(Group 1: 10%; Group 2: 33%; p-value: 0.05). Most women in both groups found the side effects either acceptable or highly acceptable (Group 1: 74.8%; Group 2: 89.5%). Most women in both groups found the procedure satisfactory or very satisfactory (Group 1: 74.3%; Group 2: 88.1%). However, significantly more women in Group 1 cited that the length of hospitalization was the worst aspect of the procedure (Group 1: 18.9%; Group 2: 7.9%; p-value=0.05).
CONCLUSION: Misoprostol is a safe and effective method for medical induction of labor after intrauterine fetal demise. A 200mcg dose is significantly more effective than 100mcg for evacuating the uterus within 48h. The side effects and treatment are highly acceptable to women.

118 An evaluation of the role of investigations for women with second trimester miscarriage

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OBJECTIVE: Our data looked at the value of offering the Royal College of Obstetricians and Gynaecologists (RCOG) recommended tests to women with second trimester miscarriages. We present our experience from the Pregnancy Loss Clinic at City Hospital, Birmingham, which serves a diverse urban population in the UK. We currently follow RCOG guidance for managing women with second trimester miscarriage. The routine tests offered (haematological and biochemical, histology/pathology and radiological) are varied with limited evidence for their role in improving future pregnancy outcomes. These tests are also expensive and time consuming.
STUDY DESIGN: Retrospective review of results of investigations performed for women with second trimester miscarriage. 82 women with second trimester miscarriages were seen over a 20 month period. Blood tests (for autoimmune disease and coagulopathy) were performed 6 to 8 weeks following the pregnancy loss. Genetics tests, placental histology and post mortem examination were offered to all women and were performed where informed consent was given.
RESULTS: In this cohort post mortem offered no additional insight provided the woman had had an anomaly scan. Results of biochemical tests correlated with clinical findings and on no occasion was previously undiagnosed pathology (autoimmune disorders) found that would have an impact on future pregnancy outcome.
CONCLUSION: Despite the devastating impact of fetal loss, part of our duty of care as clinicians is to adopt an evidence-based approach and offer only those investigations which are of proven value. In a woman with known fetal anomalies, immunological/haematological and histological investigations may not be of added value. In women with no obvious abnormality on antenatal fetal scans, the investigations do not seem to add value to the management of future pregnancies. Cervical length assessment only has value during ongoing care of subsequent pregnancies. We suggest a more targeted approach to managing these women.

119 Maternal body mass index (BMI) and stillbirth: analysis for potential causal pathophysiological mechanisms

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OBJECTIVE: To determine in a cohort of women with fetal death the association between maternal BMI and cause of fetal death; a search for potential underlying pathophysiological mechanism.
STUDY DESIGN: In a multicenter prospective cohort study from 2002 to 2008, 1025 women with a intra-uterine fetal death (IUFD) >20 weeks of gestation were studied. An extensive diagnostic workup was performed including maternal blood tests, coagulation tests (antithrombin, protein C activity, total protein S antigen, von Willebrand factor and the trombophilias factor V Leiden, prothrombin G20210A and lupus anticoagulant), autopsy and placental examination. Cause of death was classified according the Tulip classification. Odds ratios for each outcome were estimated for BMI classes (underweight BMI < 18.5; overweight BMI 25.0-29.9; obesity BMI >30.0) compared with normal weight women (BMI 18.5-24.9) by using logistic regression.
RESULTS: We analyzed 1025 women and their IUFD. For 233 women (22.7%) BMI was missing. These cases were excluded. Obese women smoke more (OR 1.84, 95% CI 1.19 - 2.85) and have a higher prevalence of hypertension (OR 3.57, 95% CI 1.76–7.24), gestational diabetes (OR 6.60, 95% CI 2.28–19.08), pregnancy induced hypertension (OR 2.87, 95% CI 1.59–5.19) and preeclampsia/HELLP syndrome (OR 1.79, 95% CI 0.92–3.49). Obese women have more placental causes of fetal death (OR 1.55, 95% CI 1.02–2.36). Smoking is a confounding factor (adjusted OR 1.37, 95% CI 0.89–2.11), other risk factors have no influence. Percentage of abnormal testing for C-reactive protein was higher in obese women (OR 2.42, 95% CI 1.57–3.74). We did not find any differences in trombophillic defects between normal weight and obese women.
CONCLUSION: Potential pathophysiological mechanism contributing to IUFD in obese women are placental dysfunction and possible a systemic inflammatory response. Trombophillic defects have no influence. Further research for the underlying mechanism of IUFD in obese women is necessarily.

