Supplementary table 5: Risk of bias

Risk of bias assessments for studies of women with pregestational and/or with gestational diabetes

Risk of bias assessments (RoBANS)

Study ID	Sequence generation	Allocation concealment	Selection of participants	Confounding variables	Measurement of exposure	Blinding of outcomes assessment	Incomplete outcome data	Selective outcome reporting	Other
Cassimatis 2020 (Retrospective cohort study)	N/A	N/A	**Low** All participants from three institutions had PGDM (type 1 or type 2) with singleton pregnancies and delivered in late preterm between April 2014 and May 2017.	**High** -Study design No consideration -Analysis No consideration	**Low** Data obtained from an obstetric electronic database	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements	**Low** No missing data	**Low** All predefined outcomes reported	-
Krispin 2018 (Retrospective cohort study)	N/A	N/A	**Low** All participants from a single, university-affiliated, tertiary medical center had GDM and delivered after 34 weeks of gestation between 2012 and 2016.	**High** -Study design No consideration -Analysis The following potential confounders were adjusted: primiparity, birth weight, gestational age at delivery, gravidity, parity, hypertensive disorders, and body mass index.	**Low** Data obtained from a comprehensive computerized perinatal database	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements . .	**Low** No missing data	**Low** All predefined outcomes reported	-

Study ID	Sequence generation	Allocation concealment	Selection of participants	Confounding variables	Measurement of exposure	Blinding of outcomes assessment	Incomplete outcome data	Selective outcome reporting	Other
Battarbee 2020 (Retrospective cohort study)	N/A	N/A	**Low** A cohort study included 115,502 participants from 25 hospitals in the United States between March 2008 and February 2011. To avoid overrepresentation of participants from larger hospitals, up to one-third of participants had spent days at hospitals with annual delivery volumes from 2,000 to 7,000 and up to one-sixth had spent days in hospitals with annual deliveries > 7,000.	**High** -Study design No consideration -Analysis No consideration on confounding variables	**Low** Data obtained from medical records	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements . .	**Low** Eleven sets of missing data (11 women and 12 neonates) were excluded from the data for steroids, but the proportion of missing data was very small (less than 1%).	**Low** All predefined outcomes reported	-

N/A: Not Applicable; **PGDM:** Pregestational diabetes mellitus; **GDM:** gestational diabetes mellitus; **ACS:** Antenatal corticosteroid

*Krispin (2018) and Battarbee (2020) reported the data by their multiple logistic regression models, but we used crude data in the analysis. Hence, confounding variables were at high risk of bias in all included studies.

Risk of bias assessments for studies of antenatal corticosteroids in women undergoing elective cesarean section in the late preterm period

Risk of bias assessments (RoBANS)

Study ID	Sequence generation	Allocation concealment	Selection of participants	Confounding variables	Measurement of exposure	Blinding of outcomes assessment	Incomplete outcome data	Selective outcome reporting	Other
Kirshenbaum 2018 (Case-control study)	N/A	N/A	**Low** All participants, from a single tertiary medical center, delivered by elective cesarean section at 34 + 0–37 + 0 weeks of gestation between January 2011 and December 2013.	**High** -Study design No consideration -Analysis No consideration on confounding variables	**Low** Data obtained from obstetric electronic database	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** No missing data	**Low** All predefined outcomes reported.	-
de la Huerga López 2019 (Retrospective cohort study)	N/A	N/A	**Low** All participants admitted/delivered and treated at the same tertiary hospital over the same period (from January 2013 to April 2017).	**High** -Study design No consideration -Analysis No consideration on confounding variables	**Low** Data obtained from medical records	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** No missing data	**Low** All predefined outcomes reported	-

N/A: Not Applicable

Cochrane Risk of Bias tool

Study ID	Random sequence generation	Allocation concealment	Blinding of participants and personnel	Blinding of outcome assessment	Incomplete outcome data	Selective reporting	Other bias
Gyamfi-Bannerman 2016 (Randomized controlled trial)	**Low** The randomization sequence was developed using the simple urn method.	**Low** The randomization sequences were generated by an independent data coordinating center using the simple urn method.	**Low** Neither the participants nor the investigators were informed of the study group assignments.	**Low** All outcome reviewers were unaware of study-group assignments.	**Low** Only two participants in each of the two groups were lost to follow-up.	**Low** The study protocol is available and all of the study's pre-specified (primary and secondary) outcomes have been reported.	**Low** No other bias is found.

