

Additional data

eFig 1. Search strategies

eFig 2. Risk of Bias and quality assessment

eFig 3. GRADE assessment

eFig 4. Forest plots

eFig 1

Database: **Ovid MEDLINE(R)** and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions(R) <1946 to January 19, 2022>

Search Strategy:

-
- 1 (t piece or t-piece or neopuff or neo tee or babypuff or neotee or tom thumb).ti,ab,kf. (675)
 - 2 (((self or flow) adj3 bag*) or mask*).ti,ab,kf. (90664)
 - 3 manual ventilation.ti,ab,kf. (442)
 - 4 (positive adj3 (pressure or ventilation)).ti,ab,kf. (30797)
 - 5 exp Infant/ or (infan* or Neonat* or Newborn* or Prematur* or Preterm or (low adj3 weight*)).ti,ab,kf. (1677278)
 - 6 Delivery Rooms/ or (delivery room* or birth or resuscitation).ti,ab,kf. (387460)
 - 7 exp Positive-Pressure Respiration/ae, is, mt, mo [Adverse Effects, Instrumentation, Methods, Mortality] (10680)
 - 8 Ventilators, Mechanical/ (9422)
 - 9 1 or 2 or 3 or 4 or 7 or 8 (131755)
 - 10 5 and 6 and 9 (3006)

Scopus (1,384 document results)

(TITLE-ABS-KEY (manual AND ventilation) OR TITLE-ABS-KEY (t AND piece OR neopuff OR neo AND tee OR babypuff OR neotee OR tom AND thumb) OR TITLE-ABS-KEY ((self OR flow) W/3 bag*) OR TITLE-ABS-KEY (positive W/3 (pressure OR ventilation)) AND TITLE-ABS-KEY (infan* OR neonat* OR newborn* OR prematur* OR preterm OR (low W/3 weight*)) AND TITLE-ABS-KEY (delivery AND room* OR birth OR resuscitation))

Embase

No. Query Results	Results
#9. #1 AND #7 AND #8	3,394
#8. #2 OR #3 OR #4 OR #5 OR #6	203,473
#7. 'delivery room' OR birth	516,157
#6. 'positive pressure ventilation'	12,839
#5. 'manual emergency ventilator'	754
#4. (self OR flow) AND inflating AND bag	324
#3. 'ventilator'	68,006
#2. t AND piece OR 't piece' OR neopuff OR (neo AND tee) OR babypuff OR neotee OR (tom AND thumb)	7,356
#1. 'infant'/exp OR 'infant' OR 'newborn'/exp OR 'newborn' OR 'prematurity'/exp OR 'prematurity'	1,447,060

eFig 2.

	Menakaya 2004 [24]	Dawson 2011 [25]	Kookna 2019 [26]	Szyld 2014 [27]	Thakur 2015 [28]	Te Pas 2007 [30]	El-Chimi 2016 [29]
Randomisation process	+	+	+	-	-	+	-
Deviations from the intended intervention	?	?	?	?	?	?	?
Missing outcome data	+	+	+	+	+	+	+
Measurement of the outcome	+	+	-	+	+	+	+
Selection of the reported result	+	+	+	+	+	+	+
OVERALL	!	!	-	-	-	!	-

		Ng 2015 [31]	Guinsburg 2018 [32]
A	Representativeness of the exposed cohort	+	+
	Selection of the non-exposed cohort	+	+
	Ascertainment of exposure	+	+
	Demonstration that outcome of interest was not present at start of study	+	+
B	Comparability of cohorts on the gestational age	NC	-
	Comparability of cohorts for any additional factor	+	-
C	Assessment of outcome	+	+
	Was follow-up long enough for outcomes to occur (mortality, HIE, BPD)	+	+
	Adequacy of follow up of cohorts	+	+
TOTAL		!	!

eFig 3. - **Question:** Fixed Pressure Devices compared to Hand Driven Pressure Devices for neonatal resuscitation at birth

Certainty assessment							№ of patients		Effect		Certainty	Importance
№ of studies	Study design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Fixed Pressure Devices	Hand Driven Pressure Devices	Relative (95% CI)	Absolute (95% CI)		
Mortality in all studies												
9	observational studies and RCTs	serious	not serious	not serious	not serious	none	490/2270 (21.6%)	282/1332 (21.2%)	OR 0.57 (0.47 to 0.69)	79 fewer per 1 000 (from 100 fewer to 55 fewer)	⊕○○○ Very low	CRITICAL
BPD in RCTs or quasi-RCTs												
5	randomised trials	serious	not serious	not serious	serious (a)	none	43/627 (6.9%)	64/641 (10.0%)	RR 0.68 (0.48 to 0.96)	32 fewer per 1 000 (from 52 fewer to 4 fewer)	⊕⊕○○ Low	IMPORTANT
Intubation in delivery room in RCTs or quasi-RCTs												
4	randomised trials	serious	not serious	not serious	not serious	none	119/625 (19.0%)	171/641 (26.7%)	RR 0.72 (0.58 to 0.88)	75 fewer per 1 000 (from 112 fewer to 32 fewer)	⊕⊕⊕○ Moderate	IMPORTANT
Mechanical ventilation reported in RCTs or quasi-RCTs												
3	randomised trials	serious	not serious	not serious	not serious	none	149/592 (25.2%)	188/605 (31.1%)	RR 0.81 (0.67 to 0.96)	59 fewer per 1 000 (from 103 fewer to 12 fewer)	⊕⊕⊕○ Moderate	IMPORTANT
Airleaks in RCTs or quasi-RCTs												
5	randomised trials	serious	not serious	not serious	not serious	none	15/628 (2.4%)	16/643 (2.5%)	RR 0.98 (0.50 to 1.95)	0 fewer per 1 000 (from 12 fewer to 24 more)	⊕⊕⊕○ Moderate	IMPORTANT
Need for surfactant in RCTs or quasi-RCTs												
3	randomised trials	serious	not serious	not serious	serious (a)	none	70/137 (51.1%)	103/158 (65.2%)	RR 0.78 (0.64 to 0.96)	143 fewer per 1 000 (from 235 fewer to 26 fewer)	⊕⊕○○ Low	NOT IMPORTANT(b)
cPVL in all studies												
3	observational studies	serious	not serious	not serious	not serious	none	97/1353 (7.2%)	51/526 (9.7%)	OR 0.59 (0.41 to 0.85)	37 fewer per 1 000 (from 55 fewer to 13 fewer)	⊕○○○ Very low	CRITICAL

