Supplement table 1 Risk factors and their definition

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| **Risk factors** | **Definition** |
| Maternal age | Age at start of admission field in HES. Values were re-coded into 6 categories: 15-19, 20-24, 25-29, 30-34, 35-39, 40 and over |
| Multiple gestation | ICD-10 code in any diagnosis field coded as multiple gestation (O30) from delivery or spontaneous abortion associated with hospitalisation admission |
| Parity | Number of previous pregnancies ‘numpreg’ field in HES maternity tail; however, where this value were missing, we identified previous pregnancies by linking historical health records using the woman’s HESID back to 1997. Values were re-corded into 2 categories: primiparous and multiparous |
| Previous emergency admission  (year prior to pregnancy) | Method of admission field in HES (value: 21-28) from woman’s historical medical records |
| Socio-economic deprivation | Carstairs quintile from delivery or spontaneous abortion associated with hospitalisation admission |
| Co-morbidities | Charlson score from delivery or spontaneous abortion associated with hospitalisation admission (Charlson score includes: myocardial infarction, congestive heart failure, peripheral vascular disease, cerebrovascular disease, dementia, COPD, connective tissue disease, peptic ulcer disease, diabetes mellitus, moderate to severe chronic kidney disease, hemiplegia, leukemia, malignant lymphoma, solid tumor, liver disease, AIDS) |
| Co-morbidities  (prior to pregnancy) | Charlson score (from admissions within 3 years prior to pregnancy) |
| Gestational diabetes | ICD-10 code in any diagnosis field (from delivery or spontaneous abortion associated with hospitalisation admission):  O24 – Diabetes mellitus in pregnancy |
| Hypertension/preeclampsia | ICD-10 code in any diagnosis field (from delivery or spontaneous abortion associated with hospitalisation admission):  O10 – Pre-existing hypertension complicating pregnancy, childbirth and the puerperium  O11 – Pre-existing hypertensive disorder with superimposed proteinuria  O12 – Gestational [pregnancy-induced] oedema and proteinuria without hypertension  O13 – Gestational [pregnancy-induced] hypertension without significant proteinuria  O14 – Gestational [pregancy-induced] hypertension with significant proteinuria  O15 – Eclampsia  O16 – Unspecidied maternal hypertension |
| Cardiac diseases | ICD-10 code in any diagnosis field (from delivery or spontaneous abortion associated with hospitalisation admission):  I05 – Rheumatic mitral valve dideases  I06 – Reumatic aortic valve diseases  I07 – Reumatic tricuspid valve diseases  I08 – Multiple valve diseases  I09 – othetr rheumatic heart diseases  I10 – Essential (primary) hypertension  I11 – Hypertensive heart disease  I12 – Hypertensive renal disease  I13 – hypertensive heart and renal disease  I15 – Secondary hypertension  I20 – Angina pectoris  I23 – Certain current complications following acute myocardial infarction  I24 – Other acute ischaemic heart diseases  I25 – Chronic ischaemic heart disease (excluding I25.2 – Old myocardial infarction)  I27 – Other pulmonary heart diseases  I28 – Other diseases of pulmonary vessels  I30-I52 – Other forms of heart disease  Q20 – Congenital malformations of cardiac chambers and connections  Q21 – Congenital malformations of cardiac septa  Q22 – Congenital malformations of pulmonary and tricuspid valves  Q23 – Congenital malformations of aortic and mitral valves  Q24 – Other congenital malformations of heart  Q25 – Congenital malformations of great arteries |
| Operations on amniotic cavity  (e.g. Amniocentesis, sampling of chorionic villus) | OPCS code in any procedure field from admissions within pregnancy:  R10 – Other operations on amniotic cavity |
| Obstetric surgery | OPSC code in any diagnosis field (from admissions within pregnancy):  R01 – Therapeutic endoscopic operations on foetus  R02 – Diagnostic endoscopic examination of foetus  R04 – Therapeutic percutaneous operations on foetus  R05 – Diagnostic percutaneous examination of foetus  R07 – Therapeutic endoscopic operations for twin-twin transfusion syndrome  R08 - Therapeutic percutaneous operations for twin-twin transfusion syndrome  R12 – Operations on gravid uterus  R34 – Other obstetric operations |
| Previous caesarean section | Previous pregnancy episodes with an OPCS code or using delivery method field in HES maternity tail (from 1997/98 to 2011/12) |
| Non-obstetric surgery | Based on operating theatre procedure based on OPCS procedure field defined in previous research. From the list we excluded obstetric and male associated procedures. Furthermore, after discussion with clinicians, two OPCS codes were excluded (K66.1 – cardiotachyography, S06 – other excision of skin) |