Risk of bias assessments for studies of antenatal corticosteroids in women with chorioamnionitis (histological or clinical)

Risk of bias assessments (RoBANS)

Study ID	Sequence generation	Allocation concealment	Selection of participants	Confounding variables	Measurement of exposure	Blinding of outcomes assessment	Incomplete outcome data	Selective outcome reporting	Other
Ahn 2012 (Prospective cohort study)	N/A	N/A	**Low** All participants admitted/born at Ewha Women's University between 2005 and 2010.	**High** -Study design No consideration -Analysis Multiple logistic regression model was used but controlled only by gestational age.	**Low** Data obtained from direct measurements and clinical assessments	**Low** No statement to indicate blinding, but unlikely to affect outcome measurements . .	**Low** No missing data	**Low** All expected outcomes reported	-
Been 2009 (Prospective cohort study)	N/A	N/A	**Low** All participants admitted/born at the Erasmus University Medical Center-Sophia Children's Hospital between May 2001 and February 2003.	**High** -Study design No consideration -Analysis No consideration on confounding variables	**Low** Data obtained from direct measurements and clinical assessments	**Low** No statement to indicate blinding, but unlikely to affect outcome. Measurements . .	**Low** No missing data	**Low** All expected outcomes reported	-

Study ID	Sequence generation	Allocation concealment	Selection of participants	Confounding variables	Measurement of exposure	Blinding of outcomes assessment	Incomplete outcome data	Selective outcome reporting	Other
Goldenberg 2006 (Retrospective cohort study)	N/A	N/A	**Low** All participants admitted/delivered at the same institution during the same period (December 5, 1996–June 13, 2001).	**High** -Study design No consideration -Analysis No consideration on confounding variables	**Low** Data obtained from medical records	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements .	**Low** No missing data	**Low** All expected outcomes were reported	-
Dempsey 2005 (Retrospective cohort study)	N/A	N/A	**Low** All participants admitted/delivered at the same institution between January 1989 and January 1999.	**High** -Study design No consideration -Analysis No consideration on confounding variables	**Low** Data obtained from medical records (obstetrical and neonatal database and pathology database, cross-referenced with data from pathology database and from maternal and neonatal chart review).	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements . .	**Low** No missing data	**Low** All expected outcomes were reported	-

Study ID	Sequence generation	Allocation concealment	Selection of participants	Confounding variables	Measurement of exposure	Blinding of outcomes assessment	Incomplete outcome data	Selective outcome reporting	Other
Foix-L'Helias 2005 (Retrospective cohort study)	N/A	N/A	**Low** Participants drawn from different institutions between 1993 and 1996.	**High** -Study design No consideration -Analysis No consideration on confounding variables	**Low** Data obtained from medical records	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements . .	**Low** No missing data	**Low** All predefined outcomes reported	Survey limited to inborn babies, possibly overestimating the impact of ACS. However, no distinction was made between completed and uncompleted ACS courses, so there is potential the underestimation.
Baud 2000 (Retrospective cohort study)	N/A	N/A	**Low** All participants admitted to Antoine Beclere University Hospital between 1993 and 1997.	**High** -Study design No consideration -Analysis Multiple logistic regression model was used, controlled for causes of delivery, antenatal antibiotics administration, mode of delivery, gestational age, origin (inborn or out born), and hemodynamic failure.	**Low** Data obtained from computerized database	**Low** No statement to indicate blinding, but unlikely to affect outcome measurements . .	**Low** No missing data	**Low** All predefined outcomes reported	-

Study ID	Sequence generation	Allocation concealment	Selection of participants	Confounding variables	Measurement of exposure	Blinding of outcomes assessment	Incomplete outcome data	Selective outcome reporting	Other
Elimian 2000 (Retrospective cohort study)	N/A	N/A	**Low** All participants admitted/delivered at the same institution between January 1990 and December 1997.	**High** -Study design No consideration -Analysis No consideration on confounding variables	**Low** Data obtained from medical records	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** No missing data	**Low**. All expected outcomes were reported.	-
Ryu 2019 (Retrospective cohort study)	N/A	N/A	**Low** All participants from a single university hospital, admitted to the same institution (Seoul National University Hospital) between 2007 and 2014.	**High** -Study design No consideration -Analysis Multiple logistic regression was used, controlled for gestational age, sex, and cesarean section.	**Low** Data obtained from obstetric electronic database	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** At the beginning of the study incomplete information was excluded.	**Low** All predefined outcomes reported.	-

