

Appendix 1: Summary of Previous Literature (by Year) on Subsequent Stillbirth Related to Previous Pregnancy Outcomes of Stillbirth, Growth Restriction, and Prematurity

Author and Year	Study Type	Country	Study subjects	Exclusions	Definition of SB	Total cohort size	Exposure assessed in pregnancy 1	Outcome assessed in pregnancy 2	Confounders adjusted for from subsequent pregnancy	Confounders adjusted for from subsequent birth	Comments
Salihu 2011	Population based retrospective cohort study	USA	Women who had two singleton consecutive births in Missouri 1989-2005	Multiple gestations GA outside the range of 20–44 weeks Infants without siblings Women not between 10 and 24 years preg 1 and not > 24 years for initial adolescent and 28 years for initial mature cohort Missing data for unknown demographic variables inter-pregnancy interval < 28 d	Fetal deaths of ≥ 20 weeks gestation	152,151	Stillbirth Neonatal Mortality Perinatal mortality	Stillbirth Neonatal mortality Perinatal Mortality	Race/ethnicity Education Marital status Smoking in pregnancy Prenatal care BMI Interpregnancy interval Composite variable of obstetric complications	Abruption	No cause of death Potentially includes congenital anomalies and terminations of pregnancy
August 2011	Population based retrospective cohort	USA	Women who had two singleton consecutive	Multiples Stillbirth in first pregnancy GA < 20 or > 44	In utero fetal death at ≥ 20 weeks gestation	320,350	Infant mortality	Stillbirth	Race Maternal age Maternal education	Congenital anomalies Abruptio	Congenital anomalies examined only for preg 2

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			births in Missouri 1989-2005	Implausible pregnancy Interval Fetal death in second pregnancy (undefined as to which gestation this refers to ? < 20 weeks)					Marital status Pre-pregnancy obesity Prenatal smoking Prenatal care Anaemia IDDM NIDDM Chronic hypertension Preeclampsia Eclampsia Placenta Praevia Renal disease	2 models (1 with preg 2 demographics and 2 plus preg 2 complications)	No cause of death
Bhattacharya 2010	Population based retrospective cohort	Scotland	Women having first and second pregnancy in Scotland 1981 - 2005	Not clearly specified	> 24 weeks gestation	309,304	Stillbirth	Stillbirth	Age Interpregnancy interval Carstairs category Smoking Preeclampsia Placenta praevia	Abruption Preterm Low birthweight	Unclear whether multiple pregnancies included No cause of death Large % of missing data for smoking No BMI
Melve 2010	Population based retrospective cohort study	Norway	Women having whose 2 first singleton births were registered in the time period 1967–2004 in	Multiple pregnancies Missing birth weight	Fetal death at ≥ 20 weeks gestation	567,148	Stillbirth Gestation	Stillbirth Gestation	maternal age maternal education marital status		Pregnancy complication data collected but not adjusted for No cause of death

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			Norway								
Measey 2009	Population based case-control study	Australia	Cases= singleton unexplained (despite full autopsy) fetal deaths Controls = singleton live birth Both selected from WA midwives data collection 1990 - 1999	Multiple pregnancy Explained SB's SB's with no full post-mortem investigation SB's with FGR	Included antepartum unexplained fetal deaths of ≥ 20 weeks or ≥ 400 grams	852	Stillbirth Previous pregnancy loss	Stillbirth	Indigenous Maternal age Parity Miscarriage		Not consecutive pregnancies Not all parous women Not adjusted for pregnancy medical conditions Small dataset Missing data on smoking, BMI, SES, antenatal care, prev CS For previous loss can't determine whether termination
Lykke 2009	Population based cohort study	Denmark	Women having a first and second singleton pregnancy in Denmark from 1978 - 2007	Maternal age > 15 and < 50 Cardiovascular diagnosis Type 1 and 2 diabetes Maternal death or emigration within 3 months of second delivery	Fetal deaths of > 20 weeks gestation	536,419	Stillbirth Preterm Pre-eclampsia Fetal growth Abrupton	Stillbirth Preterm Pre-eclampsia Fetal growth Abrupton	Year of delivery Maternal age at first delivery Interpregnancy interval Different models dept on outcome: Preeclampsia Preterm Fetal growth (sd)	Multiple models dept on outcome: Abrupton SGA	No cause of death so unclear how much of dose-response relationship may be due to recurrence of abnormalities and v preterm deaths