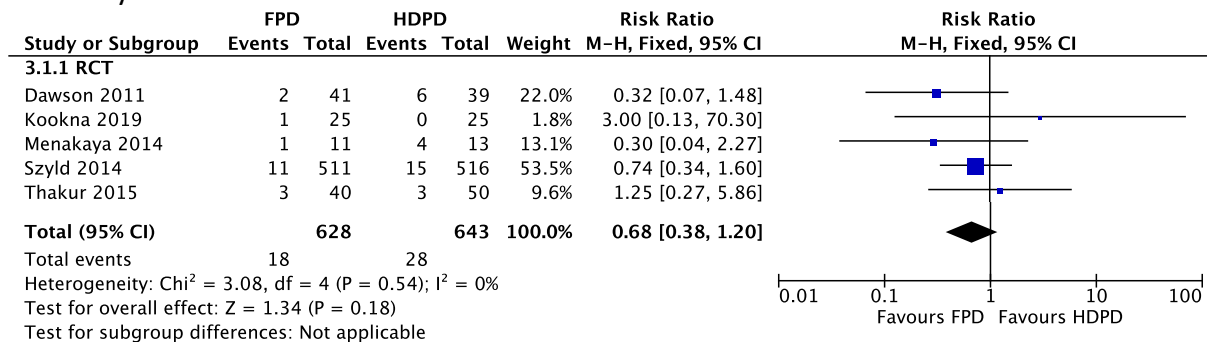
- (a) Number of patients below the optimal information size.
 (b) Important in low resources settings

CI: confidence interval; OR: odds ratio; RR: risk ratio; RCT: randomized controlled trials, BPD bronchopulmonary dysplasia; cPVL: cystic periventricular leukomalacia.

