations, oral corticosteroid use or asthma severity. Maternal asthma exacerbations and oral corticosteroid use had a significant effect on outcomes, including low birth weight (RR 3.02, 95% CI 1.87-4.89 and RR 1.41, 95% CI 1.04-1.93, respectively) and pre-term delivery (RR 1.54, 95% CI 0.89-2.69 and RR 1.51, 95% CI 1.15-1.98, respectively). Moderate-to-severe asthma during pregnancy was associated with an increased risk of small for gestational age (RR 1.24, 95% CI 1.15-1.35) and low birth weight (RR 1.15, 95% CI 1.05-1.26) infants. These data suggest that asthma exacerbations, oral corticosteroid use or asthma severity defined as moderate-to-severe may be associated with pre-term delivery, low birth weight, and small for gestational age infants. Further studies on the effect of maternal asthma control on perinatal outcomes are warranted.

**Database:** Medline

## **20. The outcome of pregnancies in women with cystic fibrosis--single centre experience 1998-2011.**

**Author(s):** Thorpe-Beeston, J G; Madge, S; Gyi, K; Hodson, M; Bilton, D

**Source:** BJOG : an international journal of obstetrics and gynaecology; Feb 2013; vol. 120 (no. 3); p. 354-361

**Publication Date:** Feb 2013

**Publication Type(s):** Research Support, Non-u.s. Gov't Journal Article

Available in full text at [BJOG: An International Journal of Obstetrics and Gynaecology](#) - from John Wiley and Sons

**Abstract:**To describe the maternal and fetal outcomes of pregnancies in women with cystic fibrosis. Retrospective study. Single obstetric hospital and adult cystic fibrosis centre. Retrospective case-note review of pregnant women with cystic fibrosis referred for antenatal care and delivery. Maternal and fetal outcomes, mode of delivery, lung function and pregnancy complications. Forty-eight pregnancies were studied in 41 women. There were two miscarriages, 44 singleton pregnancies and two sets of twins. All babies were liveborn and survived. The mean gestational age at delivery was  $35.9 \pm 3.3$  weeks. There were no fetal abnormalities or terminations of pregnancy. The median birthweight centile was 31.9 (interquartile range 14.9-55.6). Twenty-five (52.1%) of the women had pancreatic insufficiency and 17 (35.4%) required insulin. There was a positive correlation between booking predicted forced expiratory volume in 1 second (FEV(1) ) and gestational age at delivery (P 60% ( $35.0 \pm 3.2$  weeks versus  $37.1 \pm 3.0$  weeks; P = 0.02 and 75.0% versus 25.0%; P = 0.01). Three of the seven women with an FEV(1) <40% died within 18 months of delivery. Four of the eight women with FEV(1) 40-50% died between 2 and 8 years after delivery. Pregnancy for women with cystic fibrosis is possible and results in favourable maternal and fetal outcomes, but the incidence of preterm delivery and caesarean section is increased. Women with pre-existing poor lung function should be counselled antenatally to ensure that they understand the implications of their shortened life-expectancy and parenthood. © 2012 The Authors BJOG An International Journal of Obstetrics and Gynaecology © 2012 RCOG.

**Database:** Medline

## 21. Pregnancy outcomes in pulmonary arterial hypertension in the modern management era.

**Author(s):** Jaïs, Xavier; Olsson, Karen M; Barbera, Joan A; Blanco, Isabel; Torbicki, Adam; Peacock, Andrew; Vizza, C Dario; Macdonald, Peter; Humbert, Marc; Hoeper, Marius M

**Source:** The European respiratory journal; Oct 2012; vol. 40 (no. 4); p. 881-885

**Publication Date:** Oct 2012

**Publication Type(s):** Multicenter Study Journal Article

Available in full text at [European Respiratory Journal](#) - from Highwire Press

Available in full text at [European Respiratory Journal](#) - from Free Access Content

**Abstract:** Previous studies have reported mortality rates of up to 56% associated with pregnancy in pulmonary arterial hypertension (PAH) but the management of this disease has changed considerably in recent years. We compiled a multinational, prospective registry to examine the contemporary outcome of pregnancies in patients with PAH. During a 3-yr period, the 13 participating centres reported 26 pregnancies. Three (12%) females died and one (4%) developed right heart failure requiring urgent heart-lung transplantation. There were eight abortions; two spontaneous and six induced. 16 (62%) pregnancies were successful, i.e. the females delivered healthy babies without complications. These females had well controlled PAH (pulmonary vascular resistance (PVR)  $500 \pm 352$  dyn·s·cm<sup>-5</sup>); eight of them were long-term responders to calcium channel blockers. In contrast, the females who died or required transplantation had poorly controlled PAH (PVR  $1,667 \pm 209$  dyn·s·cm<sup>-5</sup>). Pregnancy remains associated with a substantial mortality rate in PAH. However, our results indicate that the outcome of pregnancy in PAH has improved, at least when PAH is well controlled, and particularly in long-term responders to calcium channel blockers. These data must be confirmed by larger series before the general recommendation to avoid pregnancy in all patients with PAH is reconsidered.

**Database:** Medline

## 22. Current pregnancy outcomes in women with cystic fibrosis.

**Author(s):** Burden, Christy; Ion, Rachel; Chung, Yealin; Henry, Amanda; Downey, Damian G; Trinder, Johanna

**Source:** European journal of obstetrics, gynecology, and reproductive biology; Oct 2012; vol. 164 (no. 2); p. 142-145

**Publication Date:** Oct 2012

**Publication Type(s):** Journal Article

**Abstract:** Women with cystic fibrosis (CF) now achieve a greater life expectancy and therefore have greater expectations from life. Literature reporting pregnancy outcomes in CF is still sparse. There remains a legacy of advising women with significant disease to avoid pregnancy. We aimed to assess current maternal and fetal outcomes in women with CF with varied pre-pregnancy lung function. Retrospective case note review of data from 15 pregnancies in 12 women with CF receiving care at a specialist centre between 2003 and 2011. Descriptive statistics were used for the quantitative data. The forced expiratory volume (FEV<sub>1</sub>) and forced vital capacity (FVC) were calculated and shown as the percentage of their predicted values for BMI, height and age. Changes in lung function pre, 6, and 24 months post delivery were calculated with the paired t-test. Mean maternal age was 28.9 (range 21-36, CI 26.8-31). Maternal FEV<sub>1</sub> at booking ranged from 27 to 80% predicted (mean=63.6%, CI 54.62-71.38%). Cystic fibrosis-related diabetes (CFRD) was present in 8 of 14 (live birth) pregnancies. Average gestation at delivery was 38 weeks. There was a 100% vaginal delivery rate (11 spontaneous vertex, 2 ventouse, 1 forceps). Average fetal birth weight was 2.97 kg (range 2.2-3.83 kg, CI 2.72-3.23). The differences between the maternal pre- and 6 months post-pregnancy mean

FEV<sub>1</sub> (p=0.136) and FVC (p=0.225) were not statistically significant. With careful multidisciplinary antenatal and intrapartum management, successful outcomes have been obtained in this group of women with CF. Copyright © 2012 Elsevier Ireland Ltd. All rights reserved.

