

SUPPLEMENTARY MATERIAL

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Supplementary Tables

Supplementary Table 1: Search terms

Cochrane Central Register of Controlled Trials (CENTRAL) via Cochrane Library. Issue 10 of 12, October 2021. Search made on 2021-11-17

Search number	Terms	References in Trials
#1	MeSH descriptor: [Infant, Newborn] explode all trees	16150
#2	MeSH descriptor: [Infant] explode all trees	32726
#3	MeSH descriptor: [Intensive Care Units, Neonatal] explode all trees	728
#4	(Infant* OR Newborn* OR Neonat* OR fetal OR foetal OR baby OR babies OR Neonatal ICU* OR Newborn ICU* OR NICU OR "Newborn Intensive Care Units" OR "Neonatal Intensive Care Units" OR "new born*" OR "newly born*"):ti,ab,kw	84830
#5	#1 OR #2 OR #3 OR #4	84830
#6	MeSH descriptor: [Hypoxia-Ischemia, Brain] explode all trees	228
#7	(Hypoxia-ischemia* OR Hypoxia Ischemia* OR Ischemia-Hypoxia* OR Hypoxic-ischemic OR Hypoxic-ischaemic OR Hypoxic Ischemic OR Ischemic-Hypoxic OR encephalopat* OR HIE):ti,ab,kw	4141
#8	#6 OR #7	4141
#9	(afghanistan OR albania OR algeria OR american samoa OR angola OR antigua OR barbuda OR argentina OR armenia OR armenian OR aruba OR azerbaijan OR bahrain OR bangladesh OR barbados OR belarus OR byelarus OR belorussia OR byelorussian OR belize OR british honduras OR benin OR dahomey OR bhutan OR bolivia OR bosnia OR herzegovina OR botswana OR bechuanaland OR brazil OR brasil OR bulgaria OR burkina faso OR burkina fasso OR upper volta OR burundi OR urundi OR cabo verde OR cape verde OR cambodia OR kampuchea OR khmer republic OR cameroon OR cameron OR cameroun OR central african republic OR ubangi shari OR chad OR chile OR china OR colombia OR comoros OR comoro islands OR mayotte OR congo OR zaire OR costa rica OR cote d'ivoire OR cote d'ivoire OR cote d'ivoire OR ivory coast OR croatia OR cuba OR cyprus OR czech republic OR czechoslovakia OR djibouti OR french somaliland OR dominica OR dominican republic OR ecuador OR egypt OR united arab republic OR el salvador OR equatorial guinea OR spanish guinea OR eritrea OR estonia OR eswatini OR swaziland OR ethiopia OR fiji OR gabon OR gabonese republic OR gambia OR georgia OR georgian OR ghana OR gold coast OR gibraltar OR greece OR grenada OR guam OR guatemala OR guinea OR guyana OR guiana OR haiti OR hispaniola OR	292061 (LMIC filter)

	<p>honduras OR hungary OR india OR indonesia OR timor OR iran OR iraq OR isle of man OR jamaica OR jordan OR kazakhstan OR kazakh OR kenya OR korea OR kosovo OR kyrgyzstan OR kirghizia OR kirgizstan OR kyrgyz republic OR kirghiz OR laos OR lao pdr OR lao people's democratic republic OR latvia OR lebanon OR lesotho OR basutoland OR liberia OR libya OR libyan arab jamahiriya OR lithuania OR macau OR macao OR macedonia OR madagascar OR malagasy republic OR malawi OR nyasaland OR malaysia OR maldives OR indian ocean OR mali OR malta OR micronesia OR kiribati OR marshall islands OR nauru OR northern mariana islands OR palau OR tuvalu OR mauritania OR mauritius OR mexico OR moldova OR moldovian OR mongolia OR montenegro OR morocco OR ifni OR mozambique OR portuguese east africa OR myanmar OR burma OR namibia OR nepal OR netherlands antilles OR nicaragua OR niger OR nigeria OR oman OR muscat OR pakistan OR panama OR papua new guinea OR paraguay OR peru OR philippines OR philipines OR phillipines OR phillippines OR poland OR polish people's republic OR portugal OR portuguese republic OR puerto rico OR romania OR russia OR russian federation OR ussr OR soviet union OR union of soviet socialist republics OR rwanda OR ruanda OR samoa OR pacific islands OR polynesia OR samoan islands OR sao tome and principe OR saudi arabia OR senegal OR serbia OR seychelles OR sierra leone OR slovakia OR slovak republic OR slovenia OR melanesia OR solomon island OR solomon islands OR norfolk island OR somalia OR south africa OR south sudan OR sri lanka OR ceylon OR saint kitts and nevis OR st kitts and nevis OR saint lucia OR st lucia OR saint vincent OR st vincent OR grenadines OR sudan OR suriname OR surinam OR syria OR syrian arab republic OR tajikistan OR tadjikistan OR tadjhikistan OR tadjhik OR tanzania OR tanganyika OR thailand OR siam OR timor leste OR east timor OR togo OR togolese republic OR tonga OR trinidad OR tobago OR tunisia OR turkey OR turkmenistan OR turkmen OR uganda OR ukraine OR uruguay OR uzbekistan OR uzbek OR vanuatu OR new hebrides OR venezuela OR vietnam OR viet nam OR middle east OR west bank OR gaza OR palestine OR yemen OR yugoslavia OR zambia OR zimbabwe OR northern rhodesia OR global south OR africa south of the sahara OR sub saharan africa OR subsaharan africa OR central africa OR north africa OR northern africa OR magreb OR maghrib OR sahara OR southern africa OR east africa OR eastern africa OR west africa OR western africa OR west indies OR indian ocean islands OR caribbean OR central america OR latin america OR south america OR central asia OR north asia OR northern asia OR southeastern asia OR south eastern asia OR southeast asia OR south east asia OR western asia OR east europe OR eastern europe OR developing country OR developing countries OR developing nation</p>	
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	OR developing nations OR developing population OR developing populations OR developing world OR less developed country OR less developed countries OR less developed nation OR less developed nations OR less developed world OR lesser developed countries OR lesser developed nations OR under developed country OR under developed countries OR under developed nations OR under developed world OR underdeveloped country OR underdeveloped countries OR underdeveloped nation OR underdeveloped nations OR underdeveloped population OR underdeveloped populations OR underdeveloped world OR middle income country OR middle income countries OR middle income nation OR middle income nations OR middle income population OR middle income populations OR low income country OR low income countries OR low income nation OR low income nations OR low income population OR low income populations OR lower income country OR lower income countries OR lower income nations OR lower income population OR lower income populations OR underserved countries OR underserved nations OR underserved population OR underserved populations OR under served population OR under served populations OR deprived countries OR deprived population OR deprived populations OR poor country OR poor countries OR poor nation OR poor nations OR poor population OR poor populations OR poor world OR poorer countries OR poorer nations OR poorer population OR poorer populations OR developing economy OR developing economies OR less developed economy OR less developed economies OR underdeveloped economies OR middle income economy OR middle income economies OR low income economy OR low income economies OR lower income economies OR low gdp OR low gnp OR low gross domestic OR low gross national OR lower gdp OR lower gross domestic OR lmic OR lmics OR third world OR lami country OR lami countries OR transitional country OR transitional countries OR emerging economies OR emerging nation OR emerging nations)	
#10	#5 AND #8 AND #9	230
#11	#10 with Cochrane Library publication date from Nov 2009 to present	174

Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions(R) 1946 to November 16, 2021