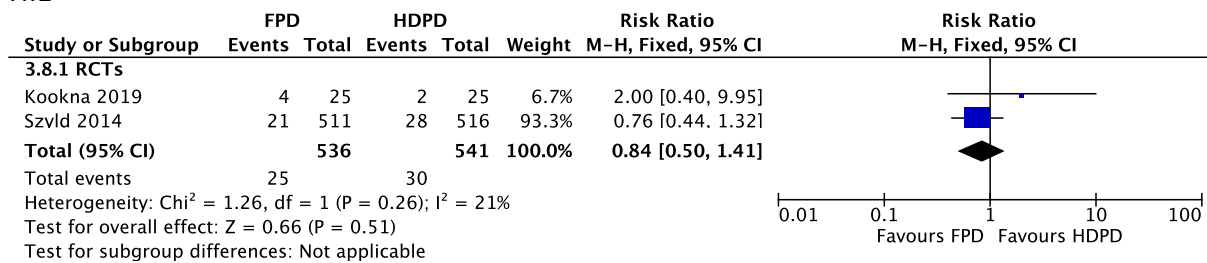
eFig 4 : forest plots

RCTs and qRCTs analysis

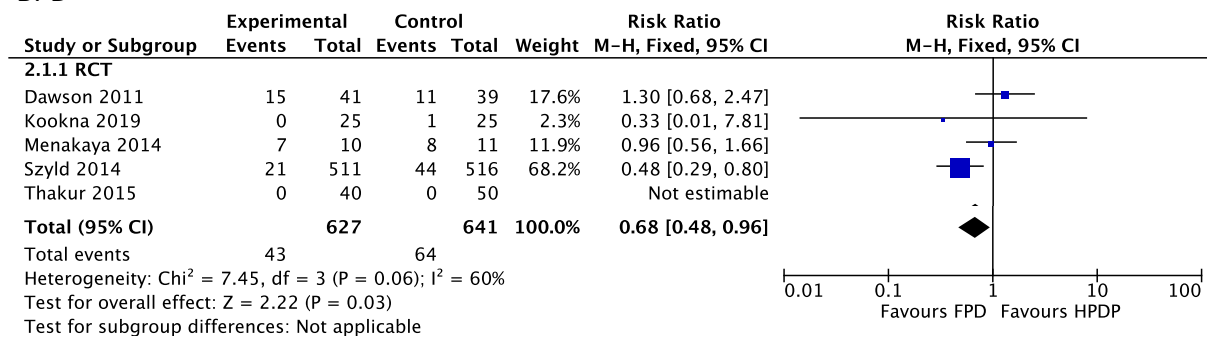
Mortality²⁴⁻²⁸



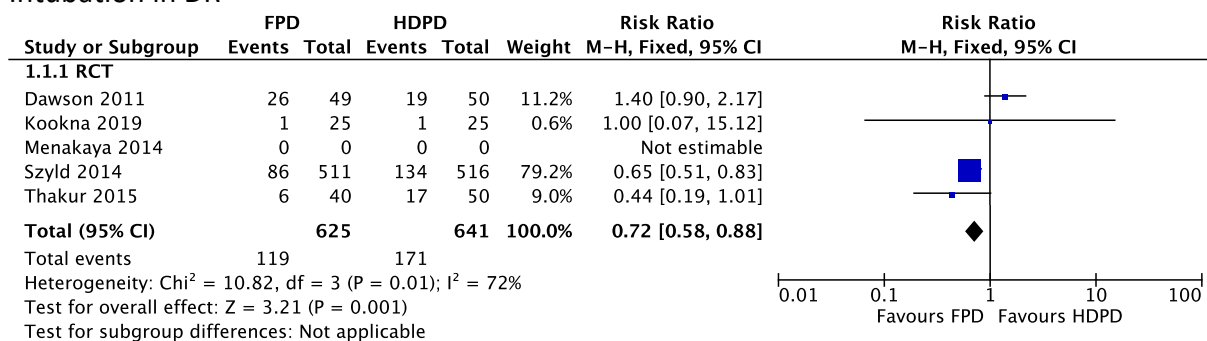
HIE^{26,27}



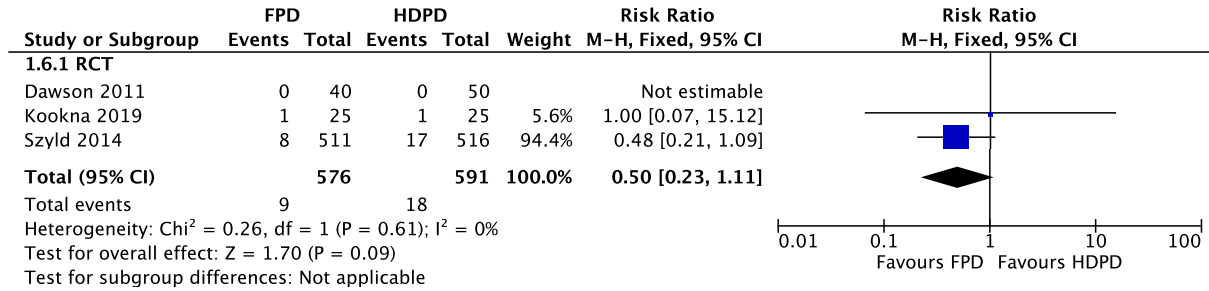
BPD²⁴⁻²⁸



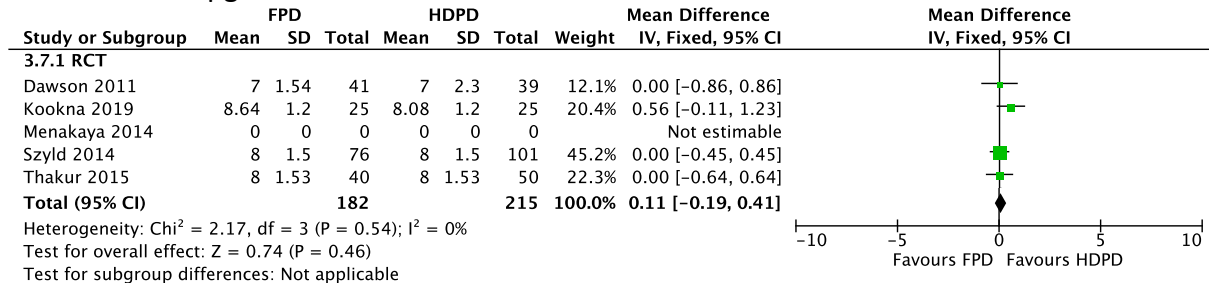
Intubation in DR²⁵⁻²⁸



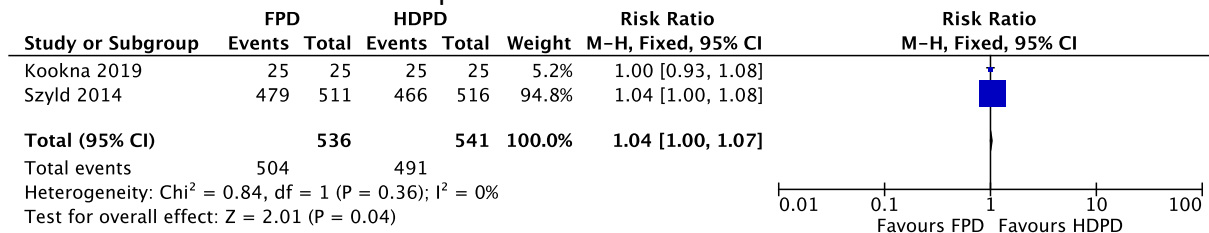
Need for advanced resuscitation²⁵⁻²⁷



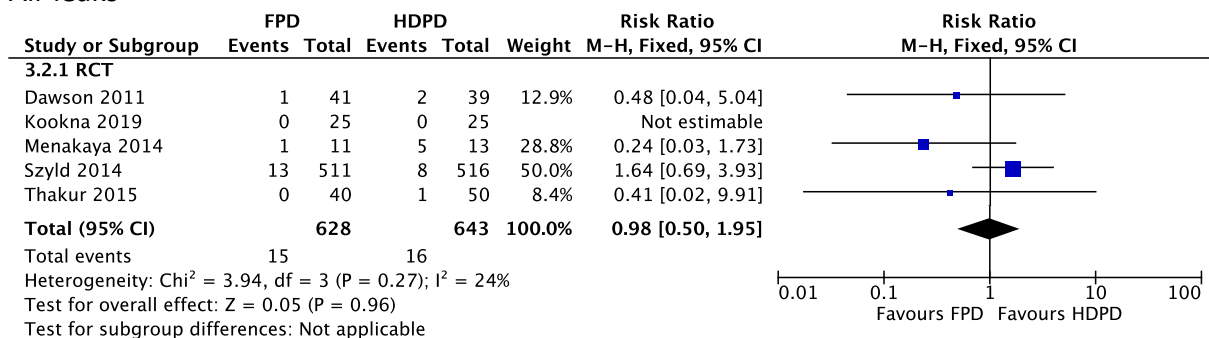
Five minutes Apgar score²⁵⁻²⁸



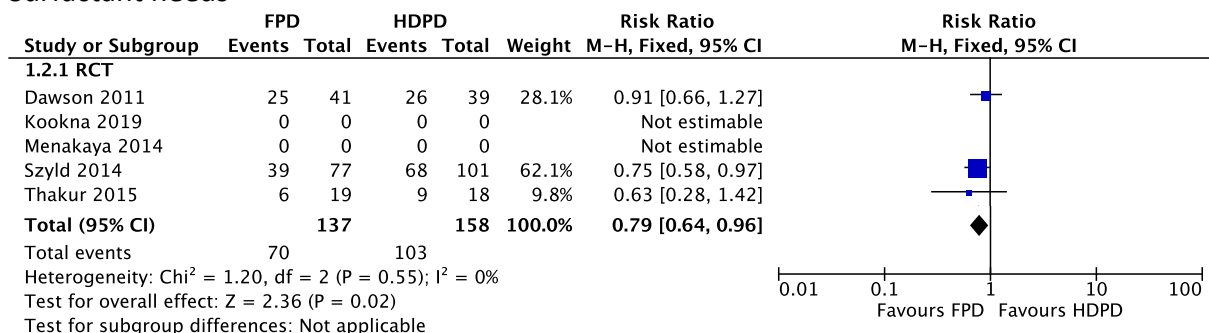
Occurrences of heart rate >100 bpm at 2 minutes of life^{26,27}