N/A: Not applicable**; RDS:** Respiratory distress syndrome; **BPD:** Bronchopulmonary dysplasia; **IHC:** Intrahepatic cholestasis; **IVH:** Intraventricular hemorrhage; **PVL:** Periventricular leukomalacia; **NEC:** Necrotizing enterocolitis; **PDA:** Patent ductus arteriosus; **HC:** Histological chorioamnionitis; **CC:** Clinical chorioamnionitis; **IUGR:** Intrauterine growth restriction; **ACS:** Antenatal corticosteroid; **GA:** Gestational age; **CS:** Cesarean section

*Baud (2000), Ahn (2012) and Ryu (2019) reported the data by their multiple logistic regression models, but we used crude data in the analysis. Hence, confounding variables were at high risk of bias in all included studies.

Risk of bias assessments for of studies of antenatal corticosteroids in women with growth-restricted fetuses and/or small-for-gestational-age infants

Risk of bias assessments (RoBANS)

Study ID	Sequence generation	Allocation concealment	Selection of participants	Confounding variables	Measurement of exposure	Blinding of outcomes assessment	Incomplete outcome data	Selective outcome reporting	Other
van Stralen 2009 (Retrospective cohort study)	N/A	N/A	**Low** All participants admitted/delivered and treated at the same institution (Leiden University Medical Center) over the same period (January 2001–December 2005).	**High** -Study design No consideration -Analysis No consideration on confounding variables	**Low** Data obtained from obstetric electronic database	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** No missing data	**Low** All predefined outcomes reported.	Although equally divided, the difference in origin, i.e., referral pattern, may also have influenced the results.
Torrance 2007 (Retrospective cohort study)	N/A	N/A	**Low** All participants from a single tertiary referral center admitted to the same institution (neonatal intensive care unit at the University Medical Centre Utrecht, the Netherlands) over the same period (from January 1, 1999, to December 31, 2003). Cases and controls were selected from same pool (e.g., same gestational age, same birth weight).	**High** -Study design No consideration -Analysis No consideration on confounding variables	**Low** Data was obtained from an electronic database.	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** No loss to follow-up	**Low** All predefined outcomes reported.	-

Study ID	Sequence generation	Allocation concealment	Selection of participants	Confounding variables	Measurement of exposure	Blinding of outcomes assessment	Incomplete outcome data	Selective outcome reporting	Other
Foix-L'Helias 2005 (Retrospective cohort study)	N/A	N/A	**Low** Participants drawn from different institutions during the same period (1993–1996).	**High** -Study design No consideration -Analysis No consideration on confounding variables	**Low** Data obtained from medical records.	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** No missing data	**Low** All predefined outcomes reported.	Survey limited to inborn babies, possibly overestimating the impact of ACS. However, no distinction was made between completed and uncompleted ACS courses, so there is potential underestimation.
Schaap 2001 (Case-control study)	N/A	N/A	**Low** Participants drawn from different two institutions during the same period (1984–1991).	**High** -Study design Matched by birth weight, sex and year of birth. -Analysis No consideration on confounding variables	**Low** Data obtained from medical records. Because all mothers had been admitted at least 24 h before delivery, a difference in fetal condition on admission was unlikely.	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** Nine losses at school age follow-up (4 in steroid group, 5 in control group) but no significant difference in sociodemographic details between those lost and retained at follow-up.	**Low** All predefined outcomes reported.	Hypertensive mothers less often treated with corticosteroids. Further, matching notwithstanding, birth weight and gestational age were significantly lower in the AGA group, although magnitude of the difference is small.