Search number	Search terms	References
1	("Infant, Newborn" or Infant or "Intensive Care Units, Neonatal").sh.	1193982
2	(Infant* or Newborn* or Neonat* or fetal or foetal or baby or babies or Neonatal ICU* or Newborn ICU* or NICU or Newborn Intensive Care Units or Neonatal Intensive Care Units or new born* or newly born*).ab,ti.	961183
3	1 OR 2	1685533
4	Hypoxia-Ischemia, Brain.sh.	6295
5	(Hypoxia-ischemia* or Hypoxia Ischemia* or Ischemia-Hypoxia* or Hypoxic-ischemic or Hypoxic-ischaemic or Hypoxic Ischemic or Ischemic-Hypoxic or encephalopat* or HIE).ab,ti.	61035
6	4 OR 5	62605
7	(afghanistan or albania or algeria or american samoa or angola or "antigua and barbuda" or antigua or barbuda or argentina or armenia or armenian or aruba or azerbaijan or bahrain or bangladesh or barbados or republic of belarus or belarus or byelarus or belorussia or byelorussian or belize or british honduras or benin or dahomey or bhutan or bolivia or "bosnia and herzegovina" or bosnia or herzegovina or botswana or bechuanaland or brazil or brasil or bulgaria or burkina faso or burkina fasso or upper volta or burundi or urundi or cabo verde or cape verde or cambodia or kampuchea or khmer republic or cameroon or cameron or cameroun or central african republic or ubangi shari or chad or chile or china or colombia or comoros or comoro islands or iles comores or mayotte or democratic republic of the congo or democratic republic congo or congo zaire or costa rica or "cote d'ivoire" or "cote d'ivoire" or cote divoire or cote d ivoire or ivory coast or croatia or cuba or cyprus or czech republic or czechoslovakia or djibouti or french somaliland or dominica or dominican republic or ecuador or egypt or united arab republic or el salvador or equatorial guinea or spanish guinea or eritrea or estonia or eswatini or swaziland or ethiopia or fiji or gabon or gabonese republic or gambia or "georgia (republic)" or georgian or ghana or gold coast or gibraltar or greece or grenada or guam or guatemala or guinea or guinea bissau or guyana or british guiana or haiti or hispaniola or honduras or hungary or india or indonesia or timor or iran or iraq or isle of man or jamaica or jordan or kazakhstan or kazakh or kenya or "democratic people's republic of korea" or republic of korea or north korea or south korea or korea or kosovo or kyrgyzstan or kirghizia or kirgizstan or kyrgyz republic or kirghiz or laos or lao pdr or "lao people's democratic republic" or latvia or lebanon or lebanese republic or lesotho or basutoland or liberia or libya or libyan arab jamahiriya or lithuania or macau or macao or "macedonia (republic)" or macedonia or madagascar or malagasy republic or malawi or nyasaland or malaysia or malay federation or malaya federation or maldives or indian ocean islands or indian ocean or mali or malta or micronesia or federated states of micronesia or kiribati or marshall islands or nauru or northern mariana islands or palau or tuvalu or mauritania or mauritius or mexico or moldova or moldovian or mongolia or montenegro or morocco or ifni or mozambique or portuguese east africa or myanmar or burma or namibia or nepal or netherlands antilles or nicaragua or niger or nigeria or oman or muscat or pakistan or panama or papua new guinea or new guinea or paraguay or peru or philippines or philipines or phillippines or philippines or poland or "polish people's republic" or portugal or portuguese republic or puerto rico or romania or russia or russian federation or ussr or soviet union or union of soviet socialist republics or rwanda or ruanda or samoa or pacific islands or polynesia or samoan islands or navigator island or navigator islands or "sao tome and principe" or saudi arabia or senegal or serbia or seychelles or sierra leone or slovakia or slovak republic or slovenia or melanesia or solomon island or solomon islands or norfolk island or norfolk islands or somalia or south africa or south sudan or sri lanka or ceylon or "saint kitts and nevis" or "st. kitts and nevis" or saint lucia or "st. lucia" or "saint vincent and the grenadines" or saint vincent or "st. vincent" or grenadines or sudan or suriname or surinam or dutch	1841501

	guiana or netherlands guiana or syria or syrian arab republic or tajikistan or tadjikistan or tadjhikistan or tadjhik or tanzania or tanganyika or thailand or siam or timor leste or east timor or togo or togolese republic or tonga).ab,kf,sh,ti.	
8	("trinidad and tobago" or trinidad or tobago or tunisia or turkey or "turkey (republic)" or turkmenistan or turkmen or uganda or ukraine or uruguay or uzbekistan or uzbek or vanuatu or new hebrides or venezuela or vietnam or viet nam or middle east or west bank or gaza or palestine or yemen or yugoslavia or zambia or zimbabwe or northern rhodesia or global south or africa south of the sahara or sub-saharan africa or subsaharan africa or africa, central or central africa or africa, northern or north africa or northern africa or magreb or maghrib or sahara or africa, southern or southern africa or africa, eastern or east africa or eastern africa or africa, western or west africa or western africa or west indies or indian ocean islands or caribbean or central america or latin america or "south and central america" or south america or asia, central or central asia or asia, northern or north asia or northern asia or asia, southeastern or southeastern asia or south eastern asia or southeast asia or south east asia or asia, western or western asia or europe, eastern or east europe or eastern europe or developing country or developing countries or developing nation? or developing population? or developing world or less developed countr* or less developed nation? or less developed population? or less developed world or lesser developed countr* or lesser developed nation? or lesser developed population? or lesser developed world or under developed countr* or under developed nation? or under developed population? or under developed world or underdeveloped countr* or underdeveloped nation? or underdeveloped population? or underdeveloped world or middle income countr* or middle income nation? or middle income population? or low income countr* or low income nation? or low income population? or lower income countr* or lower income nation? or lower income population? or underserved countr* or underserved nation? or underserved population? or underserved world or under served countr* or under served nation? or under served population? or under served world or deprived countr* or deprived nation? or deprived population? or deprived world or poor countr* or poor nation? or poor population? or poor world or poorer countr* or poorer nation? or poorer population? or poorer world or developing econom* or less developed econom* or lesser developed econom* or under developed econom* or underdeveloped econom* or middle income econom* or low income econom* or lower income econom* or low gdp or low gnp or low gross domestic or low gross national or lower gdp or lower gnp or lower gross domestic or lower gross national or lmic or lmic or third world or lami countr* or transitional countr* or emerging economies or emerging nation?).ab,kf,sh,ti.	480260
9	7 OR 8	2136183
10	3 AND 6 AND 9	1013
11	10 AND 2009:2022.(sa_year).	715

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Web of Science Core Collection 2021-11-17

Search number	Search terms	References	Comments
1	TOPIC: (Infant* OR Newborn* OR Neonat* OR fetal OR foetal OR baby OR babies OR Neonatal ICU* OR Newborn ICU* OR NICU OR “Newborn Intensive Care Units” OR “Neonatal Intensive Care Units” OR "new born*" OR "newly born*")	1,050,712	
2	TOPIC: (Hypoxia-ischemia* OR Hypoxia Ischemia* OR Ischemia-Hypoxia* OR Hypoxic-ischemic OR Hypoxic-ischaemic OR Hypoxic Ischemic OR Ischemic-Hypoxic OR encephalopat* OR HIE)	93,585	

3	<p>TOPIC: (afghanistan OR albania OR algeria OR american samoa OR angola OR antigua OR barbuda OR argentina OR armenia OR armenian OR aruba OR azerbaijan OR bahrain OR bangladesh OR barbados OR belarus OR byelarus OR belorussia OR byelorussian OR belize OR british honduras OR benin OR dahomey OR bhutan OR bolivia OR bosnia OR herzegovina OR botswana OR bechuanaland OR brazil OR brasil OR bulgaria OR burkina faso OR burkina fasso OR upper volta OR burundi OR urundi OR cabo verde OR cape verde OR cambodia OR kampuchea OR khmer republic OR cameroon OR cameron OR cameroun OR central african republic OR ubangi shari OR chad OR chile OR china OR colombia OR comoros OR comoro islands OR mayotte OR congo OR zaire OR costa rica OR cote d'ivoire OR cote d'ivoire OR cote d'ivoire OR ivory coast OR croatia OR cuba OR cyprus OR czech republic OR czechoslovakia OR djibouti OR french somaliland OR dominica OR dominican republic OR ecuador OR egypt OR united arab republic OR el salvador OR equatorial guinea OR spanish guinea OR eritrea OR estonia OR eswatini OR swaziland OR ethiopia OR fiji OR gabon OR gabonese republic OR gambia OR georgia OR georgian OR ghana OR gold coast OR gibraltar OR greece OR grenada OR guam OR guatemala OR guinea OR guyana OR guiana OR haiti OR hispaniola OR honduras OR hungary OR india OR indonesia OR timor OR iran OR iraq OR isle of man OR jamaica OR jordan OR kazakhstan OR kazakh OR kenya OR korea OR kosovo OR kyrgyzstan OR kirghizia OR kirgizstan OR kyrgyz republic OR kirghiz OR laos OR lao pdr OR lao people's democratic republic OR latvia OR lebanon OR lesotho OR basutoland OR liberia OR libya OR libyan arab jamahiriya OR lithuania OR macau OR macao OR macedonia OR madagascar OR malagasy republic OR malawi OR nyasaland OR malaysia OR maldives OR indian ocean OR mali OR malta OR micronesia OR kiribati OR marshall islands OR nauru OR northern mariana islands OR palau OR tuvalu OR mauritania OR mauritius OR mexico OR moldova OR moldovian OR mongolia OR montenegro OR morocco OR ifni OR mozambique OR portuguese east africa OR myanmar OR burma OR namibia OR nepal OR netherlands antilles OR nicaragua OR niger OR nigeria OR oman OR muscat OR pakistan OR panama OR papua new guinea OR paraguay OR peru OR philippines OR philippines OR philippines OR philippines OR poland OR</p>	5,180,415	LMIC filter
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	<p>polish people's republic OR portugal OR portuguese republic OR puerto rico OR romania OR russia OR russian federation OR ussr OR soviet union OR union of soviet socialist republics OR rwanada OR ruanda OR samoa OR pacific islands OR polynesia OR samoan islands OR sao tome and principe OR saudi arabia OR senegal OR serbia OR seychelles OR sierra leone OR slovakia OR slovak republic OR slovenia OR melanesia OR solomon island OR solomon islands OR norfolk island OR somalia OR south africa OR south sudan OR sri lanka OR ceylon OR saint kitts and nevis OR st kitts and nevis OR saint lucia OR st lucia OR saint vincent OR st vincent OR grenadines OR sudan OR suriname OR surinam OR syria OR syrian arab republic OR tajikistan OR tadjikistan OR tadhikistan OR tadhik OR tanzania OR tanganyika OR thailand OR siam OR timor leste OR east timor OR togo OR togolese republic OR tonga OR trinidad OR tobago OR tunisia OR turkey OR turkmenistan OR turkmen OR uganda OR ukraine OR uruguay OR uzbekistan OR uzbek OR vanuatu OR new hebrides OR venezuela OR vietnam OR viet nam OR middle east OR west bank OR gaza OR palestine OR yemen OR yugoslavia OR zambia OR zimbabwe OR northern rhodesia OR global south OR africa south of the sahara OR sub saharan africa OR subsaharan africa OR central africa OR north africa OR northern africa OR magreb OR maghrib OR sahara OR southern africa OR east africa OR eastern africa OR west africa OR western africa OR west indies OR indian ocean islands OR caribbean OR central america OR latin america OR south america OR central asia OR north asia OR northern asia OR southeastern asia OR south eastern asia OR southeast asia OR south east asia OR western asia OR east europe OR eastern europe OR developing country OR developing countries OR developing nation OR developing nations OR developing population OR developing populations OR developing world OR less developed country OR less developed countries OR less developed nation OR less developed nations OR less developed world OR lesser developed countries OR lesser developed nations OR under developed country OR under developed countries OR under developed nations OR under developed world OR underdeveloped country OR underdeveloped countries OR underdeveloped nation OR underdeveloped nations OR underdeveloped population OR underdeveloped populations OR underdeveloped world OR middle income country OR middle income countries OR middle income</p>		
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4	#1 AND #2 AND #3	1,142	
5	#4 AND Timespan =2009-11-01 to 2021-12-31 (Publication date)	851	