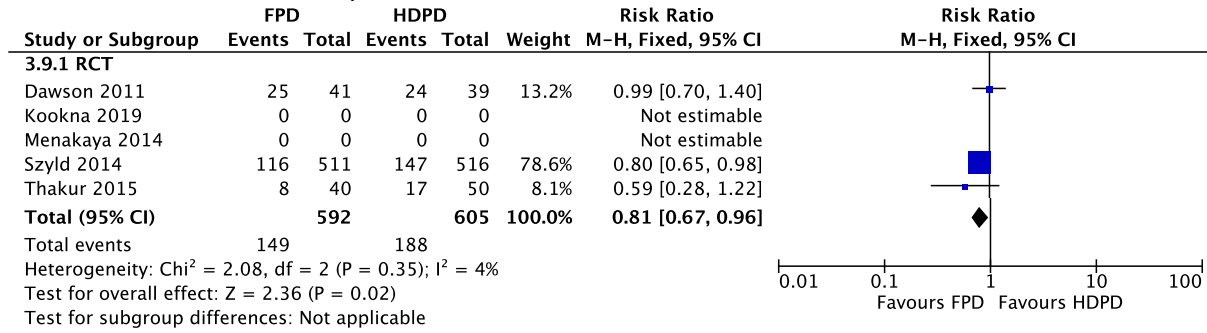
Air leaks²⁴⁻²⁸



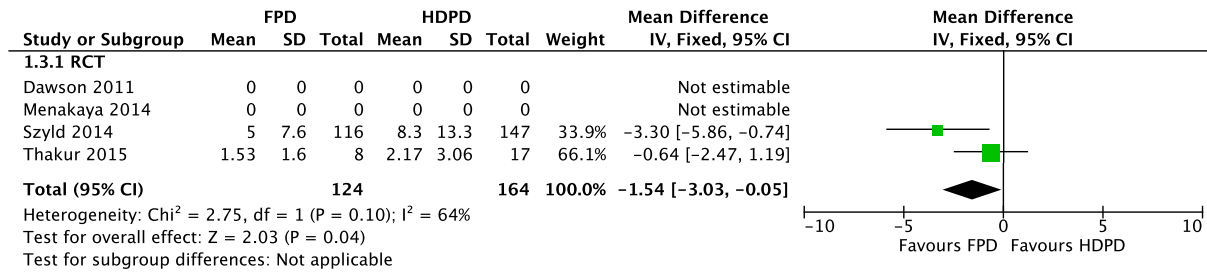
Surfactant needs^{25,27,28}



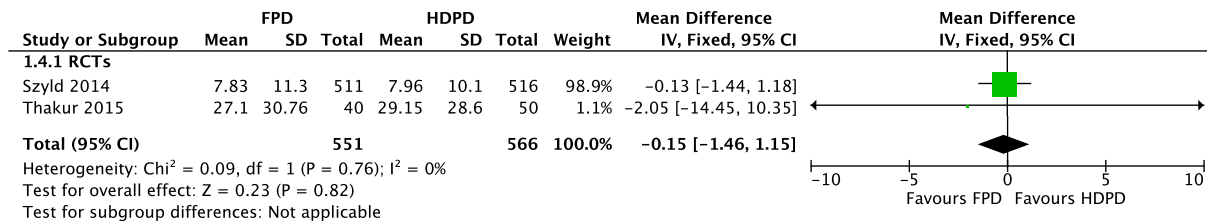
Mechanical ventilation requirements^{25,27,28}



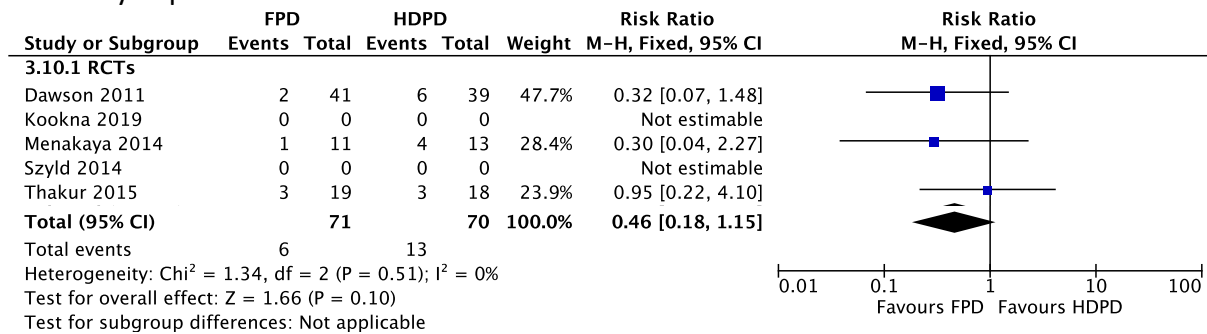
Mechanical ventilation duration^{27,28}



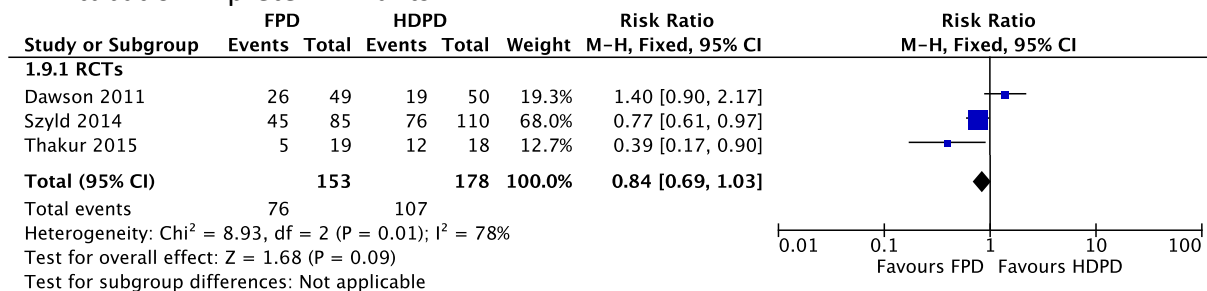
Non-invasive ventilation duration^{27,28}



