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 puerperiumO11 – Pre-existing hypertensive disorder with superimposed proteinuriaO12 – Gestational [pregnancy-induced] oedema and proteinuria without hypertensionO13 – Gestational [pregnancy-induced] hypertension without significant proteinuriaO14 – Gestational [pregancy-induced] hypertension with significant proteinuriaO15 – EclampsiaO16 – 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 dideasesI06 – Reumatic aortic valve diseasesI07 – Reumatic tricuspid valve diseasesI08 – Multiple valve diseasesI09 – othetr rheumatic heart diseasesI10 – Essential (primary) hypertensionI11 – Hypertensive heart diseaseI12 – Hypertensive renal diseaseI13 – hypertensive heart and renal diseaseI15 – Secondary hypertensionI20 – Angina pectorisI23 – Certain current complications following acute myocardial infarctionI24 – Other acute ischaemic heart diseasesI25 – Chronic ischaemic heart disease (excluding I25.2 – Old myocardial infarction)I27 – Other pulmonary heart diseasesI28 – Other diseases of pulmonary vesselsI30-I52 – Other forms of heart diseaseQ20 – Congenital malformations of cardiac chambers and connectionsQ21 – Congenital malformations of cardiac septaQ22 – Congenital malformations of pulmonary and tricuspid valvesQ23 – Congenital malformations of aortic and mitral valvesQ24 – Other congenital malformations of heartQ25 – 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 foetusR02 – Diagnostic endoscopic examination of foetusR04 – Therapeutic percutaneous operations on foetusR05 – Diagnostic percutaneous examination of foetus R07 – Therapeutic endoscopic operations for twin-twin transfusion syndromeR08 - Therapeutic percutaneous operations for twin-twin transfusion syndromeR12 – Operations on gravid uterusR34 – 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) |