<https://www.webofscience.com/wos/woscc/summary/cfdfa4bb-9dff-498d-b10f-c58c86cfa220-139ffd17/relevance/1>

WHO Global Index Medicus 2021-11-17: All indices

Search number	Search terms	References	Comments
1	Infant* OR Newborn* OR Neonat* OR fetal OR foetal OR baby OR babies OR Neonatal ICU* OR Newborn ICU* OR NICU OR “Newborn Intensive Care Units” OR “Neonatal Intensive Care Units” OR new born* OR newly born* [Title, Abstract, Subject]	639	DeCS/MeSH works only for material written in limited number of languages and was therefore not used
2	Hypoxia-ischemia* OR Hypoxia Ischemia* OR Ischemia-Hypoxia* OR Hypoxic-ischemic OR Hypoxic-ishaemic OR Hypoxic Ischemic OR Ischemic-Hypoxic OR encephalopat* OR HIE [Title, Abstract, Subject]	51110	
3	Infant* OR Newborn* OR Neonat* OR fetal OR foetal OR baby OR babies OR Neonatal ICU* OR Newborn ICU* OR NICU OR “Newborn Intensive Care Units” OR “Neonatal Intensive Care Units” OR new born* OR newly born* [Title, Abstract, Subject] AND Hypoxia-ischemia* OR Hypoxia Ischemia* OR Ischemia-Hypoxia* OR Hypoxic-ischemic OR Hypoxic-ishaemic OR Hypoxic Ischemic OR Ischemic-Hypoxic OR encephalopat* OR HIE [Title, Abstract, Subject]	16	
4	Year range: 2009 to 2022	10	

Supplementary Table 2: Reasons for study exclusion in full text screening phase

One record could have several reasons for exclusion, but only the first reason for exclusion in the order of screening is reported here (see [Supplementary Figure 2](#) for screening flow-chart).

Author, year	Reason(s) for exclusion
(Abdallah et al., 2016)	Timing of NE diagnosis unclear
(AbdelAziz et al., 2017)	No valid clinical NE diagnosis (diagnosis by imaging)
(Abdel-Aziz et al., 2021)	No useful outcome
(Abdulqawi K et al., 2011)	Not LMIC
(Abiodun and Oluwafemi, 2017)	Timing of NE diagnosis unclear
(Abo et al., 2017)	Timing of NE diagnosis unclear
(Abo Shady et al., 2018)	Conference abstract
(Adhikari and Rao, 2017)	Timing of NE diagnosis unclear
(Adhikari and Paudel, 2020)	Timing of NE diagnosis unclear
(Agarwal et al., 2016)	Hypoxia diagnosis does not match
(Ahmad et al., 2018)	Included children ≥ 34 weeks of gestation
(Aker et al., 2019)	Same data as another included report (Aker 2021)
(Al Yazidi et al., 2015)	Not LMIC
(Alaro et al., 2014)	Hypoxia diagnosis does not match (Apgar < 7 at 5 min), also no useful outcome
(Aliyu et al., 2017)	Full text not found
(Allanson et al., 2018)	Not NE
(Alp et al., 2011)	No useful outcome
(Antil et al., 2020)	Not NE
(Anwar et al., 2021)	No valid clinical NE diagnosis
(Apaydın et al., 2021)	Hypoxia diagnosis does not match, no useful outcome as mortality not reported
(Arshad et al., 2018)	No valid clinical NE diagnosis
(Ashraf et al., 2016)	No valid clinical NE diagnosis
(Aslam et al., 2017)	Timing of NE diagnosis unclear
(Atici et al., 2015)	Likely same data as another included report (Celik 2015)
(Avasiloaiei et al., 2013)	No valid clinical NE diagnosis
(Bağuiya et al., 2021)	Not NE
(Bahatkar and Aundhakar, 2021)	Timing of NE diagnosis unclear
(BAI Wen-Juan et al., 2021)	Hypoxia diagnosis does not match, not all were evaluated for NE within 24hrs
(Balestri et al., 2013)	Conference abstract
(Barrera-de Leon et al., 2013)	Timing of NE diagnosis within 48 hrs
(Barta et al., 2021)	Not LMIC
(Barycheva et al., 2021)	No valid clinical NE diagnosis
(Baştuğ et al., 2021)	No useful outcome

(Basys et al., 2016)	No valid clinical NE diagnosis
(Bayitondere et al., 2018)	No valid clinical NE diagnosis
(Bhagwani et al., 2016)	Hypoxia diagnosis does not match
(Bhorat et al., 2021)	Review article
(Bischoff et al., 2021)	Not LMIC
(Boo and Cheah, 2016)	No valid clinical NE diagnosis
(Boskabadi et al., 2010)	Hypoxia diagnosis does not match
(Boskabadi et al., 2016)	Unclear if all babies were term, also Hypoxia diagnosis does not match
(Boskabadi et al., 2021)	Hypoxia diagnosis does not match
(Bradford et al., 2020)	No valid clinical NE diagnosis
(Brissaud et al., 2010)	Not LMIC
(Bruckmann and Velaphi, 2015)	Timing of NE diagnosis unclear
(Bundi et al., 2020)	Timing of NE diagnosis unclear
(Can et al., 2011)	Timing of NE diagnosis unclear
(Calkavur et al., 2011)	Timing of NE diagnosis unclear
(Carlo et al., 2013)	Not NE
(Cavallin et al., 2020)	No valid clinical NE diagnosis
(Ceran et al., 2021)	No useful outcome
(Chafer-Pericas et al., 2016)	Not LMIC
(Chandra and Prasadarao, 2019)	Timing of NE diagnosis unclear
(Chapagain et al., 2017)	Timing of NE diagnosis unclear
(Chen et al., 2012)	No valid clinical NE diagnosis
(Chen et al., 2018)	Full text not found
(CHEN Taoying et al., 2014)	Full text not found
(Chiabi et al., 2013)	Hypoxia diagnosis does not match
(Chiabi et al., 2021)	Hypoxia diagnosis does not match
(Chin et al., 2019)	Not LMIC
(Chock et al., 2021)	Not LMIC
(Choudhary et al., 2015)	Timing of NE diagnosis unclear
(Dalal and Nayan, 2013)	No valid clinical NE diagnosis
(Dani et al., 2013)	Not LMIC
(Dani et al., 2018)	Not LMIC
(Isadora D'Ávila Tassinari and Luciano Stürmer de Fraga, 2021)	Review article
(De Knijf and Pattinson, 2010)	No valid clinical NE diagnosis
(Denihan et al., 2019)	Not LMIC
(Doi et al., 2012)	Not LMIC
(Dominguez-Dieppa et al., 2021)	Timing of NE diagnosis unclear
(Doreswamy and Ramakrishnegowda, 2021)	Hypoxia diagnosis does not match
(Egharevba et al., 2018)	Timing of NE diagnosis unclear
(Eghbalian, 2010)	No valid clinical NE diagnosis
(Ekwochi et al., 2017)	Timing of NE dg >24 hrs in 36%, Apgar 0-5 at 5 min in only 32%
(El Bana et al., 2016)	Timing of NE diagnosis unclear