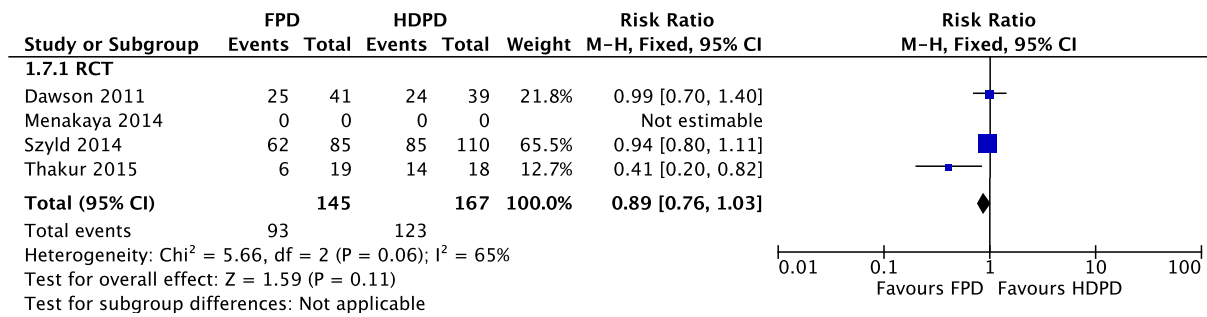
Mortality in preterm infants^{24,25,28}



DR intubation in preterm infants^{25,27,28}

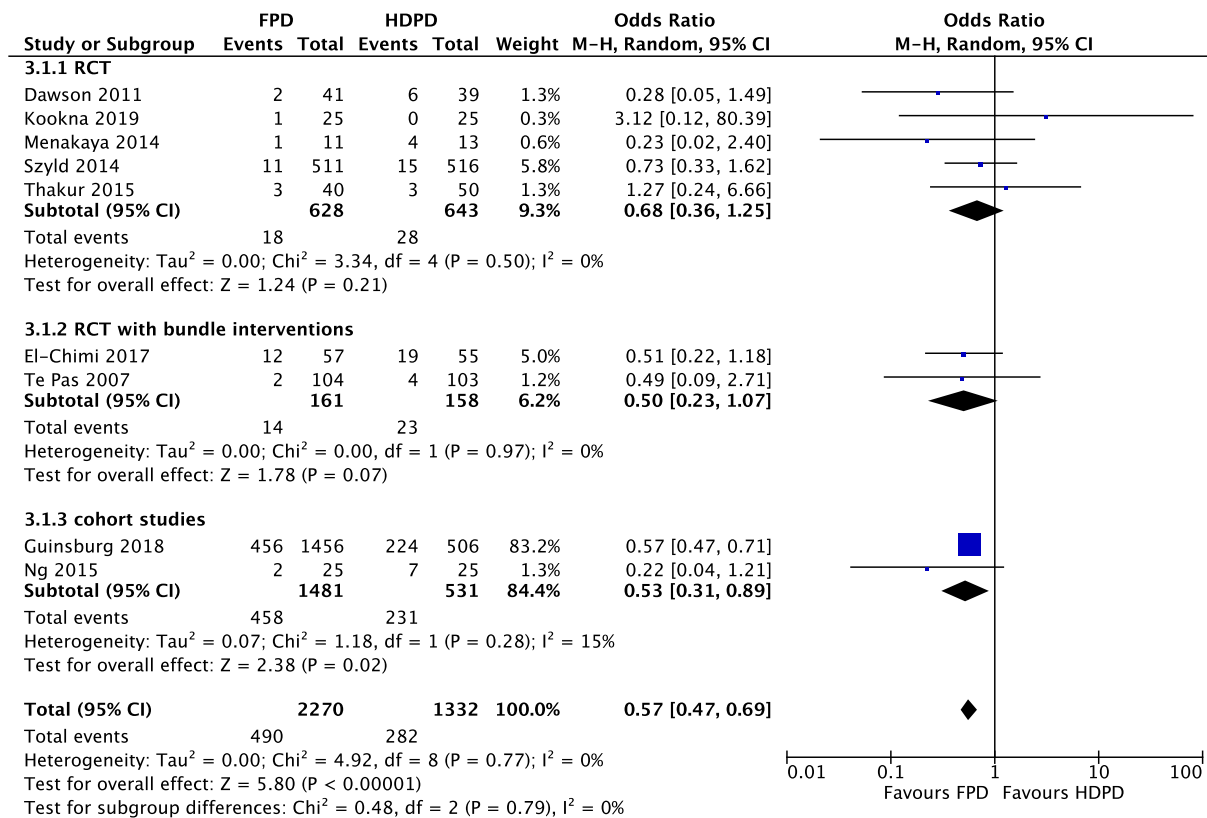


MV requirements in preterm infants (RR 0.89 [0.76-1.03])^{25,27,28}.