**Database:** Medline

### **23. Restrictive lung disease in pregnancy**

**Author(s):** Tram C.; Lapinsky S.; Maxwell C.

**Source:** Chest; Oct 2012; vol. 142 (no. 4)

**Publication Date:** Oct 2012

**Publication Type(s):** Journal: Conference Abstract

Available in print at [Patricia Bowen Library and Knowledge Service West Middlesex university Hospital](#) - from Chest

Available in full text at [Chest](#) - from Free Access Content

**Abstract:** PURPOSE: Restrictive lung disease is relatively uncommon in pregnancy, and limited data are available to direct peri-partum and post-partum management of patients with severe disease. This study reviewed the course of pregnant patients with severe restrictive lung diseases, in our tertiary care referral centre over the past 10 years. METHODS: Patients with Forced Vital Capacity (FVC) < 70% predicted were identified from office charts. Retrospective review of office and hospital records was performed. RESULTS: We identified 12 patients with 15 pregnancies. Causes of restrictive disease included kyphoscoliosis (6 patients), neuromuscular disease (2), and parenchymal lung disease (4). FVC ranged from 20% to 68% predicted (median 40%). During the course of pregnancy, about half the patients demonstrated some improvement in FVC and half a deterioration, although in many cases the change was small. Improvement in FVC ranged from 0.02L to 0.4L (median 0.1L) and deterioration ranged from 0.01 to 0.3L (median 0.12L). There were no clear parameters which could identify which patients improved versus deteriorated, but the patients with muscular disease both showed deterioration. Oxygen saturation was adequate in the majority, while 3 women required oxygen supplementation (2 with parenchymal lung disease). One woman with severe muscular disease (FVC 25% predicted) required intermittent noninvasive ventilation during both pregnancies. Three patients had mild pulmonary hypertension on echo.. Premature delivery (31 to 36 weeks) occurred in 9 pregnancies. Five deliveries were vaginal with 10 by C-section (8 elective, 2 following planned vaginal delivery). Neuraxial anesthesia was used in all but 5, who required general anesthesia for C-section due to difficult spinal anatomy. Noninvasive ventilation was used during 3 other deliveries. There was no maternal mortality and two women required ICU admission postpartum. Eleven neonates required intensive monitoring. CONCLUSIONS: Severe restrictive lung disease can be tolerated even in the face of very poor lung functions.

**Database:** EMBASE

#### **24. A follow-up study of lung function trends in cystic fibrosis parturients**

**Author(s):** Kerr J.; Walker E.; Quasim S.

**Source:** International Journal of Obstetric Anesthesia; May 2012; vol. 21

**Publication Date:** May 2012

**Publication Type(s):** Journal: Conference Abstract

**Abstract:**Introduction: Cystic fibrosis is the commonest inherited lifethreatening disease with a median survival of 29 years. As medical management has improved, more women with cystic fibrosis are surviving to childbearing age and becoming pregnant. In 2009 we presented a case series of pregnancy outcomes in a cohort of parturients with cystic fibrosis. We were interested to see if pregnancy has a long-term impact on lung function at one year, as matched cohort studies have shown no significant difference in deterioration between pregnant and non-pregnant groups. Method: We retrospectively reviewed the notes of all parturients with cystic fibrosis since January 2000 and recorded lung function pre -pregnancy, during pregnancy, immediately postpartum, and at 3, 6 and 12 months postpartum. Results: During the study period, 25 women with 30 pregnancies were identified. Complete data were available for 21 women with 23 pregnancies. FEV1 appears to decline during pregnancy, being lowest immediately after delivery, but does not reach statistical significance, and then improves, but not to pre -pregnancy values. The only statistically significant change from baseline is at 3 months (P2 and previous studies have demonstrated no significant impact of pregnancy on lung function. 2 Our results demonstrate an improvement in lung function postpartum which other studies have not, suggesting a potentially reversible pregnancy related decrease in lung function in the 3 months postpartum .

**Database:** EMBASE

#### **25. Two successful pregnancies in a woman affected by cystic fibrosis: case report and review of the literature.**

**Author(s):** Ciavattini, Andrea; Ciattaglia, Francesco; Cecchi, Stefano; Gagliardini, Rolando; Tranquilli, Andrea Luigi

**Source:** 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; Feb 2012; vol. 25 (no. 2); p. 113-115

**Publication Date:** Feb 2012

**Publication Type(s):** Case Reports Journal Article Review

Available in full text at [Journal of Maternal-Fetal and Neonatal Medicine, The](#) - from Taylor & Francis

**Abstract:**Pregnancies in patients with cystic fibrosis (CF) are subject to an increased risk of complications. We have made a systematic review of the literature concerning pregnancies in women with CF to evaluate prognostic factors of pregnancy outcome such as lung function and nutritional status, also including and describing the case of a woman suffering from CF who had two pregnancies in her late thirties, both with a good outcome. Thirteen case series and 22 case reports involving 523 pregnancies in 401 women were extracted. 83.1% of 516 pregnancies whose outcome was known resulted in the delivery of live births, with preterm birth rate of 24%. Miscarriage occurred in 6.3% and therapeutic abortion in 10% of pregnancies. Indirect mother's death occurred in seven cases. In our case report, the course of the second pregnancy proved to be much more difficult than the first, with preterm delivery probably related to a worsening of lung disease in the third trimester of pregnancy. Pre-pregnant lung function as well as lung function deterioration, CF-related diabetes mellitus and weight gain in pregnancy, are parameters to consider in the counseling about the outcome of pregnancy.

