Endbericht:
„Systematische Auswertung des aktuellen Forschungsstands zum Kaiserschnitt“
Los 2: Zeitpunkt des geplanten Kaiserschnitts

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Abkürzungsverzeichnis

AWMF	Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften
ÄZQ	Ärztliches Zentrum für Qualität in der Medizin
CDSR	Cochrane Database of Systematic Reviews
CPAP	Continuous positive airway pressure
CS	Caesarean Section
DARE	Database of Abstracts of Reviews of Effects
DRKS	Deutsches Register Klinischer Studien
GIN	Guideline International Network
GRADE	Grades of Recommendation, Assessment, Development, and Evaluation
HTA	Health Technology Database
KI	Konfidenzintervall
NGC	National Guideline Clearinghouse
NICE	National Institute for Health and Care Excellence
NICU	Neonatal Intensive Care Unit
PICOS	Patienten, Interventionen, Kontrollen, Endpunkte, Studientypen
PPHN	persistent pulmonary hypertension of the newborn
RCOG	Royal College of Obstetricians and Gynecologists
RCT	Randomized Controlled Trial
RDS	Respiratory Distress Syndrome
RR	Relatives Risiko
SoF	Summary of Findings
SSW	Schwangerschaftswoche
TTN	Transient Tachypnea of the newborn
WHO	World Health Organization

1. Fragestellung

Für Los 2: Zeitpunkt des geplanten Kaiserschnitt wurde folgende Fragestellung definiert:

Welchen Einfluss hat der Zeitpunkt des elektiven Kaiserschnitts außerhalb der Frühgeburtlichkeit (37 + 0 Schwangerschaftswoche (SSW)) auf die maternale und neonatale Gesundheit

2. Methoden

2.1. Review-Protokoll

Für die Erstellung dieses Systematic Reviews wurde vorab ein Protokoll erstellt, das die methodische Vorgehensweise darlegt und mit den Kriterien der PRISMA Gruppe übereinstimmt.[1] Das Protokoll wurde nach Fertigstellung der Koordinierungsstelle „Kaiserschnittforschung“ (ansässig Universitätsklinikum Frankfurt, Prof. Louwen) zur Kommentierung freigegeben. Hinsichtlich der sekundären Outcomes ergaben sich während des Volltextscreening Ergänzungen, die nach Rücksprache mit der Koordinierungsstelle zu Änderungen des Protokolls führten. Zusätzlich als Endpunkt aufgenommen wurden: neonatale Mortalität, neonatales respiratorisches Distresssyndrom, neonatale vorübergehende Tachypnoe, neonataler Pneumothorax, neonatale Wiederbelebung, neonatale Sepsis, neonatale Hyperbilirubinämie bedarf Phototherapie, maternale Mortalität, maternale Hysterektomie und maternale Blutungen, einer die Transfusion/Behandlung bedürfen. Spezifiziert wurden Verweildauer auf der neonatalen Intensivstation ≥2 Tage, Hospitalisierung ≥5 Tage, Geburtsgewicht ≤2500g, Apgar-Score ≤6 und ≤3. Gestrichen wurden dafür Depression, depressive Symptome, Beatmung, CPAP-Beatmung und Antibiotikagabe.

2.2. Einschlusskriterien

Folgende Einschlusskriterien für Patienten, Intervention, Kontrollgruppe, Endpunkt und Studientyp (PICOS-Schema) wurden formuliert:

Population:

Eingeschlossene Patientinnen mussten Frauen mit elektivem Kaiserschnitt außerhalb der Frühgeburtlichkeit (37+0 SSW) sein. Dies war unabhängig davon, ob es sich um die erste oder eine weitere Geburt handelte und unabhängig vom vorherigen Geburtsmodus. Außerdem bezog sich die Frage nur auf Populationen gemäß Weltgesundheitsorganisation (WHO) Stratum-A. Dies sind Staaten mit sehr niedriger Kindersterblichkeit und Gesamtsterblichkeit, vorwiegend Staaten in Westeuropa, Nordamerika und Westpazifik.[2]

Intervention:

Die Intervention war die Durchführung des elektiven Kaiserschnitts in der 37 + 0 bis 38 +6 SSW

Kontrolle:

In der Kontrollgruppe sollte der Kaiserschnitt erst ab der 39 + 0 SSW stattfinden.

Outcomes:

Hatte die Intervention einen Einfluss auf:

Primäres Outcome:

- Einweisung auf die neonatale Intensivstation (neonatal intensive care unit (NICU)) aber auch neonatal critical care unit

Sekundäre Outcomes:

- NICU Verweildauer ≥2 Tage
- Neonatale Hospitalisierung ≥5 Tage
- Neonatale respiratorische Morbidität (gemäß Studienprotokoll)
- Neonatales respiratorisches Distresssyndrom (RDS)
- Neonatale vorübergehende Tachypnoe (TTN)
- Neonataler Pneumothorax
- Neonatale Wiederbelebung (gemäß Studienprotokoll)
- Neonatale Sepsis
- Neonatale Hypoglykämie
- Neonataler Apgar Score ≤3
- Neonataler Apgar Score ≤6
- Neonatale Hyperbilirubinämie (bedarf Phototherapie)
- Neonatales Geburtsgewicht ≤2500g
- Neonataler Tod
- Maternaler Tod
- Maternale Hysterektomie
- Maternale Blutung (bedarf Transfusion/Behandlung)
- Maternale unerwünschte Ereignisse (gemäß Studienprotokoll)

Studientyp:

Im Review sollten randomisierte-kontrollierte Studien (RCT), quasi randomisierte-kontrollierte Studien und Kohortenstudien untersucht werden. RCTs sollen Bias durch zufällige und damit gleichmäßige Verteilung von Risiken verringern. Bei Quasi-RCT ist zwar eine Randomisierung erwünscht, jedoch verfehlt die Art der Randomisierung das Prinzip der Randomisierung, z.B. eine Randomisierung nach dem Tag der Aufnahme im Krankenhaus entspricht nicht dem Zufallsprinzip.[3, 4] Kohortenstudien sind Beobachtungsstudien, die eine Kohorte mit der Intervention mit einer Kontrollgruppe vergleichen, jedoch teilen sich die Personen den Gruppen de facto selbst zu.[5]

Die Einschlusskriterien für die Fragestellung sind in Tabelle 1 zusammengefasst.

Tabelle 1: Einschlusskriterien

	Population	Intervention	Kontrolle	Outcome	Studientyp
Zeitpunkt des Kaiserschnittes	Frauen mit elektiven Kaiserschnitt außerhalb der Frühgeburtlichkeit (37+0 SSW) (unabhängig davon, ob es sich um die erste oder eine weitere Geburt handelt und unabhängig vom vorherigen Geburtsmodus)	Elektiver Kaiserschnitt in der 37+0 bis 38+6 SSW	Elektiver Kaiserschnitt ab der 39+0 SSW	*Primäres Outcome:* • Einweisung auf die NICU *Sekundäre Outcomes:* • NICU Verweildauer ≥2 Tage • Neonatale Hospitalisierung ≥5 Tage • Neonatale respiratorische Morbidität (gemäß Studienprotokoll) • Neonatales RDS • TTN • Neonataler Pneumothorax • Neonatale Wiederbelebung (gemäß Studienprotokoll) • Neonatale Sepsis • Neonatale Hypoglykämie • Neonataler Apgar Score ≤3 • Neonataler Apgar Score ≤6 • Neonatale Krampfanfälle • Neonatale Hyperbilirubinämie bedarf Phototherapie • Neonatales Geburtsgewicht ≤2500g • Neonataler Tod • Maternaler Tod • Maternale Hysterektomie • Maternale Blutung bedarf Transfusion/Behandlung • Maternale unerwünschte Ereignisse	• RCT • Quasi-RCT • Kohortenstudien

NICU: Neiónatal Intensive Care Unit; RCT: randomized controlled trial; RDS: Respiratory distress syndrome; SSW: Schwangerschaftswoche; TTN: Transient tachypnea of the newborn

2.3. Datenquellen und Suchstrategie

Es wurde im Mai 2016 eine systematische Recherche in MEDLINE, EMBASE, CENTRAL, CINAHL und Psycinfo durchgeführt. Zur Identifikation von systematischen Reviews wurden über den Zugang der Cochrane Library die Datenbanken Cochrane Database of Systematic Reviews (CDSR), Database of Abstracts of Reviews of Effects (DARE) und die Health Technology Database (HTA) recherchiert.

Die Suchstrategien wurden zunächst für eine Datenbank entwickelt und dann an jeweils andere Datenbanken und Suchoberflächen angepasst. Eine andere Person überprüfte mit Hilfe der PRESS Checkliste zur Überprüfung von elektronischen Suchstrategien die so entwickelte Recherche und passte sie gegebenenfalls an.[6] Tabelle 2 enthält die Suchstrategien bezüglich der Primärstudien. Tabelle 3 zeigt die Suchstrategie für CDSR, DARE, HTA und CENTRAL via CochraneLibrary.

Zur Identifikation von Leitlinien wurden die Datenbanken der Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften AWMF, Ärztliches Zentrum für Qualität in der Medizin (ÄZQ), Guideline International Network (GIN), National Guideline Clearinghouse (NGC) sowie die Homepages der folgenden Fachgesellschaften recherchiert:

- Schweizerische Gesellschaft für Gynäkologie und Geburtshilfe
- Society of Obstetricians and Gynaecologists of Canada
- The Royal College of Obstetricians and Gynaecologists
- Österreichischen Gesellschaft für Gynäkologie und Geburtshilfe

Zur Identifikation weiterer relevanter Literatur wurden die Referenzen der systematischen Reviews, Leitlinien und der eingeschlossenen Studien zu verwandten Fragestellungen geprüft.

Zusätzlich wurden auch die Studienregister ClinicalTrials (www.clinicaltrials.gov), Deutsches Register Klinischer Studien (DRKS) (www.drks.de) sowie EU Clinical Trials Register (https://www.clinicaltrialsregister.eu/) recherchiert. Tabelle 4 enthält die Suchstrategie der Studienregister.

Die Recherchen erfolgten ohne zeitliche und sprachliche Einschränkung. Lediglich die Leitlinienrecherche war auf Veröffentlichungen ab Juni 2011 beschränkt.

Tabelle 2: Recherchestrategien Primärstudien

Datenbank (Recherchedatum)	**Suchstrategie**
MEDLINE (23.05.2016)	(neonatal[tiab] OR neo-natal[tiab] OR maternal[tiab] OR Perinatal[tiab] OR peri-natal[tiab] OR "Perinatal Care"[Mesh] OR “intensive care”[tiab] OR "Intensive Care Units"[Mesh] OR depressi*[tiab] OR "Depression, Postpartum"[Mesh] OR oxygen[tiab] OR bleeding[tiab] OR Apgar[tiab] OR hypoglycemia[tiab] OR "Hypoglycemia"[Mesh] OR hyperbilirubinemia[tiab] OR "Hyperbilirubinemia, Neonatal"[Mesh] OR “birth weight”[tiab] OR "Birth Weight"[Mesh] OR antibiotic*[tiab] OR respirator*[tiab] OR CPAP[tiab] OR "Continuous Positive Airway Pressure"[Mesh]) AND (Cesarean[tiab] OR Caesarean[tiab] OR Cesarian[tiab] OR Caesarian[tiab] OR "Cesarean Section"[Mesh] OR C-Section[tiab] OR “C Section”[tiab] OR “C Sections”[tiab]) AND (Timing[tiab] OR late[tiab] OR prior[tiab] OR delayed[tiab] OR time[tiab] OR week*[tiab]) AND Elective[tiab]
EMBASE (25.05.2016)	('newborn intensive care'/de OR 'intensive care'/de OR 'intensive care unit'/de OR 'perinatal period'/de OR 'depression'/de OR 'oxygen'/de OR 'bleeding'/de OR 'Apgar score'/de OR 'hypoglycemia'/de OR 'hyperbilirubinemia'/de OR 'birth weight'/de OR neonatal:ti,ab OR neo-natal:ti,ab OR maternal:ti,ab OR perinatal:ti,ab OR peri-natal:ti,ab OR "intensive care":ti,ab OR depressi*:ti,ab OR oxygen:ti,ab OR bleeding:ti,ab OR apgar:ti,ab OR hypoglycemi*:ti,ab OR hyperbilirubinemia:ti,ab OR "birth weight":ti,ab OR antibiotic*:ti,ab OR respirator:ti,ab OR Cpap:ti,ab OR "Continuous Positive Airway Pressure":ti,ab) AND ('cesarean section'/de OR cesarean:ab,ti OR caesarean:ab,ti OR cesarian:ab,ti OR caesarian:ab,ti OR 'c section':ab,ti OR 'c-sections':ab,ti) AND ('time'/de OR timing:ab,ti OR late:ab,ti OR prior:ab,ti OR delayed:ab,ti OR time:ab,ti OR week*:ab,ti) AND (elective:ab,ti)

	AND Human/de Limited on EMBASE and Articles, Articles + press, Reviews
CINAHL (23.05.2016)	MW "Perinatal Care" OR MW "Intensive Care Units, Neonatal" OR MW "Intensive Care, Neonatal" OR MW "Intensive Care Units" OR (TI neonatal OR TI neo-natal OR TI maternal OR TI perinatal OR TI peri-natal OR TI "Intensive Care" OR TI "Intensive Care Units") OR (AB neonatal OR AB neo-natal OR AB maternal OR AB perinatal OR AB peri-natal OR AB "Intensive Care" OR AB "Intensive Care Units") OR MW "Depression Postpartum" OR MW "APGAR Score" OR MW Oxygen OR MW "Postpartum Hemorrhage" OR MW Hypoglycemia OR MW Hyperbilirubinemia OR MW "Hyperbilirubinemia, Neonatal" OR MW "Birth Weight" OR MW Antibiotics OR MW "Continuous Positive Airway Pressure" OR (TI depressi* OR TI oxygen OR TI bleeding OR TI Apgar OR TI hypoglycemi* OR TI hyperbilirubinemia OR TI "Birth Weight" OR TI antibiotic* OR TI respirator* OR TI cpap) OR (AB depressi* OR AB oxygen OR AB bleeding OR AB Apgar OR AB hypoglycemi* OR AB hyperbilirubinemia OR AB "Birth Weight" OR AB antibiotic* OR AB respirator* OR AB cpap) AND MW "Cesarean Section" OR MW "Cesarean Section, Elective" OR (TI Cesarean OR TI Caesarean OR TI Cesarian OR TI Caesarian OR TI C-Section OR TI "C Section") OR (AB Cesarean OR AB Caesarean OR AB Cesarian OR AB Caesarian OR AB C-Section OR AB "C Section") AND MW Time OR (TI time OR TI timing OR TI late OR TI prior OR TI delayed OR TI week) OR (AB time OR AB timing OR AB late OR AB prior OR AB delayed OR AB week) AND Elective
PsycInfo (24.05.2016)	SU ("Neonatal Period" OR "Perinatal Period" OR "Neonatal Intensive Care" OR "Intensive Care") OR TI(neonatal OR neo-natal OR maternal OR perinatal OR peri-natal OR "Intensive Care") OR AB(neonatal OR neo-natal OR maternal OR perinatal OR peri-natal OR "Intensive Care") OR SU("Major Depression" OR "Postpartum Depression" OR "Oxygen" OR "Hemorrhage" OR "Hypoglycemia" OR "Birth Weight" OR antibiotics) OR TI(Depressi* OR oxygen OR bleeding OR apgar OR hypoglycemi* OR hyperbilirubinemia OR "birth weight" OR antibiotic* OR respirator* OR cpap OR "Continuous Positive Airway Pressure") OR AB(Depressi* OR oxygen OR bleeding OR apgar OR hypoglycemi* OR hyperbilirubinemia OR "birth

	weight" OR antibiotic* OR respirator* OR cpap OR "Continuous Positive Airway Pressure") AND SU("Caesarean Birth") OR TI(cesarean OR caesaren OR cesarian OR caesarian OR C-section OR "C Section" OR "C Sections") OR AB(cesarean OR caesaren OR cesarian OR caesarian OR C-section OR "C Section" OR "C Sections") AND SU(time) OR TI(timing OR late OR prior OR delayed OR time OR week) OR AB(timing OR late OR prior OR delayed OR time OR week) AND TX elective
CENTRAL (23.05.2016)	Siehe Recherchestrategien Systematic Reviews CDSR

Tabelle 3: Recherchestrategien Systematic Reviews

Datenbank (Recherchedatum)	**Suchstrategie**
Frage 1	
CDSR, DARE, HTA, CENTRAL (23.05.2016)	#1 MeSH descriptor: [Perinatal Care] explode all trees 491 #2 MeSH descriptor: [Critical Care] explode all trees 2044 #3 MeSH descriptor: [Intensive Care Units] explode all trees 3056 #4 MeSH descriptor: [Depression, Postpartum] explode all trees 356 #5 MeSH descriptor: [Hypoglycemia] explode all trees 1390 #6 MeSH descriptor: [Hyperbilirubinemia] explode all trees 451 #7 MeSH descriptor: [Birth Weight] explode all trees 1262 #8 MeSH descriptor: [Continuous Positive Airway Pressure] explode all trees 822 #9 (neonatal or neo-natal or maternal or Perinatal or peri-natal or "intensive care" or depressi* or oxygen or bleeding or Apgar or hypoglycemia or hyperbilirubinemia or "birth weight" or "Birth Weight" or antibiotic* or respirator* or CPAP) 193467 #10 MeSH descriptor: [Cesarean Section] explode all trees

	2674 #11 (Cesarean or Caesarean or Cesarian or Caesarian or C-Section or "C Section" or "C Sections") 7488 #12 MeSH descriptor: [Time] explode all trees 60403 #13 (Timing or late or prior or delayed or time or week*) 395145 #14 elective 16602 #15 #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 194320 #16 #10 or #11 7488 #17 #12 or #13 396806 #18 #15 and #16 and #17 and #14 792

Tabelle 4: Recherchestrategien Studienregister

Thema (Recherchedatum)	**Suchstrategie**
ClinicalTrials (20.06.2016)	(cesarean OR caesarean OR sectio) AND (elective OR)
EU Clinical Trials (20.06.2016)	(cesarean OR caesarean OR sectio) AND (elective OR)
DRKS (20.06.2016)	: (kaiserschnitt OR sectio OR caeserian OR cesarian) AND (elektiv* OR elective OR wunsch)

2.4. Studienselektion

Die identifizierten Treffer wurden in ein Literaturverwaltungsprogramm (EndNote) überführt und auf Duplikate überprüft. Die in den Datenbanken und über die Handrecherche identifizierte Literatur wurde von zwei Gutachtern unabhängig selektiert. Zunächst wurden die Abstracts sämtlicher in den Datenbanken erzielten Treffer auf Erfüllung der a-priori definierten Einschlusskriterien hin geprüft und anschließend, bei potentieller Relevanz, die Volltexte geprüft. Unstimmigkeiten wurden bis zum Konsens diskutiert.

2.5. Datenextraktion

Die gesamte Datenextraktion wurde von einem Gutachter vorgenommen und zur Verifizierung von einem zweiten Gutachter kontrolliert. Jegliche Differenz wurde bis zum Konsens diskutiert. Die nachfolgenden Daten wurden extrahiert:

- Studientyp
- Setting (Ort, Krankenhaus, etc)
- Rekrutierungszeitraum
- Teilnehmer (Ausschlusskriterien, Anzahl randomisiert/analysiert/Drop-out, Charakteristika)
- Intervention/Exposition
- Kontrolle
- Zielgröße
- Hauptergebnis

Für kontinuierliche Variablen wurde der Mittelwert bzw. die Mittelwertdifferenz mit Konfidenzintervallen angegeben. Für dichotome Variablen wurden nach Möglichkeit die relativen Effektmaße (Odds Ratio, Relatives Risiko, Hazard Ratio) mit Konfidenzintervallen angegeben. Die statistische Signifikanz wurde mit Konfidenzintervallen oder alternativ mit p-Werten angegeben. Die relativen Effektmaße wurden vereinheitlicht, sodass die Kontrollgruppe immer die Referenzkategorie darstellt (Nenner des Vergleichs). D.h. relative Effektmaße >1 für negative Endpunkte (z.B. Einweisung auf NICU) bedeuten, dass die Interventionsgruppe unterlegen ist (höhere Zahl der Einweisungen in der Interventionsgruppe). Umgekehrt gilt der Zusammenhang für Effektmaße <1. Die Ergebnisse wurden zu diesem Zweck ggf. umgepolt. Die Darstellung erfolgt soweit nicht anders angegeben, entsprechend der As-Treated-Population.

Um eine Meta-Analyse durchzuführen wurden die absoluten Zahlen der einzelnen Studien angegeben und gepoolt. Um Daten aller Studien für die Meta-Analyse zu erhalten, wurden die Autoren der Studien, die nur adjustierte Werte publizierten, nach rohen (nicht adjustierten) Werten kontaktiert.

2.6. Risk of bias assessment

Alle als relevant identifizierte Literatur wurde hinsichtlich ihres Verzerrungspotentials bewertet. Die Bewertung wurde jeweils durch zwei Gutachter unabhängig voneinander durchgeführt. Unstimmigkeiten wurden ausdiskutiert.

Die Bewertung der RCTs wurde anhand des Cochrane Risk of Bias Tool durchgeführt, siehe Appendix B. Hiermit werden Aspekte untersucht, die Hinweise auf das mögliche Vorliegen verschiedener Bias-Arten geben können. Folgende Kategorien wurden bewertet: Selection Bias, Performance Bias, Detection Bias, Attrition Bias, Reporting Bias, Other Bias. Dabei wurden Selection Bias, Reporting Bias und Other Bias für die gesamte Studie erhoben, während Performance Bias, Detection Bias und Attrition Bias für jeden Endpunkt einzeln bewertet wurden. Dies soll unterschiedliche Bewertungen ermöglichen, die z.B. durch verschiedene Drop out Raten (Attrition Bias) bei unterschiedlichen Endpunkten nötig werden.[4] Die Bewertung der Kohortenstudien erfolgte mit der Newcastle-Ottawa Scale, siehe Appendix C. Hierbei werden die drei Kategorien Selection, Comparability und Outcome bewertet. Bei Erfüllung eines Kriteriums werden Sterne zugeteilt, insgesamt können neun Sterne erreicht werden. In der Kategorie Selection werden die Auswahl der Interventionsgruppe und die der Kontrollgruppe, die Messung der Exposition und die Auswahl des Outcomes mit maximal 4 Sternen bewertet. In der Kategorie Comparability wird gefragt, ob eine Adjustierung der Ergebnisse stattfindet und kann mit maximal zwei Sternen bewertet werden. Die Kategorie Outcome bewertet die Messung des Outcomes, die Länge des Follow-up und die Patientenzahl im Follow-up mit bis zu drei Punkten.[7]

2.7. Datensynthese

Der „Body of Evidence“ wurde mit "Grades of Recommendation, Assessment, Development, and Evaluation" (GRADE) bewertet. Im Rahmen der Leitlinienerstellung eignet sich GRADE besonders gut, da es basierend auf den GRADE Ergebnissen entsprechende Handlungsempfehlungen auf Basis der vorhandenen Evidenzlage aussprechen kann. Zur Bewertung werden zum einen der Studientyp und zum anderen Einschränkungen der Ergebnisse herangezogen. Dabei werten die Risk of Bias Bewertung, Inkonsistenzen und Ungenauigkeit der Ergebnisse, Indirekte Vergleiche und Publikationsbias die Ergebnisse um ein bis zwei Stufen ab. Allerdings können große Effekte, Dosis-Wirkungs-Beziehung und wenn Effekte durch andere Störvariablen und Bias beeinflusst werden könnten, die Ergebnisse um ein bis zwei Stufen aufwerten.[4]

Für das Management der Ergebnisse wurde der von der Cochrane Collaboration zur Verfügung gestellte Review Manager 5.3 verwendet. Die Software GRADEPro wurde verwendet, um die Summary of Findings (SoF) Tables zu erstellen, die sich aus GRADE heraus ergeben. Mit der Software Review Manager 5.3 wurde auch die Meta-Analyse berechnet. Berechnungen des relativen Risikos (RR) erfolgten mit dem Mantel-Haenszel Test mit unter Berücksichtigung von Random Effects. Der RR wurde immer mit dazugehörigen 95% Konfidenzinterval (KI) angegeben. Wenn möglich wurden die Ergebnisse aus mehr als einer Studie gepoolt. Wenn es nur eine einzige Studie gab, wurde für diese auch das RR mit zugehörogen KI berechnet. Forest- und Funnel Plots wurden mithilfe von Review Manager 5.3 erstellt.

3. Ergebnisse der Literaturrecherche

Im Rahmen der systematischen Recherche nach Primärstudien wurden in den Datenbanken Medline, EMBASE, CENTRAL, CINAHL und Psycinfo 2610 Treffer identifiziert, von denen 97 potentiell relevant erschienen und im Volltext überprüft wurden. Die Überprüfung der Volltexte resultierte in 28 Studien, die die Einschlusskriterien erfüllten und eingeschlossen wurden.

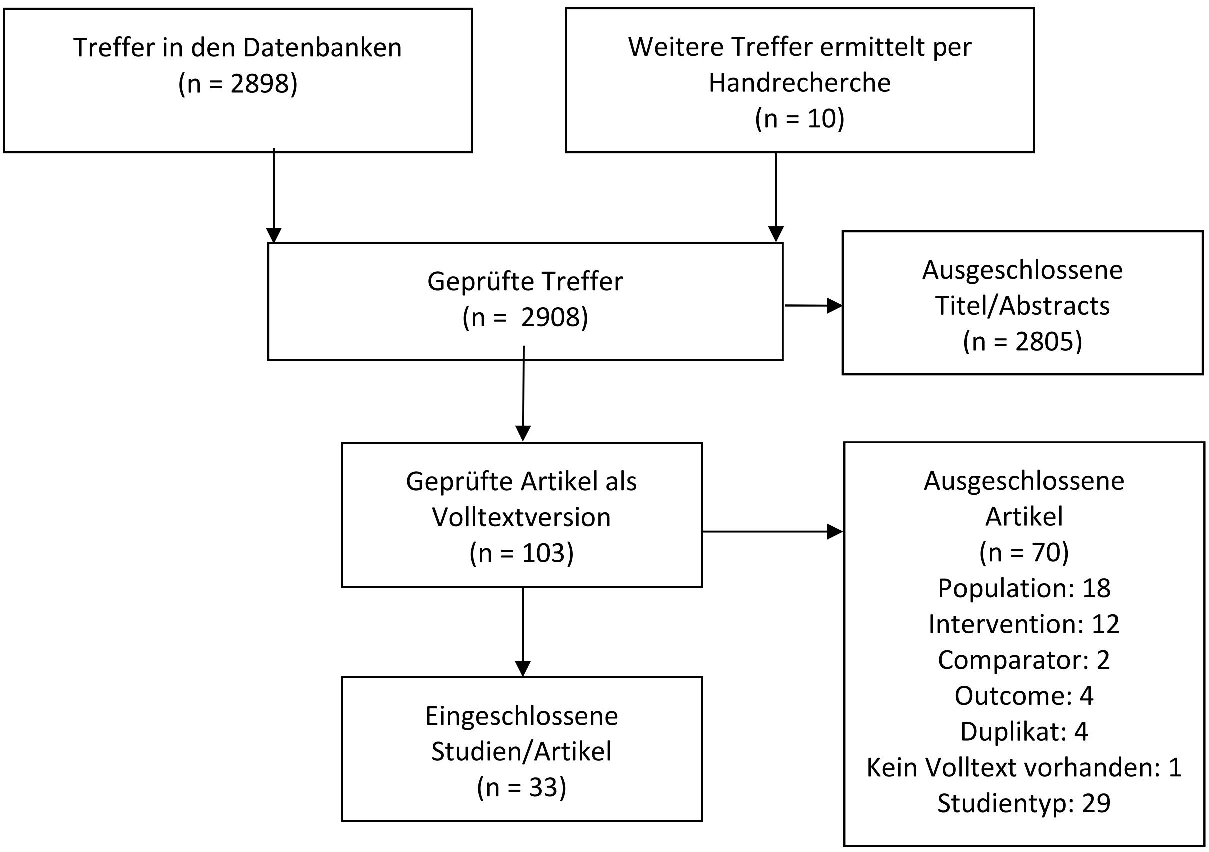
Im Rahmen der systematischen Recherche nach systematischen Übersichtsarbeiten konnten in den Datenbanken CDSR, DARE und HTA 288 Treffer identifiziert werden. Die Sichtung der Abstracts ergab, dass keiner die Einschlusskriterien erfüllte.

Die Recherche in Studienregistern ergab zwei Treffer, diese waren jedoch bereits bei der Suche der anderen Datenbanken identifiziert wurden, und wurden ausgeschlossen, da es sich somit um bereits publizierte und identifizierte Studien handelte.

Im Weiteren wurde ein Referenzcheck durchgeführt. Dies resultierte in zehn potentiell relevante Titel, von denen letztlich sechs in diese Arbeit eingeschlossen wurden.

Der Verlauf der Studienauswahl ist in Abbildung 1 dargestellt. Die Listen der ausgeschlossenen Volltexte sind in Appendix F aufgeführt.

Abbildung 1: Flow-chart



Zwei Publikationen von Zanardo et al. 2004 wurden zusammengefasst, da es sich um eine Studie handelte.[8, 9] Zwei weitere Publikationen (Chiossi et al. 2013 und Tita et al. 2009) befassten sich ebenfalls mit dem gleichen Datensatz und Fragestellung. Hier wählten wir Chiossi et al. 2013, die die leicht größere Studienpopulation hatten; Tita et al. 2009 wurde lediglich für die Outcomes genommen, die Chiossi et al. 2013 nicht evaluierte.[10-12] Auch Vilchez et al. 2014 und 2015 entsprachen einer Studie.

Die Leitlinienrecherche vom 17.05.2016 ergab zwei Leitlinien, die des National Institute for Health and Care Excellence (NICE) „Caesarean section" und die des Royal College of Obstetricians and Gynecologists (RCOG), die eine Empfehlung zu der Fragestellung abgeben.[13, 14] Beide Leitlinien empfehlen einen elektiven Kaiserschnitt nicht vor der 39+0 SSW durchzuführen, da es zu einem erhöhten Risiko für respiratorische Morbidität kommen kann. In der NICE Leitlinie heißt es zu der Empfehlung zu "Timing of planned Caesarean section (CS) - The risk of respiratory morbidity is increased in babies born by CS before labour, but this risk decreases significantly after 39 weeks. Therefore planned CS should not routinely be carried out before 39 weeks."[13]. Bei RCOC heißt es "Elective repeat caesarean section (ERCS) - The risk of perinatal death with ERCS is extremely low, but there is a small increase in neonatal respiratory morbidity when ERCS is performed before 39+0 weeks of gestation. The risk of respiratory morbidity can be reduced with preoperative course of antenatal corticosteroids. […]ERCS delivery should be conducted after 39+0 weeks of gestation" [14]

Die zugrundeliegende Evidenz wurde jedoch bereits in der Literaturrecherche in den Datenbanken identifiziert oder erfüllte nicht die Einschlusskriterien.