(El Faragy and Soliman, 2019)	Timing of NE diagnosis unclear
(El Raggal et al., 2013)	No relevant outcome
(El-Gamasy and Nassar, 2017)	Timing of NE diagnosis unclear
(El-Gamasy and Alarabawy, 2018)	Timing of NE diagnosis unclear
(Elmahdy et al., 2010)	No usable outcome
(Elmoursi et al., 2021)	No usable outcome
(Elnady et al., 2018)	Unclear timing of NE diagnosis
(Ersdal et al., 2018)	Not NE
(Essajee et al., 2015)	Unclear timing of NE diagnosis
(Ezenwa et al., 2021)	Timing of NE diagnosis >24 hrs
(Fahmy et al., 2017)	No valid clinical NE diagnosis
(G. Mande et al., 2018)	Unclear timing of NE diagnosis
(Frey et al., 2018)	No valid clinical NE diagnosis
(Gane et al., 2014)	No valid clinical NE diagnosis
(Gane et al., 2016)	No relevant outcome
(Gane, Bahubali D. et al., 2013)	Not NE
(Gao et al., 2011)	Full text not found
(Garbutt and Trotman, 2009)	Timing of NE diagnosis unclear, also Hypoxia diagnosis does not match
(Garg et al., 2012)	Conference abstract
(Gathwala et al., 2010)	No valid clinical NE diagnosis
(Gebregziabher et al., 2020)	Timing of NE diagnosis unclear
(Ghobrial et al., 2018)	No valid clinical NE diagnosis
(Girish et al., 2018)	Timing of NE diagnosis unclear
(Glass et al., 2011a)	Not LMIC
(Glass et al., 2011b)	Not LMIC
(Goel et al., 2013)	Unclear Hypoxia criteria
(Graham et al., 2016)	No valid NE diagnosis
(Guan et al., 2017)	Timing of NE diagnosis unclear
(Gulczynska et al., 2012)	Conference abstract
(Gulczynska et al., 2014)	Conference abstract
(Gupta and Rana, 2018)	No valid NE diagnosis
(Gupta et al., 2014)	Timing of NE diagnosis unclear
(Hagag et al., 2019)	No relevant outcome
(Hamed et al., 2021)	Timing of NE diagnosis unclear
(He and Xie, 2020)	No valid clinical NE diagnosis
(Hassell et al., 2018)	No useful outcome
(Hekimoğlu and Aktürk Acar, 2021)	No valid clinical NE diagnosis
(Horn et al., 2013a)	Almost same data as in another included report (Horn 2013, Journal of Perinatal Medicine)
(Horn et al., 2009)	Almost same data as in another included report (Horn 2013, Journal of Perinatal Medicine)

(Horn et al., 2013b)	Same data as in another included report (Horn 2013, Journal of Perinatal Medicine)
(Hou et al., 2017)	No valid NE diagnosis
(Huseynova et al., 2017)	Whole cohort low birth weight
(Imam et al., 2009)	Timing of NE diagnosis unclear
(Iqbal et al., 2021)	Hypoxia diagnosis does not match
(Issa et al., 2021)	Hypoxia diagnosis does not match
(Iwamoto et al., 2013)	Not LMIC
(Jiang and He, 2016)	Full text not found
(Jose et al., 2013)	Timing of NE diagnosis unclear
(Jose and K., 2017)	No valid clinical NE diagnosis
(Joseph et al., 2018)	Timing of NE diagnosis unclear
(Joy et al., 2013)	Mostly same data as another included article (Bharadjwaj 2012)
(Kali et al., 2015)	Hypoxia diagnosis does not match
(Kali et al., 2016)	Hypoxia diagnosis does not match
(Kamath et al., 2021)	Conference abstract
(Kanik et al., 2009)	Timing of NE diagnosis within 3 days
(Kedy Koum et al., 2014)	Timing of NE diagnosis unclear
(Khasawneh et al., 2020)	Timing of NE diagnosis unclear
(Khashaba et al., 2011)	Timing of NE diagnosis unclear
(Khodaparast et al., 2016)	No valid clinical NE diagnosis
(Kovacs et al., 2017)	Not LMIC
(Kozuki et al., 2017)	Timing of NE diagnosis within 7 days
(Kudreviciene et al., 2014)	Hypoxia diagnosis does not match
(Kulkarni et al., 2021)	Same data as another included report (Siddu Charki 2020)
(Kumar and Yadav, 2019)	Editorial
(Lakhkar et al., 2020)	Study protocol
(Leak et al., 2021)	No valid clinical NE diagnosis
(Lee et al., 2013)	Hypoxia criteria and timing of NE diagnosis do not match
(Li et al., 2019)	Timing of NE diagnosis unclear
(Li et al., 2011)	Full text not found
(LI et al., 2011)	Full text not found
(Li et al., 2009)	Hypoxia diagnosis does not match
(Liang et al., 2019)	Timing of NE diagnosis unclear
(LIN Ze-Peng et al., 2014)	Full text not found
(Liu et al., 2010)	No relevant outcome
(Liu et al., 2014)	No valid clinical NE diagnosis
(Liu et al., 2015)	No valid clinical NE diagnosis
(Liu et al., 2016)	No valid clinical NE diagnosis
(Liu et al., 2019a)	No valid clinical NE diagnosis
(Liu et al., 2019b)	Full text not found

(Liu et al., 2020)	No valid clinical NE diagnosis
(Liu et al., 2021)	Hypoxia diagnosis does not match
(Locatelli et al., 2020)	Not LMIC
(Lopes-Pereira et al., 2019)	Not LMIC
(Lu Yunhong et al., 2019)	Full text not found
(LU et al., 2022)	Hypoxia diagnosis does not match
(Lv et al., 2017)	NE diagnosis not complete match, excluded cases with incomplete follow-up = no useful outcome
(Magai et al., 2020)	No valid clinical NE diagnosis
(Magai et al., 2021)	No valid clinical NE diagnosis
(Magai et al., 2019)	No valid clinical NE diagnosis
(Magalhaes et al., 2015)	Same data as in another included report (Kinoshita 2021)
(Malik et al., 2016)	No valid clinical NE diagnosis
(Manandhar and Basnet, 2019)	Timing of NE diagnosis unclear
(Manotas et al., 2018)	No valid clinical NE diagnosis
(Martinez et al., 2014)	No valid clinical NE diagnosis
(Matyanga et al., 2013)	Timing of NE diagnosis unclear
(Mah et al., 2017)	Timing of NE diagnosis unclear
(McIntyre et al., 2013)	Not LMIC
(Medani et al., 2014)	No valid clinical NE diagnosis
(Memon et al., 2012)	Hypoxia diagnosis does not match
(Mia et al., 2013)	Full text not found
(Milner et al., 2017)	No valid clinical NE diagnosis
(Mohamed and Kamel, 2021)	Timing of NE diagnosis unspecified
(Mohan et al., 2013)	No valid clinical NE diagnosis
(Mondal et al., 2010)	No valid clinical NE diagnosis
(Montaldo et al., 2020)	Same data as another included article (Thayyil 2021)
(Moniruzzaman et al., 2019)	Full text not found
(Moshiro et al., 2018)	Timing of NE diagnosis unclear
(Mullalli-Bime et al., 2016)	Conference abstract
(Mullany et al., 2013)	Same data as Lee 2011
(Mwakyusa et al., 2009)	Timing of NE diagnosis unclear
(Mwaniki et al., 2010)	No valid NE diagnosis
(Namusoke et al., 2018)	Timing of NE diagnosis < 48 hrs
(Nangia et al., 2016)	Timing of NE diagnosis not specified
(Nath and Hazarika, 2016)	No valid NE diagnosis
(Nayeri et al., 2012)	Timing of NE diagnosis unclear
(Nevalainen et al., 2020)	Not LMIC
(Ngabireyimana et al., 2017)	No valid NE diagnosis
(Ogunfowora et al., 2019)	Timing of NE diagnosis unclear, no Hypoxia criteria
(Ogunkunle et al., 2020)	Timing NE diagnosis unclear