Cause of fetal death in relation to maternal body mass index

	Body mass index			
	<18.5	18.5-24.9	25.0-29.9	> 30
Cause of death				
Congenital anomaly	1 (4.2)	11 (2.9)	11 (4.6)	8 (5.4)
Placenta	17 (70.8)	241 (63.4)	155 (64.6)	108 (73.0) *
Infection	1 (4.2)	6 (1.6)	8 (3.3)	2 (1.4)
Other	0 (0.0) NA	27 (7.1)	13 (5.4)	3 (2.0) *
Unknown	5 (20.8)	95 (25.0)	53 (22.1)	27 (18.2)
Total n = 792 (100.0)	24 (3.0)	380 (48.0)	240 (30.3)	148 (18.7)

Results are given in N (%).

NA, *P* value was not applicable.

**P* value < .05 for comparison with reference group BMI 18.5–24.9.

120 Recurrence risk of stillbirth in a subsequent pregnancy: a population-based cohort study

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OBJECTIVE: To estimate the risk of recurrence of stillbirth in a subsequent pregnancy.
STUDY DESIGN: We studied in retrospect a nationwide birth cohort in the Netherlands from 1999 to 2007. In total, records of 252.827 women with a singleton birth in a first pregnancy could be linked to records of their second pregnancy using data obtained from the national Perinatal Registry. Stillbirth was defined as antepartum or intrapartum fetal death from 22 weeks of gestation. Fetal deaths associated with a major congenital anomaly were excluded. Small for gestational age (SGA) was defined as birthweight <10th percentile.
RESULTS: Of 252.827 first pregnancies, 2058 pregnancies ended in a stillbirth (8.1 per 1000). At the subsequent pregnancy there were 815 stillbirths. For women whose first pregnancy resulted in a stillbirth, the rate of stillbirth in their subsequent pregnancy was 5.8 per 1000, versus 3.2 per 1000 for women without a stillbirth in their first pregnancy (OR 1.8 [95% CI 1.02-3.60]. After adjustment for maternal age, ethnicity, social-economic status and SGA in the first pregnancy the risk was 2.4 [95% CI 1.32-4.21]). Highest risk of recurrence of stillbirth occurred in women

with a history of a stillbirth between 22 and 28 weeks of gestation during the first pregnancy (15.0 per 1000, OR 2.54 [95% CI 0.72-8.98]). Women with a history of a stillbirth ≥ 37 weeks of gestation appeared to have no risk of recurrence (1.1 per 1000, OR 0.37 [95% CI 0.05-2.64]). This might be related to the 68% induction of labor rate for women with a history of stillbirth ≥ 37 weeks of gestation was, versus 22% for women without a history of stillbirth.

CONCLUSION: Women with a prior stillbirth have a higher risk of recurrence in their next pregnancy. This risk was mainly observed when stillbirth had occurred in early gestation (22-28 weeks). The absence of this association in late pregnancy might be due to more inductions of labour.

Recurrence risk of stillbirth in a second pregnancy by gestational age

	Recurrence risk # Per 1000	OR *	95% CI
Gestational age of the first stillbirth			
>=22 weeks	5.8	2.36	1.32-4.21
22-27 weeks	15.0	2.54	0.72-8.98
28-33 weeks	8.3	2.60	0.85-8.40
34-36 weeks	3.7	0.98	0.13-7.16
≥ 37 weeks	1.1	0.37	0.05-2.64

#Risk of stillbirth in a second pregnancy with a history of stillbirth in the first pregnancy (per 1000 births); *Odds ratio adjusted for maternal age, ethnicity, low-social economic status and small for gestational age.

121 A silk-based gel for cervical injection: controlled gelation with sonication

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OBJECTIVE: To develop an injectable, silk-based biomaterial as an alternative to cervical cerclage for the management of cervical insufficiency. Here, we studied sonication to achieve controlled gelation of a silk-based biomaterial and determined feasibility of cervical injection in a rat model.

STUDY DESIGN: A purified silk solution (6% w/w) was prepared as previously reported. The solution was concentrated to 10% or 15% by dialysis against a polytheylene glycol solution. Solutions were autoclaved for sterilization. Using a 3mL syringe, a 1.5mL silk solution was sonicated with Branson 450 Sonifier and a 1/8″ diameter tapered microtip. Solutions were sonicated for 10-25 sec at 15% amplitude and 20kHz frequency. To determine the effect of temperature on gelation, solutions were sonicated at room temperature and in an ice bath. Time to gelation was measured. Gelation was determined by an opaque appearance on visual inspection and a positive vial inversion test. Sprague Dawley rats (n=5) were used to test the feasibility of cervical injections. A nasal speculum and arthroscope (5mm, 30 degree) were used to visualize the cervix. Cervical injections (200 uL) were performed with a 23 gauge needle using direct visualization. The cervices were dissected for histological examination to determine anatomical localization.