## 26. A meta-analysis of adverse perinatal outcomes in women with asthma.

**Author(s):** Murphy, V E; Namazy, J A; Powell, H; Schatz, M; Chambers, C; Attia, J; Gibson, P G

**Source:** BJOG : an international journal of obstetrics and gynaecology; Oct 2011; vol. 118 (no. 11); p. 1314-1323

**Publication Date:** Oct 2011

**Publication Type(s):** Research Support, Non-u.s. Gov't Meta-analysis Journal Article Review

Available in full text at [BJOG: An International Journal of Obstetrics and Gynaecology](#) - from John Wiley and Sons

**Abstract:** Asthma is a common condition during pregnancy and may be associated with adverse perinatal outcomes. This meta-analysis sought to establish if maternal asthma is associated with an increased risk of adverse perinatal outcomes, and to determine the size of these effects. Electronic databases were searched for the following terms: (asthma or wheeze) and (pregnan\* or perinat\* or obstet\*). Cohort studies published between 1975 and March 2009 were considered for inclusion. Studies were included if they reported at least one perinatal outcome in pregnant women with and without asthma. A total of 103 articles were identified, and of these 40 publications involving 1,637,180 subjects were included. Meta-analysis was conducted with subgroup analyses by study design and active asthma management. Maternal asthma was associated with an increased risk of low birthweight (RR 1.46, 95% CI 1.22-1.75), small for gestational age (RR 1.22, 95% CI 1.14-1.31), preterm delivery (RR 1.41, 95% CI 1.22-1.61) and pre-eclampsia (RR 1.54, 95% CI 1.32-1.81). The relative risk of preterm delivery and preterm labour were reduced to non-significant levels by active asthma management (RR 1.07, 95% CI 0.91-1.26 for preterm delivery; RR 0.96, 95% CI 0.73-1.26 for preterm labour). Pregnant women with asthma are at increased risk of perinatal complications, including pre-eclampsia and outcomes that affect the baby's size and timing of birth. Active asthma management with a view to reducing the exacerbation rate may be clinically useful in reducing the risk of perinatal complications, particularly preterm delivery. © 2011 The Authors BJOG An International Journal of Obstetrics and Gynaecology © 2011 RCOG.

**Database:** Medline

## 27. Maternal and infant outcomes of pregnancy in women with cystic fibrosis

**Author(s):** Tzemos K.; Gemma S.; Rice A.; Wolf K.; Taylor C.; Nahikian-Nelms M.

**Source:** Pediatric Pulmonology; Oct 2011; vol. 46 ; p. 402-403

**Publication Date:** Oct 2011

**Publication Type(s):** Journal: Conference Abstract

Available in full text at [Pediatric Pulmonology](#) - from John Wiley and Sons

**Abstract:** Background: Advancement in medical care for patients with CF has led to an increased life expectancy for the CF population. A growing number of women with CF are reaching reproductive age and having successful pregnancies. There are increased risks associated with pregnancy in this population, and concern remains regarding the effect that pregnancy in the woman with CF may have on maternal and infant health. Objectives: Objectives of this study were to determine the relationship between CF disease and maternal and infant outcomes and describe the nutritional interventions provided during pregnancy. Methods: Retrospective chart review including all women with CF who had successful pregnancies between 1996 and 2011 who still attended the CF Center at a Midwestern Hospital. Measures collected include age, BMI, FEV1, weight gain during pregnancy, preexisting CFRD, diagnosis of gestational diabetes, hospitalizations during pregnancy, need for IV antibiotic therapy, type of delivery, infant weight, gestational age, decision to breastfeed infant, and

nutrition topics discussed during counseling with the CF dietitian. Results: Eighteen women in the study had 23 successful pregnancies. Mean pre-pregnancy BMI was 20.6 kg/m<sup>2</sup> with a mean weight gain of 26.2 lbs during pregnancy. Mean FEV1 was 81.7% for the 12 months prior to pregnancy. Pre-pregnancy weight and FEV1 were shown to be strong predictors of weight and FEV1 status postpartum. Interestingly, women with a BMI 22 who experienced a mean decrease in BMI of 1.46. Infant weight and gestational age did not differ based on maternal factors however there was a 40% rate of premature births, and 30% rate of low birth weight infants. Conclusions: Maternal and infant outcomes are positive for most women with cystic fibrosis who have sub-optimal body mass index. Prepregnancy maternal BMI and FEV1 remain strong predictors of these measures 6 months after delivery. There is much variability in the health outcomes during pregnancy regardless of weight and pulmonary status, suggesting that all women with CF remain at risk for adverse health outcomes due to pregnancy and should be monitored closely and frequently during this time. Nutrition interventions to promote adequate weight gain and overall optimal nutritional status for pregnancy should begin in the prenatal period, and continue throughout the patient's pregnancy.

**Database:** EMBASE

## **28. Pregnancy outcomes in the current era of cystic fibrosis care: a 15-year experience.**

**Author(s):** Lau, Edmund M T; Barnes, David J; Moriarty, Carmel; Ogle, Robert; Dentice, Ruth; Civitico, Jane; Avedello, Aurora; Torzillo, Paul J; Bye, Peter T

**Source:** The Australian & New Zealand journal of obstetrics & gynaecology; Jun 2011; vol. 51 (no. 3); p. 220-224

**Publication Date:** Jun 2011

**Publication Type(s):** Journal Article

Available in full text at [Australian and New Zealand Journal of Obstetrics and Gynaecology](#) - from

**Abstract:**With improvement in clinical care and longer survival of patients with cystic fibrosis (CF), pregnancy has become commonplace. However, the impact of pregnancy on maternal health and fetal outcomes requires ongoing review. A retrospective study of 20 pregnancies from 18 women with CF during the period 1995-2009 was performed. Changes in lung function, body mass index (BMI) and development of gestational diabetes were recorded. Fetal outcomes and maternal survival were examined, and the influence of pre-pregnancy parameters on outcomes was evaluated. Mean maternal age at pregnancy was 29±5 years with a mean pre-pregnancy forced expiratory volume in 1 s (FEV1) of 65.6±20.8% predicted. Eleven of 20 pregnancies had a pre-pregnancy FEV1 <60% predicted. During pregnancy, FEV1% predicted fell by 4.8% (CI 1.6-7.9), but recovered to baseline within 6 months post-partum. Mothers gained a mean weight of 7.6±3.2 kg, and gestational diabetes developed in 43% of women. All women delivered live births apart from one therapeutic abortion. Five infants were preterm, and two mature infants had low birth weight. Three mothers either died or required lung transplantation after pregnancy (range 2.5-8.0 years). FEV1 <60% predicted and BMI <20 kg/m<sup>2</sup> were significant predictors of fetal complications. Most women tolerated pregnancy well without major complications despite many having at least moderate lung function impairment. Pre-pregnancy FEV1 and BMI were important predictors of outcomes. © 2011 The Authors. Australian and New Zealand Journal of Obstetrics and Gynaecology © 2011 The Royal Australian and New Zealand College of Obstetricians and Gynaecologists.