4. Studienergebnisse

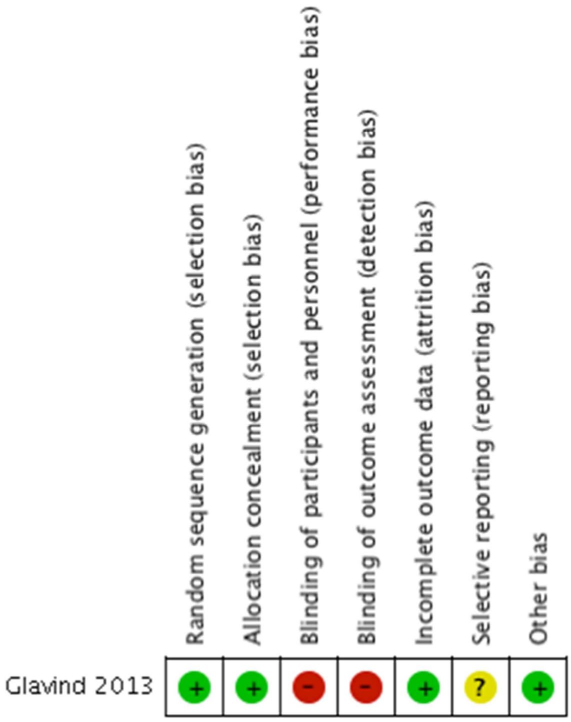
Im folgenden Abschnitt folgt eine kurze Darstellung der wichtigsten Ergebnisse. Ergänzt werden die Ergebnisse durch detaillierte Tabellen, die aus Review Manager 5.3 exportiert wurden.

Es wurden 33 Publikationen für die Beantwortung der Fragestellung in diesen Review eingeschlossen und ausgewertet. Dabei handelt es sich bei allen Studien um veröffentlichtes Material. Es wurde eine RCT (Glavind et al. 2013) und 33 Kohortenstudien eingeschlossen.[15] In Tabelle 5 sind die allgemeinen Charakteristika der eingeschlossenen Studien dargestellt. Acht Studien fanden in den USA statt, von denen bezogen sich allerdings zweimal zwei Studien auf dasselbe Register. Vier Studien kamen aus Japan, fünf aus den Niederlanden und die anderen Studien kamen jeweils aus weiteren europäischen Ländern und Australien. Die meisten Studien fanden in den Jahren 2000 bis 2011 statt.

4.1. Risk of Bias Bewertung

Mit dem Cochrane Risk of Bias Tool konnte nur eine Studie, die RCT von Glavind et al., bewertet werden.

Abbildung 2: Risk of Bias Assessment



Die Kohortenstudien wurden mit der Newcastle-Ottawa Scale bewertet (s. Tabelle 6)

Tabelle 5: Qualitätsbewertung der Kohortenstudien mit Newcastle Ottawa Scale

<table>
<tr><td>Study</td><td colspan="4">Selection</td><td>Comparability</td><td colspan="3">Outcome</td></tr>
<tr><td></td><td>Representativeness of the exposed cohort</td><td>Selection of the non exposed cohort</td><td>Ascertainment of exposure</td><td>Demonstration that outcome of interest was not present at start of study</td><td>Comparability of cohorts on the basis of the design or analysis</td><td>Assessment of outcome</td><td>Was follow-up long enough for outcomes to occur</td><td>Adequacy of follow up of cohorts</td></tr>
<tr><td rowspan="2">Alderdice et al 2005</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2"></td><td colspan="3">NICU admissions, Respiratory morbidity</td></tr>
<tr><td>*</td><td>*</td><td>*</td></tr>
<tr><td rowspan="2">Bailit 2010</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">**</td><td colspan="3">NICU admission, Apgar score <3 (asphyxia), sepsis</td></tr>
<tr><td>*</td><td>*</td><td>*</td></tr>
<tr><td rowspan="2">Balchin 2008</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">**</td><td colspan="3">RDS, TTN</td></tr>
<tr><td>*</td><td>*</td><td>*</td></tr>
<tr><td rowspan="2">Chiossi et al 2013</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">**</td><td colspan="3">NICU admissions, maternal outcomes

Neonatal outcomes (incl. respiratory morbidity)</td></tr>
<tr><td>*</td><td>*</td><td>*</td></tr>
<tr><td rowspan="2">Clark 2009</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2"></td><td colspan="3">NICU admission</td></tr>
<tr><td>*</td><td>*</td><td>*</td></tr>
</table>

Doan et al 2014	*	*	*	*	*	NICU admissions, neonatal outcomes (incl. respiratory morbidity)		
						*	*	*
Farchi et al. 2010	*	*	*	*	**	Respiratory morbidity		
						*	*	*
Finn et al 2016	*	*	*	*	* *	NICU admissions, neonatal outcomes (incl. respiratory morbidity)		
						*	*	*
Gawlik et al 2015	*	*	*	*	**	NICU admissions, Apgar Score, birth weight		
						*	*	*
Graziosi et al 1998		*		*	*	Respiratory morbidity, phototherapy, NICU admission, incubator time		
								*
Hansen et al 2008	*	*	*	*	**	Respiratory morbidity		
						*	*	*
Many et al 2006		*	*	*	**	Respiratory morbidity		
						*	*	*
Matsuo et al 2008	*	*	*	*	**	Neonatal outcomes (incl. respiratory morbidity), maternal complications		

						*	*	*
McAlister et al 2013	*	*	*	*	**	NICU admissions		
						*	*	*
Melamed 2013	*	*	*	*	**	NICU admission, respiratory morbidity, TTN, RDS, pneumothorax, 5-min Apgar <7, hypoglycemia, phototherapy		
						*	*	*
Morrison et al. 1995	*	*	*	*	**	NICU admissions with respiratory morbidity		
						*	*	*
Nakashima et al 2014	*	*	*	*	**	NICU admissions, neonatal outcomes (incl. respiratory morbidity)		
						*	*	*
Nir et al. 2012	*	*	*	*	**	NICU admissions		
						*	*	*
Parikh 2014	*	*		*		NICU admission, neonatal mortality, >5 days nursery		
							*	*
Resende et al. 2015	*	*	*	*	**	NICU admissions, neonatal outcomes (incl. respiratory morbidity)		

						*	*	*
Terada 2014	*	*	*	*		Oxygen supplementation, respiratory support		
						*	*	*
Tita 2009	*	*	*	*	**	RDS, NICU admission, hypoglycemia, ventilation, composite adverse event/death		
						*	*	*
Tracy 2007	*	*	*	*	*	NICU admission		
						*	*	*
Vidic 2016	*	*	*	*	*	NICU admission, respiratory distress, APGAR, hypoglycemia		
						*		
Vilchez 2015	*	*	*	*	**	Neonatal, infant, early Mortality		
						*	*	*
Vilchez 2014	*	*	*	*	**	NICU admission, APGAR-score ≤6, surfactant use, antibiotics use, neonatal seizures		

<table>
<tr><td rowspan="2">Wilmink 2010</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">**</td><td colspan="3">NICU admission, respiratory diseases, neonatal adverse events</td></tr>
<tr><td>*</td><td>*</td><td>*</td></tr>
<tr><td rowspan="2">Wilmink 2012</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">**</td><td colspan="3">NICU admission</td></tr>
<tr><td>*</td><td>*</td><td>*</td></tr>
<tr><td rowspan="2">Yamazaki 2003</td><td rowspan="2"></td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2"></td><td colspan="3">TTN, apnea, hypoglycemia</td></tr>
<tr><td>*</td><td>*</td><td>*</td></tr>
<tr><td rowspan="2">Zanardo 2004A&B</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2"></td><td colspan="3">Respiratory distress syndrome, transient tachypnea, PPV resuscitation</td></tr>
<tr><td>*</td><td>*</td><td>*</td></tr>
<tr><td rowspan="2">Zandaro 2007</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2">*</td><td rowspan="2"></td><td colspan="3">Pneumothorax, respiratory morbidity</td></tr>
<tr><td>*</td><td>*</td><td>*</td></tr>
</table>

Tabelle 6: Studiencharakteristika

Studie	Studientyp	Setting	Rekrutierungs zeitraum	Patientenzahl	SSW	>1 Kaiserschnitt
Alderdice et al. 2005	Kohortenstudie	Nordirland, multizentrisch	2001-2002	2.553	37, 38, 39, 40, 41	Nein
Bailit et al. 2010	Kohortenstudie	USA, multizentrisch	2002-2008	3.959	34, 35, 36, 37, 38, 39, 40, 41, 42	Nein
Balchin et al. 2008	Kohortenstudie	England, London, multizentrisch	1988-2000	20.891	37, 38, 39, 40	Nein
Chiossi et al. 2013	Kohortenstudie	USA, multizentrisch, Tita 2009 gleiche Erhebung	1999-2002	14.865	37, 38, 39, 40, 41	Ja
Clark et al. 2009	Kohortenstudie	USA, multizentrisch	2007	1.851	37, 38, ≥39	Subgruppen für erster Kaiserschnitt & Wiederholter
Doan et al. 2014	Kohortenstudie	Australien (Queensland), Unizentrisch	1998-2009	14.447	37-38, 39-41	Nein
Farchi et al. 2010	Kohortenstudie	Italien (Lazio), multizentrisch	2003-2005	13.329	37, 38, 39, 40-41	Ja
Finn et al. 2016	Kohortenstudie	Irland (Cork), unizentrisch	2008-2012	4.242	37, 38, 39, 40, 41	Nein
Gawlik et al. 2015	Kohortenstudie	Deutschland (Heidelberg), unizentrisch	2006-2011	503	37, 38-41	Ja

Glavind et al. 2013	RCT	Dänemark, multizentrisch	2009-2011	1.274	38, 39	Nein
Graziosi et al. 1998	Kohortenstudie	Niederlande (Utrecht), unizentrisch	1990-1995	272	37, 38, 39, 40, 41	Nein
Hansen et al. 2008	Kohortenstudie	Dänemark (Aarhus), unizentrisch	1998-2006	2.687	37, 38, 39, 40, 41	Nein
Many et al. 2006	Kohortenstudie	Israel (Tel Aviv), -	-	278	38, 39, 40, 41	Nein
Matsuo et al. 2008	Kohortenstudie	Japan (Osaka), unizentrisch	1994-2005	364	37, 38, ≥39	Nein
McAlister et al. 2013	Kohortenstudie	USA, multizentrisch	2008-2009	4.125	37-38, 39-41	Nein
Melamed et al. 2014	Kohortenstudie	Israel (Tel Aviv), unizentrisch	2010-2011	377	38, 39	≥2 vorherige Kaiserschnitte
Morrison et al. 1995	Kohortenstudie	England (Cambridge), unizentrisch	1985-1993	2.341	37, 38, 39, 40, ≥41	Nein
Nakashima et al. 2014	Kohortenstudie	Japan, unizentrisch	2006-2012	684	37, 38	Nein
Nir et al. 2012	Kohortenstudie	Israel, unizentrisch	2007-2009	1050	37-38, ≥39	Nein
Parikh et al. 2014	Kohortenstudie	USA, multizentrisch	2008-2011	14.613	37, 38, ≥39	Nein
Resende et al. 2014	Kohortenstudie	Portugal, unizentrisch	2003-2013	3.123	37-38, 39-41	Nein
Terada et al. 2014	Kohortenstudie	Japan (Tokyo), unizentrisch	2006-2013	1.936	37, 38, 39-40, 41	Nein
Tita et al. 2009	Kohortenstudie	USA, multizentrisch, siehe	1996-2006	13.258	37, 38, 39, 40, 41,	Ja

		Chiossi 2009			42	
Tracy et al. 2007	Kohortenstudie	Australien, multizentrisch	1999-2002	43.059	37, 38, 39, 40, 41	Nein
Vidic et al. 2016	Kohortenstudie	Slowenien, multizentrisch	2002-2012	7.364	37, 38, 39, 40, ≥41	Nein
Vilchez et al. 2014	Kohortenstudie	USA, multizentrisch, Vilchez 2015 gleiche Erhebung	2004-2008	785.340	37, 38, 39, 40, 41	Ja
Vilchez et al. 2015	Kohortenstudie	USA, multizentrisch, siehe Vilchez 2014	2004-2008	483.052	37, 38, 39, 40, 41	Ja
Wilmink et al. 2010	Kohortenstudie	Niederlande, multizentrisch	2000-2006	20.973	37, 38, 39, 40, 41, 42	Nein
Wilmink et al. 2012	Kohortenstudie	Niederlande, multizentrisch, Zwillingsgeburten	2000-2007	4.557	35, 36, 37, ≥38	Nein
Yamazaki et al. 2003	Kohortenstudie	Japan (Nagaoka), unizentrisch	1998-2000	96	37, 38	Nein
Zanardo et al. 2004, zwei Publikationen	Kohortenstudie	Italien, unizentrisch	1998- 2000	1284	37,38,39-41	Nein
Zanardo et al. 2007	Kohortenstudie	Italien, multizentrisch	2002-2003	9988	37, 38, 39 and 40-41+6	Nein

4.2. Subgruppenanalyse

Nachdem die Volltexte gesichtet waren und der Einschluss festgelegt war, wurden posthoc verschiedene Subgruppen gebildet. Zum einen hatte sich gezeigt, dass die Studien unterschiedliche Zeitpunkte aufführten. Der Großteil der Studien verglich einzelne Wochen miteinander und die Wochen reichten von der 37+0 bis zur 42+6 SSW. Bis auf drei Studien beinhalteten jedoch alle Studien den Vergleich <39 und ≥39 SSW. Nach Rücksprache mit der Koordinierungsstelle wurde festgelegt, alle Ereignisse zwischen 37+0 bis 38+6 SSW zu akkumulieren und mit den akkumulierten Werten ≥39+0 SSW zu vergleichen. Dies war der Hauptvergleich der auch den Empfehlungen der Leitlinien von NICE und RCOG entspricht, die einen Kaiserschnitt erst nach der 38+6 SSW empfehlen.[13, 14] Weiterhin gab es zwei Subgruppen: Studien, die Patientinnen einschlossen, die sowohl vorherige Kaiserschnitte erlebt hatten als auch jene, die noch keinen erlebt hatten, wurden in die Gruppe „elective Caesarean Section (CS)“ eingeschlossen. Die Studien, die Patientinnen untersuchten, die ausschließlich mind. einen vorherigen Kaiserschnitt erlebt hatten, wurden in die Gruppe „repeat elective CS“ eingeschlossen. Hier gab es eine Studie, bei der das Einschlusskriterium war mindestens zwei vorherige Kaiserschnitte gehabt zu haben.[16] Zwei weitere Studien, die nur die 37+0-6 SSW mit der 38+0-6 SSW verglichen (Nakashima et al. 2014, Yamazaki et al. 2003), wurden in einem Frühvergleich dargestellt.[17, 18] Im Zwillingsvergleich wurde die einzige Studie aufgeführt, die ausschließlich Zwillingsgeburten untersuchte (Wilmink et al. 2012).[19] In Tabelle 6 sind die einzelnen Vergleiche mit den analysierten Zeiträumen dargestellt.

Tabelle 7: Vergleichsgruppen

Vergleich	Interventionsgruppe	Kontrollgruppe
Hauptvergleich mit Subgruppe „elective CS“ und „elective repeat CS“ Kohortenstudien	37+0 – 38+6	≥39+0
Hauptvergleich RCT	38 (38+1-38+5)	39 (38+6-39+5)
Frühvergleich	37+0 – 6	38+0 – 6
Zwillingsvergleich	Zwillinge 35+0 – 37+6	Zwillinge 38+0 – 41+6

4.3. Patienten

Der Umfang der eingeschlossenen Patienten variierte und beträgt im Median 3.624 (Spannweite: 96 - 785.340, siehe Tabelle 5). Die eingeschlossenen Studien untersuchten überwiegend Geburten ohne Komplikationen und ohne Risikofaktoren sowie Neugeborene mit Fehlbildungen. Das mittlere Alter der eingeschlossenen Patientinnen lag zwischen 30 und 35 Jahren. Nur Chiossi et al. (2013) berichteten von Frauen unter 30 Jahre im Mittel, wobei das Alter mit steigender SSW abnahm (37+0 - 38+6 SSW MW:30,6, 41+0-6 SSW MW:28,1).[10] Neben den vier Studien, die in Japan durchgeführt wurden, wurden alle anderen Studien in den USA, Australien und Europa durchgeführt und schlossen mindestens ca. 50% Patienten mit kaukasischer Herkunft (soweit angegeben). Im Hauptvergleich waren Zwillingsgeburten zumeist ausgeschlossen. Nur eine Studie berichtete von elf

Zwillingsgeburten, die aber mit den 194 Einlingsgeburten gemeinsam ausgewertet wurden.[20] Das Gestationsalter wurde in 13 Studien anhand der letzten Menstruation in Kombination mit Ultraschall bewertet.[8-10, 16, 19, 21-29] In vier Studien wurde das Gestationsalter alleine mit Ultraschall bewertet.[15, 18, 30, 31] Von den achtzehn Studien, die „elective CS“ untersuchten, gaben 13 nähere Angaben zum Verhältnis der Studienpopulation an mit einer ungefähr gleichen Proportion von Frauen mit vorherigem Kaiserschnitt (ca. 50-67%, außer Graziosi et al. 1998 mit 25%). Die ausführlichen Patientencharakteristika sind in Anhang C aufgeführt.

4.4. Interventionen

Die untersuchte Intervention war ein elektiver Kaiserschnitt in der 37+0 bis 38+6 SSW in der Hauptgruppe. In die Auswertung wurden alle Studien einbezogen, die Angaben zu diesem Zeitraum machten, d.h. sowohl Studien die nur die 38+0-6 SSW als auch die 37+0 bis 38+6 SSW auswerteten. Weiterhin wurden die beiden Wochen, sofern sie einzeln berichtet wurden, akkumuliert. Die Intervention der Frühgruppe fand in der 37+0-6 SSW, und in der Zwillingsgruppe 35+0 bis 37+6 SSW statt. Eine besondere Definition des Zeitraumes nutzte Melamed et al. 2014 (37+4 - 38+3 vs. ≥ 38+4) Gezählt wurde diese im Hauptvergleich.[16] Die RCT Glavind et al. untersuchte 38 (38+1-38+5) vs. 39 (38+6-39+5) SSW.[15] Eine Studie des Frühvergleich, Yamazaki et al. 2010, nutzte den Zeitraum 37+0-3 vs. 37+4-38+6.

4.5. Kontrollen

Als Kontrollgruppe wurden im Hauptvergleich SSW ≥39 untersucht, im Frühvergleich 38+0-6 SSW, und im Zwillingsvergleich 38+0 – 41+6 SSW.

4.6. Outcomes

NICU Admission (Einweisung auf die NICU)

19 Studien erhoben das Outcome NICU Admission.[10, 15-17, 19-21, 23, 24, 26, 28, 32-39] Im Hauptvergleich der 37+0 bis 38+6 vs. ≥39 SSW konnten 16 Studien mit aufgenommen werden. Diese wiederum unterteilten sich in „elective CS“ mit 13 Studien und „repeat elective CS“ mit vier Studien (Clark et al. 2009 hatte beide Gruppen einzeln analysiert). Es zeigte sich ein Relatives Risiko (RR) von 1,78 [95%KI 1,55, 2,06] in der „elective CS“ Gruppe und damit eine um 1,78-fach erhöhtes Risiko in der Interventionsgruppe auf die NICU eingewiesen zu werden.[20, 21, 23, 26, 28, 32-39] Die „Repeat elective CS“ Gruppe zeigt ein RR von 1,60 [95%KI 1,20, 2,14].[10, 16, 24, 33] Die RCT von Glavind et al. 2013 zeigte ein RR von 1,14 [95%KI 0,88, 1,48].[15]

Im Frühvergleich konnte eine Studie zugeordnet werden. Diese zeigte ein RR von 2,01 [95%KI 1,05, 3,84].[17] Die Zwillingsstudie von Wilmink et al. 2012 zeigte ein RR von 8,65 [95%KI 1,96, 38,27] für die Interventionsgruppe.[19] In allen Gruppen konnten hinsichtlich der NICU Admission ein signifikant erhöhtes RR für einen elektiven Kaiserschnitt bei weniger als 39 Gestationswochen gezeigt werden.

NICU length of stay ≥2 days (NICU Verweildauer ≥2 Tage)

Die Verweildauer auf der NICU wurde im Hauptvergleich in drei Studien analysiert. Doan et al. 2014 und Finn et al. 2016 wurden gepoolt und es ergab sich ein RR von 1,93 [95%KI 1,52, 2,45].[21, 23] Glavind et al. zeigte ein RR von 1,03 [95%KI 0,67, 1,59].[15]

Neonatal respiratory morbidity (neonatale respiratorische Morbidität (gemäß Studienprotokoll))

Insgesamt wurde das Outcome Respiratory morbidty in 16 Studien erhoben. Dabei wurde das Outcome unterschiedlich definiert, siehe Tabelle 7. Hauptsächlich wurden TTN oder RDS in die Definition miteinbezogen, weiterhin auch Pneumothorax, Beatmung und Sauerstoffzufuhr.

Tabelle 8: Respiratory Morbidity

Studie	Respiratory Morbidity definiert als…
Alderdice et al. 2005	NICU admission mit TTN oder RDS
Balchin et al. 2008	TTN oder RDS
Doan et al. 2014	Neonatal Critical Care Unit (NCCU), die Intensiv- oder Spezialpflege anbietet, mit jeder respiratorischen Diagnose: RDS, TTN, persistent pulmonary hypertension of the newborn (PPHN), Pneumothorax
Farchi et al. 2010	pulmonary interstitial emphysema/Pneumothorax,TTN, RDS, schwere Asphyxie (Asphyxie und 5-minute Apgar score <7) und andere neonatale respiratorische Probleme, respiratorische Therapie (Sauerstoffzufuhr, nasal CPAP)
Finn et al. 2016	RDS und TTN und continuous positive airway pressure (CPAP)
Glavind et al.2013	Mechanische Beatmung, 3 oder mehr Tage mit Sauerstoffzufuhr oder CPAP Behandlung während NICU Aufenthalt
Hansen et al. 2008	TTN, RDS oder PPHN
Many et al. 2006	Sauerstoff, Beatmung, Antibiose
Melamed et al. 2014	RDS, TTN, Pneumothorax, CPAP, mechanische Beatmung
Morrison et al. 1995	NICU Admission mit RDS, TTN und Sauerstoffzufuhr
Nakashima et al. 2014	Tachypnoe, Retraktion, Grunzen, Zyanose
Resende et al. 2015	TTN, RDS, Sauerstoff oder Beatmung
Terada et al. 2014	RDS/TTN die Sauerstoffzufuhr oder andere Unterstützung (Beatmung, CPAP) benötigen
Tita et al. 2009	RDS oder TTN
Wilmink et al. 2010	RDS, TTN, Pneumothorax, air leakage, intermittierende Überdruck Beatmung, CPAP, Sauerstoffzufuhr
Yamazaki et al. 2003	TTN oder Apnoe

In der Subgruppe “elective CS” wurden 10 Studien gepoolt. Es ergab sich ein RR von 2,44 [95%KI 2,10, 2,84].[20-23, 25, 27, 28, 31, 37, 40] Die RCT von Glavind et al. 2013 zeigte ein RR von 1,33 [95%KI 0,91, 1,95]. [15] In der Subgruppe “repeat elective CS” wurden drei Studien gepoolt und es ergab sich ein RR von 1.63 [1.44, 1.86][16, 41, 42] Der Frühvergleich führte mit dem Pooling beider Studien zu einem RR von 3,22 [95%KI 1,70, 6,11].[17, 18]

Neonatal RDS (Neonatales respiratorisches Distresssyndrom)

Neun Studien erhoben das Outcome RDS. In der Subgruppe „elective CS“ ergaben sechs davon ein RR von 2.64 [95%CI 2.00, 3.49]. [8, 21, 28, 30, 34, 39] In der Subgruppe „Repeat elective CS“ wurden zwei Studien gepoolt und ergaben ein RR von 2,36 [95%KI 1,83, 3,05] [10] [16] Wilmink et al. stellten in ihrer Zwillingsstudie ein RR von 11,98 [95%KI 1,52, 94,43] für RDS fest.[19]

TTN (Neonatale vorübergehende Tachypnoe)

Insgesamt erhoben neun Studien TTN. Fünf Studien wurden in der „Elective CS“ Gruppe gepoolt und ergaben ein RR von 2,15 [95%KI 1,75, 2,64] [21, 23] [8, 28, 30] Zwei Studien wurden in der „Repeat elective CS” Gruppe gepoolt und ergaben ein RR von 1,50 [95%KI 1,27, 1,77] [10] [16]. In der Frühgruppe untersuchten nur Yamazaki et al. 2003 TTN, ein RR von 2,50 [95%KI 0,84, 7,42] wurde ermittelt[18]. Wilmink et al. 2012 erreichen wiederum ein signifikant erhöhtes RR für das Outcome TTN (4,92 [95%KI 2,46, 9,87]).[19] Wilmink et al. 2012 zeigten in der Zwillingsstudie ein RR von 4,92 [95%KI 2,46, 9,87].[19]

Neonatal Pneumothorax (Neonataler Pneumothorax)

Drei Studien in der Subgruppe „Elective CS“ zeigten ein RR von 3,12 [95%KI 1,60, 6,10]. [21] [30] [29]. In der Subgruppe „Repeat elective CS“ erhob nur eine Studie, Melamed et al. 2014, das Outcome Pneumothorax (RR 0,43 [95%KI 0,03, 6,78]).[16] Willmink et al. 2012 zeigten im Zwillingsvergleich ein RR von 6,65 [95%KI 0,32, 138,47][19]. Damit kann man nur in der Gruppe „Elecitve CS“ von einem signifikanten Unterschied sprechen.

Neonatal Resuscitation (Neonatale Wiederbelebung (gemäß Studienprotokoll))

Insgesamt konnten sechs Studien identifiziert werden, die Wiederbelebung untersuchten. Dabei war der Begriff Wiederbelebung unterschiedlich definiert. Doan et al. 2014 sprachen von „positive pressure ventilation, cardiac compression/ resusciation drugs“[21], Tita et al. 2009 von „cardiopulmonary resuscitation or ventilator support within 24 hours after birth“[42]. Wilmink et al. definiert in beiden Studien Wiederbelebung als „endotracheal artificial respiration and/or administration of buffers and/or other“[19]. Zanardo et al. 2004 definieren alles als Wiederbelebung von intravenöser oder intratrachealer Pharmakotherapie, Thoraxkompression, Überdruckbeatmung, oropharyngeal suction, Stimulation, Trocknung/Wärmung. Resende et al. 2015 geben keine weitere Definition an.[37, 43]

In der Subgruppe „elective CS“ beträgt das RR für Wiederbelebung 1,17 [95%KI 1,05, 1,30][21, 28, 37, 43] in der Subgruppe „repeat elective CS“ (nur Tita et al. 2009) 2,69 [95%KI 1,75, 4,15].[42] Wilmink et al. 2012 zeigt im Zwillingsvergleich ein RR von 2,66 [95%KI 0,49, 14,51], welches nicht signifikant ist.[19]

Neonatal sepsis (Neonatale Sepsis)

Acht Studien berichten über Sepsis, dabei geben allerdings nur vier Studien den Begriff „Sepsis“ an und nur zwei Studien, beide Wilmink et al. definieren es als „sepsis, including both clinically suspected patients as well as proven infections with positive cultures“[19, 28]. CHiossi et al. 2013, Bailit et al. 2010 und Resende et al. 2015 definieren es nicht weiter. Finn et al. und Glavind et al. 2013 geben nur Antibiotikagabe an, während Nakashima et al. 2014 Infektion definiert als „the need for antibiotics and an associated serum C-reactive protein level of ≥ 0.25 mg/dL. Blood samples were also collected for culture.“ Melamed et al. 2014 geben Infektionen an, diese werden aber nicht weiter definiert.[10, 16, 37, 44] [15, 17, 19, 28]

In der Gruppe „elective CS“ liegt das RR für Sepsis bei 1,43 [95%KI 0,95, 2,18].[28, 32, 37]

Chiossi et al. 2013 und Melamed et al. 2014 wurden in der Gruppe „repeat electice CS“ gepoolt und erreichten ein RR von 1,64 [95%KI 1,40, 1,93][10, 16]. Die RCT von Glavind et al. 2013 berichtet ein RR von 1,22 [95%KI 0,61, 2,45][15]. Der Frühvergleich zeigt ein RR von 0,75 [95%KI 0,15, 3,71] durch Nakashima et al. 2014[17]. Und der Zwillingsvergleich mit Wilmink et al. 2012 ein RR von 3,11 [95%KI 0,80, 11,99][19].

Neonatal hypoglycemia (Neonatale Hypoglykämie)

Neun Studien berichteten Hypoglykämie des Neugeborenen. Vier in der Gruppe „elective CS“ mit einem RR von 1,48 [95%KI 1,26, 1,74][21, 28, 37, 39] und zwei in der Gruppe „repeat elective CS“ RR 3,75 [95%KI 2,64, 5,32][16, 42]. Auch im Frühvergleich wurden beide Studien gepoolt und ergaben ein RR von 3,02 [95%KI 1,47, 6,20].[17, 18] Die Zwillingsstudie von Willmink et al 2012 ergab ein RR von 4,70 [95%KI 3,15, 7,01][19].

Neonataler Apgar Score ≤3

Es lagen vier Studien mit einem Apgar Score ≤3 vor. Für „elective CS“ waren dies Bailit et al. 2010 und Wilmink et al. 2010 mit einem gepoolten RR von 1,58 [95%KI 0,70, 3,56] und für „repeat elective CS“ gab es nur Chiossi et al. 2013 mit einem RR von 2,17 [95%KI 0,83, 5,70][10, 28, 32]. Im Zwillingsvergleich zeigte Willmink et al 2012 ein RR von 2,66 [95%KI 0,24, 29,33][19]. Die Ergebnisse waren nicht signifikant.

Neonataler Apgar Score ≤6

Nur der Hauptvergleich lagen Daten für einen Apgar Score ≤6 vor. In der Gruppe „Elective CS“ zeigten drei Studien ein RR von 1,63 [95%KI 1,13, 2,36].[21, 28, 39] und in der Gruppe „Repeat elective CS“ zeigte Melamed et al. 2014 ein RR von 0,32 [0,07, 1,41].[16]

Neonatal hyperbilirubinemia requiering phototherapy (Neonatale Hyperbilirubinämie bedarf Phototherapie)

Sieben Studien erhoben Hyperbilirubinämie. Definiert wurde es in allen Studien als „Hyperbilirubinämie, die einer Phototherapie bedarf“. In der Subgruppe „elective CS“ konnten fünf Studien gepoolt werden, die ein RR von 2,09 [95%KI 1,54, 2,82] ergaben.[21, 28, 34, 37, 39]. In der Gruppe „Repeat elective CS“ konnte nur Melamed et al. 2014 analysiert werden und berichtete ein RR von 0,43 [95%KI 0,16, 1,11].[16] Weiterhin wurde im Frühvergleich Nakashima et al. 2014 einbezogen und berechnete ein RR von 1,22 [95%KI 0,76, 1,94][17]. Damit konnte nur in der Subgruppe „elective CS“ ein signifikantes Ergebnis gezeigt werden.