(Okumuş et al., 2014)	No useful outcome
(Padayachee and Ballot, 2013)	Gestational age defined by birth weight
(Pang et al., 2021)	Hypoxia diagnosis does not match
(Parakh et al., 2019)	Hypoxia diagnosis does not match
(Patel et al., 2017)	Not NE
(Pattar et al., 2015)	Timing of NE diagnosis unclear
(PEI Xue-Mei et al., 2014)	Hypoxia diagnosis does not match
(Pejovic et al., 2020)	Timing of NE diagnosis unclear
(Peng et al., 2015)	Not LMIC
(Perez et al., 2017b)	Hypoxia diagnosis does not match
(Perez, 2015)	Editorial
(Perez et al., 2015)	Same data as included article (Perez 2018)
(Perez et al., 2017a)	No useful outcome
(Sola et al., 2013)	No useful outcome
(Perretta et al., 2020)	Not LMIC
(Prakash et al., 2016)	Hypoxia criteria do not match
(Preeti et al., 2019)	Hypoxia criteria do not match
(Prithviraj et al., 2016)	Timing of NE diagnosis 48-72 hrs
(Procianoy et al., 2019)	Same data as in another included study (Procianoy 2019)
(Pu et al., 2021)	Timing of NE diagnosis unclear
(Punchak et al., 2018)	Not NE
(Purkayastha et al., 2016)	No valid NE diagnosis
(Qureshi et al., 2010)	Timing of NE diagnosis unclear
(Savitha and Rajprakash, 2016)	No gestational age limit
(Raina et al., 2016)	Timing of NE diagnosis unclear
(Rajhans et al., 2012)	Conference abstract
(Rakesh et al., 2018)	Same data as in another included study (Catherine 2020). Also potential overlap with Olivera 2018 and Thomas 2018
(Ramaganeshan et al., 2016)	No valid NE diagnosis
(Rathee and Prasad, 2014)	No valid NE diagnosis
(Rivera, 2015)	Not NE
(Robertson et al., 2011)	Trial protocol
(Robinson et al., 2021)	Not LMIC
(Rohit et al., 2015)	No valid NE diagnosis
(Roka et al., 2013)	No useful outcome
(Rule et al., 2017)	Timing of NE diagnosis within 48 hrs
(Sadeghnia and Mohammadpoor, 2019)	Not NE
(Salustiano et al., 2012)	No valid NE diagnosis
(Sebetseba et al., 2020)	No useful outcome
(See et al., 2012)	No useful outcome (included only babies who had CT/MRI done and a follow-up visit)

(Seepana and Raju, 2019)	No valid NE diagnosis
(Seo et al., 2020)	Not LMIC
(Shalaby et al., 2021)	Timing of NE diagnosis unclear
(Shan, 2016)	Full text not found
(Shapiro et al., 2017)	Not LMIC
(Sharma et al., 2016)	Not NE
(Shrestha et al., 2016)	Timing of NE diagnosis unclear
(Shrestha et al., 2017)	No useful outcome (mixes NE and other diagnoses)
(Siddiqui and Butt, 2021)	Hypoxia diagnosis does not match
(Simiyu et al., 2017)	No gestational age limit
(Simovic et al., 2014)	Hypoxia diagnosis does not match
(Simovic et al., 2015)	Hypoxia diagnosis does not match
(Singh et al., 2021)	Hypoxia diagnosis does not match
(Song et al., 2016)	Not NE
(Sowjanya et al., 2016)	No gestational age limit
(Stofberg et al., 2020)	Hypoxia diagnosis does not match
(Sulthana et al., 2015)	No valid NE diagnosis
(Summanen et al., 2017)	Not LMIC
(Sun et al., 2014)	Full text not found
(Sunny et al., 2020)	No valid NE diagnosis
(Sunny et al., 2021a)	No valid NE diagnosis
(Sunny et al., 2021b)	Not NE
(Surkov, 2016)	Hypoxia diagnosis does not match
(Surkov, 2018)	Timing of NE diagnosis within 72 hrs
(Sweetman et al., 2012)	Conference abstract
(Szakmar et al., 2020)	Not LMIC
(Tagin et al., 2015)	Editorial
(Tajalli et al., 2021)	No valid NE diagnosis
(Talebian et al., 2015)	No valid NE diagnosis
(Tanigasalam et al., 2018)	Likely same data as in another included study (Catherine 2020).
(Tanigasalam et al., 2016)	Same data as another included study (Tanigasalam 2016)
(Tann et al., 2014)	Hypoxia diagnosis does not match
(Tann et al., 2015)	Conference abstract
(Tann et al., 2016)	Hypoxia diagnosis does not match
(Tann et al., 2018a)	Hypoxia diagnosis does not match
(Tann et al., 2018b)	Hypoxia diagnosis does not match
(Tann, 2010)	Conference abstract
(Tette et al., 2016)	Not NE
(Thayyil, 2018)	Editorial
(Thayyil et al., 2013)	Hypoxia diagnosis does not match
(Thomas et al., 2011)	Likely same data as in another included study (Shabeer 2017)

(Thomas et al., 2015)	Likely same data as in another included study (Shabeer 2017)
(Thoresen et al., 2021)	Not LMIC
(Tian et al., 2021)	No valid NE diagnosis
(Torres-Munoz et al., 2017)	Hypoxia diagnosis does not match
(Torres-Munoz et al., 2021)	Unclear timing of NE diagnosis
(Tran et al., 2021)	No valid NE diagnosis (states that used TOBY criteria but no EEG was used), also lacks useful outcome
(Trotman and Garbutt, 2011)	Timing of NE diagnosis unclear
(Trotman and Olugbuyi, 2018)	Review
(Tskimanauri et al., 2017)	Full text not found
(Tunc et al., 2010)	Not NE
(Uleanya et al., 2019)	Not NE
(Van Anh et al., 2019)	No valid NE diagnosis
(van Deursen et al., 2019)	No valid NE diagnosis
(Viyas et al., 2019)	No useful outcome
(Wallander et al., 2014)	Not NE
(Walsh et al., 2012)	Not LMIC
(Wang et al., 2011)	No useful outcome (follow-up to 6 months only)
(Wang et al., 2018)	Gestational age and Hypoxia diagnosis unclear
(Wang et al., 2020)	According to inclusion criteria excluded post-term babies but according to Table 2 most cases were post-term
(Wang et al., 2021)	No useful outcome
(Wang Gang, 2017)	Full text not found
(Wei et al., 2012)	Timing of NE diagnosis unclear
(West and Opara, 2013)	No valid clinical NE diagnosis
(Wu et al., 2016)	No valid clinical NE diagnosis
(WU Yi-jun et al., 2015)	Full text not found
(Xin et al., 2019)	Not NE
(Xu et al., 2022)	No useful outcome
(Yadav et al., 2016)	Timing of NE diagnosis unclear
(Yang Yong, 2017)	Full text not found
(Yang, 2011)	Full text not found
(Yelamali et al., 2020)	Timing of NE diagnosis unclear
(Yin et al., 2014)	No valid clinical NE diagnosis
(Yuan et al., 2020)	Timing of NE diagnosis unclear
(Youn et al., 2016)	Not LMIC
(Yousef et al., 2021)	Timing of NE diagnosis unclear
(Zhang et al., 2020a)	Timing of NE diagnosis unclear
(Zhang et al., 2020b)	Not NE
(Zhang Yisen and Li Zhanhua, 2017)	Full text not found

(Zhang, 2011)	Full text not found
(Zhang et al., 2016)	Full text not found
(Zhang et al., 2021)	Not original human study
(Zeng et al., 2021)	No valid clinical NE diagnosis
(Zhu et al., 2015)	No useful outcome
(Zhu et al., 2016)	No useful outcome
(Zou et al., 2010)	Full text not found

NE = neonatal encephalopathy, LMIC = low- and middle-income country

Total = 320

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Supplementary Table 3: Results of the Bias Evaluation and Modified Newcastle Ottawa Scale

See separate file “Supplementary Table 3.pdf”

Supplementary Table 4: Additional information about included reports

See separate file “Supplementary Table 4.pdf”