**Database:** Medline



### **29. Acute respiratory failure in obstetric patients**

**Author(s):** Lapinsky S.E.

**Source:** Current Women's Health Reviews; Jun 2011; vol. 7 (no. 2); p. 143-150

**Publication Date:** Jun 2011

**Publication Type(s):** Journal: Article

**Abstract:**The pregnant woman is at risk of several pregnancy-specific conditions that may cause respiratory failure, as well as many conditions that are aggravated by the pregnant state. These conditions include pulmonary edema secondary to preeclampsia, amniotic fluid embolism, ARDS due to pregnancy complications and other causes, as well as aspiration of gastric contents, venous thromboembolism and pre-existing heart disease. Management of these patients requires understanding of the altered maternal physiology and avoidance of harm to the fetus. While radiological procedures and drug therapy may compromise fetal wellbeing, the greatest risk is deterioration in the maternal condition resulting in fetal hypoxia. Little data exist to guide prolonged mechanical ventilation in the pregnant woman, but usual principles can be applied to optimize oxygenation, while avoiding maternal alkalosis. If the fetus is at a viable gestation and is at risk due to intractable maternal hypoxia, there may be a benefit to the fetus in delivery. However, delivery purely in an attempt to improve maternal oxygenation or ventilation is often not successful. © 2011 Bentham Science Publishers Ltd.

**Database:** EMBASE

### **30. Pregnancy outcomes in women with cystic fibrosis**

**Author(s):** Burden C.A.; Ion R.; Chung Y.; Henry A.; Trinder J.

**Source:** Archives of Disease in Childhood: Fetal and Neonatal Edition; Jun 2011; vol. 96

**Publication Date:** Jun 2011

**Publication Type(s):** Journal: Conference Abstract

Available in full text at [Fetal and Neonatal](#) - from Highwire Press

**Abstract:**Recent improvements in medical care have enabled women with cystic fibrosis (CF) to achieve a greater life expectancy and aspire to a greater expectation from life. Literature reporting pregnancy outcome in women with CF is sparse and focuses on women with mild disease. There remains a legacy of advising women with significant disease (FEV1<60%) to avoid pregnancy. Pregnancy data was reviewed from all women with CF receiving care at a tertiary centre between 2003-2011. Input into hospital antenatal care was provided by a CF respiratory physician, an obstetrician in maternal medicine, a CF dietician, a CF physiotherapist and an obstetric anaesthetist. Individualised multidisciplinary plans were made for antenatal, delivery and postpartum care in all women. CF was managed aggressively with optimisation of nutrition, prompt treatment of infection and inpatient admission if necessary. Results: A total of 14 pregnancies in 12 women were identified. Mean age of pregnancy was 29.5(26-36). FEV1 at booking ranged from 27-80% (mean=62.8%). Diabetes was present in 9/14 women(three pre-pregnancy). The average gestation at delivery was 37+3(30-41). Vaginal delivery was advised in all cases (no obstetric contraindication), with elective epidural, oxygen support and passive management of the second stage. There was a 100% vaginal delivery rate (11 spontaneous vertex, 2 ventouse, 1 forceps). Average birth weight was 2.97 kg (2.2-3.83 kg). There were no postpartum complications. Conclusion: With careful multidisciplinary management, successful outcomes with vaginal deliveries have been obtained in this small series of women with CF, with a mean FEV1 of just over 60%.

**Database:** EMBASE

### **31. Pregnancy in cystic fibrosis.**

**Author(s):** McArdle, John R

**Source:** Clinics in chest medicine; Mar 2011; vol. 32 (no. 1); p. 111

**Publication Date:** Mar 2011

**Publication Type(s):** Journal Article Review

**Abstract:**The challenges posed by cystic fibrosis (CF), including poor nutrition and progressive lung function decline, may pose problems for pregnancy for both mother and child. A multidisciplinary team of providers is optimal to help address the variety of issues that might arise in such a pregnancy. Careful attention to maternal weight gain, pulmonary function and exacerbations, and screening for gestational diabetes is necessary. Pregnancies among women with CF are associated with more frequent use of intravenous antibiotics and hospitalization than is seen in nonpregnant CF women. This article reviews maternal and fetal outcomes for CF in pregnancy. Copyright © 2011 Elsevier Inc. All rights reserved.

**Database:** Medline

### **32. Pregnancy & motherhood in women with cystic fibrosis: Experience and outcomes in a regional adult UK centre**

**Author(s):** Etherington C.; Peckham D.; Clifton I.; Conway S.

**Source:** Pediatric Pulmonology; Sep 2010; vol. 45 ; p. 431

**Publication Date:** Sep 2010

**Publication Type(s):** Journal: Conference Abstract

Available in full text at [Pediatric Pulmonology](#) - from John Wiley and Sons

**Abstract:**Introduction: As the median survival for CF continues to improve, most women now reach reproductive age in a relatively healthy state and face decisions regarding pregnancy. Pre-pregnancy lung function has been suggested as the most important factor influencing maternal and fetal outcome. The aim of this study was to review the experience of pregnancy over a 20 year period in a large Regional UK Centre and assess maternal and fetal outcomes. Methods: A retrospective review of the case notes of women who became pregnant between 1990 and 2009 was performed. Data on modality of conception, baseline demographic data, pregnancy and mode of delivery were obtained. Maternal lung function, weight, number of clinic visits and days of intravenous antibiotics were recorded for 4 years pre pregnancy, during pregnancy and 4 years post pregnancy. For each child data on DOB, gender, singleton/multiple births, CF status and outcome were obtained. Subgroup analysis was performed with regard to baseline FEV1 <60% predicted. Seven women died post pregnancy - 3/19 women with FEV1 >60% died vs. 4/13 with FEV1 <60%, p=0.001. Ten children have lost their mothers; median (range) age of child at death 6.3 (1.1-13.4) yrs. Conclusions:With an aggressive MDT approach and meticulous antenatal care most women with CF can become pregnant, deliver healthy children and live to raise them with minimal impact on health status. The course of pregnancy cannot be predicted in any individual and all women should anticipate more intensive antepartum and postpartum treatment. The presence of pre-existing CFRD and a pre-pregnancy FEV1 of <60% predicted are associated with significantly worse outcomes.