Neonatal birth weight ≤2500g (Neonatales Geburtsgewicht ≤2500g)

Insgesamt berichteten sechs Studien das Outcome Geburtsgewicht ≤2500g. Für die Subgruppe „Elective CS“ wurden die Studien von Finn et al. 2016 und Wilmink et al. 2010 gepoolt und ergaben ein RR von 3,33 [95%KI 2,63, 4,21].[23, 28] Tita et al. 2009 zeigte in der Subgruppe „Repeat elective CS“ ein RR von 2,45 [95%KI 1,77, 3,38].[42] Auch im Zwillingsvergleich zeigte sich ein signifikant erhöhtes RR von 4,70 [95%KI 3,95, 5,60].[19] Im Frühvergleich konnten beide Studien gepoolt werden, dies ergab ein (nicht signifikant erhöhtes) RR von 1,40 [95%KI 0,48, 4,13].[17, 18]

Neonatal hospitalization ≥5 days (Neonatale Hospitalisierung ≥5 Tage)

Sechs Studien berichteten von einer Hospitalisierung des Neugeborenen ≥5 Tage. Vier Studien wurden in „elective CS“ gepoolt und ergaben ein RR von 1,58 [95%KI 1,03, 2,42].[28, 36, 37, 39] Tita et al. 2009 zeigte bei „Repeat elective CS“ ein RR von 1,55 [95%KI 1,33, 1,80]. [42] Wilmink et al. 2012 errechnete ein RR von 3,68 [95%KI 3,05, 4,44].[19]

Neonatal death (Neonataler Tod)

Nur im Hauptvergleich wurden Studien identifiziert, die neonatal death erhoben. Drei Studien in „elective CS“ poolten ein RR von 1,28 [95%KI 0,73, 2,23].[12, 21, 36] In „repeat elective CS“ konnte nur Chiossi et al. 2013 berücksichtigt werden, da Melamed et al. 2014 keine Ereignisse berichtete. Es ergab sich ein RR von 1,69 [95%KI 0,69, 4,16].[10, 16] Somit waren die erhöhten RR für neonatal death nicht signifikant.

Maternal death (Maternaler Tod)

Chiossi et al. 2013 berichtet maternal death als Outcome und zeigt ein RR von 0,38 [95%KI 0,04, 3,40].[10] Glavind et al. 2013 führen maternal death auch als Outcome auf, es gab jedoch keine Todesfälle.[15]

Maternal hysterectomy (Maternale Hysterektomie)

Bailit et al. 2010 berichtet über Hysterektomien und zeigt ein RR von 0,43 [95%KI 0,04, 4,14].[32] Auch hier wird das Outcome von Glavind et al. 2013 aufgeführt, aber es finden keine Ereignisse statt.[15]

Maternal bleeding needing transfusion/treatment (Maternale Blutung bedarf Transfusion/Behandlung)

In der „repeat elective CS“ berichten zwei Studien über maternal bleeding und zeigen ein RR von 1,21 [95%KI 0,65, 2,24].[10, 16] Auch Glavind et al. 2013 berichtet maternal bleeding mit RR 0,75 [95%KI 0,32, 1,77].[15]

Maternal composite adverse events (Maternale unerwünschte Ereignisse)

Maternal composite adverse events wurden in vier Studien erhoben. In Tabelle 8 ist die Definition des jeweiligen Outcomes dargestellt. Trotz der recht unterschiedlichen Definitionen wurde das Outcome maternal composite adverse events mit Absprache der Koordinierungsstelle als ein Outcome – quasi als allgemeine unerwünschte Ereignisse einer Kaiserschnittoperation – zusammengefasst.

Nur Matsuo et al. 2008 berichtet Maternal composite adverse events in der „elective CS“ mit einem RR von 38,50 [95%KI 5,29, 280,15].[30] Glavind et al. 2013 berichtet ein RR von 0,91 [95%KI 0,65, 1,27].[15] In der Subgruppe „repeat elective CS“ konnten zwei Studien gepoolt werden, CHiossi et al. 2013 und Melamed et al. 2014, und ergaben ein RR von 0,98 [95%KI 0,48, 2,02].[10, 16]

Tabelle 9: Maternal composite adverse events

Studie	Maternal composite adverse events
Chiossi et al. 2013	including death, pulmonary edema, cesarean hysterectomy, pelva or abdominal abscess, deep vein thrombosis/pulmonary embolism,

	pneumonia, blood transfusion
Glavind et al. 2013	including death, cesarean hysterectomy, deep vein thrombosis/pulmonary embolism, uterine incision lateral tear, injury to bowel or bladder, procedural or anaesthesia complications, rupture or dehiscence, bleeding needing treatment, re-operation, antiobiotics
Matsuo et al. 2008	including blood loss >2 L, total abdominal hysterectomy, wound dehiscence, severe adhesions, retained gauze, pyelonephritis, deep vein thrombosis, pulmonary edema, postpartum cardiomyopathy, angina attack
Melamed et al. 2014	presence any of the following complications: post partum infectious morbidity, general anesthesia, postpartum hemorrhage (defined subjectively by the surgeon or by a decrease of more than 3 g/dL in post-operative hemoglobin levels), intestinal or bladder laceration, dehiscence or rupture of uterine scar, accidental extension of uterine scar, need for inverted-T incision, cesarean hysterectomy, postpartum relaparotomy, complications of surgical scar, paralytic ileus, admission to intensive care unit, venous thromboembolism or hospitalization for more than 5 days

4.7. Datensynthese der Ergebnisse

Die Datensynthese wurde mithilfe von GRADE durchgeführt. Jeder Vergleich erhielt ein eigenes GRADE Evidence Profile, siehe Abbildungen 3-7. Die Qualitätsbewertung reichte von „very low“ bis „moderate“. Abstufungen in der Qualität lagen hauptsächlich am Studiendesign, einer hohen Heterogenität und dem Verzerrungspotential der eingeschlossenen Studien (Risk of Bias). Die Qualität wurde bei einigen Outcomes aufgewertet, da ein großer Effekt berichtet wurde.

Abbildung 3: GRADE Evidence Profile, Hauptvergleich

Author(s):

Date:

Question: Cohort studies: Elective CS in 37-38 weeks compared to ≥ 39 weeks for neonatal and maternal health

Setting:

Bibliography: . Timing of elective Caesarean Section beyond prematurity for neonatal and maternal health. Cochrane Database of Systematic Reviews [Year], Issue [Issue].

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Cohort studies: Elective CS in 37-38 weeks	≥ 39 weeks	Relative (95% CI)	Absolute (95% CI)		
Neonatal NICU admission - Elective CS												
13	observational studies	not serious	serious [1]	not serious	not serious	none	4370/57767 (7.6%)	3140/62327 (5.0%)	**RR 1.78** (1.55 to 2.06)	**39 more per 1.000** (from 28 more to 53 more)	⊕◯◯◯ VERY LOW	
Neonatal NICU admission - Repeat elective CS												
4	observational studies	not serious	serious	not serious	not serious	none	821/7188 (11.4%)	705/10134 (7.0%)	**RR 1.60** (1.20 to 2.14)	**42 more per 1.000** (from 14 more to 79 more)	⊕◯◯◯ VERY LOW	
Neonatal NICU length of stay ≥2 days - Elective CS												

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Cohort studies: Elective CS in 37-38 weeks	≥ 39 weeks	Relative (95% CI)	Absolute (95% CI)		
2	observational studies	not serious	not serious	not serious	not serious	none	171/9288 (1.8%)	241/9401 (2.6%)	**RR 1.93** (1.52 to 2.45)	**24 more per 1.000** (from 13 more to 37 more)	⨁⨁◯◯ LOW	
Neonatal respiratory morbidity - Elective CS												
10	observational studies	not serious	not serious	not serious	not serious	publication bias strongly suspected strong association [2]	1657/43009 (3.9%)	603/30347 (2.0%)	**RR 2.44** (2.10 to 2.84)	**29 more per 1.000** (from 22 more to 37 more)	⨁⨁◯◯ LOW	
Neonatal respiratory morbidity - Repeat elective CS												
3	observational studies	not serious	not serious	not serious	not serious	none	661/14607 (4.5%)	395/12344 (3.2%)	**RR 1.63** (1.44 to 1.86)	**20 more per 1.000** (from 14 more to 28 more)	⨁⨁◯◯ LOW	
Neonatal respiratory distress syndrome (RDS) - Elective CS												

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Cohort studies: Elective CS in 37-38 weeks**	**≥ 39 weeks**	**Relative (95% CI)**	**Absolute (95% CI)**		
6	observational studies	not serious	not serious	not serious	not serious	strong association	168/23659 (0.7%)	86/20604 (0.4%)	**RR 2.64** (2.00 to 3.49)	**7 more per 1.000** (from 4 more to 10 more)	⊕⊕⊕◯ MODERATE	
Neonatal respiratory distress syndrome (RDS) - Repeat elective CS												
2	observational studies	not serious	not serious	not serious	not serious	strong association	150/6161 (2.4%)	95/9081 (1.0%)	**RR 2.36** (1.83 to 3.05)	**14 more per 1.000** (from 9 more to 21 more)	⊕⊕⊕◯ MODERATE	
Neonatal transient tachypnea - Elective CS												
5	observational studies	not serious	not serious	not serious	not serious	strong association	706/22055 (3.2%)	367/18814 (2.0%)	**RR 2.15** (1.75 to 2.64)	**22 more per 1.000** (from 15 more to 32 more)	⊕⊕⊕◯ MODERATE	
Neonatal transient tachypnea - Repeat elective CS												

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Cohort studies: Elective CS in 37-38 weeks	≥ 39 weeks	Relative (95% CI)	Absolute (95% CI)		
2	observational studies	not serious	not serious	not serious	not serious	none	274/6161 (4.4%)	271/9081 (3.0%)	**RR 1.50** (1.27 to 1.77)	**15 more per 1.000** (from 8 more to 23 more)	⊕⊕◯◯ LOW	
Neonatal pneumothorax - Elective CS												
3	observational studies	not serious	not serious	not serious	serious [3]	strong association	46/14284 (0.3%)	11/10471 (0.1%)	**RR 3.12** (1.60 to 6.10)	**2 more per 1.000** (from 1 more to 5 more)	⊕⊕◯◯ LOW	
Neonatal pneumothorax - Repeat elective CS												
1	observational studies	not serious	not serious	not serious	serious [3]	none	1/264 (0.4%)	1/113 (0.9%)	**RR 0.43** (0.03 to 6.78)	**5 fewer per 1.000** (from 9 fewer to 51 more)	⊕◯◯◯ VERY LOW	
Neonatal resuscitation - Elective CS												

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Cohort studies: Elective CS in 37-38 weeks**	**≥ 39 weeks**	**Relative (95% CI)**	**Absolute (95% CI)**		
4	observational studies	not serious	not serious	not serious	not serious	none	878/22722 (3.9%)	558/16708 (3.3%)	**RR 1.17** (1.05 to 1.30)	**6 more per 1.000** (from 2 more to 10 more)	⊕⊕◯◯ LOW	
Neonatal resuscitation - Repeat elective CS												
1	observational studies	not serious	not serious	not serious	not serious	strong association	51/4737 (1.1%)	34/8506 (0.4%)	**RR 2.69** (1.75 to 4.15)	**7 more per 1.000** (from 3 more to 13 more)	⊕⊕⊕◯ MODERATE	
Neonatal sepsis - Elective CS												
3	observational studies	not serious	not serious	not serious	not serious	none	68/14792 (0.5%)	42/12327 (0.3%)	**RR 1.43** (0.95 to 2.18)	**1 more per 1.000** (from 0 fewer to 4 more)	⊕⊕◯◯ LOW	
Neonatal sepsis - Repeat elective CS												

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Cohort studies: Elective CS in 37-38 weeks**	**≥ 39 weeks**	**Relative (95% CI)**	**Absolute (95% CI)**		
2	observational studies	not serious	not serious	not serious	not serious	none	300/6161 (4.9%)	276/9081 (3.0%)	**RR 1.64** (1.40 to 1.93)	**19 more per 1.000** (from 12 more to 28 more)	⨁⨁◯◯ LOW	
Neonatal hypoglycemia - Elective CS												
4	observational studies	not serious	not serious	not serious	not serious	none	408/24053 (1.7%)	246/21457 (1.1%)	**RR 1.48** (1.26 to 1.74)	**6 more per 1.000** (from 3 more to 8 more)	⨁⨁◯◯ LOW	
Neonatal hypoglycemia - Repeat elective CS												
2	observational studies	not serious	not serious	not serious	not serious	strong association	61/2142 (2.8%)	66/8515 (0.8%)	**RR 3.75** (2.64 to 5.32)	**21 more per 1.000** (from 13 more to 33 more)	⨁⨁⨁◯ MODERATE	
Neonatal Apgar score ≤3 - Elective CS												

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Cohort studies: Elective CS in 37-38 weeks	≥ 39 weeks	Relative (95% CI)	Absolute (95% CI)		
2	observational studies	not serious	not serious	not serious	serious [3]	none	14/13365 (0.1%)	10/10631 (0.1%)	**RR 1.58** (0.70 to 3.56)	**1 more per 1.000** (from 0 fewer to 2 more)	⨁◯◯◯ VERY LOW	
Neonatal Apgar score ≤3 - Repeat elective CS												
1	observational studies	not serious	not serious	not serious	serious [3]	strong association	10/5897 (0.2%)	7/8968 (0.1%)	**RR 2.17** (0.83 to 5.70)	**1 more per 1.000** (from 0 fewer to 4 more)	⨁⨁◯◯ LOW	
Neonatal Apgar score ≤6 - Elective CS												
3	observational studies	not serious	not serious	not serious	not serious	none	81/22626 (0.4%)	52/19761 (0.3%)	**RR 1.63** (1.13 to 2.36)	**2 more per 1.000** (from 0 fewer to 4 more)	⨁⨁◯◯ LOW	
Neonatal Apgar score ≤6 - Repeat elective CS												

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Cohort studies: Elective CS in 37-38 weeks	≥ 39 weeks	Relative (95% CI)	Absolute (95% CI)		
1	observational studies	not serious	not serious	not serious	very serious [3]	strong association	3/264 (1.1%)	4/113 (3.5%)	**RR 0.32** (0.07 to 1.41)	**24 fewer per 1.000** (from 15 more to 33 fewer)	⊕◯◯◯ VERY LOW	
Neonatal hyperbilirubinemia - Elective CS												
5	observational studies	not serious	serious [1]	not serious	not serious	strong association	462/24192 (1.9%)	393/21590 (1.8%)	**RR 2.09** (1.54 to 2.82)	**20 more per 1.000** (from 10 more to 33 more)	⊕⊕◯◯ LOW	
Neonatal hyperbilirubinemia - Repeat elective CS												
1	observational studies	not serious	not serious	not serious	serious [3]	strong association	8/264 (3.0%)	8/113 (7.1%)	**RR 0.43** (0.16 to 1.11)	**40 fewer per 1.000** (from 8 more to 59 fewer)	⊕⊕◯◯ LOW	
Neonatal birth weight ≤2500g - Elective CS												

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Cohort studies: Elective CS in 37-38 weeks	≥ 39 weeks	Relative (95% CI)	Absolute (95% CI)		
2	observational studies	not serious	not serious	not serious	not serious	strong association	341/12504 (2.7%)	95/12314 (0.8%)	**RR 3.33** (2.63 to 4.21)	**18 more per 1.000** (from 13 more to 25 more)	⊕⊕⊕◯ MODERATE	
Neonatal birth weight ≤2500g - Repeat elective CS												
1	observational studies	not serious	not serious	not serious	not serious	strong association	87/4743 (1.8%)	63/8402 (0.7%)	**RR 2.45** (1.77 to 3.38)	**11 more per 1.000** (from 6 more to 18 more)	⊕⊕⊕◯ MODERATE	
Neonatal hospitalisation > 5 days - Elective CS												
4	observational studies	not serious	serious [1]	not serious	not serious	none	1925/19920 (9.7%)	2923/25756 (11.3%)	**RR 1.58** (1.03 to 2.42)	**66 more per 1.000** (from 3 more to 161 more)	⊕◯◯◯ VERY LOW	
Neonatal hospitalisation > 5 days - Repeat elective CS												

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Cohort studies: Elective CS in 37-38 weeks**	**≥ 39 weeks**	**Relative (95% CI)**	**Absolute (95% CI)**		
1	observational studies	not serious	not serious	not serious	not serious	none	297/4735 (6.3%)	344/8501 (4.0%)	**RR 1.55** (1.33 to 1.80)	**22 more per 1.000** (from 13 more to 32 more)	⊕⊕◯◯ LOW	
Neonatal death - Elective CS												
3	observational studies	not serious	not serious	not serious	not serious	none	192/248967 (0.1%)	154/263145 (0.1%)	**RR 1.28** (0.73 to 2.23)	**0 fewer per 1.000** (from 0 fewer to 1 more)	⊕⊕◯◯ LOW	
Neonatal death - Repeat elective CS												
2	observational studies	not serious	not serious	not serious	serious [3]	none	10/6161 (0.2%)	9/9081 (0.1%)	**RR 1.69** (0.69 to 4.16)	**1 more per 1.000** (from 0 fewer to 3 more)	⊕◯◯◯ VERY LOW	
Maternal death - Repeat elective CS												

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Cohort studies: Elective CS in 37-38 weeks	≥ 39 weeks	Relative (95% CI)	Absolute (95% CI)		
1	observational studies	not serious	not serious	not serious	serious [3]	none	1/5897 (0.0%)	4/8968 (0.0%)	**RR 0.38** (0.04 to 3.40)	**0 fewer per 1.000** (from 0 fewer to 1 more)	⊕◯◯◯ VERY LOW	
Maternal bleeding (needing transfusion/treatment) - Repeat elective CS												
2	observational studies	not serious	not serious	not serious	serious [3]	none	71/6161 (1.2%)	74/9081 (0.8%)	**RR 1.21** (0.65 to 2.24)	**2 more per 1.000** (from 3 fewer to 10 more)	⊕◯◯◯ VERY LOW	
Maternal hysterectomy - Elective CS												
1	observational studies	not serious	not serious	not serious	serious [3]	none	1/1492 (0.1%)	3/1928 (0.2%)	**RR 0.43** (0.04 to 4.14)	**1 fewer per 1.000** (from 1 fewer to 5 more)	⊕◯◯◯ VERY LOW	
Maternal hysterectomy - Repeat elective CS												

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Cohort studies: Elective CS in 37-38 weeks	≥ 39 weeks	Relative (95% CI)	Absolute (95% CI)		
2	observational studies	not serious	not serious	not serious	serious [3]	none	15/6161 (0.2%)	19/9081 (0.2%)	**RR 1.20** (0.61 to 2.36)	**0 fewer per 1.000** (from 1 fewer to 3 more)	⊕◯◯◯ VERY LOW	
Maternal composite adverse events - Elective CS												
1	observational studies	not serious	not serious	not serious	Very serious [3]	Strong association	26/129 (20.2%)	1/191 (0.5%)	**RR 38.50** (5.29 to 280.15)	**196 more per 1.000** (from 22 more to 1000 more)	⊕◯◯◯ VERY LOW	
Maternal composite adverse events - Repeat elective CS												
2	observational studies	not serious	serious [1]	not serious	not serious	none	139/6161 (2.3%)	125/9081 (1.4%)	**RR 0.98** (0.48 to 2.02)	**0 fewer per 1.000** (from 7 fewer to 14 more)	⊕◯◯◯ VERY LOW	

Abbildung 4: GRADE Evidence Profile, Hauptvergleich RCT

Author(s):

Date:

Question: RCT: Elective CS in 37-38 weeks compared to ≥ 39 weeks for neonatal and maternal health

Setting:

Bibliography: . Timing of elective Caesarean Section beyond prematurity for neonatal and maternal health. Cochrane Database of Systematic Reviews [Year], Issue [Issue].

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**RCT: Elective CS in 37-38 weeks**	**≥ 39 weeks**	**Relative (95% CI)**	**Absolute (95% CI)**		
Neonatal NICU admission - Elective CS												
1	randomised trials	serious [1]	not serious	not serious	serious [2]	none	101/635 (15.9%)	89/637 (14.0%)	**RR 1.14** (0.88 to 1.48)	**20 more per 1.000** (from 17 fewer to 67 more)	⊕⊕◯◯ LOW	
Neonatal NICU length of stay ≥2 days - Elective CS												
1	randomised trials	not serious	not serious	not serious	serious [2]	none	39/635 (6.1%)	38/637 (6.0%)	**RR 1.03** (0.67 to 1.59)	**2 more per 1.000** (from 20 fewer to 35 more)	⊕⊕⊕◯ MODERATE	
Neonatal respiratory morbidity - Elective CS												

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	RCT: Elective CS in 37-38 weeks	≥ 39 weeks	Relative (95% CI)	Absolute (95% CI)		
1	randomised trials	serious [1]	not serious	not serious	serious [2]	none	57/635 (9.0%)	43/637 (6.8%)	**RR 1.33** (0.91 to 1.95)	**22 more per 1.000** (from 6 fewer to 64 more)	⨁⨁◯◯ LOW	
Neonatal sepsis - Elective CS												
1	randomised trials	serious [1]	not serious	not serious	serious [2]	none	17/635 (2.7%)	14/637 (2.2%)	**RR 1.22** (0.61 to 2.45)	**5 more per 1.000** (from 9 fewer to 32 more)	⨁⨁◯◯ LOW	
Maternal death - Elective CS												
1	randomised trials	not serious				none	0/635 (0.0%)	0/637 (0.0%)	not estimable		-	
Maternal bleeding (needing transfusion/treatment) - Elective CS												
1	randomised trials	not serious	not serious	not serious	not serious	none	9/636 (1.4%)	12/638 (1.9%)	**RR 0.75** (0.32 to 1.77)	**5 fewer per 1.000** (from 13 fewer to 14 more)	⨁⨁⨁⨁ HIGH	
Maternal hysterectomy - Elective CS												

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**RCT: Elective CS in 37-38 weeks**	**≥ 39 weeks**	**Relative (95% CI)**	**Absolute (95% CI)**		
1	randomised trials	not serious					0/636 (0.0%)	0/638 (0.0%)	not estimable		-	
Maternal composite adverse events - Elective CS												
1	randomised trials	not serious	not serious	not serious	serious [2]	none	60/636 (9.4%)	66/638 (10.3%)	**RR 0.91** (0.65 to 1.27)	**9 fewer per 1.000** (from 28 more to 36 fewer)	⨁⨁⨁◯ MODERATE	

CI: Confidence interval; **RR:** Risk ratio

1. Personnel and participants not blinded, outcome not blinded
2. large confidence interval

Abbildung 5: Frühvergleich

Author(s):

Date:

Question: Elective CS 37 week compared to 38 weeks for neonatal and maternal health

Setting:

Bibliography: . Timing of elective Caesarean Section beyond prematurity for neonatal and maternal health. Cochrane Database of Systematic Reviews [Year], Issue [Issue].

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Elective CS 37 week**	**38 weeks**	**Relative (95% CI)**	**Absolute (95% CI)**		
Neonatal NICU admission												
1	observational studies	not serious	not serious	not serious	not serious	strong association	32/390 (8.2%)	12/294 (4.1%)	**RR 2.01** (1.05 to 3.84)	**41 more per 1.000** (from 2 more to 116 more)	⊕⊕⊕◯ MODERATE	
Neonatal respiratory morbidity												
2	observational studies	not serious	not serious	not serious	serious [1]	none	42/438 (9.6%)	11/342 (3.2%)	**RR 3.22** (1.70 to 6.11)	**71 more per 1.000** (from 23 more to 164 more)	⊕◯◯◯ VERY LOW	
Neonatal transient tachypnea												

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Elective CS 37 week**	**38 weeks**	**Relative (95% CI)**	**Absolute (95% CI)**		
1	observational studies	not serious	not serious	not serious	serious [1]	none	10/48 (20.8%)	4/48 (8.3%)	**RR 2.50** (0.84 to 7.42)	**125 more per 1.000** (from 13 fewer to 535 more)	⨁◯◯◯ VERY LOW	
Neonatal sepsis												
1	observational studies	not serious	not serious	not serious	serious [1]	none	3/390 (0.8%)	3/294 (1.0%)	**RR 0.75** (0.15 to 3.71)	**3 fewer per 1.000** (from 9 fewer to 28 more)	⨁◯◯◯ VERY LOW	
Neonatal hypoglycaemia												
2	observational studies	not serious	not serious	not serious	serious [1]	none	35/438 (8.0%)	9/342 (2.6%)	**RR 3.02** (1.47 to 6.20)	**53 more per 1.000** (from 12 more to 137 more)	⨁◯◯◯ VERY LOW	
Neonatal hyperbilirubinemia												
1	observational studies	not serious	not serious	not serious	not serious	none	42/390 (10.8%)	26/294 (8.8%)	**RR 1.22** (0.76 to 1.94)	**19 more per 1.000** (from 21 fewer to 83 more)	⨁⨁◯◯ LOW	

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Elective CS 37 week	38 weeks	Relative (95% CI)	Absolute (95% CI)		
Neonatal birth weight ≤2500g												
2	observational studies	not serious	serious [1]	not serious	serious [1]	none	75/438 (17.1%)	31/342 (9.1%)	**RR 1.40** (0.48 to 4.13)	**36 more per 1.000** (from 47 fewer to 284 more)	⨁◯◯◯ VERY LOW	

CI: Confidence interval; **RR:** Risk ratio

1. large confidence interval

Abbildung 6: Zwillingsvergleich

Author(s):

Date:

Question: Elective CS in twin pregnancies 35-37 weeks compared to 38-41 weeks for neonatal and maternal health

Setting:

Bibliography: . Timing of elective Caesarean Section beyond prematurity for neonatal and maternal health. Cochrane Database of Systematic Reviews [Year], Issue [Issue].

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Elective CS in twin pregnancies 35-37 weeks**	**38-41 weeks**	**Relative (95% CI)**	**Absolute (95% CI)**		
Neonatal NICU admission												
1	observational studies	not serious	not serious	not serious	very serious [1]	strong association	13/1378 (0.9%)	2/1834 (0.1%)	**RR 8.65** (1.96 to 38.27)	**8 more per 1.000** (from 1 more to 41 more)	⊕◯◯◯ VERY LOW	
Neonatal Hospitalization > 5 days												
1	observational studies	not serious	not serious	not serious	not serious	strong association	359/1378 (26.1%)	130/1834 (7.1%)	**RR 3.68** (3.05 to 4.44)	**190 more per 1.000** (from 145 more to 244 more)	⊕⊕⊕◯ MODERATE	
Apgar score ≤3												

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Elective CS in twin pregnancies 35-37 weeks	38-41 weeks	Relative (95% CI)	Absolute (95% CI)		
1	observational studies	not serious	not serious	not serious	very serious [1]	strong association	2/1378 (0.1%)	1/1834 (0.1%)	**RR 2.66** (0.24 to 29.33)	**1 more per 1.000** (from 0 fewer to 15 more)	⊕◯◯◯ VERY LOW	
Neonatal pneomothorax												
1	observational studies	not serious	not serious	not serious	very serious [1]	strong association	2/1378 (0.1%)	0.0%	**RR 6.65** (0.32 to 138.47)	**0 fewer per 1.000** (from 0 fewer to 0 fewer)	⊕◯◯◯ VERY LOW	
Neonatal respiratory distress outcome (RDS)												
1	observational studies	not serious	not serious	not serious	very serious [1]	strong association	9/1378 (0.7%)	1/1834 (0.1%)	**RR 11.98** (1.52 to 94.43)	**6 more per 1.000** (from 0 fewer to 51 more)	⊕◯◯◯ VERY LOW	
Neonatal resuscitation												

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Elective CS in twin pregnancies 35-37 weeks**	**38-41 weeks**	**Relative (95% CI)**	**Absolute (95% CI)**		
1	observational studies	not serious	not serious	not serious	very serious [1]	strong association	4/1378 (0.3%)	2/1834 (0.1%)	**RR 2.66** (0.49 to 14.51)	**2 more per 1.000** (from 1 fewer to 15 more)	⊕◯◯◯ VERY LOW	
Neonatal sepsis												
1	observational studies	not serious	not serious	not serious	very serious [1]	strong association	7/1378 (0.5%)	3/1834 (0.2%)	**RR 3.11** (0.80 to 11.99)	**3 more per 1.000** (from 0 fewer to 18 more)	⊕◯◯◯ VERY LOW	
Neonatal transient tachypnea												
1	observational studies	not serious	not serious	not serious	very serious [1]	strong association	37/1378 (2.7%)	10/1834 (0.5%)	**RR 4.92** (2.46 to 9.87)	**21 more per 1.000** (from 8 more to 48 more)	⊕◯◯◯ VERY LOW	
Neonatal hypoglycemia												

Quality assessment							№ of patients		Effect		Quality	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Elective CS in twin pregnancies 35-37 weeks	38-41 weeks	Relative (95% CI)	Absolute (95% CI)		
1	observational studies	not serious	not serious	not serious	serious [1]	strong association	106/1378 (7.7%)	30/1834 (1.6%)	**RR 4.70** (3.15 to 7.01)	**61 more per 1.000** (from 35 more to 98 more)	⨁⨁◯◯ LOW	
Low birth weigh (<=2500g)												
1	observational studies	not serious	not serious	not serious	not serious	strong association	491/1378 (35.6%)	139/1834 (7.6%)	**RR 4.70** (3.95 to 5.60)	**280 more per 1.000** (from 224 more to 349 more)	⨁⨁⨁◯ MODERATE	

CI: Confidence interval; **RR:** Risk ratio

1. large confidence interval

5. Diskussion

Zur Beantwortung der Frage „Welchen Einfluss hat der Zeitpunkt des elektiven Kaiserschnitts außerhalb der Frühgeburtlichkeit (37 + 0 Schwangerschaftswoche (SSW)) auf die maternale und neonatale Gesundheit?“ konnten 33 Publikationen identifiziert werden, die auf 30 Primärstudien beruhen. Dabei handelte es sich bei einer Studie um eine RCT (Glavind et al. 2013) und alle anderen Studien waren Kohortenstudien. Im Hauptvergleich konnten für beide Subgruppen „elective CS“ und „repeat elective CS“ signifikant erhöhte RR in der Interventionsgruppe für folgende Outcomes dargestellt werden: NICU admission, NICU length of stay ≥2 days, neonatal respiratory morbidity, neonatal RDS, neonatal TTN, neonatal resuscitation, neonatal hypoglycemia, Neonatal birth weight ≤2500g, neonatal hospitalisation > 5 days. In der Subrgruppe „elective CS“ konnten weiterhin für neonatal pneumothorax, neonatal Apgar score ≤6, neonatal hyperbilirubinemia ein signifikant erhöhtes RR festgestellt werden. In der „Repeat elective CS“ Gruppe wurde wiederum ein signifikant erhöhtes RR für Neonatal sepsis erhoben.
Die RCT von Glavind et al. aus dem Jahr 2013 lieferte keinerlei signifikante Werte. Man konnte auch insgesamt nur sehr kleine Unterschiede zwischen den beiden Gruppen sehen. Dies mag damit begründbar sein, dass in dem Vergleich den Glavind et al. anstrebte, die Kaiserschnitte in den beiden Gruppen nur maximal elf Tage auseinander lagen, während die Kohortenstudien eine Spanne der 37+0 bis (zum Großteil) 41+6 SSW untersuchen.
Der Frühvergleich beruhte auf zwei Studien, Nakashima et al. 2014 und Yamazaki et al. 2013. Nakashima et al 2014. vergleicht die 37+0-6 mit der 38+0-6 SSW, während Yamazaki et al 2003, die 37+0-3 mit der 37+4-38+6 SSW vergleicht. Yamazaki et al. 2003 hat also einen früheren „späten“ Kaiserschnittzeitpunkt. Dennoch können in den gepoolten Daten der beiden Studien ein signifikant erhöhtes RR in der Interventionsgruppe für neonatal respiratory morbidity und für neonatal hypoglycemia gezeigt werden. Weiterhin zeigt Nakashima et al. 2014 eine signifikant höhere NICU Admission in der Interventionsgruppe.
Auch im Zwillingsvergleich konnte Wilmink et al. 2012 signifikant erhöhte RRs bei NICU admissions, neonatal RDS, TTN, neonatal hospitalization > 5 days, neonatal hypoglycemia, neonatal low birth weigh (≤2500g) zeigen. Die Effekte waren hier besonders groß, und brachten auch teilweise sehr weite Konfidenzintervalle mit sich. Dies liegt vermutlich daran, dass der Vergleich schon Kinder vor der „Reife“ (37+0 SSW) einschloss, nämlich ab der 35+0 SSW und es insgesamt kleine Patientenzahlen waren.
Es gab wenige Ergebnisse, die auf einen protektiven Faktor des frühen Kaiserschnitts hindeuteten. Melamed et al. zeigte hinsichtlich neonatal pneumothorax, neonatal hyperbilirubinemia und neonatal Apgar Score ≤6 ein RR unter 1. Dies war jedoch nicht signifikant und die Fallzahl (bzw. die Patientenzahl) waren zu gering, um eine Aussage darüber treffen zu können. Hinsichtlich der maternalen Komplikationen zeigte Chiossi et al. 2013 ein RR unter 1 (maternal death). Aber auch dies rührt von sehr geringen Fallzahlen (1 in der Interventionsgruppe, 4 in der Kontrollgruppe). Ebenso erscheint in Bailit et al. 2010 ein RR <1 bei maternal hysterectomy, welches auch auf kleinen Fallzahlen beruhen kann. Melamed et al. 2014 zeigt bei maternal composite adverse events ein RR von 0,68 [95%KI 0,48, 0,97]. Hier sind die Fallzahlen deutlich höher und anhand des Konfidenzintervals lässt sich Signifikanz ableiten. Chiossi et al. 2013 und Matsuo et al. 2008 kommen allerdings auf den gegenteiligen Effekt. Hier muss man einräumen, dass die Patientinnen, die Melamed et al. 2014 einschloss, alle bereits

mindestens zwei Kaiserschnitte erlebt hatten. Damit steigt insgesamt das Risiko für Komplikationen.