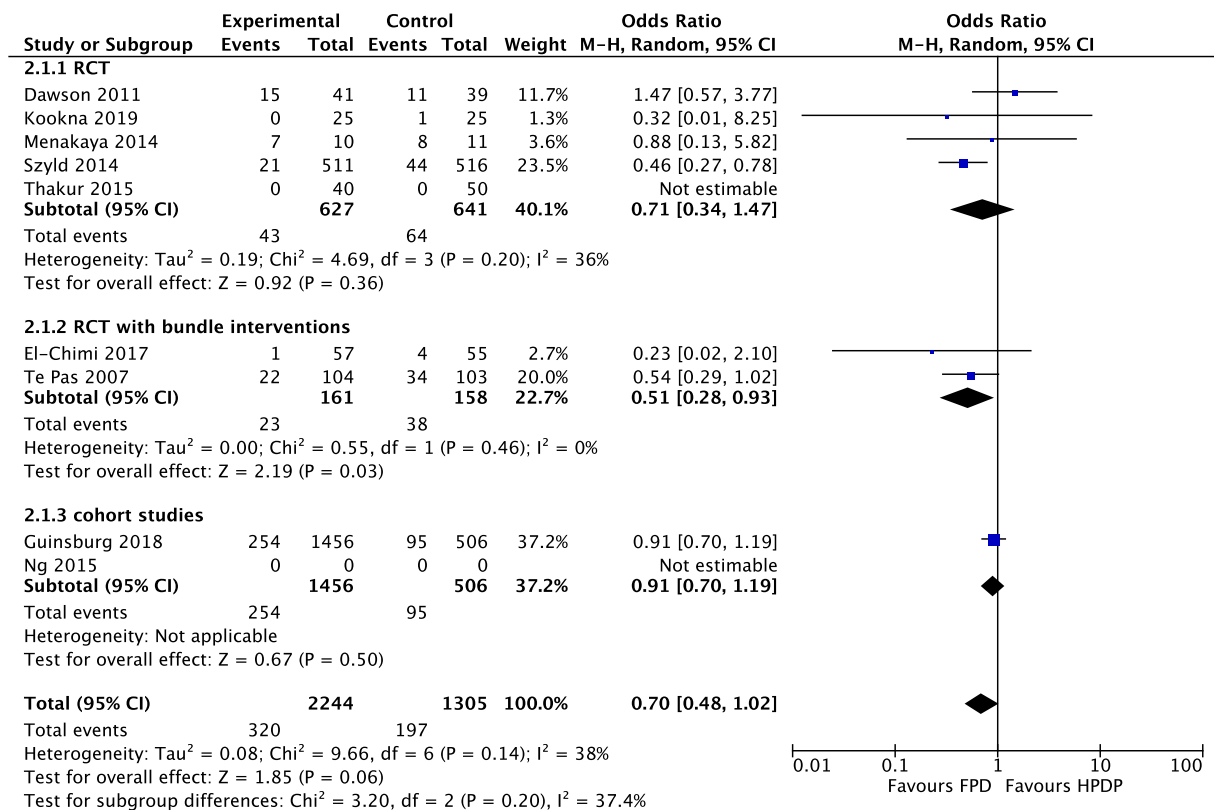


Overall analysis, including RCTs with bundle interventions and cohort studies

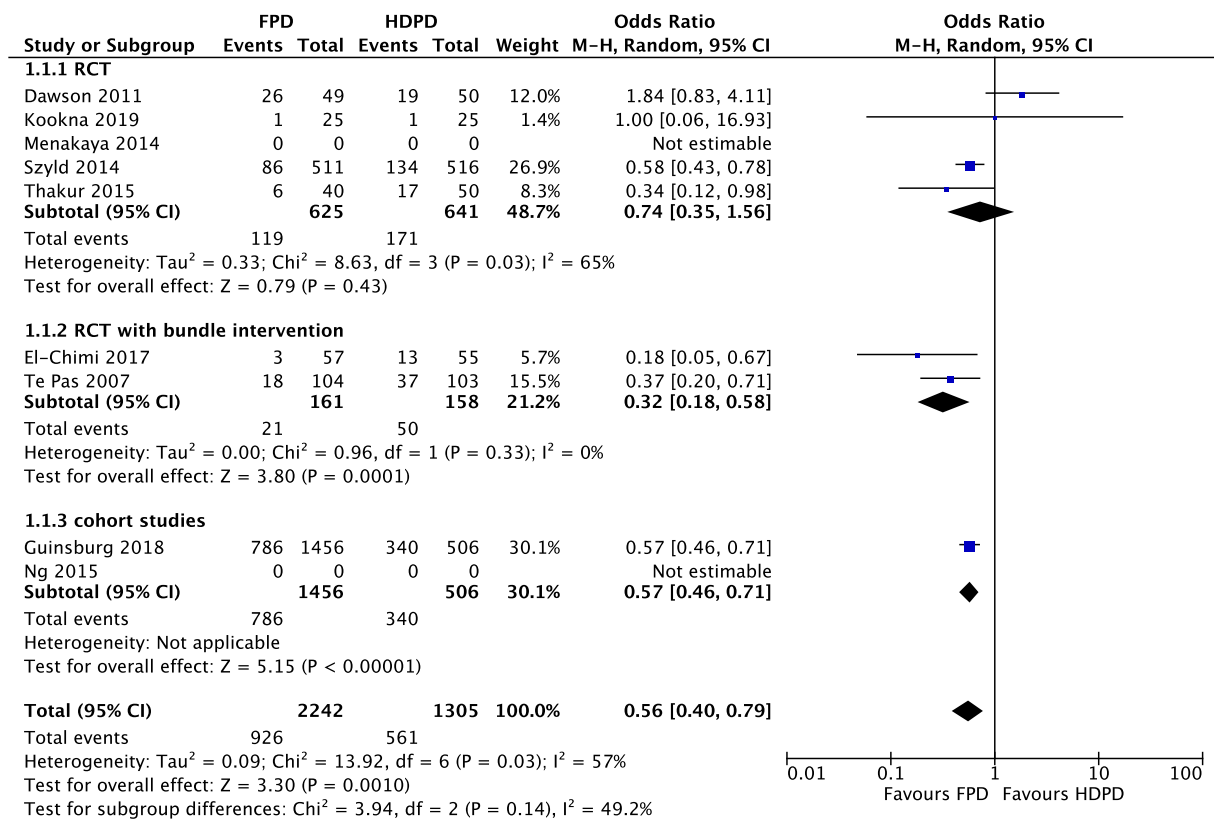