**Database:** EMBASE

### **33. Long-term outcomes following pregnancy in women with cystic fibrosis**

**Author(s):** McMullen A.; Schechter M.S.; Millar S.; Pasta D.; Quittner A.L.

**Source:** Pediatric Pulmonology; Sep 2010; vol. 45 ; p. 391

**Publication Date:** Sep 2010

**Publication Type(s):** Journal: Conference Abstract

Available in full text at [Pediatric Pulmonology](#) - from John Wiley and Sons

**Abstract:**Background: Previous studies have shown that women with CF who become pregnant have better lung function than those never pregnant and that pregnancy is not associated with short-term decline in clinical status or survival (1,2). Less is known about longer-term physiologic and functional outcomes for these women that might reflect competing demands of disease self-management and parenting. Objective: To determine if there are differences in long-term physiologic and functional outcomes for women experiencing a pregnancy compared with those who never become pregnant. Methods: This analysis was conducted using ESCF data from 1994 to 2005. Women reporting a pregnancy that could have spanned >30 weeks between 1994 and 2003 were each matched with 10 never-pregnant women using a propensity score that included age, race, genotype, pulmonary function, nutritional measures, reported complications, clinical symptoms, intensity of therapies, and measures of healthcare utilization. In a subgroup of 260 women (54 pregnant and 206 never pregnant), health-related quality of life (HRQoL) was measured using the CFQ-R (3). Group differences for FEV1, pulmonary exacerbations, and healthcare utilization in the endpoint period of 2004-2005 were assessed using repeated-measures models adjusting for matched sets. Group differences in clinical status and treatment were analyzed in the same period using conditional logit models, also adjusting for matched sets. Results: Women (n=19) who met inclusion criteria for pregnancy were compared with 1190 matched controls. Median time between pregnancy and the endpoint period was 6.0 years (range 1.8-11.1). No significant differences were found in annualized change in lung function or BMI z-score between women who had been pregnant and controls. Report of cough but no other signs or symptoms was greater in women post-pregnancy (p<.05). Women experiencing pregnancy were treated for pulmonary exacerbations more frequently (p<.01) and had more illness-related clinic visits (p=.024), but there was no significant difference in routine therapies prescribed. There was a borderline increased risk of diabetes in previously pregnant women (OR 1.46; 95% CI 0.93-2.28), and post-pregnancy, women reported lower HRQoL scores in physical functioning, vitality, health perceptions, and respiratory symptoms compared to controls (p<.01). Conclusion: In the years following pregnancy, women did not experience worsening pulmonary function or nutritional status compared with women who were never pregnant, but did have increased cough and required more illness-related treatments. They also reported worse HRQoL in physical functioning, vitality, health perceptions, and respiratory symptoms. These differences may reflect the impact that the physical and emotional demands of parenting have on mothers' abilities to meet the daily challenges of an arduous CF-related treatment regimen. Our findings have implications for pre-pregnancy counseling.

**Database:** EMBASE

### **34. Acute respiratory failure in pregnancy**

**Author(s):** Mighty H.E.

**Source:** Clinical Obstetrics and Gynecology; Jun 2010; vol. 53 (no. 2); p. 360-368

**Publication Date:** Jun 2010

**Publication Type(s):** Journal: Review

Available in full text at [Clinical Obstetrics and Gynecology](#) - from Ovid

**Abstract:**The maternal respiratory tract undergoes significant anatomic and physiologic changes during pregnancy, which increase maternal susceptibility to respiratory failure. Respiratory failure in pregnancy is relatively rare, but it remains one of the leading conditions requiring intensive care unit admission in pregnancy and carries a high risk of maternal and fetal morbidity and mortality. Acute respiratory failure can result from a variety of conditions, most of which are not pulmonary in origin. Early diagnosis of underlying disease is critical, as it will guide the management approach. Treatment goals during respiratory failure in the pregnant woman are similar to those outside of pregnancy-to maintain adequate ventilation and to provide hemodynamic and nutritional support. Additionally, the obstetrician will need to monitor fetal status and help to determine the best timing for delivery. © 2010, Lippincott Williams & Wilkins.

**Database:** EMBASE

### **35. Maternal and neonatal outcomes of pregnancies complicated by asthma in an Australian population.**

**Author(s):** Clifton, Vicki L; Engel, Patricia; Smith, Roger; Gibson, Peter; Brinsmead, Maxwell; Giles, Warwick B

**Source:** The Australian & New Zealand journal of obstetrics & gynaecology; Dec 2009; vol. 49 (no. 6); p. 619-626

**Publication Date:** Dec 2009

**Publication Type(s):** Research Support, Non-u.s. Gov't Journal Article

Available in full text at [Australian and New Zealand Journal of Obstetrics and Gynaecology](#) - from John Wiley and Sons

**Abstract:**To determine if there are sex differences in risk and incidence of stillbirth, preterm delivery and small-for-gestational age (SGA) in pregnancies complicated by maternal asthma relative to a non-asthmatic population. Univariate and multiple regression analysis of the incidence of preterm delivery, SGA and stillbirth in singleton pregnancies complicated by asthma in Newcastle, NSW, Australia, from 1995 to 1999. Asthma complicated 12% of all singleton pregnancies. The incidence of preterm delivery was not significantly different between asthmatic (13%) and non-asthmatic (11%) pregnancies. Male fetuses (53%) were more likely to deliver preterm than female fetuses (47%) in both asthmatic and non-asthmatic populations. There were significantly more male neonates of pregnancies complicated by asthma that were SGA at term relative to those of the non-asthmatic population. There were significantly more preterm female neonates that were SGA in pregnancies complicated by asthma relative to those of the non-asthmatic population. Male fetuses were more likely to be associated with a stillbirth in pregnancies complicated by asthma than female fetuses. The presence of maternal asthma during pregnancy increases the risk of stillbirth for the male fetus and is associated with changes in fetal growth, but does not increase the incidence of a preterm delivery.

**Database:** Medline

### **36. Respiratory disease in pregnancy**

**Author(s):** Stone S.; Nelson-Piercy C.

**Source:** Obstetrics, Gynaecology and Reproductive Medicine; May 2007; vol. 17 (no. 5); p. 140-146

**Publication Date:** May 2007

**Publication Type(s):** Journal: Article

**Abstract:**Breathlessness in the absence of an underlying pathology is common in pregnancy. Asthma affects about 7% of women of childbearing 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. © 2007 Elsevier Ltd. All rights reserved.

**Database:** EMBASE

### **37. Pregnancy and chronic progressive pulmonary disease.**

**Author(s):** Wexler, Isaiah D; Johannesson, Marie; Edenborough, Frank P; Sufian, Beth S; Kerem, Eitan

**Source:** American journal of respiratory and critical care medicine; Feb 2007; vol. 175 (no. 4); p. 300-305

**Publication Date:** Feb 2007

**Publication Type(s):** Journal Article Review

Available in full text at [American Journal of Respiratory and Critical Care Medicine](#) - from ProQuest

**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.

**Database:** Medline

### **38. Exacerbation of underlying pulmonary disease in pregnancy.**

**Author(s):** Budev, Marie M; Arroliga, Alejandro C; Emery, Stephen

**Source:** Critical care medicine; Oct 2005; vol. 33 (no. 10)

**Publication Date:** Oct 2005

**Publication Type(s):** Journal Article Review

Available in full text at [Critical Care Medicine](#) - from Ovid

**Abstract:**The presence of underlying pulmonary disease in women of childbearing potential can present a significant challenge during pregnancy and the postpartum period. Management of the underlying disease, recognizing and preventing disease progression, and, most important, managing and minimizing toxic side effects of various therapies require the expertise of an interdisciplinary team. This team must involve close collaboration between intensive care physicians, pulmonary physicians, and high-risk obstetricians familiar with these disease states in an effort to minimize fetal and maternal morbidity and mortality. We will review the impact of the pregnant state in lung transplant recipients, patients with pulmonary arterial hypertension, and patients with underlying cystic fibrosis. Review of the literature in regards to pregnancy outcomes and issues for patients with cystic fibrosis, pulmonary hypertension, and lung transplants. A review of the epidemiology, pathophysiology, risk factors, classification, clinical features, and outcomes for pregnant patients with underlying pulmonary diseases. Safety of pregnancy in the female lung transplant recipient concerns three outcomes: maternal outcome, fetal outcome, and transplanted graft outcome.