Supplementary Table 5: Neonatal Mortality Associated with Intrapartum-Related NE

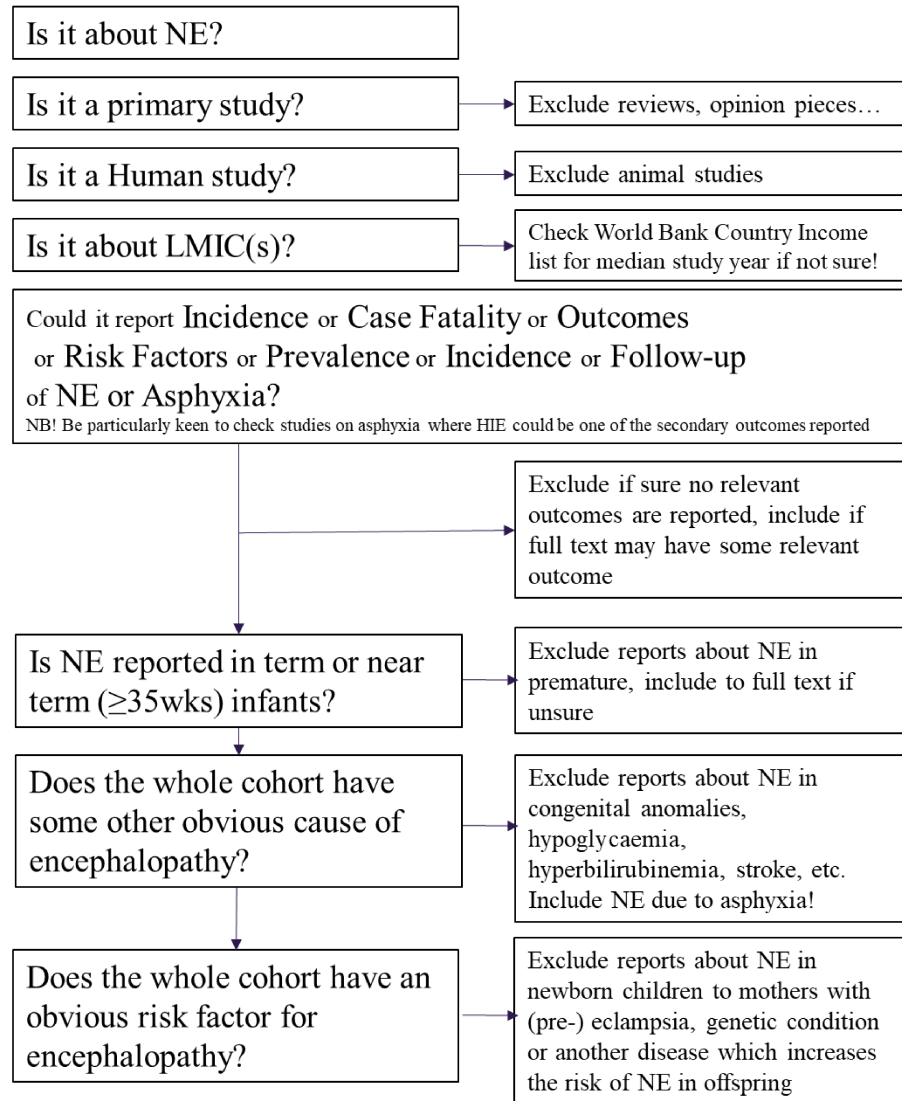
See separate file “Supplementary Table 5.pdf”

Supplementary Table 6: Neurodevelopmental Outcomes Associated with Intrapartum-Related NE

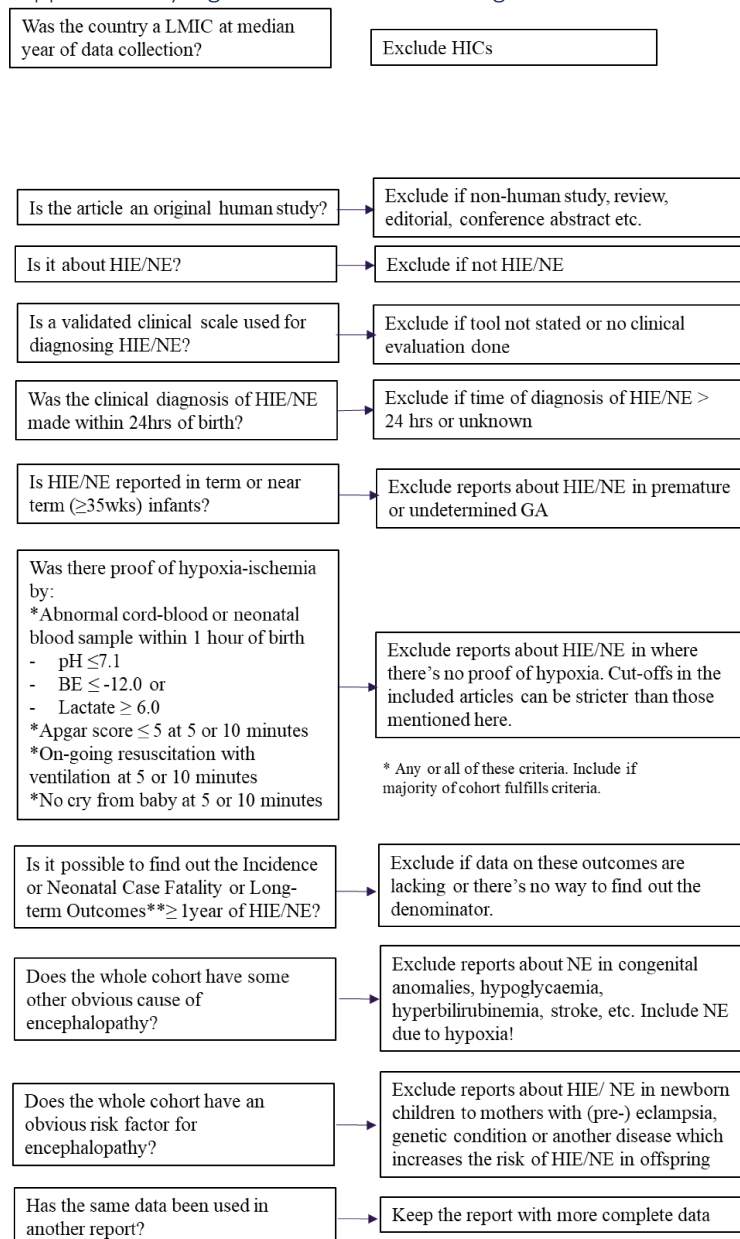
See separate file “Supplementary Table 6.pdf”

Supplementary Figures

Supplementary Figure 1: Abstract screening chart

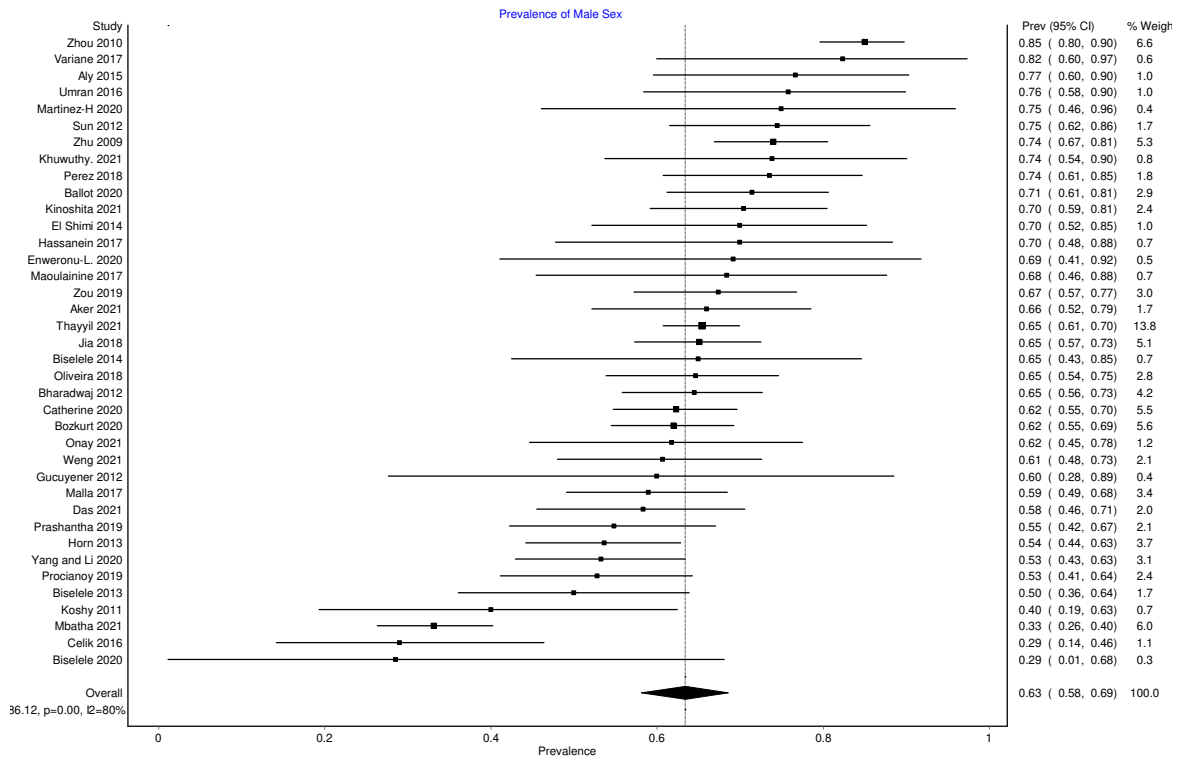


Supplementary Figure 2: Full text screening chart

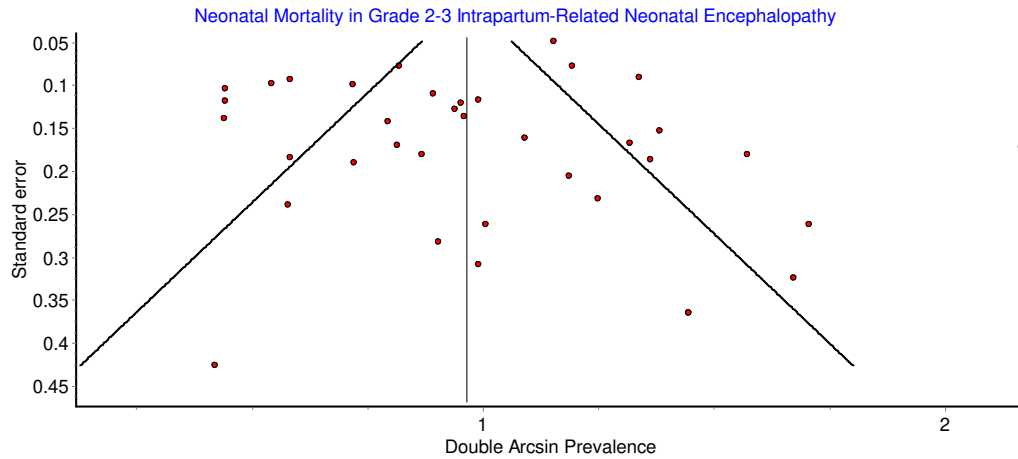


**Types of adverse neurodevelopmental outcomes considered are cerebral palsy; developmental delay assessed with any validated developmental assessment tool; intellectual impairment (intelligence quotient (IQ) 2 SD below mean); blindness (vision 6/60 in both eyes); sensorineural deafness requiring amplification; epilepsy

