Appendix

Detail of Perinatal Data Stored in Western Australian Midwives' Notification System

Recorded data included maternal age, maternal ethnicity, parity, smoking in pregnancy, marital status, pre-existing medical conditions including asthma, hypertension, diabetes and others; pregnancy complications (threatened abortion, antepartum haemorrhages due to placenta praevia, placental abruption or other causes, preeclampsia, pregnancy induced hypertension, gestational diabetes, threatened preterm labour, urinary tract infections, and other complications; analgesia and anaesthesia during labour and birth; complications of labour, mode of delivery (spontaneous vaginal, assisted vaginal and caesarean section), and postpartum complications such as postpartum haemorrhage and retained placenta. Medical conditions and pregnancy complications were also recorded with International Classification of Disease (ICD) diagnosis codes. Neonatal outcomes recorded included gestational age at delivery (recorded as number completed weeks), sex, birth weight, live/stillborn outcome, and admission to special care nursery and duration of hospital stay are recorded.

Detail of Hospitalization Records Stored in Western Australian Hospital Morbidity System

Hospitalization diagnoses coded using either ICD-9-CM (until 30 June 1997) or ICD-10-AM (from 1 July 1997) were extracted using ICD-10-AM codes using a conversion mapping when required (http://nccc.uow.edu.au/icd10am-achi-acs/index.html). ICD codes were used to extract diagnosis group specific hospitalization for women and their offspring. ICD codes on maternal admissions were used to identify pregnancies conceived via *in-vitro* fertilization

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(IVF), in the instances when an IVF treatment was one of the admission diagnoses (Z31.2) at the expected time of conception given gestational age at delivery.

Offspring hospitalizations for diagnoses that originated in the perinatal period were extracted overall (P00-P96) and categorized into admissions due to: slow fetal growth, short gestational length or low birthweight (P05-P07); haemorrhagic, haematological disorders of fetus and newborn (P50-P61); infections of the perinatal period (P35-P39); feeding problems (P92); transitory disorders of carbohydrate metabolism (P70); cardiac disorders specific to the perinatal period (P29); respiratory distress (P22) and other pulmonary conditions (P25-P28).

Maternal non-obstetric conditions during pregnancy and offspring hospitalizations beyond the perinatal period included: infectious and parasitic diseases (A00-B99); endocrine, nutritional and metabolic diseases (E00-E90); metabolic disorders (E70-E90); any mental, behavioural or neurodevelopmental disorders (F00-F99); and disorders of psychological development (F80-F90); diseases of nervous system (G00-G99); diseases of the eye and adnexa (H00-H59); diseases of the ear and mastoid process (H60-H95); any diseases of circulatory system (I00-I99); diagnosis of asthma (J45), acute and other upper respiratory tract infections (J20-J22, J40-J44, J46-J47, J85-J86); diseases of lower respiratory infections (J09-J18, J60-J70, J80-J84, J90-J94, J95-J99); any diseases of digestive system (K00-K93); diseases of the skin and subcutaneous tissues (L00-L93); and diseases of male genital organs (N40-N51). Offspring hospitalisations and the age of their occurrence were categorized according to primary and secondary ICD-10 diagnoses, and times of the first hospitalizations were examined.

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Statistical Analysis

Logistic regression evaluating effects of Polycystic Ovary Syndrome (PCOS) on perinatal outcomes, including hospitalization with diagnoses of conditions that originated in the perinatal period, always considered candidate covariates including maternal age (<20, 20-29, 30-39, 40+), parity (0, 1-4, 5+), IVF treatment, maternal pre-existing medical conditions (ICD-10), pregnancy complications as recorded during pregnancy either directly or using ICD-10 codes, multiple gestation, gender, gestational age at delivery, low birthweight, macrosomia and possible differences in pregnancy management modelled according to time periods (years <1990, 1990-1999, 2000-2011). Final logistic regression analysis evaluated the effect of PCOS on each neonatal outcome with adjustment for prematurity, multiple preganancy, hypertension, pre-eclampsia, maternal diabetes and obesity and candidate covariates that remained statistically significant in the model.

Logistic regression evaluating the effects of PCOS on the diagnosis of each congenital anomaly always adjusted for maternal age (<20, 20-29, 30-39, 40+), IVF treatment, maternal smoking during pregnancy, single/multiple gestation, gender and current age of the offspring (categorized as <1 year of age, 1-2 years, 2-3 years, 3-6 years and ≥6 years of age). Other potential confounders always considered included pre-existing or gestational diabetes and these factors remained in the final logistic regression model according to their statistical significance.

Cox proportional hazards regression analysis was used to examine the effects of PCOS on the duration until first hospitalisation of each ICD-10 diagnosis considered. In these analyses, ages for all individuals that did not experience any hospitalizations with a particular diagnosis were

assigned either the subject's maximal age at the end of the ICD-codes ascertainment (i.e. on 1 May 2011) or age at death, as appropriate. For each hospitalization outcome, relevant candidate covariates considered during model selection comprised maternal, pregnancy and neonatal characteristics. All Cox hazards regression analyses considered maternal characteristics including maternal age (<20, 20-29, 30-39, 40+), parity (0, 1-4, 5+), IVF treatment, smoking during pregnancy, medical conditions during pregnancy such as anaemia, asthma, hypertension, diabetes and other endocrine disorders, mental disorders, cardiovascular disorders, obesity, maternal congenital anomalies, pregnancy complications including threatened abortion, antepartum hemorrhage for all causes, pregnancy induced hypertensive diseases, gestational diabetes, and neonatal characteristics such as gender, singleton/multiple pregnancy gestation, gestational age at delivery (<37 completed weeks and ≥37 weeks), low birthweight, macrosomia, admission to special care nursery after birth, and an adjustment for possible temporal differences between hospitalization patterns was considered by using a time indicator for changes between decades <1990, 1990-1999 and ≥2000. The adjustment for maternal age, maternal smoking, parity, preterm birth, gender, major congenital anomaly, multiple pregnancy gestation and the time period indicator was always included in the model, while further adjustments for additional covariates were only retained as a result of the statistical hypothesis testing.

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