Die Qualitätsbewertung mit der Newcastle-Ottawa Scale zeigte zwar eine hohe methodische Qualität, jedoch scheint es, als könnte die vollständige Qualität bzw. das Verzerrungspotential der eingeschlossenen Studien nicht ausreichend differenziert werden. Durch die besonderen Charakteristika der meisten eingeschlossenen Kohortenstudien, die auf Registerdaten basieren und der Endpunkt zugleich mit Beginn der Studie bzw. Einschluss der Patientinnen zusammentraf, war Punkt 4 „Demonstration that outcome of interest was not present at start of study" nicht direkt relevant. Um jedoch das Bewertungsinstrument bzw. den Prozess nicht zu modifizieren, bewerteten wir diesen Aspekt für alle Studien positiv (d.h. mit Vergabe eines Sterns). Ein ähnliches Problem ergab sich mit „comparability of cohorts on the basis of the design or analysis". Hier beantworteten wir den Punkt auch positiv, sobald die Studien für bestimmte bekannte Störvariablen, z.B. Alter oder BMI der Mutter, Geschlecht des Kindes etc. adjustierten, auch wenn wir für die Meta-Analyse absolute Zahlen einschlossen. Damit kann eine Überschätzung der Qualität entstanden sein. Die Schwierigkeit spiegelt die besondere Problematik wider, Kohortenstudien adäquat zu bewerten. Ein im Rahmen des Auftrags geeigneteres Bewertungsinstrument liegt leider bislang nicht vor. Zudem lässt sich das Instrument weniger gut in die Bewertung mit GRADE integrieren, da sich die Bewertung von Risk of Bias besser mit dem Cochrane Risk of Bias Tool ergänzt. Auch hierzu gibt es jedoch keine bessere Alternative. Auch die RCT wies ein hohes Verzerrungspotential auf, was vor allem an der mangelnden Verblindung des Outcome-Assessments lag.
Besonders beim Outcome NICU admission errechnete sich in der Meta-Analyse ein hohes Maß an Heterogenität. Wie oben genannt, fehlt für viele Studien die Beschreibung des Patientenkollektivs. Dennoch erscheinen die Charakteristika, die berichtet wurden, über die Studien recht homogen. Allerdings ist vor allem bei NICU admission auffällig, dass die Studien aus einer Vielzahl verschiedener Länder kommen. Mögliche Landesspezifische Richtlinien und medizinische Ausbildung können zu einem unterschiedlichen Umgang in der Versorgungspraxis führen. Es kann allerdings auch unterschiedliche Praktiken in verschiedenen Krankenhäusern eines Landes geben, Studien, die Daten aus nur einem Zentrum lieferten können dadurch das Verzerrungspotential erhöhen. Auch sind die SSW Angaben unterschiedlich, der Großteil zeigt zwar Ergebnisse für jede Woche von der 37+0 bis zur 41+6, jedoch schlossen manche Studien zum Beispiel Frauen lediglich bis Woche 40+6 ein oder spezifizierten nicht genau bis zu welchem Gestationstag die Patientinnen eingeschlossen wurden.
Möglicherweise sind Risikoschwangerschaften bzw. –geburten zu den frühen Kaiserschnittterminen zugeteilt. Dies lässt sich jedoch nicht aufklären, da die Charakteristika nur selten den SSW zugeteilt sind. Auch reicht der Begriff elektiv von mütterlichem Wunsch bis zu Komplikationen.
Auch können die Outcomes, die je nach Studienprotokoll anders definiert werden, z.B. Respiratory morbidity, unterschiedliche Ergebnisse hervorrufen und ein Pooling wie es hier stattfand, kann zu Über- oder Unterschätzung eines Effekts kommen.

Der Forschungsstand zum Thema Zeitpunkt des elektiven Kaiserschnitts ist gut und regelmäßig werden neue Register ausgewertet. In dieser Arbeit ist ein Kollektiv mit einer sehr hohen Patientenzahl untersucht worden, womit die Ergebnisse dieser Arbeit eine hohe Signifikanz haben. Dennoch gibt es weiteren Bedarf an hochqualitativer Forschung.

Für eine Übertragung auf den deutschen Kontext fehlen Informationen über Richtlinien und Vorgehensweisen zur klinischen Praxis, die in den hier analysierten Studien zu Grunde liegen. Allerdings kann man insgesamt schließen, dass ein elektiver Kaiserschnitt nicht vor der 39+0 SSW erfolgen sollte, da insbesondere neonatale Morbidität mit einer erhöhten Wahrscheinlichkeit auftreten kann.

6. Appendix

Appendix A: Cochrane Risk of Bias Tool

Domain	Support for judgement	Review authors' judgement
Selection bias		
Random sequence generation	Describe the method used to generate the allocation sequence in sufficient detail to allow an assessment of whether it should produce comparable groups.	Selection bias (biased allocation to interventions) due to inadequate generation of a randomised sequence.
Allocation concealment	Describe the method used to conceal the allocation sequence in sufficient detail to determine whether intervention allocations could have been foreseen in advance of, or during, enrolment.	Selection bias (biased allocation to interventions) due to inadequate concealment of allocations prior to assignment.
Performance bias		
Blinding of participants and personnel Assessments should be made for each main outcome (or class of outcomes).	Describe all measures used, if any, to blind study participants and personnel from knowledge of which intervention a participant received. Provide any information relating to whether the intended blinding was effective.	Performance bias due to knowledge of the allocated interventions by participants and personnel during the study.
Detection bias		
Blinding of outcome assessment Assessments should be made for each main outcome (or class of outcomes).	Describe all measures used, if any, to blind outcome assessors from knowledge of which intervention a participant received. Provide any information relating to whether the intended blinding was effective.	Detection bias due to knowledge of the allocated interventions by outcome assessors.
Attrition bias		
Incomplete outcome data Assessments should be made for each main outcome (or class of outcomes).	Describe the completeness of outcome data for each main outcome, including attrition and exclusions from the analysis. State whether attrition and exclusions were reported, the numbers in each intervention group (compared with total randomized participants), reasons for attrition/exclusions where reported, and any re-inclusions in analyses performed by the review authors.	Attrition bias due to amount, nature or handling of incomplete outcome data.
Reporting bias		
Selective reporting	State how the possibility of selective outcome reporting was examined by the review authors, and what was found.	Reporting bias due to selective outcome reporting.
Other bias.		
Other sources of bias	State any important concerns about bias not addressed in the other domains in the tool. If particular questions/entries were pre-specified in the review's protocol, responses should be provided for each question/entry.	Bias due to problems not covered elsewhere in the table.

Higgins JPT, Altman DG, Sterne JAC. Chapter 8: Assessing risk of bias in included studies. In: S HJG, editor. Cochrane Handbook for Systematic Reviews of Interventions Version 510 (updated March 2011). www.cochrane-handbook.org.: The Cochrane Collaboration; 2011.

Appendix B: Newcastle Ottawa Scale

NEWCASTLE - OTTAWA QUALITY ASSESSMENT SCALE

COHORT STUDIES

Note: A study can be awarded a maximum of one star for each numbered item within the Selection and Outcome categories. A maximum of two stars can be given for Comparability

Selection

1) Representativeness of the exposed cohort

a) truly representative of the average _______________ (describe) in the community *

b) somewhat representative of the average ______________ in the community *

c) selected group of users eg nurses, volunteers

d) no description of the derivation of the cohort

2) Selection of the non exposed cohort

a) drawn from the same community as the exposed cohort *

b) drawn from a different source

c) no description of the derivation of the non exposed cohort

3) Ascertainment of exposure

a) secure record (eg surgical records) *

b) structured interview *

c) written self report

d) no description

4) Demonstration that outcome of interest was not present at start of study

a) yes *

b) no

Comparability

1) Comparability of cohorts on the basis of the design or analysis

a) study controls for _____________ (select the most important factor) *

b) study controls for any additional factor * (This criteria could be modified to indicate specific control for a second important factor.)

Outcome

1) Assessment of outcome

a) independent blind assessment *

b) record linkage *

c) self report

d) no description

2) Was follow-up long enough for outcomes to occur

a) yes (select an adequate follow up period for outcome of interest) *

b) no

3) Adequacy of follow up of cohorts

a) complete follow up - all subjects accounted for *

b) subjects lost to follow up unlikely to introduce bias - small number lost - > ____ % (select an adequate %) follow up, or description provided of those lost) *

c) follow up rate < ____% (select an adequate %) and no description of those lost

d) no statement

GA Wells, B Shea, D O'Connell, J Peterson, V Welch, M Losos, P Tugwell, The Newcastle-Ottawa Scale (NOS) for assessing the quality of nonrandomised studies in meta-analyses, 2014 http://www.ohri.ca/programs/clinical_epidemiology/oxford.asp

Appendix C: GRADE, Assessing the quality of a body of evidence

Levels of quality of a body of evidence in the GRADE approach	
Underlying methodology	**Quality rating**
Randomized trials; or double-upgraded observational studies.	High
Downgraded randomized trials; or upgraded observational studies.	Moderate
Double-downgraded randomized trials; or observational studies.	Low
Triple-downgraded randomized trials; or downgraded observational studies; or case series/case reports.	Very low
Factors that may decrease the quality level of a body of evidence	
1. Limitations in the design and implementation of available studies suggesting high likelihood of bias. 2. Indirectness of evidence (indirect population, intervention, control, outcomes). 3. Unexplained heterogeneity or inconsistency of results (including problems with subgroup analyses). 4. Imprecision of results (wide confidence intervals). 5. High probability of publication bias.	
Factors that may increase the quality level of a body of evidence	
1. Large magnitude of effect. 2. All plausible confounding would reduce a demonstrated effect or suggest a spurious effect when results show no effect. 3. Dose-response gradient.	

Schünemann HJ, Oxman AD, Vist GE, Higgins JPT, Deeks JJ, Glasziou P and Guyatt GH. Chapter 12: Interpreting results and drawing conclusions. In: S HJG, editor. Cochrane Handbook for Systematic Reviews of Interventions Version 510 (updated March 2011). www.cochrane-handbook.org.: The Cochrane Collaboration; 2011.

Appendix D: Studiencharakteristika der eingeschlossenen Studien

Alderdice 2005	
Methods	**Studytype:** retrospective Cohort-Study (chart-review) **Setting:** several maternity units, North Ireland **Recruitment period:** 04.2001 - 03.2002
Participants	**Characteristics** Women according to gestational week at delivery: **week 37 (37+0-6)** n= 208 (neonates = 237) **week 38 (38+0-6)** n= 897 (neonates = 928) **week 39 (39+0-6)** n= 1072 (neonates = 1075) **week 40 (40+0-6)** n= 192 (neonates = 192) **week 41 (41+0-6)** n= 120 (neonates = 121) **Included Patients:** 237 / 928 / 1075 / 192 / 121 **Analysed Patients:** 237 / 928 / 1075 / 192 / 121 **Drop outs:** - Women who delivered by ELCS and neonate transmitted to NICU n= 205 Reasons for ELCS (in %) repeat CS: 52 maternal request: 24 breech presentation: 21
Interventions	elective CS at different gestational weeks at term (37 or 38 or 39 or 40 or 41)

Outcomes	**Neonatal intensive care unit admission** *Neonatal outcomes:* NICU admission with transient tachypnoea of newborn/respiratory distress syndrome
Notes	

CS = Caesarean section; ELCS = Elective caesarean section; NICU = Neonatal intensive care unit;

Bailit 2010	
Methods	**Studytype:** retrospective Cohort-Study (chart-review) **Setting:** 10 institutions, USA **Recruitment period:** 2002 - 2008
Participants	**Exclusion criteria:** - multiple pregnancy - nonvertex deliveries - gestational age 34 weeks or 42 weeks - foetus with anomaly - pregnancies complicated by placenta previa or accreta or with a prior uterine scar (cesarean or myomectomy) - missing onset of labor data **Characteristics** Women with singleton pregnancy: **all (week 34 - 42):** n= 3959 Maternal age (in years): 30.1, SD: 6.6 delivery BMI: 34.1, SD: 7.6 Ethnicity (in %): Caucasian(white/non-hispanic): 51.0 Black/non-hispanic: 21.2 Hispanic: 16.7

	Asian/Pacific islander: 4.8 other: 6.3 Nulliparous (in %): 63.9
Interventions	elective CS at different gestational weeks at term (37 or 38 or 39 or 40 or 41 or 42)
Outcomes	**Neonatal intensive care unit admission** *Neonatal outcomes:* asphyxia, ventilation use, sepsis, NICU length of stay *Maternal outcomes:* hyterectomy
Notes	

BMI = Body mass index; CS = Caesarea section; NICU= Neonatal intensive care unit; SD = Standard deviation

Chiossi 2013	
Methods	**Studytype:** retrospective analysis of prospective Cohort-Study **Setting:** 19 academic centers, USA **Recruitment period:** 1999-2002
Participants	**Exclusion criteria:** - multiple pregnancy - women in early labor undergoing repeated cesarean delivery - foetus with major congenital anomaly - women whose ulimate choice of a type of delivery could not be reasonably classified - infant <500g **Characteristics** Women with singleton pregnancy and prior cesarean section according to gestational week at delivery: **week 37 (37+0-6)**

	n= 1,296 Maternal age (years): 30.6, SD: 5.6 delivery BMI: 34.1, SD: 7.6 Ethnicity (i%): Caucasian: 48.1 Black: 22.3 Hispanic: 24.3 other: 5.3 Married (%): 68.4 Payer (%): Medicaid or none: 48.7 other: 51.3 Smoker (%): 11.9 Prior CS (%): 1: 54.6 2: 32.3 3 or more: 13.1 Maternal disease* (%): 35.1 **week 38 (38+0-6)** n= 4,601 Maternal age (years): 30.6, SD: 5.4 delivery BMI: 33.2, SD: 6.9 Ethnicity (in %): Caucasian: 53.7 Black: 18.5 Hispanic: 23.2 other: 4.6 Married (%): 72.6

	Payer (%): Medicaid or none: 40.0 other: 60.0 Smoker (%): 11.1 Prior CS (%): 1: 61.1 2: 29.7 3 or more: 9.2 Maternal disease* (%): 23.8 **week 39 (39+0-6)** n= 6,941 Maternal age (years): 29.8, SD: 5.4 delivery BMI: 33.6, SD: 6.9 Ethnicity (%): Caucasian: 44.6 Black: 21.3 Hispanic: 29.8 other: 4.3 Married (%): 65.2 Payer (%): Medicaid or none: 50.8 other: 49.2 Smoker (%): 12.7 Prior CS (%): 1: 60.5 2: 31.8 3 or more: 7.7 Maternal disease* (%): 19.9

	week 40 (40+0-6) n= 1,492 Maternal age (years): 28.7, SD: 5.8 delivery BMI: 33.8, SD: 6.7 Ethnicity (%): Caucasian: 32.9 Black: 25.9 Hispanic: 36.2 other: 5.0 Married: 57.6 Payer: Medicaid or none: 62.7 other: 37.3 Smoker (%): 12.2 Prior CS: 1: 72.6 2: 22.2 3 or more: 5.2 Maternal disease*: 13.8 **week 41 (41+0-6)** n= 535 Maternal age (years): 28.1, SD: 5.9 delivery BMI: 34.5, SD: 6.6 Ethnicity (%): Caucasian: 23.7 Black: 25.8 Hispanic: 44.3 other: 6.2

	Married (%): 53.1 Payer (%): Medicaid or none: 76.3 other: 23.7 Smoker (%): 10.1 Prior CS %): 1: 80.6 2: 16.4 3 or more: 3.0 Maternal disease* (%): 10.1 **Included Patients:** 1,296 / 4,601 / 6,941 / 1,492 / 535 **Analysed Patients:** 1,296 / 4,601 / 6,941 / 1,492 / 535 **Drop outs:** -
Interventions	elective CS at different gestational weeks at term (37 or 38 or 39 or 40 or 41)
Outcomes	**Neonatal intensive care unit admission** *Neonatal outcomes:* death, respiratory distress syndrome, transient tachypnea, sepsis, seizure, 5min Apgar score 3 or less *Maternal outcomes:* death, blood transfusion, composite outcome (including death, pulmonary edema, cesarean hysterectomy, pelva or abdominal abscess, deep vein thrombosis/pulmonary embolism, pneumonia, blood transfusion)
Notes	* Asthma, diabetes, pregestational chronic hypertension with medication, seizure disorder, thyroid disease, renal disease, connective tissue disease maternal outcomes reported

BMI = Body mass index; CS = Caesarean section; SD = Standard deviation

Clark 2009	
Methods	**Studytype:** Prospective observational study **Setting:** 27 hospitals within the Hospital Corporation of America system **Recruitment period:** 01.05.2007 - 31.07.2007
Participants	**Exclusion critera:** -delivery before gestation age 37 **Characteristics** Women according to gestational week at delivery: **Weeek 37 (37+0-6)** Elective repeat ceasareans: 105 Elective primary ceasareans: 24 **Week 38 (38+0-6)** Elective repeat cesarean: 696 Elective primary cesarean: 97 **Week 39+** Elective repeat cesarean: 776 Elective primary cesarean: 153
Interventions	elective CS at different gestational weeks at term (37 or 38 or 39)
Outcomes	**Neonatal intensive care unit admission** *Neonatal Outcomes:* weight of newborn, initial or subsequent admission to a newborn special care unit (defined as any unit other thanthe normal newborn unit), and length of newborn stay in the special care unit *Maternal Outcomes:* initial cervical dilatation, initial blood pressure for women with hypertensive disease as the indication for delivery, agent used for induction, length of labor, route of delivery
Notes	

CS = Caesarean section

Doan 2014	
Methods	**Studytype:** retrospective Cohort-Study (chart-review) **Setting:** Mater Mothers' Hospitals, Australia Queensland **Recruitment period:** 1998-2009
Participants	**Exclusion criteria:** - multiple pregnancy - women with pregnancy conditions (HIV/AIDS, autoimmune disease, hypertension, diabetes) - neonates with congenital anomalies and stillbirths **Characteristics** Women according to gestational week at delivery: **week 37-38 (37 - 38+0-6)** n= 8657 Maternal age (in years): 32.8 delivery BMI (in %): Underweight (<18.5 kg/m2): 4.97 Normal (18.5–24.9 kg/m2): 52.64 Overweight (25–29.9 kg/m2): 20.68 Obese (≥30 kg/m2): 13.85 Unknown: 7.87 Ethnicity (in %): Caucasian: 91.31 Indigenous: 0.66 Asian: 4.89 Other: 3.14 Marital status (in %): Married/living together: 95.82 Single: 3.12 Seperated/Divorced/Widowed: 1.05 Socio-economic status (in %): Quintile 1: 5.59 Quintile 2: 2.58

	Quintile 3: 7.72 Quintile 4: 28.72 Quintile 5: 55.40 Private insurance (in %): 75.87 Smoker (in %): 7.21 Nulliparous (in %): 29.28 Primary CS (in %): 45.82 Indication for CS (in %): Fetal: 1.64 Abnormal presentation: 11.40 Previous CS: 53.77 Previous poor obstetric history: 1.33 Obstetric complication: 7.18 Maternal request: 14.49 Maternal comorbidity: 6.86 Unknown: 0.09 Other: 3.23 Assisted reproductive technology (in %): 9.8 General anesthesia (in %): 2.24 Baby gender male (in %): 51.62 Birth weight (in g): 3350 **week 39-41 (39 - 41+0-6)** n= 5790 Maternal age (in years): 32.2 delivery BMI (in %): Underweight (<18.5 kg/m2): 4.3 Normal (18.5–24.9 kg/m2): 53.49 Overweight (25–29.9 kg/m2): 20.45 Obese (≥30 kg/m2): 13.16 Unknown: 8.60 Ethnicity (in %): Caucasian: 89.34 Indigenous: 1.09 Asian: 5.51

	Other: 4.06 Marital status (in %): Married/living together: 94.46 Single: 4.72 Seperated/Divorced/Widowed: 0.82 Socio-economic status (in %): Quintile 1: 5.98 Quintile 2: 2.09 Quintile 3: 7.95 Quintile 4: 28.62 Quintile 5: 55.35 Private insurance (in %): 64.37 Smoker (in %): 8.49 Nulliparous (in %): 32.83 Primary CS (in %): 46.93 Indication for CS (in %): Fetal: 1.02 Abnormal presentation: 15.08 Previous CS: 52.68 Previous poor obstetric history: 1.23 Obstetric complication: 5.98 Maternal request: 14.75 Maternal comorbidity: 4.87 Unknown: 0.03 Other: 4.37 Assisted reproductive technology (in %): 6.61 General anesthesia (in %): 1.43 Baby gender male (in %): 50.52 Birth weight (in g): 3539 **Included Patients:** 8657/5790 **Analysed Patients:** 8657/5790 **Drop outs:** -
Interventions	elective CS at different gestational weeks at term (37 + 38 or

	39 - 41)
Outcomes	**Neonatal intensive care unit admission (NCCU Neonatal critical care unit) ≥1day** *Neonatal outcomes:* death, respiratory distress syndrome, transient tachypnea, pneumothorax, jaundice requiring phototherapy, hypoglycaemia, 5min Apgar score <7, , resuscitation (positive pressure ventilation, cardiac compression/ resusciation drugs), serious respiratory morbidity (admission to the Neonatal Critical Care Unit (NCCU), either intensive or special care, with respiratory morbidity and receiving assisted ventilation via mechanical ventilation and/or CPAP for ≥4 h), birth weight
Notes	

AIDS = Acquired immunodeficiency syndrome; BMI = Body mass index; CPAP = Continuous positive airway pressure; CS = Caesarean section; HIV = human immunodeficiency virus

Farchi 2010	
Methods	**Studytype:** retrospective Cohort-Study (chart-review) **Setting:** several hospitals, Italy Lazio region **Recruitment period:** 2003-2005
Participants	**Exclusion criteria:** - women with chronic and pregnancy-related diseases - neonates with congenital anomalies and intrauterine fetal growth retardation **Characteristics** Women with prior CS according to gestational week at delivery: **week 37 (37+0-6)** n= 2139 **week 38 (38+0-6)** n= 7467 **week 39 (39+0-6)** n= 672

	week 40 + 41 (40 - 41 +0-6) n= 3051 **Included Patients:** 2139 / 7467 / 672 / 3051 **Analysed Patients:** 2139 / 7467 / 672 / 3051 **Drop outs:** -
Interventions	elective CS at different gestational weeks at term (37 or 38 or 39 or 40+41)
Outcomes	*Neonatal Outcomes:* Neonatal respiratory morbidity (pulmonary interstitial emphysema/pneumothorax, transient tachypnoea, respiratory distress syndrome, severe asphyxia (asphyxia and 5-minute Apgar score <7) and other neonatal respiratory problems, and respiratory therapy (need for oxygen and nasal continuous positive airway pressure))
Notes	

CS = Caesarean section

Finn 2016	
Methods	**Studytype:** retrospective Cohort-Study **Setting:** Cork university maternity hospital, Ireland **Recruitment period:** 08-2008 - 07.2012
Participants	**Exclusion criteria:** - multiple pregnancy - foetal congenital abnormalities - delivery took place earlier than planned - Pregnancies warranted early or immediate delivery due to maternal medical or obstretic complications **Characteristics** Women with singleton pregnancy according to gestational week at delivery: **week 37 (37+0-6)** n= 55

	Maternal age (in years): 33.1, SD: 4.5 Private health insurance (in %): 41.8 Parity (in %): 0: 12.7 1: 38.2 2: 25.5 3 or more: 23.6 Infant sex (male in %): 45.5 Birth weight (in g): 3034, SD: 419 Apgar score 1 min: median 9 range 3 Apgar score 5 min: median 10 range 1 Age at admission to NICU (in h): 13.8 +/- 32.9 Indication for CS (in %)*: Previous CS: 67.3 Prior obstetic complication: 7.3 Transverse lie: 25.5 Maternal disease**: 10.9 Maternal request: 0 Macrosomia (>4.5kg): 0 **week 38 (38+0-6)** n= 576 Maternal age (in years): 34.5, SD: 4.6 Private health insurance (in %): 53.3 Parity (in %): 0: 12.3 1: 37.5 2: 30.2 3 or more: 20.0

	Infant sex (male in %): 46.4 Birth weight (in g): 3370, SD: 465 Apgar score 1 min: median 9 range 7 Apgar score 5 min: median 10 range 3 Age at admission to NICU (in h): 20.0 +/- 30.2 Indication for CS (in %)*: Previous CS: 76.7 Prior obstetic complication: 3.1 Transverse lie: 11.8 Maternal disease**: 7.8 Maternal request: 1.2 Macrosomia (>4.5kg): 0 **week 39 (39+0-6)** n= 2872 Maternal age (in years): 33.6, SD: 4.5 Private health insurance (in %): 43.0 Parity (in %): 0: 14.8 1: 46.2 2: 28.3 3 or more: 10.7 Infant sex (male in %): 50.9 Birth weight (in g): 3549, SD: 430 Apgar score 1 min: median 9 range 9 Apgar score 5 min: median 10 range 5 Age at admission to NICU (in h): 21.8 +/- 32.6 Indication for CS (in %)*: Previous CS: 74.6 Prior obstetic complication: 4.6

	Transverse lie: 17.2 Maternal disease**: 2.7 Maternal request: 1.2 Macrosomia (>4.5kg): 0.6 **week 40 (40+0-6)** n= 503 Maternal age (in years): 33.2, SD: 4.6 Private health insurance (in %): 37.8 Parity (in %): 0: 17.3 1: 56.3 2: 20.1 3 or more: 6.3 Infant sex (male in %): 51.1 Birth weight (in g): 3640, SD: 443 Apgar score 1 min: median 9 range 7 Apgar score 5 min: median 10 range 2 Age at admission to NICU (in h): 24.5 +/- 36.8 Indication for CS (in %)*: Previous CS: 73.0 Prior obstetic complication: 3.0 Transverse lie: 18.3 Maternal disease**: 2.2 Maternal request: 1.0 Macrosomia (>4.5kg): 1.6 **week 41 (41+0-6)** n= 236 Maternal age (in years): 32.6, SD: 4.6

	Private health insurance (in %): 27.1 Parity (in %): 0: 8.1 1: 80.1 2: 10.6 3 or more: 1.2 Infant sex (male in %): 52.1 Birth weight (in g): 3903, SD: 485 Apgar score 1 min: median 9 range 4 Apgar score 1 min: median 10 range 1 Age at admission to NICU (in h): 23.4 +/- 23.7 Indication for CS (in %)*: Previous CS: 86.4 Prior obstetic complication: 1.3 Transverse lie: 9.31 Maternal disease**: 0.4 Maternal request: 0.0 Macrosomia (>4.5kg): 2.1 **Included Patients:** 55 / 576 / 2872 / 503 / 236 **Analysed Patients:** 55 / 576 / 2872 / 503 / 236 **Drop outs:** -
Interventions **Outcomes**	elective CS at different gestational weeks at term (37 or 38 or 39 or 40 or 41) **Neonatal intensive care unit admission,** *Neonatal outcomes:* length of stay in NICU ≥2d, respiratory distress syndrome, transient tachypnea, composite outcome (hypoglycaemia, jaundice, sepsis, 1min Apgar score <7), antibiotics received And all as a composite birth weight