**Database:** Medline

### **39. Pregnancy outcome of asthmatic patients: a population-based study.**

**Author(s):** Sheiner, Eyal; Mazor, Moshe; Levy, Amalia; Wiznitzer, Arnon; Bashiri, Asher

**Source:** 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; Oct 2005; vol. 18 (no. 4); p. 237-240

**Publication Date:** Oct 2005

**Publication Type(s):** Journal Article

Available in full text at [Journal of Maternal-Fetal and Neonatal Medicine, The](#) - from Taylor & Francis

Available in full text at [Journal of Maternal - Fetal and Neonatal Medicine](#) - from ProQuest

**Abstract:**To investigate pregnancy outcome of asthmatic patients. A retrospective population-based study comparing all singleton pregnancies in women with and without asthma was conducted. Patients lacking prenatal care (less than three visits in prenatal care facilities) were excluded from the study. Deliveries occurred during the years 1988-2002. Stratified analysis, using a multiple logistic regression model was performed to control for confounders. During the study period 139 168 singleton deliveries occurred, of which 1.4% in asthmatic patients (n = 963). Using a multivariate analysis, with backward elimination, the following complications were significantly associated with maternal asthma: diabetes mellitus (OR = 1.8, 95%CI 1.5-2.0, p < 0.001), fertility treatments (OR = 1.6, 95%CI 1.3-2.1, p < 0.001), intrauterine growth restriction (IUGR) (OR = 1.5, 95%CI 1.1-1.9, p = 0.004), hypertensive disorders (OR = 1.5, 95%CI 1.2-1.7, p < 0.001) and premature rupture of membranes (OR = 1.2, 95%CI 1.1-1.5, p = 0.013). Higher rates of cesarean deliveries were found among asthmatic patients as compared to the controls (17.1% vs. 11.4%, p < 0.001). This association persisted even after controlling for possible confounders such as failure to progress in labor, mal-presentations, IUGR, etc. No significant differences regarding low Apgar scores (less than 7) at 1 and 5 minutes were noted between the groups (3.9% vs. 4.4%, p = 0.268 and 0.4% vs. 0.6%, p = 0.187,

respectively). Likewise, the perinatal mortality rate was similar among patients with and without asthma (1.3% vs. 1.3%,  $p = 0.798$ ). Pregnant women with asthma are at an increased risk for adverse maternal outcome. This association persists after controlling for variables considered to co-exist with maternal asthma. However, perinatal outcome is favorable. Careful surveillance is required in pregnancies of asthmatic patients, for early detection of possible complications.

**Database:** Medline

#### **40. Factors implicated in the outcome of pregnancies complicated by acute respiratory failure**

**Author(s):** Chen C.-P.; Chen C.-Y.; Wang K.-G.; Kuo S.-C.; Su T.-H.

**Source:** Journal of Reproductive Medicine for the Obstetrician and Gynecologist; Aug 2003; vol. 48 (no. 8); p. 641-648

**Publication Date:** Aug 2003

**Publication Type(s):** Journal: Review

**Abstract:**OBJECTIVE: To investigate factors predictive of the outcome of acute respiratory failure during pregnancy. STUDY DESIGN: We retrospectively reviewed the records of all pregnant women diagnosed with acute respiratory failure at a tertiary referral center from January 1, 1995, to September 30, 2000. Maternal characteristics, etiology of respiratory failure and treatment were compared between survivors and nonsurvivors. RESULTS: Twenty patients with acute respiratory failure were identified; 16 of them survived (mortality, 20%). Acute respiratory failure was diagnosed in the postpartum period in 16 (80%), and the majority of cases occurred in the first 2 postpartum days (93.8%). There was no statistically significant difference between the 2 groups in terms of patient characteristics, immediate precipitants of acute respiratory failure (including pneumonia, cardiogenic pulmonary edema, acute respiratory distress syndrome, asthma, pulmonary embolism and amniotic fluid embolism) and laboratory characteristics except for pH. However, patients who manifested disseminated intravascular coagulopathy (DIC) and sepsis as precipitating causes or complications of the immediate precipitating disease entities as well as initial loss of consciousness were predictive of poor maternal outcome. CONCLUSION: The immediate etiology of acute respiratory failure is not predictive of maternal outcome, but lower pH, initial loss of consciousness, DIC and sepsis are risk factors for maternal mortality.

**Database:** EMBASE

#### **41. Management of respiratory deterioration in a pregnant patient with severe kyphoscoliosis by non-invasive positive pressure ventilation.**

**Author(s):** Kähler, Christian M; Högl, Birgit; Habeler, Roman; Brezinka, Christoph; Hamacher, Jürg; Dienstl, Anton; Prior, Christian

**Source:** Wiener klinische Wochenschrift; Oct 2002; vol. 114 (no. 19-20); p. 874-877

**Publication Date:** Oct 2002

**Publication Type(s):** Comparative Study Case Reports Journal Article

**Abstract:**The problem of kyphoscoliosis in combination with pregnancy is uncommon and published cases are rare. Until now, little and controversial information on the outcome, optimal management and course of pregnancy in patients with kyphoscoliosis has been available. The majority of maternal deaths seem to be attributed to cardiorespiratory failure, while obstetric complications account for relatively few complications. We present the case of a 34-year old pregnant woman with congenital kyphoscoliosis and a forced vital capacity (FVC) of about one liter. A further deterioration of lung function was expected. In fact, severe limitations in exercise capacity (bed rest), fatigue and hypersomnolence, as well as a severe increase in pulmonary hypertension occurred during the

second and third trimester. Nasal intermittent positive pressure ventilation (NIP-PV) with bilevel positive airway pressure (BiPAP) was started in the 20th week of gestation and adapted throughout pregnancy. Nasal BiPAP was well-tolerated and corrected exercise tolerance, fatigue and nocturnal oxygen desaturations. At 32 weeks of gestation, the patient was admitted for an elective Caesarean section under combined spinal-epidural anaesthesia with ongoing NIPPV, and delivered a healthy baby. Home nocturnal ventilatory support was continued as nocturnal episodic desaturations were also assessed during the postpartum period. At time of discharge, the patient's exercise capacity and lung function were nearly equal to levels before pregnancy. We conclude that pregnancy in selected kyphoscoliotic patients with severe limitations in lung function is relatively safe for both the mother and the child when NIPPV is used for overcoming respiratory deterioration and for preventing further cardiorespiratory failure.