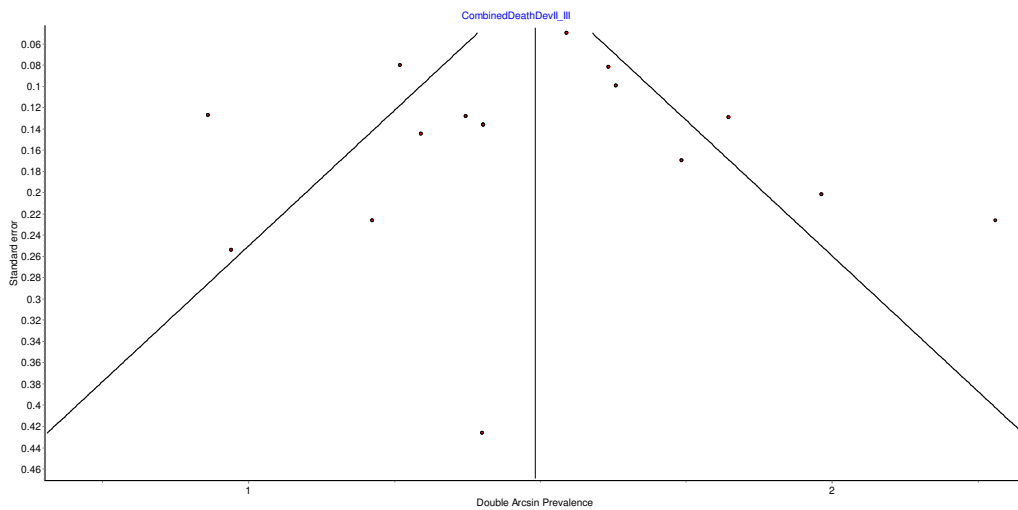
Supplementary Figure 3: Meta-analysis of the prevalence of male sex in the included studies



Supplementary Figure 4: Funnel plot of studies reporting neonatal mortality associated with grade II-III intrapartum-related neonatal encephalopathy

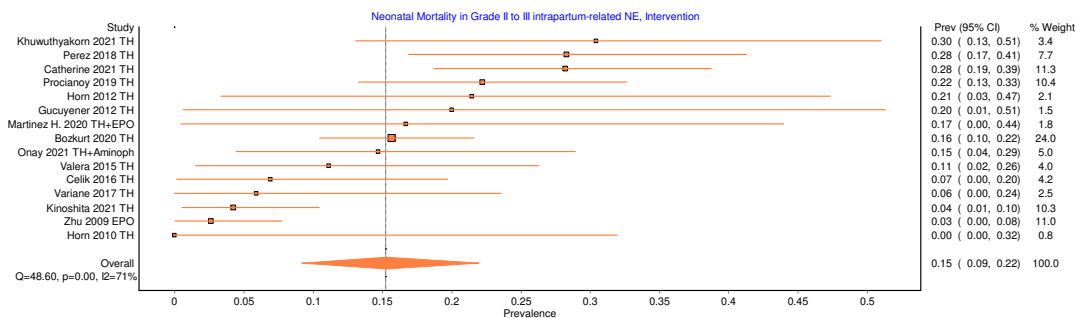


Supplementary Figure 5: Funnel plot of studies reporting combined death or moderate to severe neurodevelopmental outcome in grade II-III intrapartum-related neonatal encephalopathy

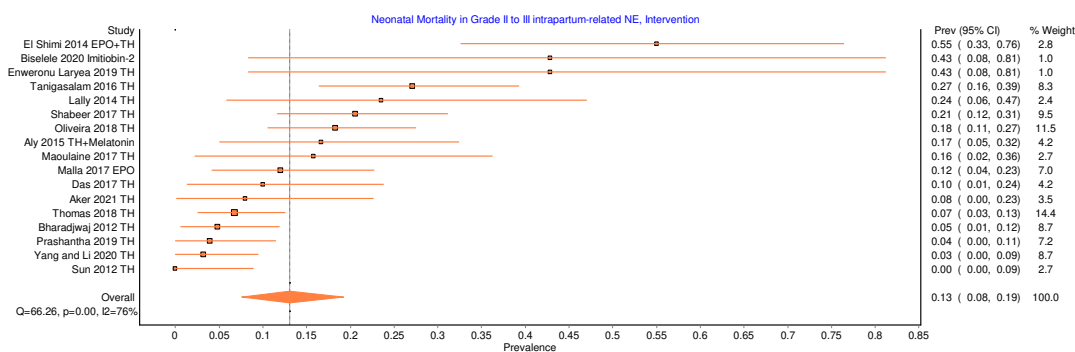


Supplementary Figure 6: Sub-group analyses of neonatal mortality by national neonatal mortality rate and country income group

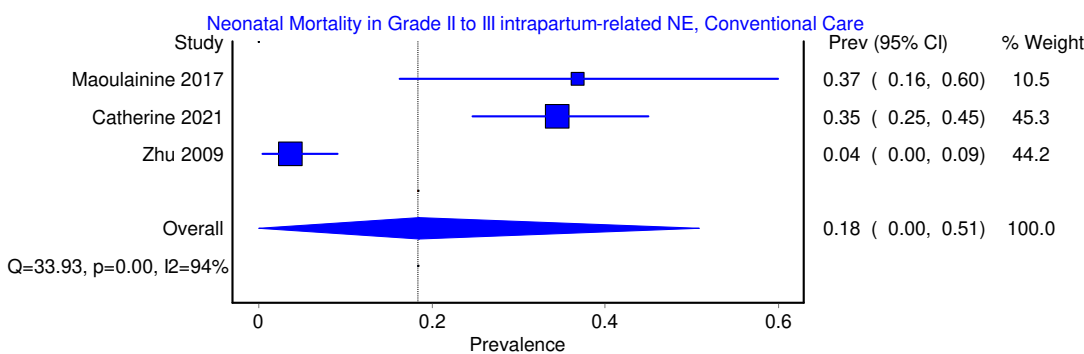
Sub-group analysis: National neonatal mortality rate medium (5-15/1000), Intervention group



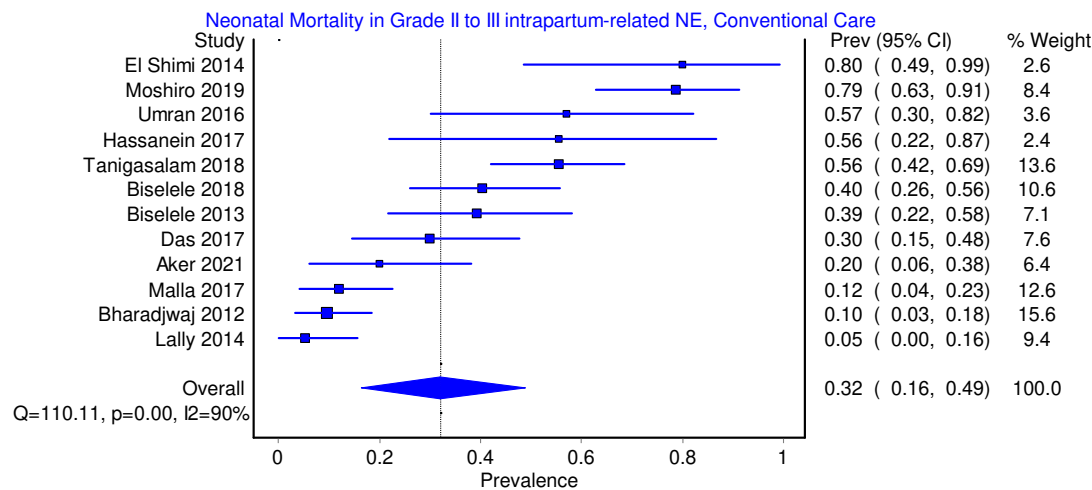
Sub-group analysis: National neonatal mortality rate high (>15/1000), Intervention group