Notes	*More than one indication possible ** placenta praevia, back/pelvis problems and fibroids respiratory distress syndrome, transient tachypnea, mechanical ventilation, CPAP reported as one (respiratory outcome) hypoglycaemia, jaundice, sepsis, 1min Apgar score <7 reported as one (other outcome)

CS = Caesarean section; CPAP = Continuous positive airway pressure; NICU = Neonatal intensive care unit; SD = Standard deviation

Gawlik 2015	
Methods	**Studytype:** retrospective Cohort-Study (Chart-review) **Setting:** Heidelberg University Hospital, Germany **Recruitment period:** 01.2006 - 12.2011
Participants	**Exclusion criteria:** - multiple pregnancy - foetus with major congenital anomaly - women with other medical or obstretical conditions that would warrant early or immediate delivery or influence foetal post-partum performance - pre-gestational diabetes - women with onset of labor **Characteristics** Women with singleton pregnancy and prior casarean section according to gestational week at delivery: **week 37 (37+0-6)** n= 226 Maternal age (in years): 32.88, SD: 5.49 **week 38-41 (41+0-6)** n =277 Maternal age (in years): 33.5, SD: 5.1

	Drop-Outs: n=14 excluded because of missing values
Interventions	elective CS at different gestational weeks at term (37 or 38-41)
Outcomes	**Neonatal intensive care unit admission,** *Neonatal Outcomes:* birth weight, Apgar Score at 1', 5' and 10'
Notes	

SD = Standard deviation; CS = Caesarean sectio

Glavind 2013	
Methods	**Studytype:** RCT (open-label) **Setting:** Seven hospitals with neonatal department, Denmark **Recruitment period:** 03.2009 - 06.2011
Participants	**Exclusion criteria:** - Multiple pregnancy - age < 18 years - language difficulties requiering interpreter - estimated risk of CS being undertaken before 39+5 weeks - Women with: placenta praevia, high blood pressure, elevated level of liver enzymes, type 1 diabetes/gestational diabetes - any fetal condition warranting delivery before 39+5 weeks **Characteristics** Women with singleton pregnancy according to gestational week at delivery: **week 38 (38+1-38+5)** n= 636 Maternal age (in years): 32.1, SD: 4.4 BMI ≥ 30 (in %): 16.8 Smoker (in %): 10 Nulliparous (in %): 19.8

	Previous CS (in %): 0: 39.8 ≥1: 60.2 Previous VB (in %): 0: 67.0 ≥1: 33.0 Indication for CS (in %)*: ≥2 Previous CS: 20.1 Transverse lie: 17.9 Maternal disease**: 8.5 Previously complicated birth: 12.3 Maternal request: 41.2 **week 39 (38+6-39+5)** n= 638 Maternal age (in years): 31.6, SD: 4.6 BMI ≥ 30 (in %): 17.4 Smoker (in %): 13 Nulliparous (in %): 18.3 Previous CS (in %): 0: 40.0 ≥1: 60.0 Previous VB (in %): 0: 66.0 ≥1: 34.0 Indication for CS (in %)*: ≥2 Previous CS: 16.0 Transverse lie: 14.1 Maternal disease**: 8.9

	Previously complicated birth: 13.0 Maternal request: 48.0 **Randomized mothers:** 636/638 **Analysed mothers:** 636/638 **Analysed neonates:** 635/637 **Drop outs:** 1/1 in neonates (stilbirth)
Interventions	**Intervention:** Elective CS at 38+3 gestational week **Control:** Elective CS at 39+3 gestational week
Outcomes	**Neonatal intensive care unit admission (within 48 hours and within 7 days of delivery)** *Neonatal outcomes:* length of stay in NICU ≥2d, any respiratory morbidity, serious respiratory morbidity, treated hypoglycaemia, 1min Apgar score ≤7, 5min Apgar score ≤7, antibiotics, birth weight Maternal outcomes: Maternal bleeding needing treatment or transfusion *Maternal composite outcome* (including death, cesarean hysterectomy, deep vein thrombosis/pulmonary embolism, uterine incision lateral tear, injury to bowel or bladder, procedural or anaesthesia complications, rupture or dehiscence, bleeding needing treatment, re-operation, antiobiotics)
Notes	maternal outcomes reported

BMI = Body mass index; CS = Caesarean section; NICU = Neonatal intensive care unit; RCT = Randomized Controlled Trial; SD = Standard deviation; VB = Vaginal birth

Graziosi 1998	
Methods	**Studytype:** Retrospective cohort-study **Setting:** Academisch Ziekenhuis Utrecht (AZU), Utrecht, Netherlands **Recruitment period:** 1990-1995
Participants	**Characteristics**

	Exclusion criteria: - complications**:** preeclampsia, fetal distress, bleeding placenta previa, congenital anomalies and maternal diseases such as diabetes. - the Caesarean section so could have taken place without problems at any desired time in the full-term periods. **Time of Elective caesarean section:** < 39 weeks: 137 (50%) ≥ 39 weeks: 135 (50%) **Reason for elective cesarean section;** < 39 weeks vs. ≥ 39 weeks [n]: Breech presentation: 31/ 29 repeated caesarean section: 24/ 25 obstetric prehistory: 24/ 25 cephalopelvine disproportion: 19/ 22 illness of the mother: 8/ 9 placenta previa: 9/ 5 fetal transverse position: 4/2 others: 18/18 **Included Patients:** 272 **Analysed Patients:** 272 **Drop outs:** -
Interventions	elective CS at different gestational weeks at term (37, 38, 39, 40 ≥41)
Outcomes	**Neonatal intensive Care Unit Admission:** *Neonatal Outcomes:* Neonatal morbitity (respiratory morbidity, phototherapy) is defined as morbidity that required NICU admission. Therefore we used the sum of these two outcomes as number of NICU admissions Respiratory morbidity, Phototherapy, days spent in NICU
Notes	

CS = Caesarean section NICU = Neonatal intensive care unit

Hansen 2008

Methods	**Studytype:** prospective Cohort-Study (Chart-review) **Setting:** Aarhus University hospital, Denmark **Recruitment period:** 01.1998 - 12.2006
Participants	**Exclusion criteria:** - Multiple pregnancy - Pregnancies associated with intrauterine growth retardation, diabetes, pre-eclampsia, hypertension - neonates with congenital malformations **Characteristics** Women with singleton pregnancy at delivery: Maternal age <35y (in %): 83.1 BMI (in %) BMI <24: 59.2 BMI ≥ 25: 21,54 Missing: 18.26 Delivered by CS (in %): 7.8 Smoker (>0 cigarettes/day in %): 10.24 Missing: 18.98 Alcohol intake in pregnancy (>1 units/week in %): 11.59 Missing: 20.44 Parity (in %): 0: 48.67 ≥1: 51.31 Marital status (in %): Married/living together: 74.67 Single: 2.8 Missing: 22.53 No of years of schooling (in %): ≥10: 71.28 <10: 5.75 Missing: 22.97 Elective CS: **Included Patients:** 261 / 1173 / 1074 / 132 / 47 **Analysed Patients:** 261 / 1173 / 1074 / 132 / 47

	Drop outs: -
Interventions	elective CS at different gestational weeks at term (37 or 38 or 39 or 40 or 41)
Outcomes	*Neonatal Outcomes:* Neonatal respiratory morbidity (any respiratory distress, transient tachypnoea, persistent pulmonary hypertension), serious respiratory morbidity (≥3 days continuous oxygen supplimentation, nasal CPAP, any period of mechanical ventilation)
Notes	

BMI = Body mass index; CPAP = Continuous positive airway pressure; CS = Caesarean section

Many 2006	
Methods	**Studytype:** Prospective Cohort-Study **Setting:** Tel Aviv, Israel **Recruitment period: -**
Participants	**Exclusion criteria:** - Multiple pregnancy - women delivered before or after booked date - no documentation of first semester ultrasound **Characteristics** Women with singleton pregnancy at delivery: Maternal age (in years): 32.1, SD:5 Number of children: 1.2, SD:1 Elective CS: **Included Patients:** 62 / 128 / 70 / 18 **Analysed Patients:** 62 / 128 / 70 / 18 **Drop outs:** -
Interventions	elective CS at different gestational weeks at term (38 or 39 or 40 or 41)

Outcomes	*Neonatal Outcomes:* Neonatal respiratory morbidity (oxygen supplementation, ventilation, antibiotics)
Notes	

CS = Caesarean section; SD = Standard deviation

Matuso 2008	
Methods	**Studytype:** prospective Cohort-Study **Setting:** Osaka University Hospital, Japan **Recruitment period:** 01.1994-12.2005
Participants	**Exclusion criteria:** **Characteristics** Women at delivery: Reasons for ELCS (in %): Previous CS: 51.1 Breech presentation: 23.9 Placenta Previa: 11.3 **Included Patients:** 118 / 224 / 22 **Analysed Patients:** 103 / 191 / 15 **Drop outs:** 15 / 33 / 7 (CS done before scheduled date)
Interventions **Outcomes**	elective CS at different gestational weeks at term (37 or 38 or ≥39) *Neonatal outcomes:* Respiratory distress syndrome, transient tachycardia of the newborn, neonatal other (including hypocalcemia, transient hyperbilirubinemia, pneumothorax, neonatal infection (antibiotics), transient thrombocytopenia, hypoglycemia *Maternal outcomes**:*** maternal sever ecomplications (including blood loss >2 L, total abdominal hysterectomy, wound dehiscence, severe adhesions, retained gauze, pyelonephritis, deep vein thrombosis, pulmonary edema, postpartum cardiomyopathy, angina attack)

Notes	maternal outcomes reported

CS = Caesarea section; ELCS = Elective caesarea section

McAlister 2013	
Methods	**Studytype:** retrospective Cohort-Study (Secondary analysis) **Setting:** 16 hospitals, USA southwest **Recruitment period:** 2008-2009
Participants	**Exclusion criteria:** - Multiple pregnancy - neonates born <37 and >41 weeks - neonates with major birth anomalies **Characteristics** **Women with singleton pregnancy at delivery:** Maternal age range: 12-55 Ethnicity (in%): White: 23.6 Black: 18.1 Hispanic: 50 Marital status Married(in %): 52.2 Highest education (in %): Graduation Equivalency Diploma/High school: 43 Baccalaureate: 13 Payer (in %): Private: 42 Medicaid: 35.7 Self-pay: 21.8 **Elective CS:** **Included Patients:** 1579 / 2546 **Analysed Patients:** 1579 / 2546 **Drop outs:** -

Interventions	elective CS at different gestational weeks at term (37-38 vs 39-41)
Outcomes	**Neonatal Intensive Care Unit Admission**
Notes	

CS = Caesarean section

Melamed 2014	
Methods	**Studytype:** retrospective cohort study **Setting:** Medical center in Tel Aviv, Israel **Recruitment period:** 2010-2011
Participants	**Exclusion criteria:** -placenta previa -suspected placenta accrete -maternal cardiac -renal or lung disease -major fetal anomalies -cases scheduled for CS prior to 37+4 weeks **Characteristics:** Women with two ore more cesareans who were scheduled for a repeat planned CS in a single tertiary medical center **Week 38 (37+4 - 38+3)** n = 264 Maternal age (years): 35.0 SD: 3.7 Maternal age (>35 years) (in%): 126 (47.7) Gravidy (median (interquartile range)): 4 (3-5) Parity (median (interquartile range)): 2 (2-3) Scheduled gestational age for planned CS (weeks) (mean, SD): 38.0 SD 0.3 Pregestational diabetes (total (in%)): 7 (2.7)

	Chronic hypertension (total (in%)): 3(1.1) Preeclampsia (total (in%)): 8 (3.0) FGR (510th centile): 3 (1.1) Number of previous CS (median (interquartile range)): 2 (2-2) 2: 206 (78.0) 3: 51 (19.3) >3: 7 (2.7) **Week 39 (>= 38+4)** n = 113 Maternal age (years): 35.1 SD: 3.3 Maternal age (>35 years) (in%): 52 (46.0) Gravidy (median (interquartile range)): 4 (3-5) Parity (median (interquartile range)): 2 (2-3) Scheduled gestational age for planned CS (weeks) (mean, SD): 38.9 SD 0.3 Pregestational diabetes (total (in%)): 2 (1.8) Chronic hypertension (total (in%)): 1 (0.9) Preeclampsia (total (in%)): 0 (0.0) FGR (510th centile): 2 (1.8) Number of previous CS (median (interquartile range)): 2 (2-2) 2: 90 (79.6) 3: 17 (15.0) >3: 6 (5.3)
Interventions	elective CS at different gestational weeks at term (38 or 39)
Outcomes	**Neonatal Intensive Care Unit Admission** *Neonatal Outcomes:* Neonatal respiratory morbidity (respiratory distress syndrome (RDS), transient tachypnea of the newborn (TTN), pneumothorax, need for continuous positive airway pressure (CPAP) or mechanical ventilation) and Neonatal composite adverse outcome (perinatal mortality, neonatal respiratory morbidity, 5-min Apgar score55, umbilical cord

	arterial pH57.0, admission to NICU, birth trauma, infectious morbidity, hypoglycemia or jaundice requiring phototherapy) *Maternal Outcomes:* Maternal infectious morbidity (presence of postpartum fever (above 38.0 C, not within the first 24 h after birth), endometritis or any surgical site infection) and Maternal composite adverse outcome (presence any of the following complications: post partum infectious morbidity, general anesthesia, postpartum hemorrhage (defined subjectively by the surgeon or by a decrease of more than 3 g/dL in post-operative hemoglobin levels), intestinal or bladder laceration, dehiscence or rupture of uterine scar, accidental extension of uterine scar, need for inverted-T incision, cesarean hysterectomy, postpartum relaparotomy, complications of surgical scar, paralytic ileus, admission to intensive care unit, venous thromboembolism or hospitalization for more than 5 days)
Notes	

CS = Caesarea section; FGR = Fetal growth restriction; SD = Standard deviation

Morrison 1995	
Methods	**Studytype:** prospective Cohort-Study **Setting:** Rosie Maternity Hospital Cambridge, England **Recruitment period:** 01.1985 - 12.1993
Participants	**Exclusion criteria:** - Infants with any evidence of infection including pneumonia or meconium aspiration syndrome **Characteristics** Deliveries according to gestational week **Elective CS:** **Included Patients:** 366 / 1063 / 505 / 243 / 164 **Analysed Patients:** 366 / 1063 / 505 / 243 / 164 **Drop outs:** -
Interventions	elective CS at different gestational weeks at term (37 or 38 or 39 or 40 or ≥41)

Outcomes	**Neonatal Intensive Care Unit Admission** with respiratory morbidity (RDS, TTN and oxygen supplimentation)
Notes	The diagnosis of neonatal respiratory morbidity was established on the basis of characteristic clinical signs which included grunting, nasal flaring, retraction, tachypnoea and poor air entry, the radiographic features of either TTN (Avery et al. 1966) or the reticulogranular pattern of RDS.

CS = Caesarean section; RDS = respiratory distress syndrome; TTN = transient tachypnea of the newborn

Nakashima 2014	
Methods	**Studytype:** retrospective Cohort-Study **Setting:** 1 hospital, Japan **Recruitment period:** 01.2006 - 12.2012
Participants	**Exclusion criteria:** - Multiple pregnancy - Pregnancies associated with intrauterine growth retardation, (gestational) diabetes, hypertension, placenta previa, low-lying placenta, placental abruption, other underlying diseases or obstetrical complications - Prolonged labor, nonreassuring fetal status, premature rupture of membranes or labor onset - fetal disorders **Characteristics:** Women with singleton pregnancy according to gestational week at delivery: **week 37 (37+0-6)** n = 390 Maternal age (in years, median with 25th/75th quartile): 35 (31-37) Maternal age ≥35y (in %): 50.5 Nulliparous (in %): 25.1 Previous CS (in %): 70.0

	Breech presentation (in %): 22.5 History of uterine surgery (in %): 7.5 Newborn birth: 2810 (2580-3024) With low birth weight (in %): 17.9 Small gestattional age (in %): 4.4 Males (in %): 45.9 5 min Apgar score (median with 25th/75th quartile): 9 (9-10) **week 38 (38+0-6)** n = 294 Maternal age (in years, median with 25th/75th quartile): 34 (31-37) Maternal age ≥35y (in %): 42.2 Nulliparous (in %): 22.8 Previous CS (in %): 71.5 Breech presentation (in %): 21.0 History of uterine surgery (in %): 7.5 Newborn birth: 2910 (2720-3100) With low birth weight (%): 8.2 Small gestattional age (%): 5.1 Males (%): 43.5 5 min Apgar score (median with 25th/75th quartile): 10 (9-10) **Included Patients:** 390 / 294 **Analysed Patients:** 390 / 294 **Drop outs:** -
Interventions	elective CS at different gestational weeks at term (37 vs 38)
Outcomes	**Neonatal intensive care unit admission** *Neonatal outcomes:* any respiratory morbidity (e.g. tachypnea, retractions, grunting, cyanosis), assisted ventilation (CPAP), oxygen supplementation ≥24 h, hypoglycaemia, 5min Apgar score, antibiotics, sepsis, hyperbilirubinemia, birth weight

Notes	

CPAP = Continuous positive airway pressure; CS = Caesarea section

Nir 2012	
Methods	**Studytype:** retrospective Cohort-Study (Chart-review) **Setting:** 1 secondary medical center, Israel **Recruitment period:** 2007 - 2009
Participants	**Exclusion criteria:** - Multiple pregnancy - Pregnancies associated with maternal illness (e.g. preeclampsia), intrauterine growth retardation, gestational diabetes, placenta previa - Neonates with congenital defect - active delivery - newborns born before completion of 37 weeks **Characteristics** Women with singleton pregnancy according to gestational week at delivery: **week 37-38 (38+0-6)** n = 596 **week ≥39** n = 454 **Included Patients:** 596 / 454 **Analysed Patients:** 596 / 454 **Drop outs:** -
Interventions	elective CS at different gestational weeks at term (37-38 vs ≥39)
Outcomes	**Neonatal intensive care unit admission** (including low Apgar score, hypoglcaemia, dehydration, dyspnoea, jaundice, other) Apgar Score at 1 and 5 minutes, length of stay

Notes	The departments policy is that the nurses decide whether to measure the infants' bilirubin levels. It emerged that they were measured more often among the newborns after the 37–38 weeks' subgroup (36% vs. 29%, p = 0.023), but there was no difference in the mean bilirubin level between the two subgroups.

CS = Caesarea section

Parikh 2014	
Methods	**Study type:** retrospective cohort study **Setting:** several clinics, USA **Recruitment period**: 2008-2011
Participants	**Exclusion:**: multiple pregnancies **Characteristics:** Women with singleton pregnancy according to gestational week at delivery: **Maternal** **37 weeks** n=553 Maternal age (in years): 32.4, SD: 5.3 Multiparous (in %): 93.5 Married (in %):82.5 Smoker (in %):1.8 BMI>=30 (in %): 33.6 Prenatal care during 1st trimester (in %): 97.8 **38 weeks** n=3971 Maternal age (in years): 31.8, SD: 4.9 Multiparous (in %): 94.4

	Married (in %): 86.8 Smoker (in %): 2.5 BMI>=30 (in %): 29.9 Prenatal care during 1st trimester (in %): 98.2 **≥39 weeks** n=10089 Maternal age (in years): 32.0, SD: 4.8 Multiparous (in %): 92.8 Married (in %): 88.0 Smoker (in %): 1.9 BMI>=30 (in %): 28.8 Prenatal care during 1st trimester (in %): 98.4 **2008** n=4164 Maternal age (in years): 31.7, SD: 4.9 Multiparous (in %):93.1 Married (in %):86.5 Smoker (in %):2.4 BMI>=30 (in %):30.3% Prenatal care during 1st trimester (in %): 98.1 **2009** n=4736 Maternal age (in years): 32.1, SD: 4.8 Multiparous (in %): 92.6 Married (in %): 88.2 Smoker (in %): 1.8 BMI>=30 (in %): 28.3 Prenatal care during 1st trimester (in %): 98.4

	2010 n=3833 Maternal age (in years): 31.9, SD:4.8 Multiparous (in %): 93.9 Married (in %): 88.2 Smoker (in %): 2.0 BMI>=30 (in %): 29.8 Prenatal care during 1st trimester (in %): 98.4 **2011** n=1880 Maternal age (in yrs): 31.9, SD: 4.8 Multiparous (in %): 93.7 Married (in %): 86.5 Smoker (in %): 2.1 BMI>=30 (in %): 28.5 Prenatal care during 1st trimester (in %): 98.1 **Included patients:** 14 613 (34.6%) of all women enrolled in program had scheduled cesarean delivery **Analysed patients:** 14 613 **Drop outs (reasons):** insurance changes precluding the women from program participation or were lost to follow up.
Interventions	elective CS at different gestational weeks at term (37 or 38 vs ≥39)
Outcomes	**Neonatal intensive care unit admission** *Neonatal outcomes:* neonatal mortality >5 nursery days
Notes	Data from Alere health, thus conflict of interest is potentially high. No absolute numbers given, only % à contact study authors a geographically dispersed dataset of women enrolled in a pregnancy risk assessment and education program that is sponsored by employers and payers, administered by Alere

	Inc. Upon enrollment women provide permission for the use of their de-identified personal health information for research and reporting purposes.

BMI = Body mass index; CS = Caesarea section; SD = Standard deviation

Resende 2015	
Methods	**Studytype:** retrospective Cohort-Study **Setting:** 1 maternity hospital, Portugal **Recruitment period:** 2003-2013
Participants	**Exclusion criteria:** - Multiple pregnancy - Pregnancies associated with maternal illness (preeclampsia, poorly controlled diabetes mellitus, Rh isoimmunization), intrauterine growth retardation, premature rupture of membranes, - Neonates with congenital malformations **Characteristics** Women with singleton pregnancy according to gestational week at delivery: **week 37-38 (38+0-6)** n = 1427 Maternal age (in years, median with min and max): 33 (14-46) Maternal age ≥35y (in %): 35 Nulliparous (in %): 39 Gestational diabetes (in %): 6 Type of care (in %): Private physicians: 52 hospital: 38 health center: 2 health center and hospital: 7 Neonatal male (in %): 48

	Birth weight (in g, median with min and max): 3170 (2380 - 5145) <2500g (in %): 5 >4000g (in %): 5 >4500g (in %): 0.3 **week 39-41 (41+0-6)** n = 1696 Maternal age (in years, median with min and max): 33 (16-46) Maternal age ≥35y (in %): 35 Nulliparous (in %): 31 Gestational diabetes (in %): 6 Type of care (in %): Private physicians: 53 hospital: 30 health center: 2 health center and hospital: 13 Neonatal male (in %): 52 Birth weight (in g, median with min and max): 3402 (2420 - 5850) <2500g (in %): 0.4 >4000g (in %): 9 >4500g (in %): 1 **All:** Reasons for CS (in %): Prior CS: 55 Breech position: 28 Fetal-pelvic incompatibility: 6 malformation of the uterus/myomectomy: 1.6 Macrosomy: 1 Maternal diseases (eg HIV+): 8

	Included Patients: (37 / 38 / 39 / 40 / 41) 323 / 1104 / 1170 / 483 / 43 **Analysed Patients:** 323 / 1104 / 1170 / 483 / 43 **Drop outs:** -
Interventions	elective CS at different gestational weeks at term (37 or 38 or 39 or 40 or 41)
Outcomes	**Neonatal intensive care unit admission** *Neonatal outcomes:* respiratory morbidity (TTN, RDS, oxygen supplimentation, ventilation), hypoglycaemia, 1min Apgar score <5, sepsis, hyperbilirubinemia, resuscitation, birth weight <2500g, hospitalization ≥5 days
Notes	

CS = Caesarean section; HIV = human immunodeficiency virus; RDS = respiratory distress syndrome; Rh = Rhesus; TTN = transient tachypnea of the newborn

Terada 2014	
Methods	**Study type**: retrospective cohort study **Setting:** Japanese Red Cross Katsushika Maternity Hospital **Recruitment period:**2006-2013
Participants	**Exclusion** criteria: - labor pains; rupture of membranes; perinatal complications, such as pregnancy-induced hypertension, fetal anomalies, and fetal growth restriction (neonatal birth weight less than -1.5 SD of the reference range in Japan); or inaccurate gestational age. - cesarean sections upon maternal request **Characteristics:** ***Neonates without respiratory disorders*** *(n=1810)* Maternal age (in years): 33.8, SD: 4.8 Nulliparity (in %): 26 Indication for CS (in %)

	- previous CS: 65 - Breech presentation: 12 - placenta previa/low-lying placenta: 6.7 Gestational age at delivery (in weeks): 38.0, SD: 0.6 Neonatal sex male (in %): 51 Neonatal birth weight (in g): 2815, SD: 341 Apgar score at 1 minute <7 (in %): 1 Umbilical artery pH<7.1 (in %): 0.7 ***Neonates with respiratory disorders*** *(=141)* Maternal age (in years): 34.0, SD: 4.9 Nulliparity (in %): 23 Indication for CS (in %) - previous CS: 70 - Breech presentation: 15 - placenta previa/low-lying placenta: 4.39 Gestational age at delivery (in weeks): 37.7, SD: 0.4 Neonatal sex male (in %):59 Neonatal birth weight (in g): 2757 SD: 358 Apgar score at 1 minute <7 (in %): 2.8 Umbilical artery pH<7.1 (%): 0 **Included patients:** (37 / 38 / 39-40 / 41) 892 / 896 / 105 / 43 **Analysed patients:** 892 / 896 / 105 / 43 **Drop outs (reasons): -**
Interventions	Elective CS at different gestational weeks at term (37, 38, 39-40, 41)
Outcomes	*Neonatal outcomes:* neonatal respiratory disorders (such as respiratory distress syndrome and transient tachypnea of the neonate requiring oxygen supplementation or respiratory support, such as intermittent mandatory ventilation and

	continuous positive airway pressure
Notes	Diagnoses were made by neonatologists with clinical and radiology data and the exclusion of other causes of respiratory distress

CS = Caesarea section; SD = Standard deviation

Tita 2009	
Methods	**Study type**: retrospective cohort study **Setting**: 19 academic centers, USA **Recruitment period**: 1996-2006
Participants	**Exclusion:** - multiple gestations - fetus with a major congenital anomaly - women with other medical or obstetrical conditions that would warrant early or immediate delivery. **Characteristics**: ***Maternal:*** **Week 37** N=834 Mean age (SD): 30,4 (5,5) BMI at delivery (SD): 32,8 (7,3) Ethnicity (in %) Black: 19,18 White: 51.2 Hispanic: 24,1 Other ethnicity: 5,52 Married (in %): 68,82 Medicaid coverage (in %): 46,76 Private insurance (in %): 53,24

	Current smoker (in %): 11,39 Previous CS (in %): 1 previous CS: 53,24 2 previous CS: 32,61 >/= 3 previous CS: 14,15 Diet-controlled gestational diabetes mellitus (in %): 6,59 1st or 2nd trimester ultrasound examination (in %): 77,7 **Week 38** N=3909 Mean age (SD): 50,5 (5,4) BMI at delivery (SD): 32,8 (6,7) Ethnicity (in %) Black: 16,3 White: 56,13 Hispanic: 22,92 Other ethnicity: 4,66 Married (in %): 74,96 Medicaid coverage (in %): 37,17 Private insurance (in %): 62,78 Current smoker (in %): 10,62 Previous CS (in %): 1 previous CS: 61,47 2 previous CS: 29,04 >/= 3 previous CS: 9,49 Diet-controlled gestational diabetes mellitus (in %): 5,76 1st or 2nd trimester ultrasound examination (in %): 79,1 **Week 39** N=6512

	Mean age (SD): 29,8 (5,6) BMI at delivery (SD): 33,4 (6,7) Ethnicity (in %) Black: 19,84 White: 45,38 Hispanic: 30,57 Other ethnicity: 4,21 Married (in %): 65,89 Medicaid coverage (in %): 50,22 Private insurance (in %): 49,78 Current smoker (in %): 12,2 Previous CS (in %): 1 previous CS: 60,5 2 previous CS: 31,79 >/= 3 previous CS: 7,71 Diet-controlled gestational diabetes mellitus (in %): 5,38 1st or 2nd trimester ultrasound examination (in %): 78,82 **Week 40** N=1385 Mean age (SD): 28,7 (5,7) BMI at delivery (SD): 33,8 (6,8) Ethnicity (in %) Black: 24,26 White: 34,08 Hispanic: 36,39 Other ethnicity: 5,27 Married (in %): 59,21 Medicaid coverage (in %): 60,94

	Private insurance (in %): 39,06 Current smoker (in %): 11,7 Previous CS (in %): 1 previous CS: 79,86 2 previous CS: 22,53 >/= 3 previous CS: 4,84 Diet-controlled gestational diabetes mellitus (in %): 3,76 1st or 2nd trimester ultrasound examination (in %): 68,01 **Week 41** N=505 Mean age (SD): 27,9 (5,7) BMI at delivery (SD): 34,5 (6,7) Ethnicity (in %) Black: 25,35 White: 23,17 Hispanic: 45,74 Other ethnicity: 5,74 Married (in %): 53,27 Medicaid coverage (in %): 76,83 Private insurance (in %): 23,17 Current smoker (in %): 10,12 Previous CS (in %): 1 previous CS: 80,59 2 previous CS: 16,44 >/= 3 previous CS: 2,97 Diet-controlled gestational diabetes mellitus (in %): 1,39 1st or 2nd trimester ultrasound examination (in %): 60,99 **Week >/= 42**

	N=113 Mean age (SD): 27,4 (0,9) BMI at delivery (SD): 34,6 (7,1) Ethnicity (in %) Black: 27,43 White: 17,7 Hispanic: 46,02 Other ethnicity: 8,85 Married (in %): 46,9 Medicaid coverage (in %): 79,65 Private insurance (in %): 20,35 Current smoker (in %): 8,85 Previous CS (in %): 1 previous CS: 72,57 2 previous CS: 23,01 >/= 3 previous CS: 4,42 Diet-controlled gestational diabetes mellitus (in %): 2,65 1st or 2nd trimester ultrasound examination (in %): 55,75 **Neonatal:** **Week 37** Male sex (n): 425 Birth weight mean (in g, SD): 3218 (469) SGA (in %): 12,47 LGA (in %): 25,18 **Week 38** Male sex (n): 1966 Birth weight mean (in g, SD): 3418 (447) SGA (in %): 8,39

	LGA (in %): 28,79 **Week 39** Male sex (n): 3281 Birth weight mean (in g, SD): 3505 (451) SGA (in %): 11,67 LGA (in %): 27,13 **Week 40** Male sex (n): 704 Birth weight mean (in g, SD): 3583 (467) SGA (in %): 13,35 LGA (in %): 31,53 **Week 41** Male sex (n): 270 Birth weight mean (in g, SD): 3714 (473) SGA (in %): 8,89 LGA (in %): 32,59 **Week 42** Male sex (n): 56 Birth weight mean (in g, SD): 3673 (467) SGA (in %): 3,57 LGA (in %): 33,93 **Included patients:** (37 / 38 / 39 / 40 / 41 / 42) number: 834 / 3909 / 6512 / 1385 / 505 / 113 **Analysed patients:** Differ according to outcome (i.e. in 38 and 39 weeks they are some missing), see results The infants were followed up until discharge from the hospital or 120 days after birth, whichever came first. **Drop outs** (reasons):