RESULTS: No gelation was observed in the absence of sonication. At 20-25 sec of sonication, immediate gelation occurred and the gel could not be pushed through a 23 gauge needle. Variables associated with more rapid time to gelation included sonication at room temperature, increased silk concentration, and longer sonication times ($p<.01$ for each). Rat cervical injections were technically feasible with the aid of the arthroscope. The gel was visualized in the cervical stroma on H&E histology.

CONCLUSION: Sonication results in controlled gelation of a silk-based biomaterial. Injection of this biomaterial into the cervical stroma of a rat is feasible. Further studies are needed to assess this biomaterial in vivo.

122 The Institute of Medicine guidelines for gestational weight gain: effect on perinatal outcomes in obese, morbidly obese, and super obese women

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OBJECTIVE: To evaluate the impact of the updated Institute of Medicine (IOM) guidelines for gestational weight gain in obese, morbidly obese, and super obese women on maternal and neonatal outcomes.

STUDY DESIGN: Retrospective cohort of obese women, defined as body mass index (BMI) > 30, delivering singletons > 36 weeks between 2000-2009. Women were included if they had a weight documented in the first trimester and one within 10 days prior to delivery. Women were stratified by obesity category: obese (BMI 30-39), morbidly obese (BMI 40-49), and super obese (BMI > 50). Gestational weight gain was categorized according to IOM guidelines, which recommend a gain of 5-9.1 kg for obese women. Selected perinatal outcomes were analyzed, and logistic regression was used to adjust for potential confounders.

RESULTS: Of the 5364 women eligible for the study, 74% were obese, 21% were morbidly obese, and 5% were super obese. Compared to obese women who gained within the IOM guidelines, women with a BMI > 30 and gestational weight gain exceeding the IOM guidelines had a 38% increased risk of cesarean delivery and hypertensive disorders and a 60% increased risk of macrosomia. Weight gain less than the IOM guidelines was associated with a 30% decreased risk of amnionitis and a 39% decreased risk of macrosomia. When compared to obese women, morbidly obese and super obese women had increased risks of a multitude of perinatal morbidities (Table). Morbidly obese women exceeding the guidelines had an increased risk of hypertensive disorders. Super obese women with weight gain less than recommended had a decreased risk of hypertensive disorders.

CONCLUSION: Gestational weight gain exceeding 2009 IOM guidelines is associated with increased risks of adverse outcomes in obese women. Weight gain less than recommended appears to be protective against some morbidities. Strategies to promote limited gestational weight gain may improve perinatal outcomes in this population.

Perinatal outcomes in obese, morbidly obese, and super obese women according to gestational weight gain per IOM guidelines

	BMI 30-39 (N=4000) aOR (95% CI)*		BMI 40-49 (N=1123) aOR (95% CI)*		BMI > 50 (N=241) aOR (95% CI)*	
	< 5 kg	> 9.1 kg	< 5 kg	> 9.1 kg	< 5 kg	> 9.1 kg
C-section	0.85 (0.69, 1.04)	1.43 (1.19, 1.71)	0.87 (0.62, 1.22)	1.26 (0.90, 1.78)	0.98 (0.52, 1.83)	1.17 (0.59, 2.33)
GDM	0.85 (0.59, 1.23)	0.99 (0.71, 1.38)	1.00 (0.54, 1.87)	1.48 (0.79, 2.76)	1.83 (0.47, 7.14)	2.29 (0.53, 9.90)
Amnionitis	0.68 (0.44, 1.05)	1.33 (0.96, 1.83)	0.56 (0.27, 1.14)	0.88 (0.46, 1.69)	1.53 (0.40, 5.95)	1.19 (0.28, 4.97)
Endometritis	0.48 (0.21, 1.12)	1.14 (0.64, 2.02)	1.53 (0.40, 5.92)	1.59 (0.41, 6.22)	0.28 (0.02, 3.27)	0.86 (0.11, 6.67)
HTN	0.90 (0.68, 1.19)	1.34 (1.06, 1.70)	0.75 (0.49, 1.15)	1.61 (1.07, 2.42)	0.38 (0.18, 0.83)	1.23 (0.59, 2.58)
BWT ≥ 4000g	0.59 (0.40, 0.86)	2.00 (1.50, 2.66)	0.49 (0.28, 0.86)	1.41 (0.85, 2.34)	0.73 (0.24, 2.27)	1.88 (0.60, 5.89)
LGA	0.66 (0.51, 0.86)	1.71 (1.38, 2.12)	0.46 (0.30, 0.68)	1.27 (0.87, 1.87)	0.64 (0.27, 1.51)	1.20 (0.48, 3.00)

BWT, birthweight; *HTN*, hypertension; *LGA*, large for gestational age.

*Referent group is women with gestational weight gain within IOM guidelines (5-9.1kg).

123 Optimal timing of delivery in women with prior stillbirth: a decision analysis

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