Mortality²⁴⁻³²



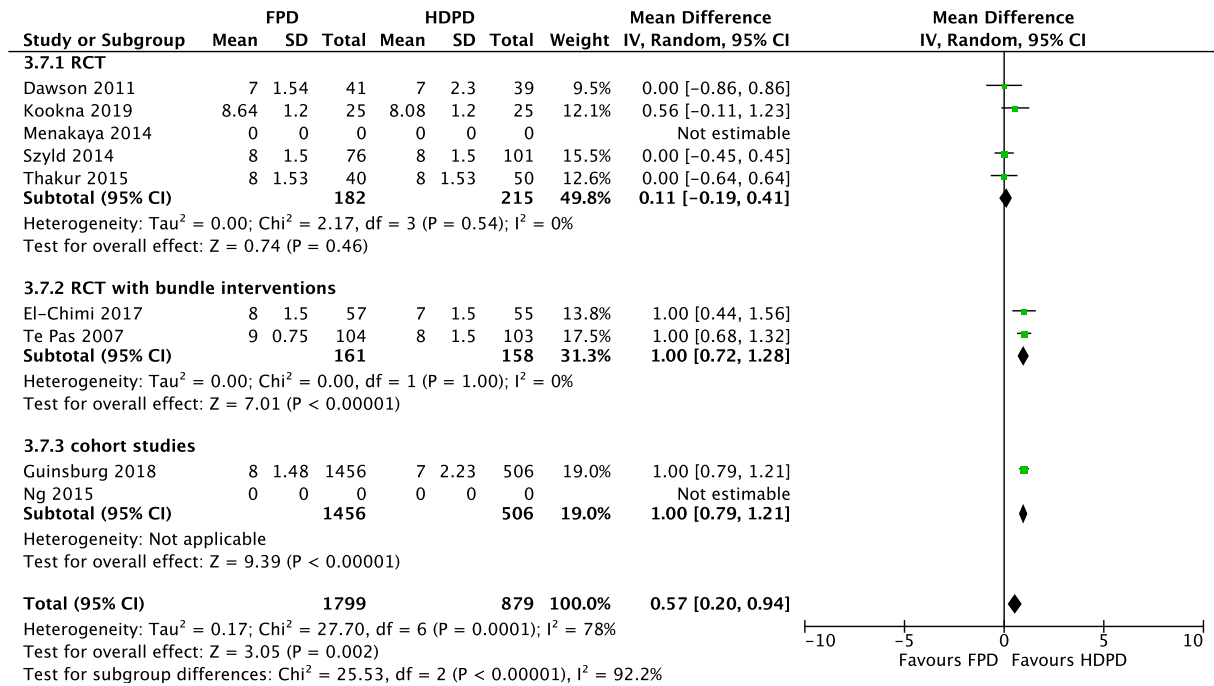
Bronchopulmonary dysplasia²⁴⁻³⁰



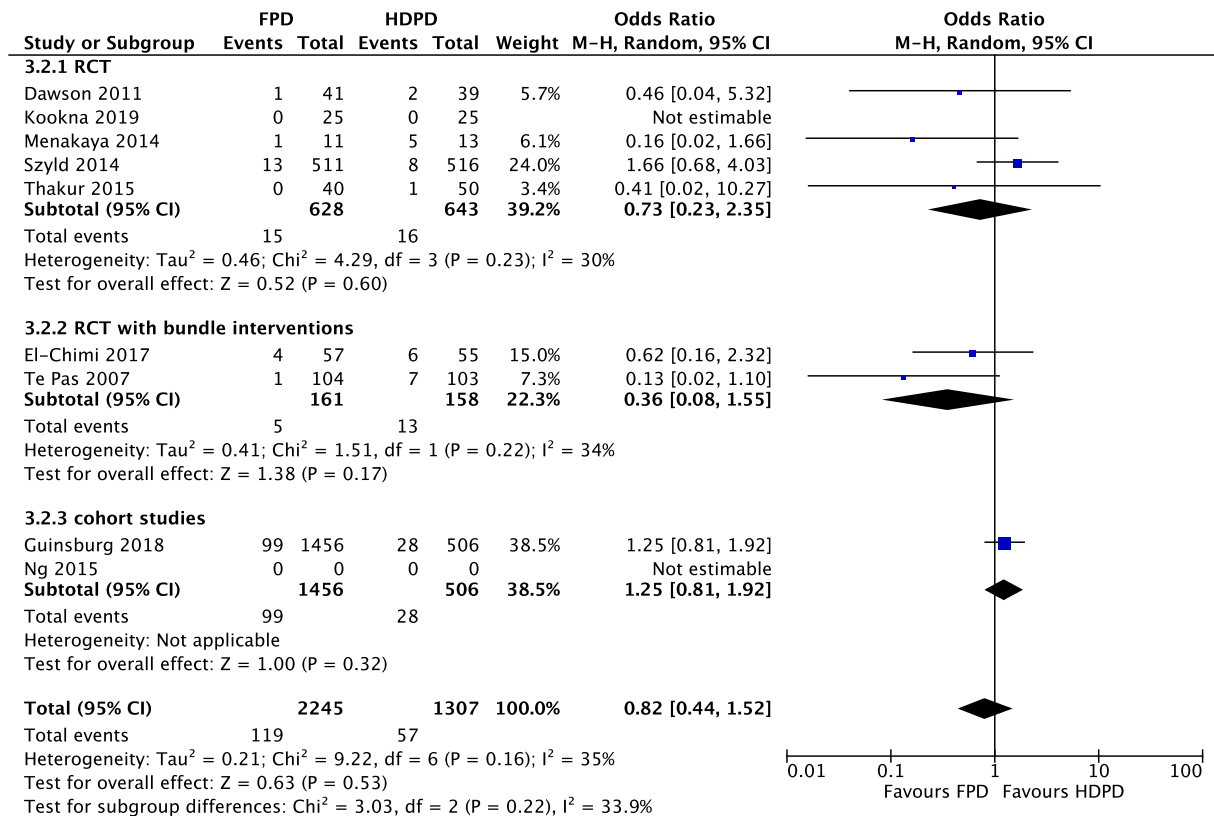
DR intubation rates^{25-30,32}