Interventions	Elective repeat CS at weeks 37, 38, 39, 40, 41, 42
Outcomes	hypoglycemia, composite respiratory morbidity, resuscitation, birthweight <=2500g, hospitalisation > 5 days
Notes	Same dataset as used in Chiossi 2013, therefore other outcomes not included SGA: Small for gestational age LGA: Large for gestational age

BMI = Body mass index; CS = Caesarea section; SD = Standard deviation

Tracy 2007	
Methods	**Study type**: retrospective cohort study **Setting**: several hospitals, Australia **Recruitment period**: 1999-2002
Participants	**Exclusion criteria**: - younger than 20 or older than 34 years - multiple pragnancies - no birth to a live singleton baby of normal size (10th-90th birthweight percentile) - no presenting in the cephalic position - not born at term (37-41 wk gestation) - hypertension or diabetes and pregnancy-induced hypertension or gestational diabetes **Characteristics:** - Characteristics not shown for CS with no labor separately but for all modes of deliveries **Included patients:** (37 / 38 / 39 / 40 / 41) - low risk primiparas 626 / 2742 / 2202 / 1396 / 653 - low risk multiparas 1877 / 17242 / 11555 / 3686 / 1080 **Analysed patients**: separate analysis of primi- and multiparas - low risk primiparas 626 / 2742 / 2202 / 1396 / 653

	- low risk multiparas 1877 / 17242 / 11555 / 3686 / 1080 **Drop outs** (reasons): All numbers differ through the report without explanation given
Interventions	Low risk singleton pregnancies and CS with no labor.
Outcomes	**Neonatal Intensive Care Unit Admission**: the admission to neonatal intensive care refers to admission to any level of neonatal support from a special care nursery to a neonatal intensive care unit, where incubators, oxygen therapy, cardiorespiratory monitoring, intravenous fluid therapy, and tube feeding may be routinely offered. The type of neonatal intensive care and complex support varies by category or level of unit in Australia is fully described elsewhere (24).
Notes	Study authors contacted for absolute numbers of babies admitted to NICU and total absolute number per gestational week National Perinatal Data Collection, which is a national database of cross-sectional data on all births collected from each state and territory and validated by the Australian Institute of Health and Welfare

CS = Caesarean sectio; NICU = Neonatal intensive care unit

Vidic 2016	
Methods	**Study type:** retrospective cohort study **Setting:** Slovenian National Information Perinatal System (NPIS). The NPIS registers all deliveries in Slovenia at 22 weeks of pregnancy or when the fetuses weighs 500 g. Registration is mandatory by law and more than 140 variables are entered immediately postpartum into a computerized database. **Recruitment period:** 2002–2012
Participants	**Exclusion criteria:** - multiple pregnancies - complicated pregnancies - no elective cesarean section (defined as abdominal delivery performed before onset of labor after 37 weeks gestation) - history of any chronic diseases or gestational complications

	- no clear indication for cesarean section (previous uterine scar or fetal non-cephalic presentation as indication for cesarean section. Cesarean section upon maternal request is not allowed in Slovenia) **Characteristics:** - Age: Mothers who had an elective cesarean before 38 weeks were older than mothers who had an elective cesarean at later in pregnancy (31.5 ± 4.7 years at 38 weeks gestation vs. 30.3 ± 4.4 years at 40 weeks, $p<0.05$). - BMI, parity: no difference in BMI and parity between the groups. - Antenatal course of steroids to enhance lung maturity was administered more often to women who delivered earlier: 28 (8.2%), 55 (3.1%), 24 (0.8%), 21 (1.2%), 7 (1.7%) for births at 37, 38, 39, 40, and 41 weeks, respectively). **Included patients**: (37 / 38 / 39 / 40 / ≥41) 343 / 1753 / 3140 / 1718 / 410 **Analysed patients:** 343 / 1753 / 3140 / 1718 / 410 **Drop outs** (reasons): -
Interventions	Elective CS at 37, 38, 39, 40, and ≥41 weeks
Outcomes	**Neonatal Intensive Care Unit Admission:** hospitalization > 5 days and number of fetal / neonatal deaths *Neonatal outcomes:* 5 min Apgar score ≤6, respiratory distress syndrome (tachypnea, grunting, flaring of the nostrils, retractions and need for supplemental oxygen), hypoglycemia (plasma glucose level of less than 1.8 mmol/L in the first 24 h of life and less than 2.5mmol/L thereafter), hyperbilirubinemia (need for phototherapy according to nomograms published by American Academy of Pediatrics [9]),
Notes	Slovenian National Information Perinatal System (NPIS). The NPIS registers all deliveries in Slovenia at 22 weeks of pregnancy or when the fetuses weighs 500 g. Registration is mandatory by law and more than 140 variables are entered immediately postpartum into a computerized database.

BMI = Body Mass Index; CS: Caesarean Section; NPIS = National Information Perinatal System

Vilchez 2014	
Methods	**Study type:** retrospective cohort study (Author claims case series) **Setting:** several hospitals, USA **Recruitment period:** 2004–2008
Participants	**Exclusion criteria:** - multiple pregnancy - no method of delivery repeat cesarean - multiple pregnancy, - attempted trial of labor, - fetal anomalies, - history of diabetes mellitus, and - hypertensive disorders including eclampsia. **Characteristics:** 86289 (10.99%) were delivered at term (40 weeks), and 699051 (89.01%) were delivered between 36 and 39 weeks, with 413007 delivering between 36–38 weeks (52%). Regarding maternal race, 101086 (12.87%) mothers were African-American, and 654 028 (83.28%) were Caucasian (whites) **Included patients**: 785340 **Analysed patients:** 785340 **Drop outs** (reasons): -
Interventions	elective repeat CS
Outcomes	**Neonatal Intensive Care Unit Admission** *Neonatal outcomes:* 5 min APGAR Score ≤6, surfactant use, antibiotics use, neonatal seizures
Notes	Study authors contacted for absolute numbers of outcomes and total n for gestational week all births registered in the 50 States of the US, the District of

	Columbia, and New York City. Data are drawn from the Linked Birth–Infant Death Data Files from the Vital Statistics Data of the Center of Disease Control and Prevention (CDC) of the United States from the years 2004-2008. - ‘‘R’’ states reporting data on ERCD were included for the analysis

CS = Caesarean Section; CSC = Center of Disease Control and Prevention; ERCD = Elective Repeat Caesarean Delivery

Vilchez 2015	
Methods	**Study type:** retrospective cohort study **Setting:** several hospitals, USA **Recruitment period:** 2004–2008
Participants	**Exclusion criteria:** - multiple pregnancies - no method of delivery by repeat cesarean - attempted trial of labor gestational age at delivery under 37 or over 41 · any reported congenital anomalies and risk factors such as diabetes, chronic hypertension and pregnancy-related hypertensive disorders including eclampsia. **Characteristics:** **Maternal:** 394 885 Whites (81,8%), 59480 Blacks (12,3%), 2963 American-Indians (0,61%), 25724 Asians (31%) **Neonatal:** 51% female, 49% male **Included patients (n):** 483,052 **Analysed patients: (n)** 483,052 Drop outs (n, reasons): - [S1]how come no hispanics are mentioned here? Vilchez 2015a

	is on hispanic population
Interventions	elective repeat CS at term (weeks 37, 38, 39, 40, 41)
Outcomes	*Neonatal outcomes:* early death (when the demise occures at less than 7 days), neonatal death (less than 28 days) and infant death (less than 1 year)
Notes	The Linked Birth–Infant Death Data Files from the Vital Statistics Data of the Center of Disease Control and Prevention (CDC) of the United States

CDC = Center of Disease Control and Prevention; CS = Caesarean Section

Wilmink 2010	
Methods	**Study type:** retrospective cohort study **Setting:** the Netherlands, data from The Netherlands Perinatal Registry (PRN), hospitals that systematically registered neonatal follow-up. **Recruitment period:** Jan. 1,2000, through Dec. 31, 2006
Participants	**Exclusion criteria:** - no indication for an elective cesarean section (included repeat cesarean section, breech presentation, traumatic first pregnancy, maternal request) -pregnancies complicated by intrauterine fetal deaths -emergency cesarean sections -multiple pregnancies - fetus with congenital anomalies -elective cesarean sections after spontaneous rupture of membranes or signs of labor - mothers with an adverse medical or obstetric history and/or complications of pregnancy that could influence the risk for neonatal morbidity **Characteristics:** **Week 37** (n=1734)

	Maternal Mean age (mean): 32.1, SD: 4.6 Race/ethnic group (in %): Western: 91.5 Asian: 1.7 Other: 6.8 Primiparas (in %): 34.3 Socioeconomic status (in %): Very high: 21.0 High: 21.2 Normal: 19.4 Low: 19.7 Very low: 18.6 *Infants* Male (in %): 49.3 Position (in %): Vertex: 55.2 Breech: 39.7 Other: 5.1 **Week 38** (n=10139) *Maternal* Mean age (mean): 31.9, SD: 4.4 Race/ethnic group (in %) Western: 91.7 Asian: 1.5 Other: 6.8 Primiparas (in %): 36.6

	Socioeconomic status (in %): Very high: 20.2 High: 21.7 Normal: 19.1 Low: 18.6 Very low: 20.4% *Infants* Male (in %): 48.7 Position (in %): Vertex: 46.9 Breech: 49.6 Other: 3.5 **Week 39** (n=6647) Maternal Mean age (mean): 32.0, SD: 4.5 Race/ethnic group (in %): Western: 91.2 Asian: 1.7 Other: 7.1 Primiparas (in %): 41.3 Socioeconomic status (in %): Very high: 22.2 High: 20.4 Normal: 18.2 Low: 17.9 Very low: 21.6 *Infants*

	Male (in %): 47.7 Position (in %) Vertex: 44.3. Breech: 4.0 Other: 3.5 **Week 40** (n=1274) *Maternal* Mean age (mean): 31.9, SD: 4.7 Race/ethnic group (in %) Western: 87.2 Asian: 2.7 Other: 8.3 Primiparas (in %): 32.9 Socioeconomic status (in %): Very high: 18.8 High: 21.3 Normal: 17.8 Low: 17.6 Very low: 24.5 *Infants* Male (in %): 52.0 Position (in %) Vertex: 59.3 Breech: 36.0 Other: 4.6 **Week 41** (n=782) Maternal

	Mean age (mean): 31.7, SD: 4.5 Race/ethnic group (in %): Western: 89.4 Asian: 1.3 Other: 9.4 Primiparas (in %): 37.7 Socioeconomic status (in %): Very high: 19.8 High: 23.8 Normal: 17.5 Low: 16.6 Very low: 22.4 *Infants* Male (in %): 51.4 Position (in %): Vertex: 60.9 Breech: 35.8 Other: 3.3 **Week 42** *Maternal* Mean age (mean, SD): 31.7 (4.5) Race/ethnic group (in %) Western: 88.4 Asian: 0.8 Other: 10.9 Primiparas (in %): 39.3 Multiparas (in %): 60.7 Socioeconomic status (in %):

	Very high socioeconomic status: 17.9 High socioeconomic status: 23.2 Normal socioeconomic status: 20.5 Low socioeconomic status: 16.4 Very low socioeconomic status: 22.0 *Infants* Male (in %): 50.9 Position (in %) Vertex: 71.8 Breech: 24.9 Other: 3.3 **Included patients (n):** 20,973 **Analysed patients (n):** 20,973 4 sensitivity analyses: - without births with uncertain age - without infants with a birthweight <10th percentile - without infants in nonvertex position - adjustments for study center to correct for potential variation in clinical decision making **Drop outs** (reasons): 17,852 cases were excluded because of incomplete follow-up
Interventions	elective CS at term (week 37, 38, 39,40, 41, and >=42)
Outcomes	**Neonatal Intensive Care Unit Admission:** *Neonatal Outcomes:* admission to any neonatal ward >/=5 days and a 5-minute Apgar score </=3, 5-minute Apgar score </=6, hyperbilirubinemia, birth weight (mean) and low, birth weight (<=2500g), Combined respiratory outcome, including both respiratory complications (respiratory distress syndrome, transient tachypnea of the newborn, pneumothorax, air leakage) and respiratory support (oxygen, intermittent positive pressure ventilation, continuous positive airway pressure), composite measure of neonatal mortality until the 28th day after birth, and/or neonatal morbidity, which includes any of the following

	adverse events: severe resuscitation (defined as endotracheal artificial respiration and/or administration of buffers and/or other), sepsis (including both clinically suspected patients as well as proven infections with positive cultures), respiratory complications (registered as respiratory distress syndrome, wet lung syndrome or tran- sient tachypnea of the newborn, pneu- mothorax, or air leakage), respiratory support (oxygen, intermittent positive pressure ventilation, continuous posi- tive airway pressure), hypoglycemia (de- fined as a serum or plasma glucose level of 2.5 mmol/L), neurologic morbidity (described as convulsions or intracranial hemorrh
Notes	in table 2 apgar score </=6, under "outcome measures" apgar score </=7

CS = Caesarean Section; SD = Standard deviation

Wilmink 2012	
Methods	**Study type:** retrospective cohort study **Setting:** several hospitals, Netherlands, **Recruitment period:** Jan. 1, 2000, through Dec. 31, 2007
Participants	**Exclusion criteria:** - singleton pregnancies - no twin pregnancy beyond >35 weeks of gestation - no neonates born by an elecitve CS >35 weeks of gestation -neonates born by a planned CS registered with a maternal and/or fetal indication or born by an emergency CS -all twins of which 1 fetus was missing in the registration were excluded -eventually twins of which at least 1 fetus had a congenital anomaly -twins of mothers with an adverse medical or obstetric history and/or a complication of pregnancy that could influence the risk for neonatal morbidity **Characteristics:** ***35 weeks***

	*Newborn*_(n=104) male (in %): 49.0 Position (in %): Vertex: 49.0 Breech: 46.2 Other: 4.8 Missing: 0 Birthweight (mean): 2304, SD: 334 Below 2500 g (in %): 66.4 Light for gestational age (<p10) (in %): 19.2 Heavy for gestational age (>p90) (in %): 0 *Maternal* (n=52) Age at delivery (mean): 31.4, SD:5.0 0-35 (in %): 73.1 >35 (in %): 26.9 Race/ethnic group (in %): Western: 92.3 Other: 7.7 Primiparas (in %): 57.7 Socioeconomic status (in %): Very High: 19.2 High: 21.2 Normal: 13.5 Low: 25.0 Very low: 21.1 Missing 0 **36 weeks:**

	Newborn (n=290): male (n) (in %): 48.3 female (n) (in %): 51.7Position (in %): · Vertex 35.9 · Breech: 56.6 · other: 7.6 Birthweight (mean, SD): 2521g (379) Below 2500 g (in %): 48.6 Light for gestational age (<p10) (in %): 19.7 Heavy for gestational age (>p90) (in %): 1.4 *Maternal* (n=154): Age at delivery (mean, SD): 32.2 (4.1) 0-35 (in %): 67.6 >35 (in %): 32.4 Race/ethnic group (in %): · Western: 91.7 · Other: 8.3 · Missing (n): 1 Parity (in %) · Primiparae: 44.8 · Multiparae: 55.2 SES (in %) · Very High SES: 16.3 · High SES: 23.4 · Normal: 19.9 · Low: 18.4

	· Very low: 22.0 · Missing (n): 4 **37 weeks** Newborn (n=984): male (in %): 49.2 female (in %): 50.8 Position (in %): · Vertex: 30.6 · Breech: 58.2 · other: 11.2 · missing (n): 4 Birthweight (mean, SD): 2700 g (375) Below 2500 g (in %): 28.6 Light for gestational age (<p10) (in %): 24.5 Heavy for gestational age (>p90) (in%): 0.8 Maternal (n=492): Age at delivery (mean, SD): 32.0 (4.4) 0-35 (%): 70.5 >35: (in %) 29.5 Race/ethnic group (in %): · Western: 87.6 · Other: 12.4 · Missing (n): 2 Parity (in %): · Primiparae: 46.3 · Multiparae: 53.7 SES (in %)

	· Very High SES: 19.0 · High SES: 21.9 · Normal: 18.8 · Low: 17.1 · Very low: 23.3 Missing: 12 **38+0-41+6 weeks** *Newborn* (n=850) male (in %): 46.1 female (in %): 53.9 Position (in %): · Vertex 35.1 · Breech: 55.4 · other: 9.5 Birthweight (mean, SD): 2878 g (401) Below 2500 g (in %): 16.4 Light for gestational age (<p10) (n): 33.7 Heavy for gestational age (>p90) (n): 0.7 *Maternal* (n=425): Age at delivery (mean, SD): 32.4 (4.7) 0-35 (in %): 64.0 >35: 36.0 Race/ethnic group (in %): · Western: 86.7 · Other: 13.3 · Missing (n):3 Parity (in %):

	· Primiparae: 47.3 · Multiparae: 52.7 SES (in %) · Very High SES: 19.8 · High SES: 20.0 · Normal: 18.1 · Low: 16.5 · Very low: 25.5 Missing (n): 6 **Included patients**: 4557 neonates through elective CS from 54,082 liveborn neonates of twin pregnancies (including week 35) **Analysed patients**: 35 /36 /37 />=38 weeks Neonates (total: 2228): 104/290/984/850 Mothers (n): 52 /145/ 492/ 425 **Drop outs** (reasons)**:** one of both neonates was not present in the registration (N=157),, congenital anomalies (n=206), registered as elective but present medical conditions: history of maternal cor vitium, chronic hypertension, diabetes mellitus, gestational diabetes, (pre-)eclampsia, HELLP, gestational hypertension, active rhesus or other bloodtype antagonism, placenta previa, placental abruption, AIDS, meconium stained fluid, rupture of membranes before cesarean, chorioamnionitis, fetal distress, syphilis, toxoplasmosis, german measles, cytomegalovirus or herpes, n = 360; No registration of neonatal follow up, n = 1606
Interventions	Elective CS of uncomplicated twin pregnancies weeks 35,36,37, and >=38 weeks
Outcomes	**Neonatal Intensive Care Unit Admission:** admission to any neonatal ward for >/= 5 days *Neonatal Outcomes:* severe adverse neonatal outcome (composite outcome), defined as a composite measure of neonatal mortality until the 28th day, or neonatal morbidity: a 5-minute Apgar score </=3, convulsions, intracranial hemorrhage,

	respiratory morbidity registered as pneumothorax or respiratory distress syndrome, respiratory support by intermittent positive pressure ventilation, severe resuscitation (defined as endotracheal artificial ventilation and/or administration of buffers), and/or sepsis, including both clinically suspected patients as well as proven infections with positive cultures. mild neonatal morbidity, a composite of: respiratory morbidity registered as transient tachypnea of the newborn, respiratory support with continuous positive airway pressure or oxygen, or hypoglycemia (defined as a serum or plasma glucose level of 2.5 mmol/L).
Notes	They study the group from 35 weeks of gestation onward, as twin pregnancies are a special case Data from The Netherlands Perinatal Registry (PRN), hospitals that systematically registered neonatal follow-up.

AIDS = Acquired immunodeficiency syndrome; CS = Caesarean Section; HELLP = Hemolysis, elevated liver enzymes, low platelet count; SD = Standard deviation; SES = Socioeconomic status

Yamazaki 2003	
Methods	**Study type:** retrospective cohort study **Setting:** Nagaoka Red Cross Hospital, Japan **Recruitment period:** January 1998 and December 2000 January 1998 and December 2000
Participants	**Exclusion:** -multiple pregnancies -pregnancy with placenta previa -pregnancy of women who had a diversity of medical complications **Characteristics:** Breech presentation (n = 48) Previous cesarean section (n = 41) Cephalopelvic disproportion (n = 7) ***37+0-3 (n=48)***

	male/Female (%): 52.08/47.92 Birthweight (mean): 2811.6, SD:312.4 Birthweight >=2500g (%): 89.58 low birth weight, below 2500g (%): 10.41 ***37+4-38+6 (n=48)*** male/Female (%): 45.83/54.17 Birthweigh (mean, SD): 2769.9, SD: 249.3 birthweight >=2500g (%): 85.42 low birth weight, below 2500g (%): 14.58 **Included patients:** 48 / 48 **Analysed patients:** 48 / 48 **Drop outs** (reasons): -
Interventions	Elective CS at 37+0-3 vs 37+4-38+6 gestational weeks
Outcomes	*Neonatal Outcome:* Tachypnea (TTN), Apnea, Hypoglycemia, TTN and hypoglycemia, Apnea and hypoglycemia, low birth weight (≤2500g)
Notes	There seems to be a labelling mistake for Table 4 (breathing difficulty, hypoglycemia)

CS = Caesarean Section; SD = Standard deviation; TTN = Transient tachypnea of the newborn

Zanardo 2004A&B	
Methods	**Study type:** retospective cohort study **Setting:** Maternity Department of Padua University, Italy. (level III center) **Recruitment period:** January 1998 to December 2000
Participants	**Exclusion:** -conditions during pregnancy that might increase risk to the neonate, including acute and chronic maternal illnesses, disorders of pregnancy, fetal abnormalities, fetal distress or potential fetal asphyxia insult, and fetal growth retardation

	Characteristics: of all mother-infant pairs who underwent elective cesarean section (n=1,284) Indication (in %) Previous CS: 51 Breech presentation: 27 Twin pregnancy: 8 Suspected cephalo- pelvic disproportion: 5 Nulliparous aged 35 years: 2 Fear of labor: 1 In 6% of elective cesarean sections, the indications for delivery were miscellaneous and included other malpresentations, uncomplicated placenta previa, retinopathy, and myopathies Maternal: Age (mean, SD): 30.9 (2.3) Nulliparae (in %): 42 Neonatal: Gestational age (mean, SD): 38.8 (1.2) Weight: 3.16 (0.5) Male: 55% Apgar <=5 at 1 min (n): 21 Apgar <=5 at 1 min (n): 4 NICU admission (n): 17 RDS (n): 29 TTN: 12 Pneumonia: 1 Length of hospital stay (days, mean, SD): 6 (0.9) **Included patients:** 1284 **Analysed patients:** 1284 **Drop outs**(reasons): -

Interventions	
Outcomes	*Neonatal Outcomes:* positive pressure ventilation (PPV) resuscitation by laryngeal mask airway (LMA) or tracheal tube (TT)
Notes	Contact study authors for absolute numbers of elective cesarean section and PPV resuscitation of each gestational week

CS = Caesarean; LMA = Laryngeal mask airway; PPV = positive pressure ventilation; TT =Tracheal tube

Zanardo 2007	
Methods	**Study type:** retrospective cohort study **Setting:** Veneto region, northeastern Italy, Pediatric Departments of Universities Padua and Verona, Level 3 reference centers and 4 Level 3 hospitals **Recruitment period:**1 January 2002 - 31 December 2003
Participants	Women who underwent elective CS between 37 0/7 and 41 6/7 weeks gestation. **Characteristics:** 37+0-6 / 38+0-6 / 39+0-6 / 40+0-41+6 weeks of gestation **Included patients**: 1492 / 4006 / 2490 / 2000 **Analysed patients:** 1492 / 4006 / 2490 / 2000 **Drop outs** (reasons): -
Interventions	Elective CS at weeks 37, 38, 39 and 40-41+6
Outcomes	*Neonatal Outcomes:* Number with pneumothorax Respiratory morbidity: iatrogenic RDS requiring mechanical ventilation (e.g.pulmonary air leak, pulmonary hypertension, or both). „Infants with iatrogenic RDS requiring mechanical ventilation was remarkably high. Two-thirds of newborns' courses were complicated by a pulmonary air leak, pulmonary hypertension, or both conditions. Half of electively delivered newborns suffered these sequelae.“ But in results section same absolute numbers as pneomothorax; therefore cases of pneomothorax also

	included under respiratory morbidity.
Notes	The study compares the incidence of pneumothorax and respiratory morbidity among women who had elective cesarean section with emergency CS and vaginal delivery

CS = Caesarean Section; RDS = Respiratory distress syndrome

Appendix E: Ergebnisse der Studien

1 Cohort studies: Elective CS in 37-38 weeks vs ≥ 39 weeks

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
1.1 Neonatal NICU admission	16		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.1.1 Elective CS	13	120094	Risk Ratio (M-H, Random, 95% CI)	1.78 [1.55, 2.06]
1.1.2 Repeat elective CS	4	17322	Risk Ratio (M-H, Random, 95% CI)	1.60 [1.20, 2.14]
1.2 Neonatal NICU length of stay ≥2 days	2	18689	Risk Ratio (M-H, Random, 95% CI)	1.93 [1.52, 2.45]
1.2.1 Elective CS	2	18689	Risk Ratio (M-H, Random, 95% CI)	1.93 [1.52, 2.45]
1.3 Neonatal respiratory morbidity	13		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.3.1 Elective CS	10	73356	Risk Ratio (M-H, Random, 95% CI)	2.44 [2.10, 2.84]
1.3.2 Repeat elective CS	3	26951	Risk Ratio (M-H, Random, 95% CI)	1.63 [1.44, 1.86]
1.4 Neonatal respiratory distress syndrome (RDS)	8		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.4.1 Elective CS	6	44263	Risk Ratio (M-H, Random, 95% CI)	2.64 [2.00, 3.49]
1.4.2 Repeat elective CS	2	15242	Risk Ratio (M-H, Random, 95% CI)	2.36 [1.83, 3.05]
1.5 Neonatal transient tachypnea	7		Risk Ratio (M-H, Random, 95% CI)	Subtotals only

1.5.1 Elective CS	5	40869	Risk Ratio (M-H, Random, 95% CI)	2.15 [1.75, 2.64]
1.5.2 Repeat elective CS	2	15242	Risk Ratio (M-H, Random, 95% CI)	1.50 [1.27, 1.77]
1.6 Neonatal pneumothorax	4		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.6.1 Elective CS	3	24755	Risk Ratio (M-H, Random, 95% CI)	3.12 [1.60, 6.10]
1.6.2 Repeat elective CS	1	377	Risk Ratio (M-H, Random, 95% CI)	0.43 [0.03, 6.78]
1.7 Neonatal resuscitation	5		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.7.1 Elective CS	4	39430	Risk Ratio (M-H, Random, 95% CI)	1.17 [1.05, 1.30]
1.7.2 Repeat elective CS	1	13243	Risk Ratio (M-H, Random, 95% CI)	2.69 [1.75, 4.15]
1.8 Neonatal sepsis	5		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.8.1 Elective CS	3	27119	Risk Ratio (M-H, Random, 95% CI)	1.43 [0.95, 2.18]
1.8.2 Repeat elective CS	2	15242	Risk Ratio (M-H, Random, 95% CI)	1.64 [1.40, 1.93]
1.9 Neonatal hypoglycemia	6		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.9.1 Elective CS	4	45510	Risk Ratio (M-H, Random, 95% CI)	1.48 [1.26, 1.74]
1.9.2 Repeat elective CS	2	10657	Risk Ratio (M-H, Random, 95% CI)	3.75 [2.64, 5.32]
1.10 Neonatal Apgar score ≤3	3		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.10.1 Elective CS	2	23996	Risk Ratio (M-H, Random, 95% CI)	1.58 [0.70, 3.56]

1.10.2 Repeat elective CS	1	14865	Risk Ratio (M-H, Random, 95% CI)	2.17 [0.83, 5.70]
1.11 Neonatal Apgar score ≤6	4		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.11.1 Elective CS	3	42387	Risk Ratio (M-H, Random, 95% CI)	1.63 [1.13, 2.36]
1.11.2 Repeat elective CS	1	377	Risk Ratio (M-H, Random, 95% CI)	0.32 [0.07, 1.41]
1.12 Neonatal hyperbilirubinemia	6		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.12.1 Elective CS	5	45782	Risk Ratio (M-H, Random, 95% CI)	2.09 [1.54, 2.82]
1.12.2 Repeat elective CS	1	377	Risk Ratio (M-H, Random, 95% CI)	0.43 [0.16, 1.11]
1.13 Neonatal birth weight ≤2500g	3		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.13.1 Elective CS	2	24818	Risk Ratio (M-H, Random, 95% CI)	3.33 [2.63, 4.21]
1.13.2 Repeat elective CS	1	13145	Risk Ratio (M-H, Random, 95% CI)	2.45 [1.77, 3.38]
1.14 Neonatal hospitalisation > 5 days	5		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.14.1 Elective CS	4	45676	Risk Ratio (M-H, Random, 95% CI)	1.58 [1.03, 2.42]
1.14.2 Repeat elective CS	1	13236	Risk Ratio (M-H, Random, 95% CI)	1.55 [1.33, 1.80]
1.15 Neonatal death	5		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.15.1 Elective CS	3	512112	Risk Ratio (M-H, Random, 95% CI)	1.28 [0.73, 2.23]
1.15.2 Repeat elective CS	2	15242	Risk Ratio (M-H, Random, 95% CI)	1.69 [0.69, 4.16]

1.16 Maternal death	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.16.2 Repeat elective CS	1	14865	Risk Ratio (M-H, Random, 95% CI)	0.38 [0.04, 3.40]
1.17 Maternal bleeding (needing transfusion/treatment)	2		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.17.2 Repeat elective CS	2	15242	Risk Ratio (M-H, Random, 95% CI)	1.21 [0.65, 2.24]
1.18 Maternal hysterectomy	3		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.18.1 Elective CS	1	3420	Risk Ratio (M-H, Random, 95% CI)	0.43 [0.04, 4.14]
1.18.2 Repeat elective CS	2	15242	Risk Ratio (M-H, Random, 95% CI)	1.20 [0.61, 2.36]
1.19 Maternal composite adverse events	3		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
1.19.1 Elective CS	1	320	Risk Ratio (M-H, Random, 95% CI)	38.50 [5.29, 280.15]
1.19.2 Repeat elective CS	2	15242	Risk Ratio (M-H, Random, 95% CI)	0.98 [0.48, 2.02]
1.20 NICU admission Adjusted ORs for Vilchez et al. 2014	1		Other data	No numeric data
1.21 Apgar Score ≤6 Asjusted ORs for Vilchez et al. 2014	1		Other data	No numeric data
1.22 Neonatal antibiotics use Adjusted OR for Vilchez et al. 2014	1		Other data	No numeric data

1.20 NICU admission Adjusted ORs for Vilchez et al. 2014

Study ID	Adj. OR 95% CI 36 week	Adj. OR 95% CI 37 week	Adj. OR 95% CI 38 week	Adj. OR 95% CI 39 week	40 week
Vilchez 2014	4.248 (4.057–4.448)	2.014 (1.926–2.106)	1.034 (0.991–1.080)	0.828 (0.793–0.865)	Reference