Study ID	Sequence generation	Allocation concealment	Selection of participants	Confounding variables	Measurement of exposure	Blinding of outcomes assessment	Incomplete outcome data	Selective outcome reporting	Other
Elimian 1999 (Retrospective cohort study)	N/A	N/A	**Low** All participants from the same institution during the same period (January 1990–July 1997)	**High** -Study design No consideration -Analysis No consideration on confounding variables	**Low** Data obtained from medical records	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** No missing data	**Low** All predefined outcomes reported.	-
Ley 1997 (Retrospective cohort study)	N/A	N/A	**Low** All participants admitted/delivered and treated at the same institution (University Hospital of Lund) during the same period (1985–1994).	**High** -Study design No consideration -Analysis Multiple logistic regression was used, controlled for birthweight deviation, gestational age, pre-eclampsia, premature rupture of membranes and mode of delivery.	**Low** Data obtained from hospital records	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** No missing data	**Low** All predefined outcomes reported.	-
Spinillo 1995 (Prospective cohort study)	N/A	N/A	**Low** All participants from the same institution during the same period (1988–1993)	**High** -Study design No consideration -Analysis Multiple logistic regression was used, controlled for gestational age, birth weight and sex.	**Low** Data obtained from hospital records	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** Missing data was less than 10%.	**Low** All predefined outcomes reported.	-

Study ID	Sequence generation	Allocation concealment	Selection of participants	Confounding variables	Measurement of exposure	Blinding of outcomes assessment	Incomplete outcome data	Selective outcome reporting	Other
Di Lenardo 1990 (Retrospective cohort study)	N/A	N/A	**Unclear** All participants admitted/delivered and treated at the same institution (Prenatal Care Ward of Univ. of Padua's Gynecology & Obstetrics Institution) but unclear if over the same period.	**High** -Study design No consideration -Analysis No consideration on confounding variables	**Low** Data obtained from medical records	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** No missing data	**Low** All predefined outcomes reported.	-
Bitar 2020 (Retrospective cohort study)	N/A	N/A	**Low** All participants, from a single hospital, who delivered at 34.0–36.6 weeks of gestation, with small-for-gestational-age or fetal-growth-restriction infants between January 2015 and December 2019.	**High** -Study design No consideration -Analysis Multiple logistic regression was used, controlled for parity and preeclampsia.	**Low** Data obtained from electronic medical records	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** There are missing data, but this is unlikely to have affected the study outcome.	**Low** All predefined outcomes were reported.	-

Study ID	Sequence generation	Allocation concealment	Selection of participants	Confounding variables	Measurement of exposure	Blinding of outcomes assessment	Incomplete outcome data	Selective outcome reporting	Other
Cartwright 2019 (Retrospective cohort study)	N/A	N/A	**Low** All participants from 23 collaborating hospitals, 16 in Australia and 7 in New Zealand, with a single, twin, or triplet pregnancy at less than 32 weeks of gestational age from April 1998 to July 2004.	**High** -Study design No consideration -Analysis Multiple logistic regression was used, controlled for gestational age at trial entry, antepartum hemorrhage, preterm pre-labor rupture of membranes, and country of birth.	**Low** Data obtained from case notes	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** There are missing data, but this is unlikely to have affected the study outcome.	**Low** The predefined outcomes were described as planned.	-
Riskin-Mashiah 2018 (Retrospective cohort study)	NA	N/A	**Low** The data of all participants from the National Very Low Birth Weight Infant database from 1995 to 2012	**High** -Study design No consideration -Analysis Multiple logistic regression was used, controlled for maternal age, ethnicity, infertility treatment, maternal hypertensive disorder, preterm labor, premature rupture of membranes and/or amnionitis, gestational age, delivery mode, birth weight z-score, gender, birth order, delivery room resuscitation and year of birth.	**Low** Data obtained from the national network	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** No missing data	**Low** All predefined outcomes reported.	-

Study ID	Sequence generation	Allocation concealment	Selection of participants	Confounding variables	Measurement of exposure	Blinding of outcomes assessment	Incomplete outcome data	Selective outcome reporting	Other
Kim 2018 (Retrospective cohort study)	N/A	N/A	**Low** All participants from a single hospital between 2009 and 2016	**High** -Study design No consideration -Analysis Multiple logistic regression was used, controlled for gestational age, parity, mode of delivery, maternal diabetes, gestational hypertensive disorder, and preterm premature rupture of membrane.	**Low** Data obtained from medical records and perinatal database	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** No statement of missing data, but the possibility of data loss is low.	**Low** All predefined outcomes reported.	-
Ishikawa 2015 (Retrospective cohort study)	N/A	N/A	**Low** The data of all participants from the National Research Network Database in Japan between 2003 and 2007	**High** -Study design No consideration -Analysis Multiple logistic regression was used, controlled for maternal age, parity, preeclampsia, preterm rupture of membranes, non-reassuring fetal status, mode of delivery, gestational age at delivery, birth weight, gender of the infant, and histological chorioamnionitis (≥ stage 2).	**Low.** Data obtained from national network	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** There are missing data, but this is unlikely to have affected the study outcome.	**Low** All predefined outcomes reported.	-