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				Implausible or missing birthweight, GA and fetal growth					from the mean)		No data on BMI, gestational diabetes, smoking, SES, race/ethnicity
Black 2008	Population based retrospective cohort	Grampian region of Scotland	Women who had their first and second deliveries in Grampian between 1976 and 2006.	Other perinatal deaths in first pregnancy Multiple pregnancies Missing data for variables used	Intrauterine death diagnosed after 20 weeks of gestation and before delivery.	34,079	Stillbirth	Stillbirth Preeclampsia Abruptio Placenta praevia Preterm delivery Malpresentation Mode of delivery Neonatal death Low birth weight	BMI marital status husband/partner's social class smoking interpregnancy interval year of delivery Preeclampsia	Multiple models dept on outcome. For stillbirth outcome adjusted for: abruptio, preterm delivery and low birthweight.	Has cause of death but included all causes ie no exclusion of abnormality No adjustment for explained vs unexplained cause of death in first pregnancy
Goy 2008	Population-based case-control study	Canada	Data from a population-based case-control study that investigated relationships between chlorination by-products and stillbirth from	Multiple pregnancies No physician permission to contact by telephone	death prior to or during delivery of a fetus, weighing 500 g or more in the preterm, term or post-term period	510	Stillbirth	Stillbirth	Household income Maternal age Smoking Fertility treatment Inactivity Province of origin		Not all multiparous women Pregnancies not consecutive Focussed on SES therefore no adjustment for medical

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			1999 – 2001 in Nova Scotia and Eastern Ontario Cases=singleton SB Controls = singleton livebirth both identified via population based datasets								conditions Small study
Lurie 2007	Hospital based case-control study	Israel	Cases: women delivering a stillborn baby at the Wolfson Medical Center during the years 1997 – 2001 Controls: 2 per case matched for year of birth, maternal age, parity and gestation at birth	Unclear or unstated	Delivery of a dead fetus after 24 completed weeks	92	Stillbirth	Stillbirth	No adjusted analysis	No adjusted analysis	Extremely small study Cause of death available No adjusted analysis Unclear whether pregnancies consecutive Multiples and abnormalities included
Sharma 2007	Population based cohort study	USA	Relatively low risk women who had first and second consecutive births in Missouri 1978-1997	Maternal age > 35 years Congenital anomalies Gestational age of < 20 or >44 weeks Multiple	Intrauterine fetal death at ≥ 20 weeks gestation	261,384	Stillbirth	Stillbirth	Race Marital status Education status BMI Prenatal care, Inter-pregnancy interval, Year of	Antepartum haemorrhage Stillbirth before and after 28 weeks Antepartum vs intrapartum stillbirth	Inadequate data on maternal conditions relative to recurrence of stillbirth

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				gestation Smoking in either pregnancy					birth.		
Smith 2006	Population based retrospective cohort	Scotland	Women having a second birth in Scotland between 1992 – 2001 whose first infant was liveborn	Missing data on gestation, sex or birthweight GA outside 24 – 43 weeks Stillbirth in first pregnancy Second pregnancy perinatal deaths due to abnormality or rhesus disease Implausible interpregnancy interval	Stillbirths classified into antepartum or intrapartum and at > 24 weeks gestation	133,163	SGA Preterm Pre-eclampsia Caesarean section	Stillbirth	Interpregnancy interval Maternal age Deprivation category Height Smoking Marital status	SGA Explained vs unexplained stillbirth	Cause of death available for second pregnancy stillbirth Able to exclude congenital abnormalities Addresses association of previous placentally related conditions and subsequent unexplained stillbirth
Sharma 2006	Population based cohort study	USA	Women who had first and second singleton consecutive births in Missouri 1978 - 1997	Multiple pregnancies Gestation outwith range of 20 – 44 weeks	Intrauterine fetal death at 20 weeks or more of gestation.	404,180	Stillbirth	Stillbirth	maternal age parity marital status, educational status smoking during pregnancy BMI prenatal care, interpregnancy interval year of birth		Pregnancy complications for only 50% Inadequate data on maternal conditions relative to recurrence of stillbirth No adjustment