1.21 Apgar Score ≤6 Asjusted ORs for Vilchez et al. 2014

Study ID	Asj. OR 95% CI 36 week	Adj. OR 95% CI 37 week	Adj. OR 95% CI 38 week	Adj. OR 95% CI 39 week	40 week
Vilchez 2014	2.037 (1.824–2.276)	1.262 (1.137–1.400)	0.797 (0.724–0.878)	0.743 (0.675–0.819)	Reference

1.22 Neonatal antibiotics use Adjusted OR for Vilchez et al. 2014

Study ID	Adj. OR 95% CI 36 week	Adj. OR 95% CI 37 week	Adj. OR 95% CI 38 week	Adj. OR 95% CI 39 week	40 week
Vilchez 2014	4.125 (3.773–4.510)	2.02 (1.850–2.206)	1.112 (1.022–1.209)	0.862 (0.791–0.940)	Reference

2 RCT: Elective CS in week 38 (38+1-38+5) vs 39 (38+6-39+5)

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
2.1 Neonatal NICU admission	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
2.1.1 Elective CS	1	1272	Risk Ratio (M-H, Random, 95% CI)	1.14 [0.88, 1.48]
2.2 Neonatal NICU length of stay ≥2 days	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
2.2.1 Elective CS	1	1272	Risk Ratio (M-H, Random, 95% CI)	1.03 [0.67, 1.59]
2.3 Neonatal respiratory morbidity	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
2.3.1 Elective CS	1	1272	Risk Ratio (M-H, Random, 95% CI)	1.33 [0.91, 1.95]
2.8 Neonatal sepsis	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
2.8.1 Elective CS	1	1272	Risk Ratio (M-H, Random, 95% CI)	1.22 [0.61, 2.45]
2.17 Maternal death	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
2.17.1 Elective CS	1	1272	Risk Ratio (M-H, Random, 95% CI)	Not estimable
2.18 Maternal bleeding (needing transfusion/treatment)	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
2.18.1 Elective CS	1	1274	Risk Ratio (M-H, Random, 95% CI)	0.75 [0.32, 1.77]
2.19 Maternal hysterectomy	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
2.19.1 Elective CS	1	1274	Risk Ratio (M-H, Random,	Not estimable

			95% CI)	
2.20 Maternal composite adverse events	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
2.20.1 Elective CS	1	1274	Risk Ratio (M-H, Random, 95% CI)	0.91 [0.65, 1.27]

3 Elective CS 37 week vs 38 weeks

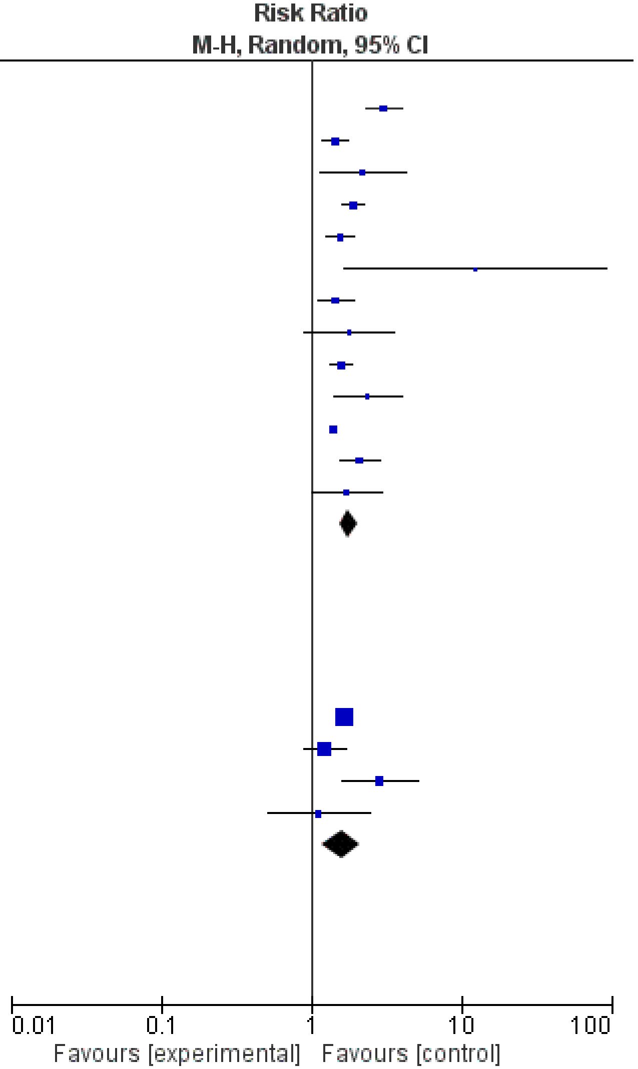
Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
3.1 Neonatal NICU admission	1	684	Risk Ratio (M-H, Random, 95% CI)	2.01 [1.05, 3.84]
3.2 Neonatal respiratory morbidity	2	780	Risk Ratio (M-H, Random, 95% CI)	3.22 [1.70, 6.11]
3.3 Neonatal transient tachypnea	1	96	Risk Ratio (M-H, Random, 95% CI)	2.50 [0.84, 7.42]
3.4 Neonatal sepsis	1	684	Risk Ratio (M-H, Random, 95% CI)	0.75 [0.15, 3.71]
3.5 Neonatal hypoglycaemia	2	780	Risk Ratio (M-H, Random, 95% CI)	3.02 [1.47, 6.20]
3.6 Neonatal hyperbilirubinemia	1	684	Risk Ratio (M-H, Random, 95% CI)	1.22 [0.76, 1.94]
3.7 Neonatal birth weight ≤2500g	2	780	Risk Ratio (M-H, Random, 95% CI)	1.40 [0.48, 4.13]

4 Elective CS in twin pregnancies 35-37 weeks vs 38-41 weeks

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
4.1 Neonatal NICU admission	1	3212	Risk Ratio (M-H, Random, 95% CI)	8.65 [1.96, 38.27]
4.2 Neonatal respiratory distress outcome (RDS)	1	3212	Risk Ratio (M-H, Random, 95% CI)	11.98 [1.52, 94.43]
4.3 Neonatal transient tachypnea	1	3212	Risk Ratio (M-H, Random, 95% CI)	4.92 [2.46, 9.87]
4.5 Neonatal pneomothorax	1	3212	Risk Ratio (M-H, Random, 95% CI)	6.65 [0.32, 138.47]
4.6 Neonatal hospitalization > 5 days	1	3212	Risk Ratio (M-H, Random, 95% CI)	3.68 [3.05, 4.44]
4.7 Neonatal Apgar score ≤3	1	3212	Risk Ratio (M-H, Random, 95% CI)	2.66 [0.24, 29.33]
4.8 Neonatal resuscitation	1	3212	Risk Ratio (M-H, Random, 95% CI)	2.66 [0.49, 14.51]
4.9 Neonatal sepsis	1	3212	Risk Ratio (M-H, Random, 95% CI)	3.11 [0.80, 11.99]
4.10 Neonatal hypoglycemia	1	3212	Risk Ratio (M-H, Random, 95% CI)	4.70 [3.15, 7.01]
4.11 Neonatal low birth weigh (<=2500g)	1	3212	Risk Ratio (M-H, Random, 95% CI)	4.70 [3.95, 5.60]

Forest plot of comparison: 1 Cohort studies: Elective CS in 37-38 weeks vs ≥ 39 weeks, outcome: 1.1 Neonatal NICU admission.

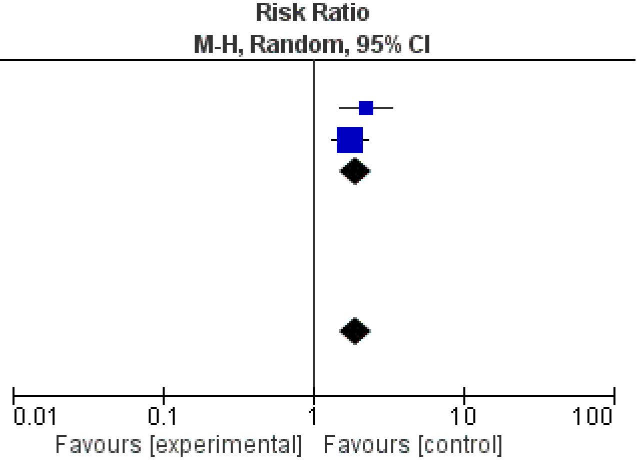
Study or Subgroup	Experimental Events	Experimental Total	Control Events	Control Total	Weight	Risk Ratio M-H, Random, 95% CI
1.1.1 Elective CS						
Alderdice 2005	149	1105	61	1384	8.8%	3.06 [2.30, 4.08]
Bailit 2010	196	1492	174	1928	10.9%	1.46 [1.20, 1.76]
Clark 2009	21	121	12	153	3.4%	2.21 [1.13, 4.32]
Doan 2014	497	8697	173	5790	11.4%	1.91 [1.61, 2.27]
Finn 2016	91	631	332	3611	10.4%	1.57 [1.26, 1.95]
Graziosi 1998	13	139	1	133	0.5%	12.44 [1.65, 93.77]
McAlister 2013	88	1579	97	2546	8.9%	1.46 [1.10, 1.94]
Nir 2012	26	596	11	454	3.2%	1.80 [0.90, 3.61]
Parikh 2014	245	4524	343	10089	11.6%	1.59 [1.36, 1.87]
Resende 2015	42	1427	21	1696	4.8%	2.38 [1.41, 3.99]
Tracy 2007	2886	23487	1811	20572	13.3%	1.40 [1.32, 1.48]
Vidic 2016	71	2096	85	5268	8.2%	2.10 [1.54, 2.87]
Wilmink 2010	45	11873	19	8703	4.6%	1.74 [1.02, 2.97]
Subtotal (95% CI)		**57767**		**62327**	**100.0%**	**1.78 [1.55, 2.06]**
Total events	4370		3140			
Heterogeneity: Tau² = 0.04; Chi² = 52.33, df = 12 (P < 0.00001); I² = 77%						
Test for overall effect: Z = 7.96 (P < 0.00001)						
1.1.2 Repeat elective CS						
Chiossi 2013	686	5897	620	8968	43.6%	1.68 [1.52, 1.87]
Clark 2009	79	801	62	776	29.7%	1.23 [0.90, 1.70]
Gawlik 2015	35	226	15	277	16.2%	2.86 [1.60, 5.10]
Melamed 2014	21	264	8	113	10.5%	1.12 [0.51, 2.46]
Subtotal (95% CI)		**7188**		**10134**	**100.0%**	**1.60 [1.20, 2.14]**
Total events	821		705			
Heterogeneity: Tau² = 0.05; Chi² = 7.74, df = 3 (P = 0.05); I² = 61%						
Test for overall effect: Z = 3.20 (P = 0.001)						



Test for subgroup differences: Chi² = 0.42, df = 1 (P = 0.52), I² = 0%

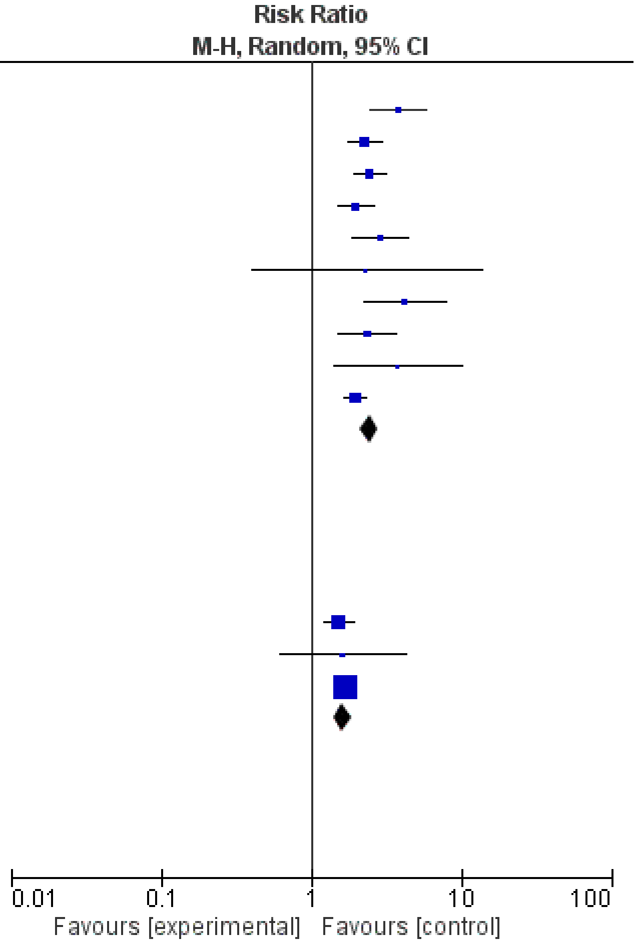
Forest plot of comparison: 1 Cohort studies: Elective CS in 37-38 weeks vs ≥ 39 weeks, outcome: 1.2 Neonatal NICU length of stay ≥2 days.

	Experimental		Control			Risk Ratio
Study or Subgroup	**Events**	**Total**	**Events**	**Total**	**Weight**	**M-H, Random, 95% CI**
1.2.1 Elective CS						
Doan 2014	106	8657	31	5790	33.0%	2.29 [1.53, 3.41]
Finn 2016	65	631	210	3611	67.0%	1.77 [1.36, 2.31]
Subtotal (95% CI)		**9288**		**9401**	**100.0%**	**1.93 [1.52, 2.45]**
Total events	171		241			
Heterogeneity: Tau² = 0.00; Chi² = 1.14, df = 1 (P = 0.29); I² = 12%						
Test for overall effect: Z = 5.34 (P < 0.00001)						
Total (95% CI)		**9288**		**9401**	**100.0%**	**1.93 [1.52, 2.45]**
Total events	171		241			
Heterogeneity: Tau² = 0.00; Chi² = 1.14, df = 1 (P = 0.29); I² = 12%						
Test for overall effect: Z = 5.34 (P < 0.00001)						
Test for subgroup differences: Not applicable						



Forest plot of comparison: 1 Cohort studies: Elective CS in 37-38 weeks vs ≥ 39 weeks, outcome: 1.3 Neonatal respiratory morbidity.

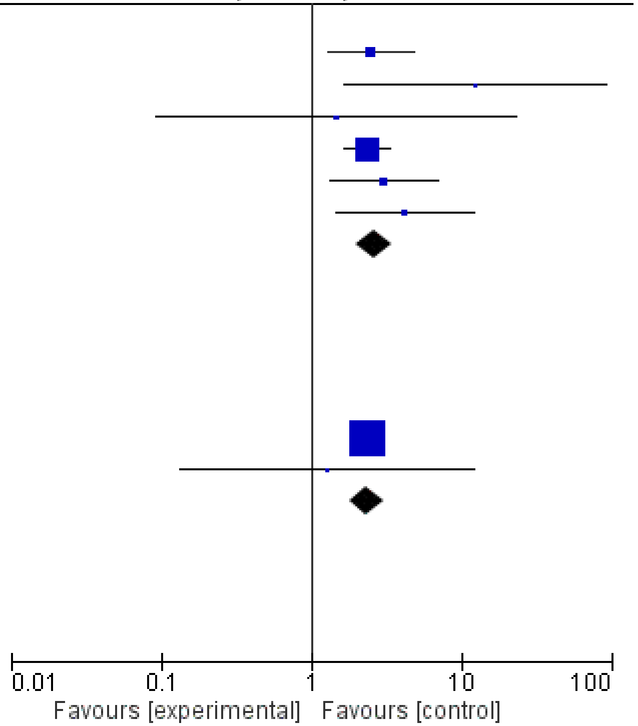
	Experimental		Control			Risk Ratio
Study or Subgroup	**Events**	**Total**	**Events**	**Total**	**Weight**	**M-H, Random, 95% CI**
1.3.1 Elective CS						
Alderdice 2005	79	1105	26	1384	8.3%	3.81 [2.46, 5.89]
Balchin 2008	367	14603	73	6633	16.0%	2.28 [1.78, 2.93]
Doan 2014	273	8657	74	5790	15.7%	2.47 [1.91, 3.18]
Finn 2016	63	631	182	3611	14.7%	1.98 [1.51, 2.60]
Hansen 2008	86	1434	26	1253	8.4%	2.89 [1.88, 4.45]
Many 2006	2	62	3	217	0.7%	2.33 [0.40, 13.65]
Morrison 1995	72	1429	11	912	4.7%	4.18 [2.23, 7.84]
Resende 2015	58	1427	29	1696	8.2%	2.38 [1.53, 3.69]
Terada 2014	183	1788	4	148	2.2%	3.79 [1.43, 10.05]
Wilmink 2010	474	11873	175	8703	21.0%	1.99 [1.67, 2.36]
Subtotal (95% CI)		**43009**		**30347**	**100.0%**	**2.44 [2.10, 2.84]**
Total events	1657		603			
Heterogeneity: Tau² = 0.02; Chi² = 15.06, df = 9 (P = 0.09); I² = 40%						
Test for overall effect: Z = 11.73 (P < 0.00001)						
1.3.2 Repeat elective CS						
Farchi 2010	361	9606	92	3723	32.6%	1.52 [1.21, 1.91]
Melamed 2014	19	264	5	113	1.8%	1.63 [0.62, 4.25]
Tita 2009	281	4737	298	8508	65.6%	1.69 [1.44, 1.99]
Subtotal (95% CI)		**14607**		**12344**	**100.0%**	**1.63 [1.44, 1.86]**
Total events	661		395			
Heterogeneity: Tau² = 0.00; Chi² = 0.59, df = 2 (P = 0.75); I² = 0%						
Test for overall effect: Z = 7.47 (P < 0.00001)						



Test for subgroup differences: Chi² = 15.97, df = 1 (P < 0.0001), I² = 93.7%

Forest plot of comparison: 1 Cohort studies: Elective CS in 37-38 weeks vs ≥ 39 weeks, outcome: 1.4 Neonatal respiratory distress syndrome (RDS).

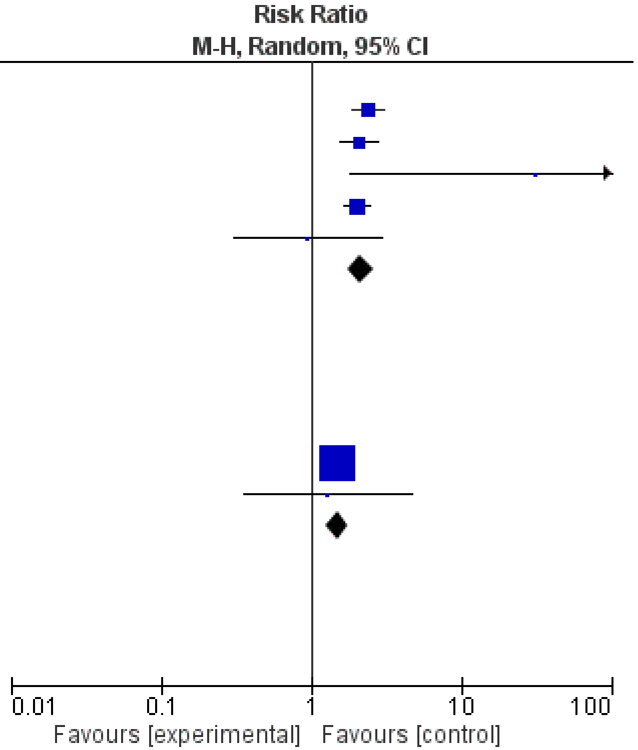
	Experimental		Control			Risk Ratio	Risk Ratio
Study or Subgroup	**Events**	**Total**	**Events**	**Total**	**Weight**	**M-H, Random, 95% CI**	**M-H, Random, 95% CI**
1.4.1 Elective CS							
Doan 2014	41	8657	11	5790	17.3%	2.49 [1.28, 4.85]	
Graziosi 1998	13	139	1	133	1.9%	12.44 [1.65, 93.77]	
Matsuo 2008	1	129	1	191	1.0%	1.48 [0.09, 23.46]	
Vidic 2016	59	2096	62	5268	61.6%	2.39 [1.68, 3.40]	
Wilmink 2010	29	11873	7	8703	11.3%	3.04 [1.33, 6.93]	
Zanardo 2004A&B	25	765	4	519	7.0%	4.24 [1.48, 12.11]	
Subtotal (95% CI)		**23659**		**20604**	**100.0%**	**2.64 [2.00, 3.49]**	
Total events	168		86				
Heterogeneity: Tau² = 0.00; Chi² = 3.79, df = 5 (P = 0.58); I² = 0%							
Test for overall effect: Z = 6.88 (P < 0.00001)							
1.4.2 Repeat elective CS							
Chiossi 2013	147	5897	94	8968	98.7%	2.38 [1.84, 3.07]	
Melamed 2014	3	264	1	113	1.3%	1.28 [0.14, 12.21]	
Subtotal (95% CI)		**6161**		**9081**	**100.0%**	**2.36 [1.83, 3.05]**	
Total events	150		95				
Heterogeneity: Tau² = 0.00; Chi² = 0.28, df = 1 (P = 0.59); I² = 0%							
Test for overall effect: Z = 6.60 (P < 0.00001)							



Test for subgroup differences: Chi² = 0.35, df = 1 (P = 0.55), I² = 0%

Forest plot of comparison: 1 Cohort studies: Elective CS in 37-38 weeks vs ≥ 39 weeks, outcome: 1.5 Neonatal transient tachypnea.

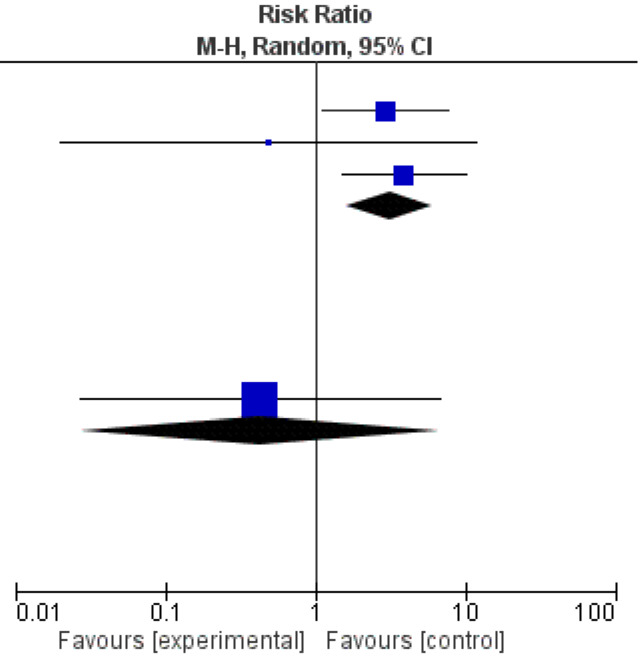
	Experimental		Control			Risk Ratio
Study or Subgroup	**Events**	**Total**	**Events**	**Total**	**Weight**	**M-H, Random, 95% CI**
1.5.1 Elective CS						
Doan 2014	302	8657	84	5790	32.6%	2.40 [1.89, 3.06]
Finn 2016	59	631	160	3611	27.4%	2.11 [1.58, 2.81]
Matsuo 2008	10	129	0	191	0.5%	31.02 [1.83, 524.67]
Wilmink 2010	328	11873	118	8703	36.5%	2.04 [1.65, 2.51]
Zanardo 2004A&B	7	765	5	519	3.1%	0.95 [0.30, 2.98]
Subtotal (95% CI)		**22055**		**18814**	**100.0%**	**2.15 [1.75, 2.64]**
Total events	706		367			
Heterogeneity: Tau² = 0.02; Chi² = 6.55, df = 4 (P = 0.16); I² = 39%						
Test for overall effect: Z = 7.30 (P < 0.00001)						
1.5.2 Repeat elective CS						
Chiossi 2013	265	5897	268	8968	98.4%	1.50 [1.27, 1.78]
Melamed 2014	9	264	3	113	1.6%	1.28 [0.35, 4.66]
Subtotal (95% CI)		**6161**		**9081**	**100.0%**	**1.50 [1.27, 1.77]**
Total events	274		271			
Heterogeneity: Tau² = 0.00; Chi² = 0.06, df = 1 (P = 0.81); I² = 0%						
Test for overall effect: Z = 4.81 (P < 0.00001)						



Test for subgroup differences: Chi² = 7.18, df = 1 (P = 0.007), I² = 86.1%

Forest plot of comparison: 1 Cohort studies: Elective CS in 37-38 weeks vs ≥ 39 weeks, outcome: 1.6 Neonatal pneumothorax.

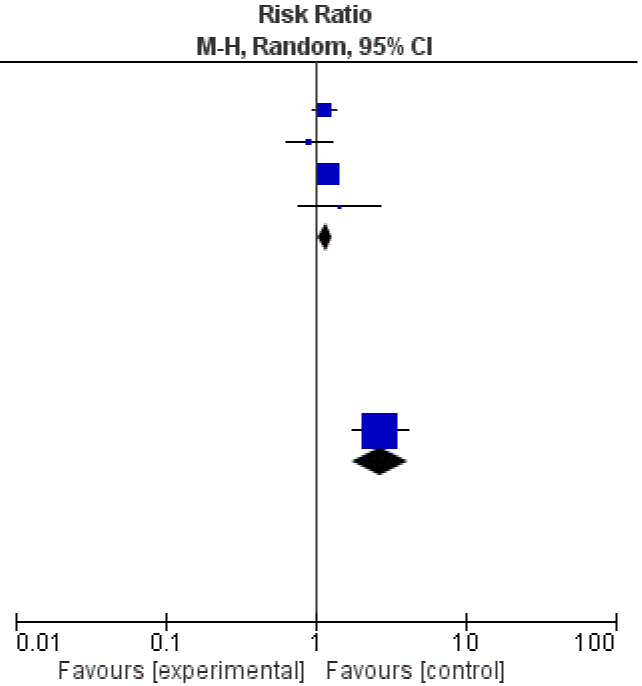
Study or Subgroup	Experimental Events	Experimental Total	Control Events	Control Total	Weight	Risk Ratio M-H, Random, 95% CI
1.6.1 Elective CS						
Doan 2014	22	8657	5	5790	47.4%	2.94 [1.12, 7.77]
Matsuo 2008	0	129	1	191	4.4%	0.49 [0.02, 11.99]
Zanardo 2007	24	5498	5	4490	48.2%	3.92 [1.50, 10.27]
Subtotal (95% CI)		**14284**		**10471**	**100.0%**	**3.12 [1.60, 6.10]**
Total events	46		11			
Heterogeneity: Tau² = 0.00; Chi² = 1.51, df = 2 (P = 0.47); I² = 0%						
Test for overall effect: Z = 3.34 (P = 0.0008)						
1.6.2 Repeat elective CS						
Melamed 2014	1	264	1	113	100.0%	0.43 [0.03, 6.78]
Subtotal (95% CI)		**264**		**113**	**100.0%**	**0.43 [0.03, 6.78]**
Total events	1		1			
Heterogeneity: Not applicable						
Test for overall effect: Z = 0.60 (P = 0.55)						



Test for subgroup differences: Chi² = 1.88, df = 1 (P = 0.17), I² = 46.8%

Forest plot of comparison: 1 Cohort studies: Elective CS in 37-38 weeks vs ≥ 39 weeks, outcome: 1.7 Neonatal resuscitation.

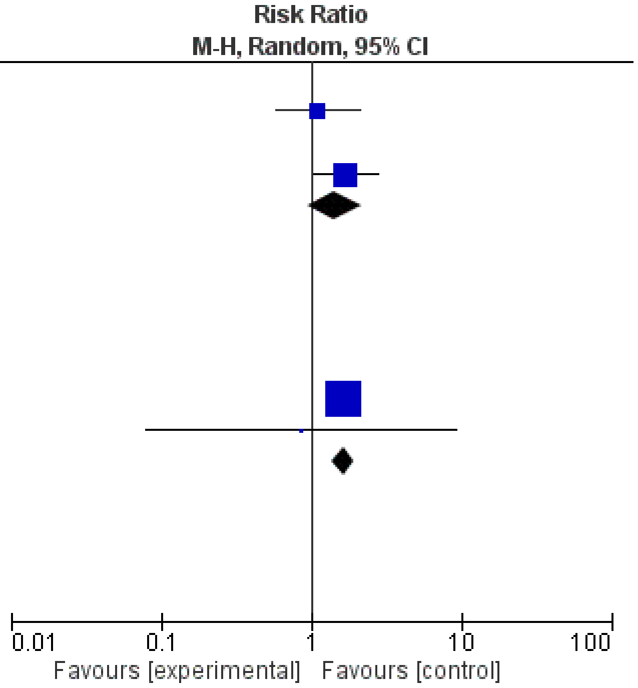
Study or Subgroup	Experimental Events	Experimental Total	Control Events	Control Total	Weight	Risk Ratio M-H, Random, 95% CI
1.7.1 Elective CS						
Doan 2014	289	8657	169	5790	31.5%	1.14 [0.95, 1.38]
Resende 2015	55	1427	72	1696	9.3%	0.91 [0.64, 1.28]
Wilmink 2010	504	11873	303	8703	56.3%	1.22 [1.06, 1.40]
Zanardo 2004A&B	30	765	14	519	2.8%	1.45 [0.78, 2.71]
Subtotal (95% CI)		**22722**		**16708**	**100.0%**	**1.17 [1.05, 1.30]**
Total events	878		558			
Heterogeneity: Tau² = 0.00; Chi² = 2.95, df = 3 (P = 0.40); I² = 0%						
Test for overall effect: Z = 2.91 (P = 0.004)						
1.7.2 Repeat elective CS						
Tita 2009	51	4737	34	8506	100.0%	2.69 [1.75, 4.15]
Subtotal (95% CI)		**4737**		**8506**	**100.0%**	**2.69 [1.75, 4.15]**
Total events	51		34			
Heterogeneity: Not applicable						
Test for overall effect: Z = 4.49 (P < 0.00001)						



Test for subgroup differences: Chi² = 13.53, df = 1 (P = 0.0002), I² = 92.6%

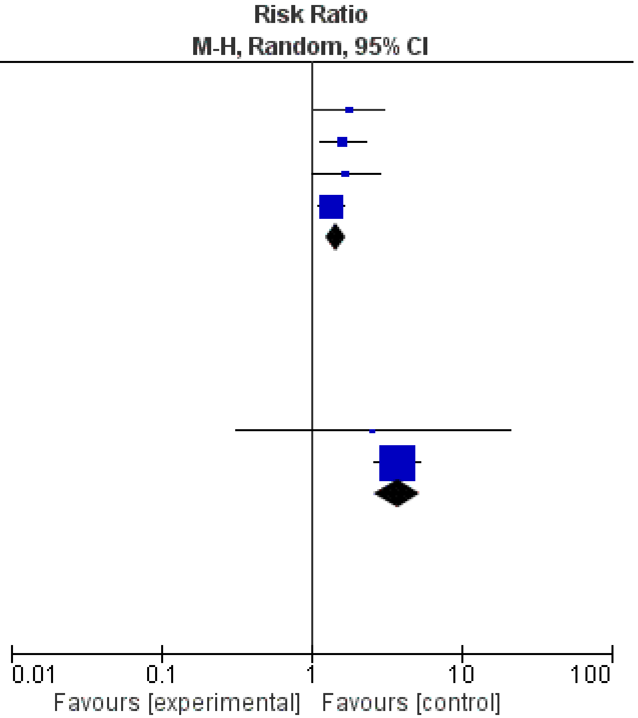
Forest plot of comparison: 1 Cohort studies: Elective CS in 37-38 weeks vs ≥ 39 weeks, outcome: 1.8 Neonatal sepsis.