**Database:** Medline

#### **42. Respiratory failure in pregnancy**

**Author(s):** Catanzarite V.; Cousins L.

**Source:** Immunology and Allergy Clinics of North America; 2000; vol. 20 (no. 4); p. 775-806

**Publication Date:** 2000

**Publication Type(s):** Journal: Review

**Abstract:**Respiratory failure can occur during pregnancy or after delivery from a wide variety of causes. Successful outcomes depend on understanding the causative disease process, appreciating the respiratory changes of pregnancy, and recognizing the relationships of fetal and maternal physiology. This article provides a review of the physiology of oxygen delivery to the fetus and discusses diagnostic and management issues.

**Database:** EMBASE

#### **43. The outcome of 72 pregnancies in 55 women with cystic fibrosis in the United Kingdom 1977-1996**

**Author(s):** Mackenzie W.E.; Edenborough F.P.; Stableforth D.E.

**Source:** British Journal of Obstetrics and Gynaecology; 2000; vol. 107 (no. 2); p. 254-261

**Publication Date:** 2000

**Publication Type(s):** Journal: Article

Available in print at [Patricia Bowen Library and Knowledge Service West Middlesex university Hospital](#) - from British Journal of Obstetrics and Gynaecology (BJOG)

**Abstract:**Objective. To identify pregnancies in women with cystic fibrosis and describe obstetric, infant and maternal medical outcomes in relation to the severity of maternal disease. Design. Retrospective study, based on casenotes. Setting. Eleven cystic fibrosis centres in the United Kingdom. Population. Pregnant women with cystic fibrosis. Methods. Single observer medical and obstetric casenote review categorising maternal cystic fibrosis (e.g. genotype, pancreatic, hepatic and diabetic status) and pre-pregnant severity (e.g. weight and lung function) and noting fetal outcome and maternal morbidity. Main outcome measures. Completed pregnancies and pregnancy losses, fetal outcome and complications, maternal morbidity, such as changes in weight, lung function, pulmonary infections during and after pregnancy. Relation of outcomes to severity of maternal cystic fibrosis. Results. From 72 pregnancies identified, the outcomes were known for 69; there were 48 live births (70%) of which 22 were premature (46%); 14 therapeutic abortions (20%); and 7 miscarriages (10%). There were no stillbirths, neonatal or early maternal deaths. Three major



fetal anomalies were seen, but no infant had cystic fibrosis. At the conclusion of our study three pregnancies were still continuing. Prematurity with increased fetal complications and maternal morbidity with infection, declining lung function and poor weight gain were associated with poor pre-partum lung function. Conclusion. Pregnancy occurs in women with cystic fibrosis of all degrees of severity. Outcomes for the infant are generally good but are variable for the mother. Predicting outcome on the basis of maternal severity is difficult but lung function appears to be the most significant determining factor. Pregnancy may be normal in women with normal lung function (forced expiratory volume > 80%). However, it may adversely affect mild and moderate lung disease due to cystic fibrosis and should be avoided in pulmonary hypertension, cor pulmonale and when forced expiratory volume < 50% predicted. Ideally, all pregnancies should be planned with prior counselling and monitored by dedicated cystic fibrosis teams, including obstetricians who are experienced in managing high risk pregnancies.

**Database:** EMBASE

#### **44. Pregnancy and the lungs.**

**Author(s):** Bhatia, P; Bhatia, K

**Source:** Postgraduate medical journal; Nov 2000; vol. 76 (no. 901); p. 683-689

**Publication Date:** Nov 2000

**Publication Type(s):** Journal Article Review

Available in full text at [Postgraduate Medical Journal](#) - from National Library of Medicine

Available in full text at [Postgraduate medical journal](#) - from Highwire Press

**Database:** Medline

#### **45. Restrictive lung disease in pregnancy.**

**Author(s):** King, T E

**Source:** Clinics in chest medicine; Dec 1992; vol. 13 (no. 4); p. 607-622

**Publication Date:** Dec 1992

**Publication Type(s):** Journal Article Review Research Support, U.s. Gov't, P.h.s.

**Abstract:** Restrictive ventilatory defects characterized by a reduction in lung volumes and an increase in the ratio of forced expiratory volume in 1 second to forced vital capacity occur when lung expansion is limited because of alterations in the lung parenchyma or because of abnormalities in the pleura, chest wall, or neuromuscular apparatus. Few studies have examined pregnant women with carefully defined restrictive lung disorders. The majority of pulmonary diseases have their onset after the childbearing years. When present, most do not alter fertility. Further, these disorders are only a relative contraindication to pregnancy because both the fetus and mother are able to survive without a high risk of increased morbidity or mortality. The clinical course of sarcoidosis is generally not altered by pregnancy. Factors indicative of a poor prognosis in sarcoidosis and pregnancy include parenchymal lesions on chest radiography, advanced roentgenologic staging, advanced maternal age, low inflammatory activity, requirement for drugs other than corticosteroids, and the presence of extrapulmonary sarcoidosis. Pregnancy seldom has a significant effect on the course of the connective tissue diseases. In PSS with significant renal involvement, pregnancy has the potential for poor fetal prognosis and the risk of maternal death due to a lethal progression of renal failure. Worsening of SLE is uncommon in pregnancy, and prophylactic therapy is generally not necessary. Most women with LAM are advised to avoid pregnancy or the use of estrogens because of the

concern that it will lead to worsening of their disease. The incidence of kyphoscoliosis in pregnancy is relatively high. Premature birth rates are higher than that in the normal population. The risk of progression of the abnormal curve in a scoliotic patient appears low. However, women with unstable scolioses at the time of pregnancy can demonstrate progression of the curve with the pregnancy. Respiratory complications during pregnancy in patients with kyphoscoliosis have been reported but in general are not serious if appropriately managed. As a rule, patients with severe restrictive lung disease (i.e., vital capacity < 1 L) should be advised to avoid pregnancy or consider therapeutic abortion. If such a patient decides to continue the pregnancy she should be provided with optimal medical management of her underlying disease and should consider delivery by cesarean section.