Study ID	Sequence generation	Allocation concealment	Selection of participants	Confounding variables	Measurement of exposure	Blinding of outcomes assessment	Incomplete outcome data	Selective outcome reporting	Other
Riskin-Mashiah 2016 (Retrospective cohort study)	N/A	N/A	**Low** The data of all participants from the National Very Low Birth Weight Infant database from 1995 to 2012	**High** -Study design No consideration -Analysis Multiple logistic regression was used, controlled for maternal age, ethnicity, infertility treatment, maternal diabetes, maternal hypertensive disorder, preterm labor, premature rupture of membranes, amnionitis, antepartum hemorrhage, gestational age, delivery mode, birthweight z-score, gender, delivery room resuscitation and year of birth.	**Low** Data obtained from national network	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** No missing data	**Low** All predefined outcomes reported.	-
Mitsiakos 2013 (Retrospective cohort study)	N/A	N/A	**Low** All participants between 24 and 31 6/7 weeks of gestational age from a single hospital. The study period was not specifically mentioned, but intervention and control groups seem to be selected from the same population groups.	**High** -Study design No consideration -Analysis No consideration on confounding variables	**Low** Data obtained from obstetric and neonatal database	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** There are missing data, but this is unlikely to have affected the study outcome.	**Low** All predefined outcomes reported.	-

Study ID	Sequence generation	Allocation concealment	Selection of participants	Confounding variables	Measurement of exposure	Blinding of outcomes assessment	Incomplete outcome data	Selective outcome reporting	Other
Kim YJ 2018 (Retrospective cohort study)	N/A	N/A	**Low** All participants born at 23 + 0 to 33 + 6 weeks of gestation between January 2007 and December 2014 in a single university hospital in South Korea.	**High** -Study design No consideration -Analysis Multiple logistic regression was used, controlled for birth weight and Apgar score at 5 minutes.	**Low** Data obtained from medical records and perinatal databases	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** No statement of missing data, but the possibility of data loss is low.	**Low** All predefined outcomes reported.	-
The collaborative study group for respiratory distress syndrome in preterm infants 2017 (Retrospective cohort study)	N/A	N/A	**Low** Participants drawn from 14 hospitals during the same period (2013–2014).	**High** -Study design No consideration -Analysis Multiple logistic regression was used, but their confounding factors were not specified.	**Low** Data obtained from medical records	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** No statement of missing data, but the possibility of data loss is low.	**Low** All predefined outcomes reported.	-

Study ID	Sequence generation	Allocation concealment	Selection of participants	Confounding variables	Measurement of exposure	Blinding of outcomes assessment	Incomplete outcome data	Selective outcome reporting	Other
Bernstein 2000 (Retrospective cohort study)	N/A	N/A	**Low** Participants drawn from North American hospitals during the same period (1991–1996).	**High** -Study design No consideration -Analysis No consideration on confounding variables	**Low** Data obtained from medical records	**Low** No statement to indicate that blinding was performed, but unlikely to affect outcome measurements.	**Low** No statement of missing data, but the possibility of data loss is low.	**Low** All predefined outcomes reported.	-

N/A: Not Applicable**; IUGR:** Intrauterine growth restriction; **ACS:** Antenatal corticosteroid; **AGA:** Appropriate for gestational age

*Spinillo (1995), Ishikawa (2015), Riskin-Mashiah (2016), Feng (2017), Riskin-Mashiah (2018), Kim (2018), Kim YJ (2018), Cartwright (2019), and Bitar (2020) reported the data by their multiple logistic regression models, but we used crude data in the analysis. Hence, confounding variables were at high risk of bias in all included studies.