	Experimental		Control			Risk Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% CI
1.8.1 Elective CS						
Bailit 2010	17	1492	20	1928	38.8%	1.10 [0.58, 2.09]
Resende 2015	0	1427	0	1696		Not estimable
Wilmink 2010	51	11873	22	8703	61.2%	1.70 [1.03, 2.80]
Subtotal (95% CI)		**14792**		**12327**	**100.0%**	**1.43 [0.95, 2.18]**
Total events	68		42			
Heterogeneity: Tau² = 0.01; Chi² = 1.11, df = 1 (P = 0.29); I² = 10%						
Test for overall effect: Z = 1.70 (P = 0.09)						
1.8.2 Repeat elective CS						
Chiossi 2013	298	5897	275	8968	99.6%	1.65 [1.40, 1.93]
Melamed 2014	2	264	1	113	0.4%	0.86 [0.08, 9.35]
Subtotal (95% CI)		**6161**		**9081**	**100.0%**	**1.64 [1.40, 1.93]**
Total events	300		276			
Heterogeneity: Tau² = 0.00; Chi² = 0.29, df = 1 (P = 0.59); I² = 0%						
Test for overall effect: Z = 6.08 (P < 0.00001)						
Test for subgroup differences: Chi² = 0.35, df = 1 (P = 0.55), I² = 0%						



Forest plot of comparison: 1 Cohort studies: Elective CS in 37-38 weeks vs ≥ 39 weeks, outcome: 1.9 Neonatal hypoglycemia.

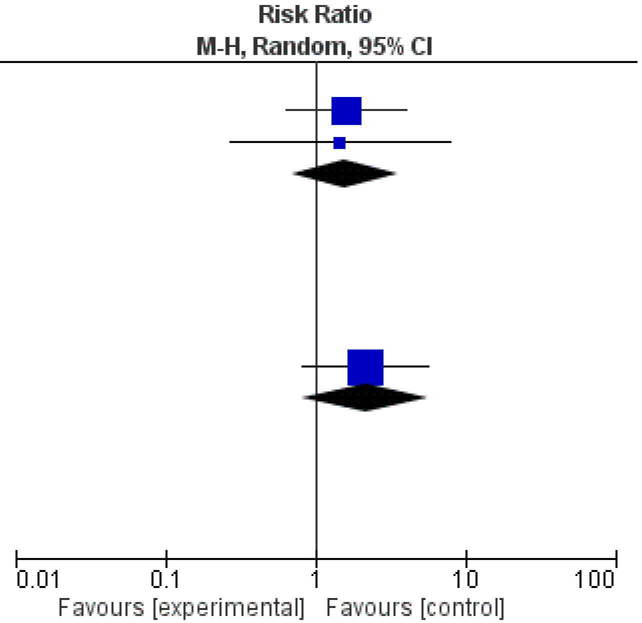
	Experimental		Control			Risk Ratio
Study or Subgroup	**Events**	**Total**	**Events**	**Total**	**Weight**	**M-H, Random, 95% CI**
1.9.1 Elective CS						
Doan 2014	51	8657	19	5790	9.1%	1.80 [1.06, 3.04]
Resende 2015	71	1427	52	1696	20.5%	1.62 [1.14, 2.30]
Vidic 2016	23	2096	34	5268	9.1%	1.70 [1.00, 2.88]
Wilmink 2010	263	11873	141	8703	61.3%	1.37 [1.12, 1.67]
Subtotal (95% CI)		**24053**		**21457**	**100.0%**	**1.48 [1.26, 1.74]**
Total events	408		246			
Heterogeneity: Tau² = 0.00; Chi² = 1.64, df = 3 (P = 0.65); I² = 0%						
Test for overall effect: Z = 4.85 (P < 0.00001)						
1.9.2 Repeat elective CS						
Melamed 2014	6	264	1	113	2.8%	2.57 [0.31, 21.09]
Tita 2009	55	1878	65	8402	97.2%	3.79 [2.65, 5.40]
Subtotal (95% CI)		**2142**		**8515**	**100.0%**	**3.75 [2.64, 5.32]**
Total events	61		66			
Heterogeneity: Tau² = 0.00; Chi² = 0.13, df = 1 (P = 0.72); I² = 0%						
Test for overall effect: Z = 7.38 (P < 0.00001)						



Test for subgroup differences: Chi² = 22.33, df = 1 (P < 0.00001), I² = 95.5%

Forest plot of comparison: 1 Cohort studies: Elective CS in 37-38 weeks vs ≥ 39 weeks, outcome: 1.10 Neonatal Apgar score ≤3.

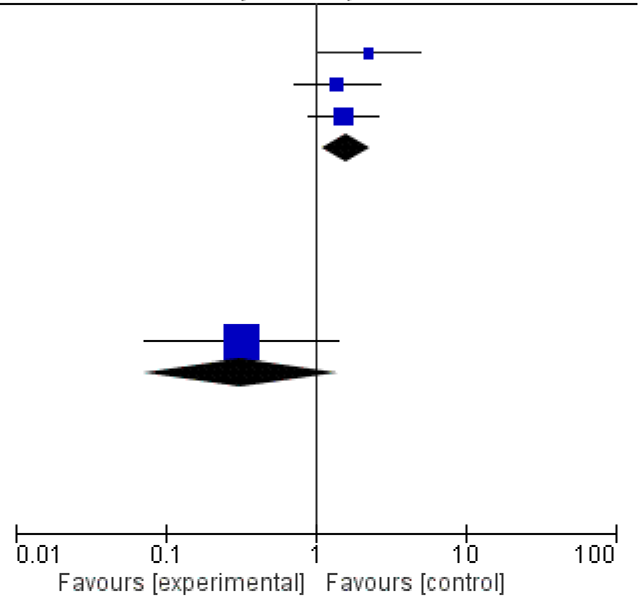
	Experimental		Control			Risk Ratio
Study or Subgroup	**Events**	**Total**	**Events**	**Total**	**Weight**	**M-H, Random, 95% CI**
1.10.1 Elective CS						
Bailit 2010	10	1492	8	1928	77.0%	1.62 [0.64, 4.08]
Wilmink 2010	4	11873	2	8703	23.0%	1.47 [0.27, 8.00]
Subtotal (95% CI)		**13365**		**10631**	**100.0%**	**1.58 [0.70, 3.56]**
Total events	14		10			
Heterogeneity: Tau² = 0.00; Chi² = 0.01, df = 1 (P = 0.92); I² = 0%						
Test for overall effect: Z = 1.10 (P = 0.27)						
1.10.2 Repeat elective CS						
Chiossi 2013	10	5897	7	8968	100.0%	2.17 [0.83, 5.70]
Subtotal (95% CI)		**5897**		**8968**	**100.0%**	**2.17 [0.83, 5.70]**
Total events	10		7			
Heterogeneity: Not applicable						
Test for overall effect: Z = 1.58 (P = 0.12)						



Test for subgroup differences: Chi² = 0.24, df = 1 (P = 0.62), I² = 0%

Forest plot of comparison: 1 Cohort studies: Elective CS in 37-38 weeks vs ≥ 39 weeks, outcome: 1.11 Neonatal Apgar score ≤6.

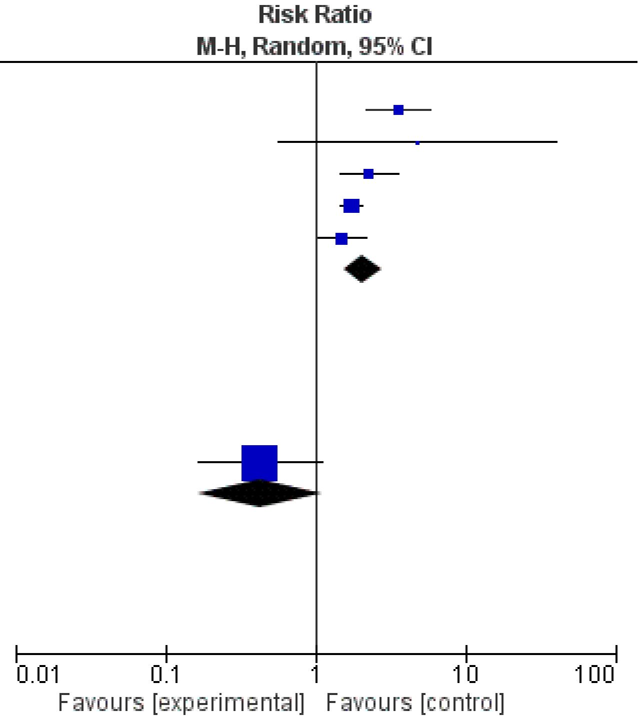
	Experimental		Control			Risk Ratio	Risk Ratio
Study or Subgroup	**Events**	**Total**	**Events**	**Total**	**Weight**	**M-H, Random, 95% CI**	**M-H, Random, 95% CI**
1.11.1 Elective CS							
Doan 2014	27	8657	8	5790	22.0%	2.26 [1.03, 4.97]	
Vidic 2016	14	2096	25	5268	32.1%	1.41 [0.73, 2.70]	
Wilmink 2010	40	11873	19	8703	45.9%	1.54 [0.89, 2.66]	
Subtotal (95% CI)		**22626**		**19761**	**100.0%**	**1.63 [1.13, 2.36]**	
Total events	81		52				
Heterogeneity: Tau² = 0.00; Chi² = 0.89, df = 2 (P = 0.64); I² = 0%							
Test for overall effect: Z = 2.59 (P = 0.010)							
1.11.2 Repeat elective CS							
Melamed 2014	3	264	4	113	100.0%	0.32 [0.07, 1.41]	
Subtotal (95% CI)		**264**		**113**	**100.0%**	**0.32 [0.07, 1.41]**	
Total events	3		4				
Heterogeneity: Not applicable							
Test for overall effect: Z = 1.50 (P = 0.13)							



Test for subgroup differences: Chi² = 4.35, df = 1 (P = 0.04), I² = 77.0%

Forest plot of comparison: 1 Cohort studies: Elective CS in 37-38 weeks vs ≥ 39 weeks, outcome: 1.12 Neonatal hyperbilirubinemia.

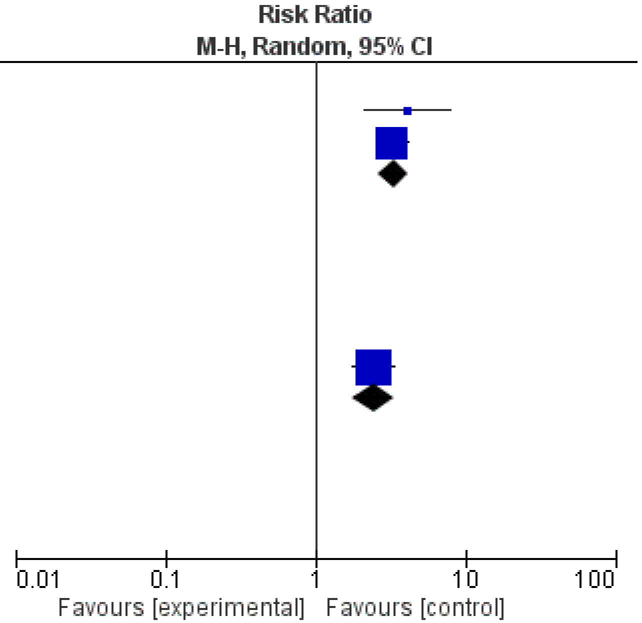
	Experimental		Control			Risk Ratio
Study or Subgroup	**Events**	**Total**	**Events**	**Total**	**Weight**	**M-H, Random, 95% CI**
1.12.1 Elective CS						
Doan 2014	102	8657	19	5790	19.0%	3.59 [2.20, 5.85]
Graziosi 1998	5	139	1	133	1.9%	4.78 [0.57, 40.41]
Resende 2015	56	1427	29	1696	20.8%	2.30 [1.47, 3.57]
Vidic 2016	208	2096	300	5268	33.6%	1.74 [1.47, 2.06]
Wilmink 2010	91	11873	44	8703	24.6%	1.52 [1.06, 2.17]
Subtotal (95% CI)		**24192**		**21590**	**100.0%**	**2.09 [1.54, 2.82]**
Total events	462		393			
Heterogeneity: Tau² = 0.06; Chi² = 10.56, df = 4 (P = 0.03); I² = 62%						
Test for overall effect: Z = 4.76 (P < 0.00001)						
1.12.2 Repeat elective CS						
Melamed 2014	8	264	8	113	100.0%	0.43 [0.16, 1.11]
Subtotal (95% CI)		**264**		**113**	**100.0%**	**0.43 [0.16, 1.11]**
Total events	8		8			
Heterogeneity: Not applicable						
Test for overall effect: Z = 1.74 (P = 0.08)						



Test for subgroup differences: Chi² = 9.60, df = 1 (P = 0.002), I² = 89.6%

Forest plot of comparison: 1 Cohort studies: Elective CS in 37-38 weeks vs ≥ 39 weeks, outcome: 1.13 Neonatal birth weight ≤2500g.

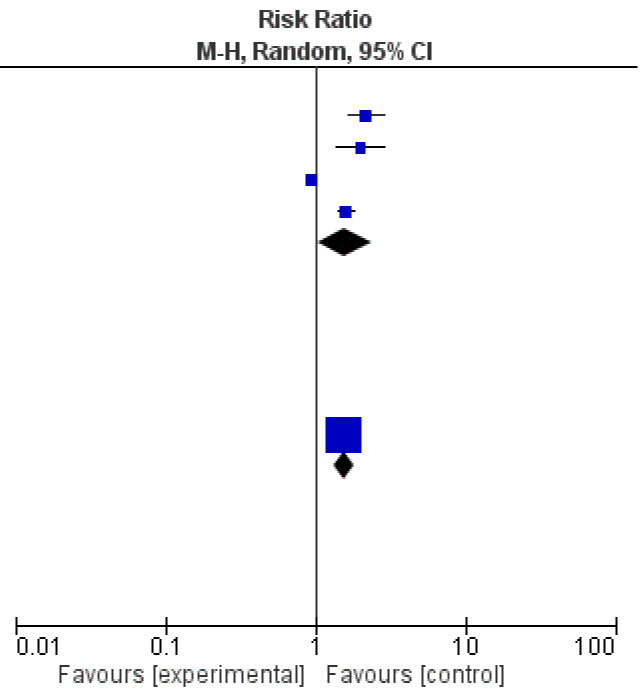
	Experimental		Control			Risk Ratio
Study or Subgroup	**Events**	**Total**	**Events**	**Total**	**Weight**	**M-H, Random, 95% CI**
1.13.1 Elective CS						
Finn 2016	15	631	21	3611	12.7%	4.09 [2.12, 7.89]
Wilmink 2010	326	11873	74	8703	87.3%	3.23 [2.51, 4.15]
Subtotal (95% CI)		**12504**		**12314**	**100.0%**	**3.33 [2.63, 4.21]**
Total events	341		95			
Heterogeneity: Tau² = 0.00; Chi² = 0.44, df = 1 (P = 0.51); I² = 0%						
Test for overall effect: Z = 10.05 (P < 0.00001)						
1.13.2 Repeat elective CS						
Tita 2009	87	4743	63	8402	100.0%	2.45 [1.77, 3.38]
Subtotal (95% CI)		**4743**		**8402**	**100.0%**	**2.45 [1.77, 3.38]**
Total events	87		63			
Heterogeneity: Not applicable						
Test for overall effect: Z = 5.44 (P < 0.00001)						



Test for subgroup differences: Chi² = 2.29, df = 1 (P = 0.13), I² = 56.3%

Forest plot of comparison: 1 Cohort studies: Elective CS in 37-38 weeks vs ≥ 39 weeks, outcome: 1.14 Neonatal hospitalisation > 5 days.

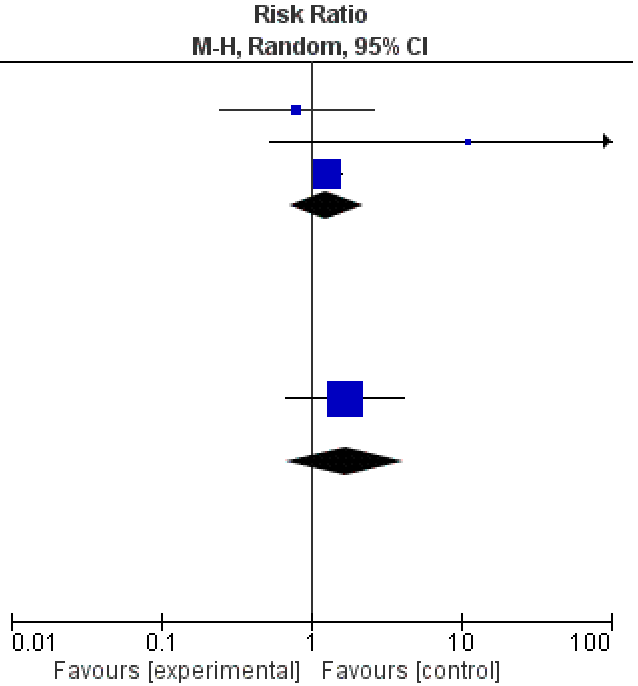
	Experimental		Control			Risk Ratio
Study or Subgroup	**Events**	**Total**	**Events**	**Total**	**Weight**	**M-H, Random, 95% CI**
1.14.1 Elective CS						
Parikh 2014	99	4524	101	10089	24.2%	2.19 [1.66, 2.88]
Resende 2015	74	1427	44	1696	22.5%	2.00 [1.39, 2.88]
Vidic 2016	909	2096	2394	5268	26.8%	0.95 [0.90, 1.01]
Wilmink 2010	843	11873	384	8703	26.4%	1.61 [1.43, 1.81]
Subtotal (95% CI)		**19920**		**25756**	**100.0%**	**1.58 [1.03, 2.42]**
Total events	1925		2923			
Heterogeneity: Tau² = 0.18; Chi² = 104.91, df = 3 (P < 0.00001); I² = 97%						
Test for overall effect: Z = 2.11 (P = 0.04)						
1.14.2 Repeat elective CS						
Tita 2009	297	4735	344	8501	100.0%	1.55 [1.33, 1.80]
Subtotal (95% CI)		**4735**		**8501**	**100.0%**	**1.55 [1.33, 1.80]**
Total events	297		344			
Heterogeneity: Not applicable						
Test for overall effect: Z = 5.68 (P < 0.00001)						



Test for subgroup differences: Chi² = 0.01, df = 1 (P = 0.93), I² = 0%

Forest plot of comparison: 1 Cohort studies: Elective CS in 37-38 weeks vs ≥ 39 weeks, outcome: 1.15 Neonatal death.

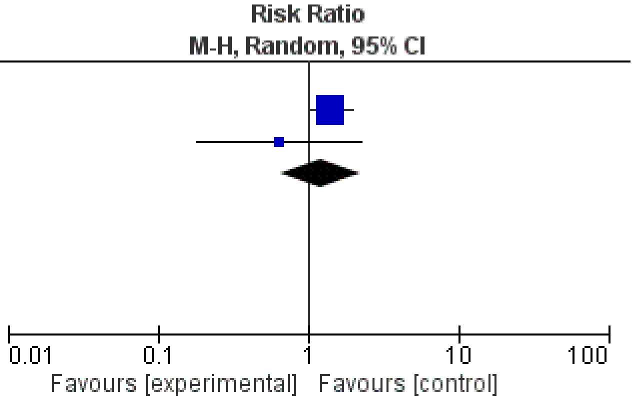
Study or Subgroup	Experimental Events	Experimental Total	Control Events	Control Total	Weight	Risk Ratio M-H, Random, 95% CI
1.15.1 Elective CS						
Doan 2014	6	8657	5	5790	17.8%	0.80 [0.25, 2.63]
Parikh 2014	2	4524	0	10089	3.3%	11.15 [0.54, 232.18]
Vilchez 2015	184	235786	149	247266	78.9%	1.30 [1.04, 1.61]
Subtotal (95% CI)		**248967**		**263145**	**100.0%**	**1.28 [0.73, 2.23]**
Total events	192		154			
Heterogeneity: Tau² = 0.09; Chi² = 2.56, df = 2 (P = 0.28); I² = 22%						
Test for overall effect: Z = 0.85 (P = 0.39)						
1.15.2 Repeat elective CS						
Chiossi 2013	10	5897	9	8968	100.0%	1.69 [0.69, 4.16]
Melamed 2014	0	264	0	113		Not estimable
Subtotal (95% CI)		**6161**		**9081**	**100.0%**	**1.69 [0.69, 4.16]**
Total events	10		9			
Heterogeneity: Not applicable						
Test for overall effect: Z = 1.14 (P = 0.25)						



Test for subgroup differences: Chi² = 0.27, df = 1 (P = 0.60), I² = 0%

Forest plot of comparison: 1 Cohort studies: Elective CS in 37-38 weeks vs ≥ 39 weeks, outcome: 1.17 Maternal bleeding (needing transfusion/treatment).

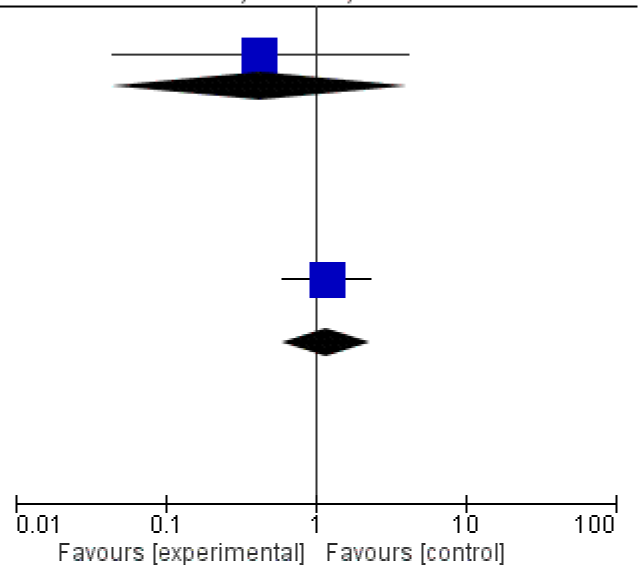
	Experimental		Control			Risk Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% CI
1.17.2 Repeat elective CS						
Chiossi 2013	65	5897	70	8968	80.1%	1.41 [1.01, 1.98]
Melamed 2014	6	264	4	113	19.9%	0.64 [0.18, 2.23]
Subtotal (95% CI)		**6161**		**9081**	**100.0%**	**1.21 [0.65, 2.24]**
Total events	71		74			
Heterogeneity: $Tau^2 = 0.09$; $Chi^2 = 1.43$, df = 1 (P = 0.23); $I^2 = 30\%$						
Test for overall effect: Z = 0.60 (P = 0.55)						



Test for subgroup differences: Not applicable

Forest plot of comparison: 1 Cohort studies: Elective CS in 37-38 weeks vs ≥ 39 weeks, outcome: 1.18 Maternal hysterectomy.

	Experimental		Control			Risk Ratio	Risk Ratio
Study or Subgroup	**Events**	**Total**	**Events**	**Total**	**Weight**	**M-H, Random, 95% CI**	**M-H, Random, 95% CI**
1.18.1 Elective CS							
Bailit 2010	1	1492	3	1928	100.0%	0.43 [0.04, 4.14]	
Subtotal (95% CI)		**1492**		**1928**	**100.0%**	**0.43 [0.04, 4.14]**	
Total events	1		3				
Heterogeneity: Not applicable							
Test for overall effect: Z = 0.73 (P = 0.47)							
1.18.2 Repeat elective CS							
Chiossi 2013	15	5897	19	8968	100.0%	1.20 [0.61, 2.36]	
Melamed 2014	0	264	0	113		Not estimable	
Subtotal (95% CI)		**6161**		**9081**	**100.0%**	**1.20 [0.61, 2.36]**	
Total events	15		19				
Heterogeneity: Not applicable							
Test for overall effect: Z = 0.53 (P = 0.60)							

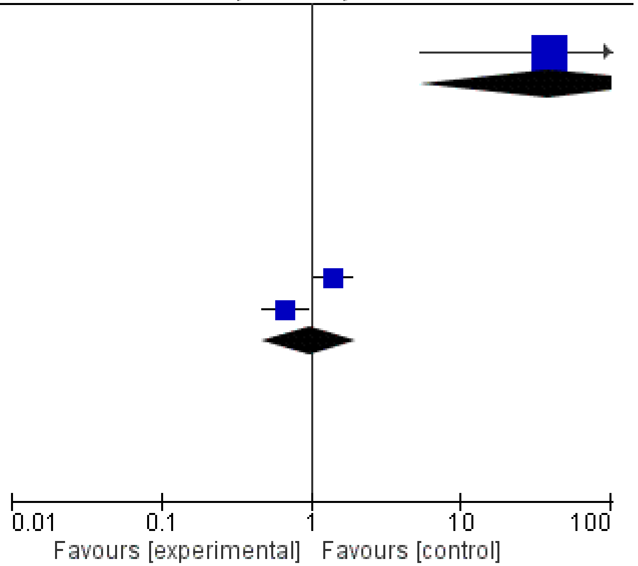


Test for subgroup differences: Chi² = 0.72, df = 1 (P = 0.39), I² = 0%

Forest plot of comparison: 1 Cohort studies: Elective CS in 37-38 weeks vs ≥ 39 weeks, outcome: 1.19 Maternal composite adverse events.

Study or Subgroup	Experimental Events	Experimental Total	Control Events	Control Total	Weight	Risk Ratio M-H, Random, 95% CI
1.19.1 Elective CS						
Matsuo 2008	26	129	1	191	100.0%	38.50 [5.29, 280.15]
Subtotal (95% CI)		**129**		**191**	**100.0%**	**38.50 [5.29, 280.15]**
Total events	26		1			
Heterogeneity: Not applicable						
Test for overall effect: Z = 3.60 (P = 0.0003)						
1.19.2 Repeat elective CS						
Chiossi 2013	82	5897	89	8968	50.9%	1.40 [1.04, 1.89]
Melamed 2014	57	264	36	113	49.1%	0.68 [0.48, 0.97]
Subtotal (95% CI)		**6161**		**9081**	**100.0%**	**0.98 [0.48, 2.02]**
Total events	139		125			
Heterogeneity: Tau² = 0.24; Chi² = 9.71, df = 1 (P = 0.002); I² = 90%						
Test for overall effect: Z = 0.05 (P = 0.96)						

Risk Ratio
M-H, Random, 95% CI



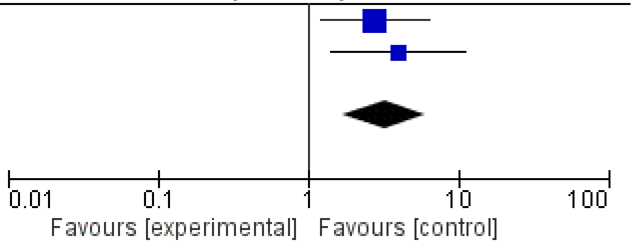
Test for subgroup differences: Chi² = 11.60, df = 1 (P = 0.0007), I² = 91.4%

Forest plot of comparison: 3 Elective CS 37 week vs 38 weeks, outcome: 3.2 Neonatal respiratory morbidity.

	Experimental		Control			Risk Ratio	Risk Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% CI	M-H, Random, 95% CI
Nakashima 2014	26	390	7	294	60.7%	2.80 [1.23, 6.36]	
Yamazaki 2003	16	48	4	48	39.3%	4.00 [1.44, 11.09]	
Total (95% CI)		**438**		**342**	**100.0%**	**3.22 [1.70, 6.11]**	
Total events	42		11				

Heterogeneity: Tau² = 0.00; Chi² = 0.29, df = 1 (P = 0.59); I² = 0%

Test for overall effect: Z = 3.59 (P = 0.0003)

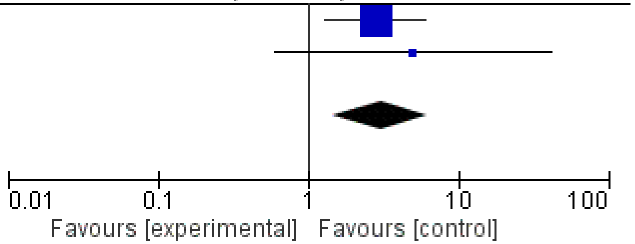


Forest plot of comparison: 3 Elective CS 37 week vs 38 weeks, outcome: 3.5 Neonatal hypoglycaemia.

	Experimental		Control			Risk Ratio	Risk Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Random, 95% CI	M-H, Random, 95% CI
Nakashima 2014	30	390	8	294	88.4%	2.83 [1.32, 6.08]	
Yamazaki 2003	5	48	1	48	11.6%	5.00 [0.61, 41.22]	
Total (95% CI)		**438**		**342**	**100.0%**	**3.02 [1.47, 6.20]**	
Total events	35		9				

Heterogeneity: Tau² = 0.00; Chi² = 0.25, df = 1 (P = 0.62); I² = 0%

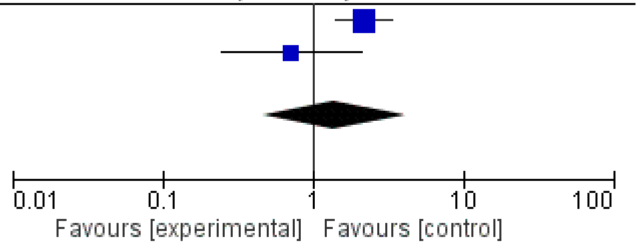
Test for overall effect: Z = 3.01 (P = 0.003)



Forest plot of comparison: 3 Elective CS 37 week vs 38 weeks, outcome: 3.7 Neonatal birth weight ≤2500g.

	Experimental		Control			Risk Ratio	Risk Ratio
Study or Subgroup	**Events**	**Total**	**Events**	**Total**	**Weight**	**M-H, Random, 95% CI**	**M-H, Random, 95% CI**
Nakashima 2014	70	390	24	294	59.9%	2.20 [1.42, 3.41]	
Yamazaki 2003	5	48	7	48	40.1%	0.71 [0.24, 2.09]	
Total (95% CI)		**438**		**342**	**100.0%**	**1.40 [0.48, 4.13]**	
Total events	75		31				

Heterogeneity: Tau² = 0.46; Chi² = 3.60, df = 1 (P = 0.06); I² = 72%
Test for overall effect: Z = 0.61 (P = 0.54)



Appendix F: Liste der ausgeschlossenen Volltexte

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