**Database:** Medline

**46. Intrauterine growth is related to gestational pulmonary function in pregnant asthmatic women. Kaiser-Permanente Asthma and Pregnancy Study Group.**

**Author(s):** Schatz, M; Zeiger, R S; Hoffman, C P

**Source:** Chest; Aug 1990; vol. 98 (no. 2); p. 389-392

**Publication Date:** Aug 1990

**Publication Type(s):** Research Support, Non-u.s. Gov't Journal Article Research Support, U.s. Gov't, P.h.s.

Available in full text at [Chest](#) - from Free Access Content

**Abstract:** Asthmatic mothers have been reported to deliver infants of lower mean birth weight than nonasthmatic mothers. This study examined the relationship between intrauterine growth and serial gestational spirometry in 352 pregnant asthmatic women who were prospectively treated and observed during pregnancy. A small ( $r = 0.11$ ) but significant ( $p$  less than 0.04) direct correlation was demonstrated between infant birth weight and individual mean percent predicted FEV1 during pregnancy. In addition, lower maternal mean FEV1 during pregnancy was associated with increased incidences of birth weight in the lower quartile of the infant population ( $p = 0.002$ ) and ponderal indices less than 2.2 (suggestive of asymmetric intrauterine growth retardation) ( $p$  less than 0.05), but not with increased incidences of preterm (less than 38 weeks) or low birth weight (less than 2,500 g) infants. Although lower mean birth weight occurred in infants of smoking compared with nonsmoking asthmatic mothers ( $p$  less than 0.02), the relationships of lower FEV1 to birth weight in the lower quartile of the population (odds ratio 3.0,  $p = 0.002$ ) and ponderal indices less than 2.2 (odds ratio 2.8,  $p$  less than 0.05) were shown by multivariate analysis to be above and beyond the influence of smoking and also independent of the effects of age, parity, acute asthmatic episodes, and asthma medications. These data support the hypothesis that lower maternal gestational FEV1 during pregnancy is related to intrauterine growth retardation and suggest that the goals of gestational asthma therapy should include optimization of pulmonary function in addition to achievement of symptomatic control.

**Database:** Medline

**DISCLAIMER:** Results of database and or Internet searches are subject to the limitations of both the database(s) searched, and by your search request. It is the responsibility of the requestor to determine the accuracy, validity and interpretation of the results.

## Strategy 131337

#	Database	Search term	Results
1	Medline	exp "RESPIRATORY INSUFFICIENCY"/	56393
2	Medline	(respirat* ADJ2 (failure OR insufficiency)).ti	9450
3	Medline	(1 OR 2)	58023
4	Medline	(pregn*).ti	187713
6	Medline	exp "PREGNANCY OUTCOME"/	46736
7	Medline	exp PREGNANCY/	801770
8	Medline	("LABOR, OBSTETRIC").ti,af	27956
9	Medline	((preterm OR premature) ADJ2 (labour OR labor)).ti	3447
10	Medline	(4 OR 6 OR 7 OR 8 OR 9)	820313
11	Medline	(3 AND 10)	1387
12	Medline	(2 AND 10)	185
13	Medline	*"RESPIRATORY INSUFFICIENCY"/	18709
14	Medline	(10 AND 13)	392
15	Medline	14 not 12	265
16	Medline	exp "LUNG DISEASES"/	791445
17	Medline	(10 AND 16)	17027
18	Medline	(4 AND 16)	3270
19	Medline	*"LUNG DISEASES"/	48843

20	Medline	(10 AND 19)	657
21	Medline	(maternal OR pregn*).ti	243044
22	Medline	(19 AND 21)	127
23	Medline	(6 AND 16)	1052
24	EMBASE	**"CHRONIC RESPIRATORY FAILURE"/ OR **"CHRONIC RESPIRATORY INSUFFICIENCY"/	839
25	EMBASE	(respirat* ADJ2 (failure OR insufficiency)).ti	11616
26	EMBASE	(24 OR 25)	11942
27	EMBASE	exp "PREGNANCY OUTCOME"/	47298
28	EMBASE	exp PREGNANCY/	719870
29	EMBASE	((preterm OR premature) ADJ2 (labour OR labor)).ti	3915
30	EMBASE	(maternal OR pregn*).ti	295392
31	EMBASE	exp "PREMATURE LABOR"/	41453
32	EMBASE	(27 OR 28 OR 29 OR 30 OR 31)	801149
33	EMBASE	(26 AND 32)	202
34	EMBASE	exp "MATERNAL DEATH"/	467
35	EMBASE	(26 AND 34)	0
36	EMBASE	exp "CHRONIC LUNG DISEASE"/	11194
37	EMBASE	(34 AND 36)	0
38	EMBASE	exp "MATERNAL	20572

		MORTALITY"/	
39	EMBASE	(26 AND 38)	9
40	EMBASE	(36 AND 38)	21
41	EMBASE	exp "FETUS GROWTH RETARDATION"/	35174
42	EMBASE	(26 AND 41)	7
43	EMBASE	(36 AND 41)	165
44	EMBASE	*"CYSTIC FIBROSIS"/	42772
45	EMBASE	(41 AND 44)	22
46	EMBASE	(38 AND 44)	19
47	EMBASE	exp "LUNG INSUFFICIENCY"/ OR exp "CHRONIC RESPIRATORY FAILURE"/	6402
48	EMBASE	(38 AND 47)	8
49	EMBASE	(41 AND 47)	3
50	EMBASE	(27 AND 47)	9
51	EMBASE	(30 AND 47)	37
52	EMBASE	exp "FETUS HYPOXIA"/	4198
53	EMBASE	(26 AND 52)	5
54	EMBASE	(36 AND 52)	8
55	EMBASE	*"LUNG DISEASE"/	39735
56	EMBASE	(52 AND 55)	5
57	EMBASE	(38 AND 55)	11
58	EMBASE	(32 AND 55)	410

59	EMBASE	exp "LUNG CAPACITY"/	2355
60	EMBASE	(32 AND 59)	34
61	EMBASE	(38 AND 59)	1
62	EMBASE	*"LUNG DISEASE"/	39735
63	EMBASE	(32 AND 62)	410
64	EMBASE	*"LUNG FUNCTION"/	24365
65	EMBASE	(41 AND 64)	34
66	EMBASE	(27 AND 64)	14
67	EMBASE	exp "RESPIRATORY FAILURE"/	85429
68	EMBASE	(41 AND 67)	178
69	EMBASE	*DYSPNEA/	11949
70	EMBASE	(32 AND 69)	201
71	EMBASE	(38 AND 69)	3
72	EMBASE	(52 AND 69)	0
73	EMBASE	(41 AND 69)	4
74	Medline	exp "FETAL GROWTH RETARDATION"/	14183
75	Medline	(3 AND 74)	16
76	Medline	(16 AND 74)	273
77	EMBASE	*"CYSTIC FIBROSIS"/	42772
78	EMBASE	(32 AND 77)	913
79	EMBASE	*PREGNANCY/	166178

80	EMBASE	*"PREGNANCY OUTCOME"/	15427
81	EMBASE	(79 OR 80)	177797
82	EMBASE	(77 AND 81)	155
83	EMBASE	(41 AND 77)	22
84	EMBASE	(52 AND 77)	2
85	EMBASE	(38 AND 77)	19