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											for preterm or SGA in preg 1.
Onwude 2006	Hospital based case-control study	UK	Case s= term singleton stillbirths born between 1992 and 1996 at St John's Hospital Controls= the first two delivered women aged within 5 years and of same parity, were selected as controls	Explained deaths Multiple pregnancies	Term singleton normally formed unexplained death	150	Stillbirth	Stillbirth	Maternal age Previous miscarriage Interval to next birth	Gestation, Birthweight	Small study Has cause of death Unclear whether just first and second pregnancies or not
Surkan 2004	Population based cohort study	Sweden	Women who delivered first and second consecutive singleton infants between 1983 and 1997 in Sweden	Multiple pregnancies	Fetal death at 28 weeks of gestation or later	410,021	Stillbirth Preterm SGA	Stillbirth	Model 1 adjusted for : Smoking Maternal age, Maternal education Living with or without the baby's father Country of birth, Year of delivery Interpregnancy interval	Model 2 = model 1 factors plus: Hypertensive diseases Antepartum hemorrhage	BMI only available from 1992 No cause of death Late (> 28) definition for stillbirth Minimal info on missing data
Robson 2001	Population	Australia	Cases =	Indigenous	Unexplained	3476	Stillbirth	Stillbirth	Abnormal glucose	Induction of	Not

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	based case-control study		Subsequent births to women with a previous unexplained stillbirth Controls = births to women with no previous history of stillbirth, matched by year of birth, in the period 1987-1997	women Multiple pregnancies	stillbirth of at least 20 weeks gestation or 400 g				tolerance or gestational diabetes	labour Labour complication Fetal distress PPH Mode of delivery Preterm	consecutive pregnancies Stillbirth as a second pregnancy outcome only presented in unadjusted analysis Small numbers
Heinonen 2000	Cross-sectional hospital based cohort	Finland	Parous women from Kuopio University Hospital with chromosomally and structurally normal singleton births	Multiple gestations that had high risk of fetal death (unspecified) First birth abnormalities with risk figures for recurrence (unspecified) Previous IDDM, preeclampsia, rhesus , uterine anomalies.	> 24 weeks or > 500 g	11,910	Stillbirth	Stillbirth Preterm Low birth weight Low apgars Nursery admission Cord pH Abnormal CTG	Maternal age Miscarriage Grand multiparity (> 7) Interpreg interval < 12 months Obesity Treatment for infertility Alcohol consumption Gestational diabetes		Relatively small sample size Unspecified how many of the prior stillbirths were multiples or abnormalities Births not consecutive
Weeks 1995	Hospital based case series	USA	Women who were seen in the Centers for	Multiple pregnancies in pregnancy	Fetal death at ≥ 20 weeks	300	Stillbirth	Stillbirth Preterm Growth	No adjusted analysis	No adjusted analysis	Small study Pregnancies not

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			Fetal Evaluation at Long Beach Memorial and the University of California, Irvine, for antepartum surveillance from January 1979 to December 1991 with a history of stillbirth as the only indication for testing	following stillbirth	gestation			restriction CS for fetal distress Abnormal CTG result			consecutive Multiples in previous pregnancy included Anomalies included No adjustment for confounding
Greenwood 1994	Population based case-control study	Jamaica	Cases = singleton perinatal deaths occurring to multigravidae throughout Jamaica in the 12-month period September 1986 to August 1987 Controls = Singleton survivors born to multigravidae	Multiple pregnancies	Fetal death \geq 500 g	7760	Stillbirth Early preg losses Perinatal death Prev CS Prev forceps	Perinatal death and subgroups of ante-partum SB asphyxia deaths immature deaths	Gravidity Maternal age		Cause of death available Not consecutive pregnancies Abnormalities included Relatively small dataset

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			in Jamaica in sept and oct 2 month period 1986								
Samueloff 1993	Hospital based retrospective cohort study	USA	Consecutive deliveries of multiparous women at Medical Center Hospital University of Texas, San Antonio 1976 - 1989	Fetal deaths < 20 weeks gestation Primiparous women	Fetal death > 20 weeks gestation	48,479	Stillbirth	Stillbirth Preterm Birthwt Diabetes High BP (any) Abruption Post dates Chorio- amnionitis	No adjusted analysis	No adjusted analysis	No cause of death Unclear whether multiple pregnancies included No adjustment for confounders Unclear which previous pregnancy the stillbirth was in
Freeman 1985	Cross-sectional study within another multicentre hospital cohort	USA	High risk women enrolled in a multicentre study on antepartum fetal heart rate testing in Vermont between 1976-1980 Plus additional women with a history of SB from one	Non-compliant with or not satisfactory antepartum fetal heart rate testing	Not specified	7052	Stillbirth	Stillbirth SGA Low apgar at 5 mins Abnormal CTG Neonatal death RDS	No adjusted analysis	No adjusted analysis	Small study Substudy of high risk women No adjusted analysis No cause of death or definition of stillbirth Pregnancies not consecutive

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			hospital delivering between 1980 - 1982								

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