Sub-group analysis: National neonatal mortality rate medium (5-15/1000), Conventional care group



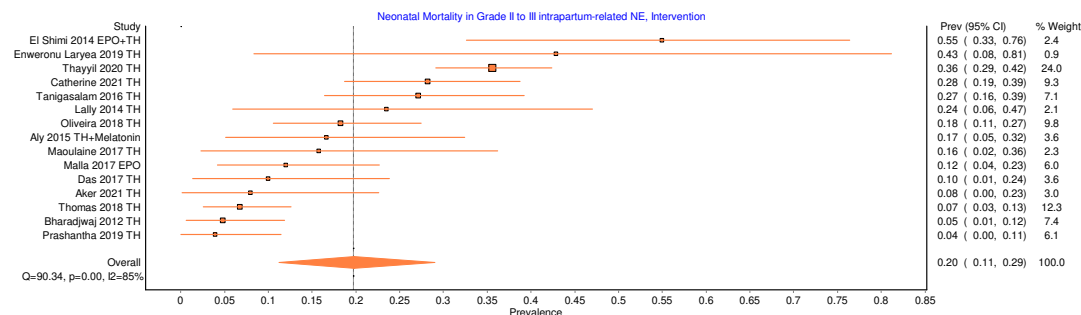
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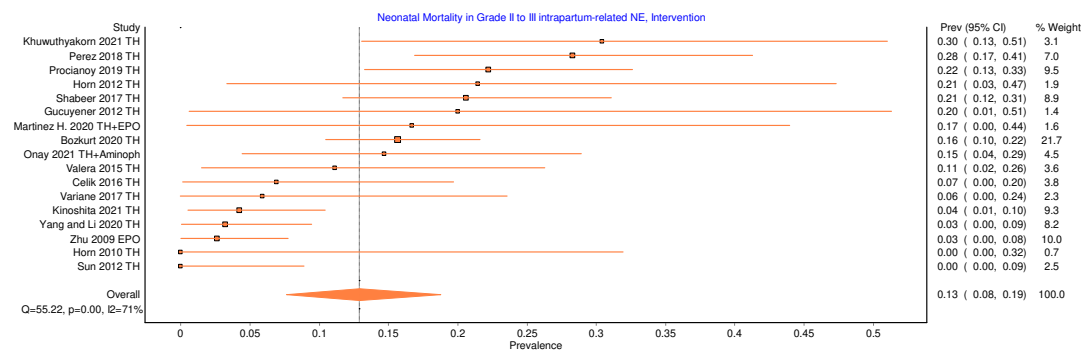
Sub-group analysis: World Bank Income Group Low, Intervention group

N/A, only 1 study available

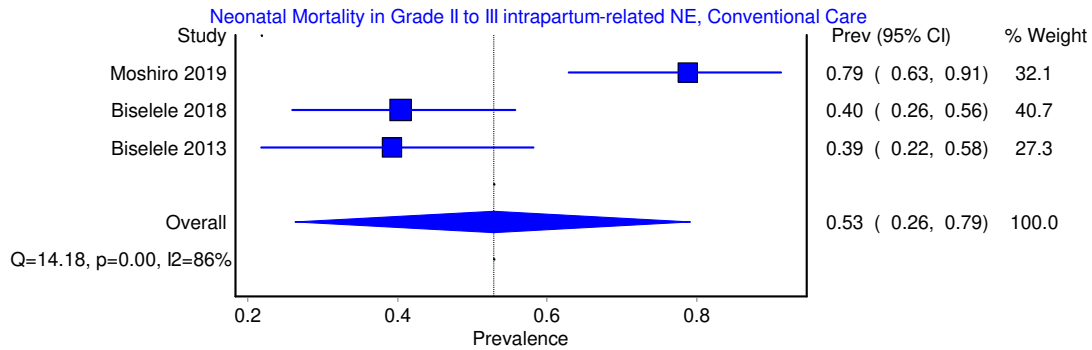
Sub-group analysis: World Bank Income Group Lower Middle, Intervention group



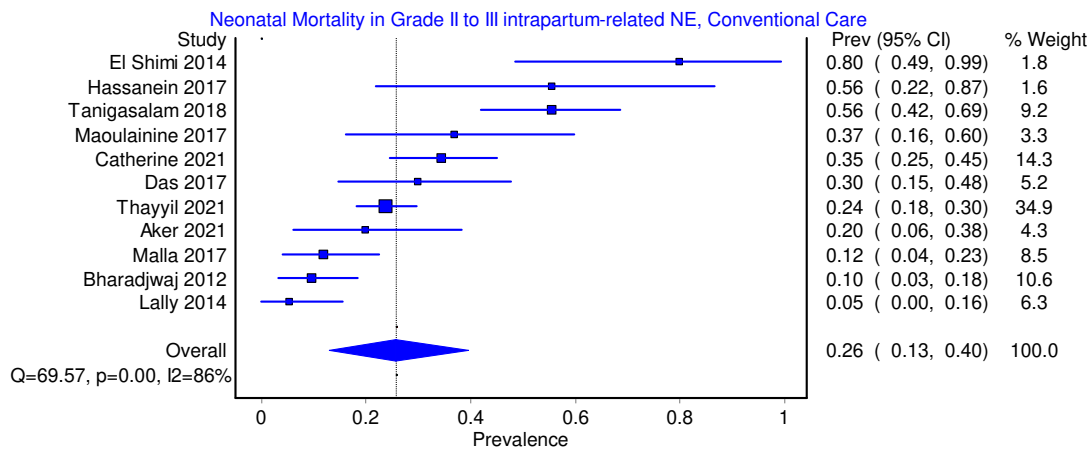
Sub-group analysis: World Bank Income Group Upper Middle, Intervention group



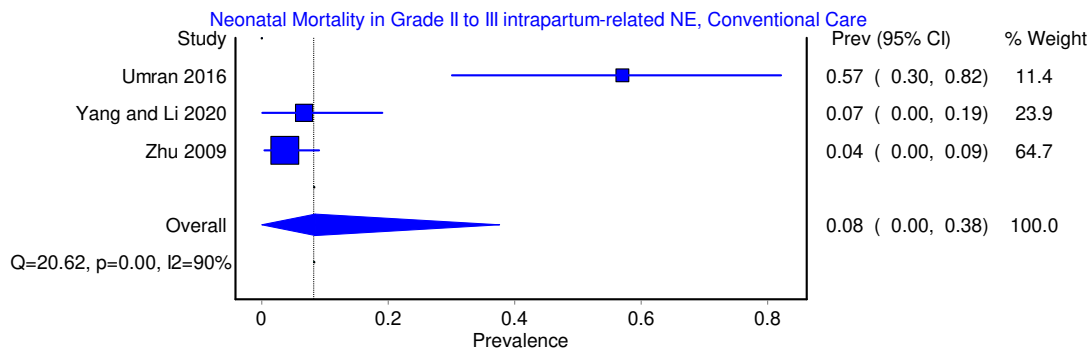
Sub-group analysis: World Bank Income Group Low, Conventional care group



Sub-group analysis: World Bank Income Group Lower Middle, Conventional care group

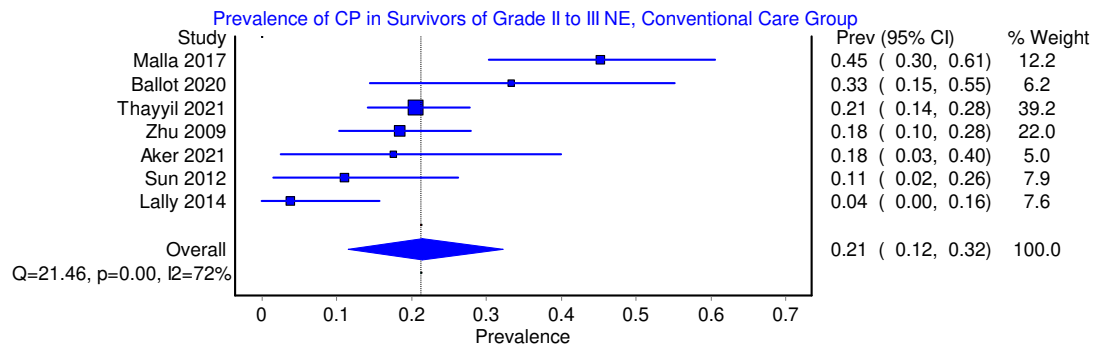


Sub-group analysis: World Bank Income Group Upper Middle, Conventional care group



Supplementary Figure 7: Incidence of Cerebral Palsy in survivors of Grade II-III intrapartum-related neonatal encephalopathy after follow-up ≥ 1 year. A) Conventional care group B) Intervention group

a)



b)