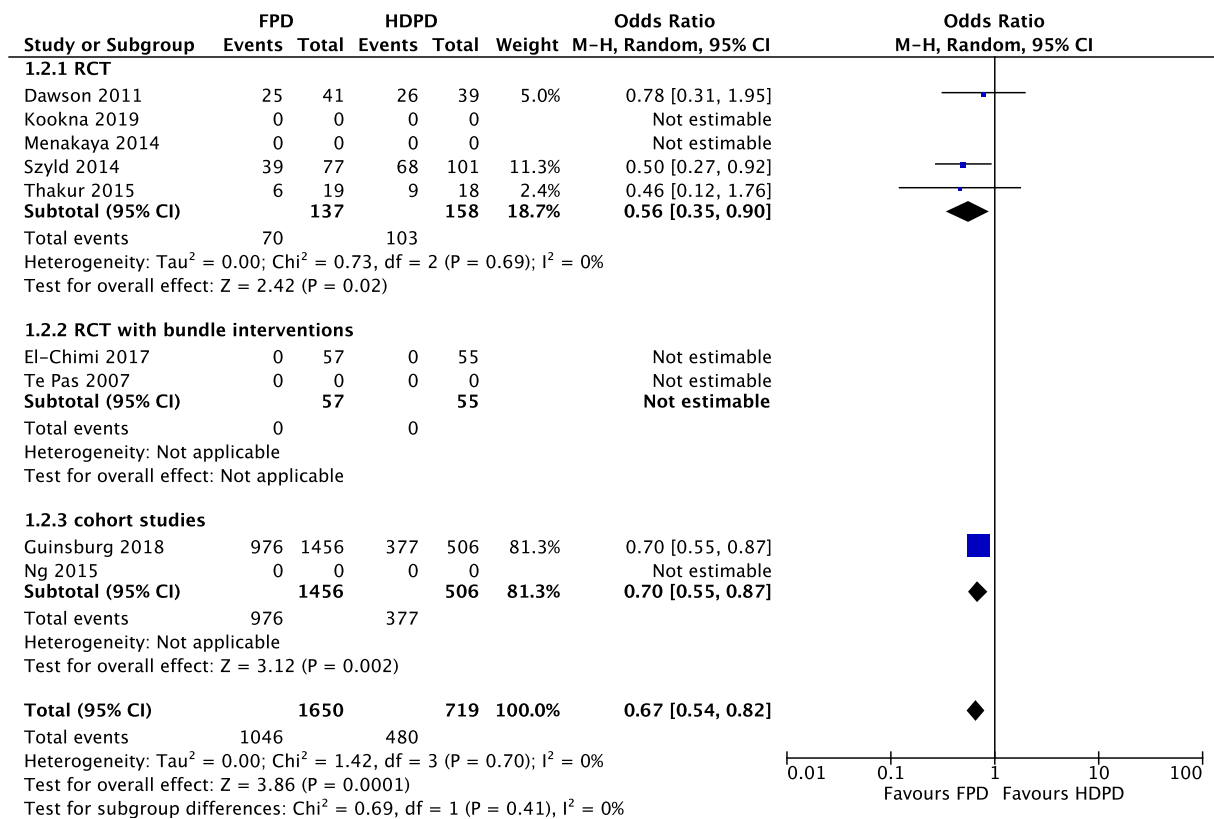
Apgar scores at 5 minutes^{25-30,32}



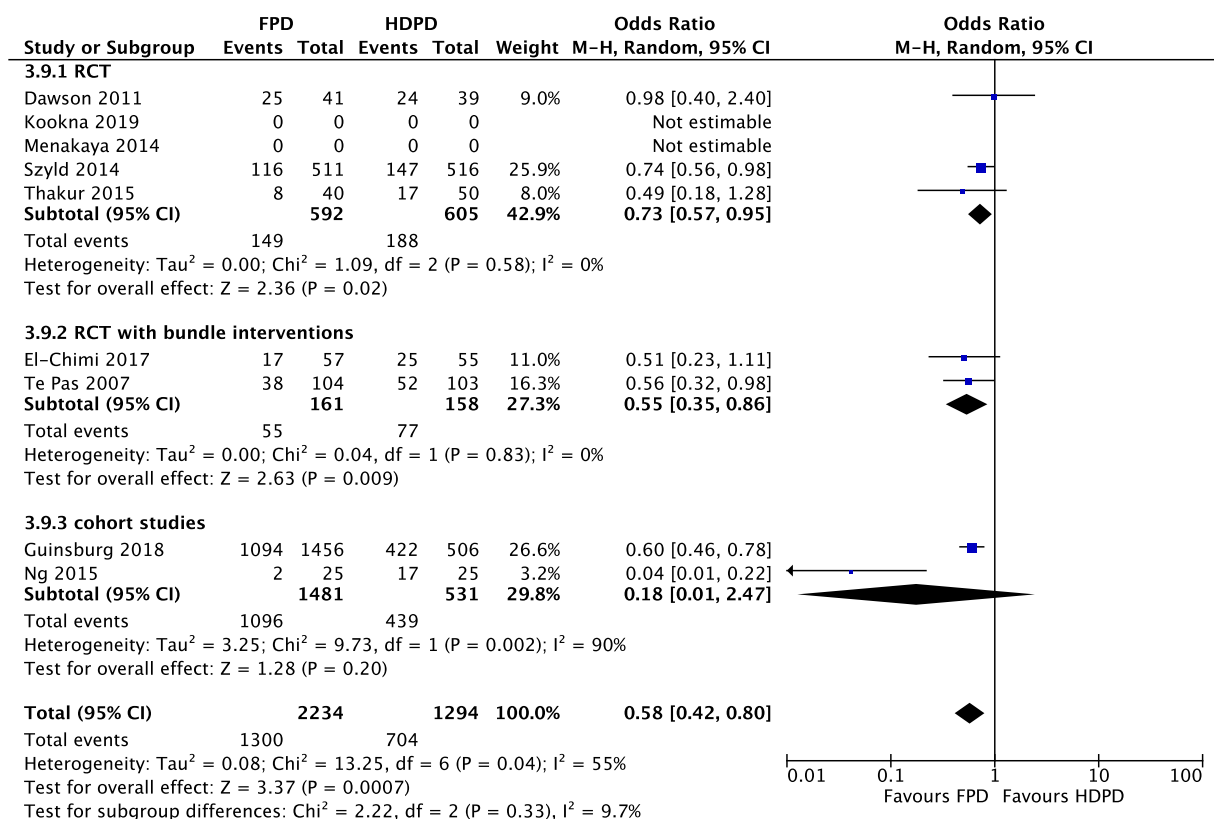
Air leaks^{25-30,32}



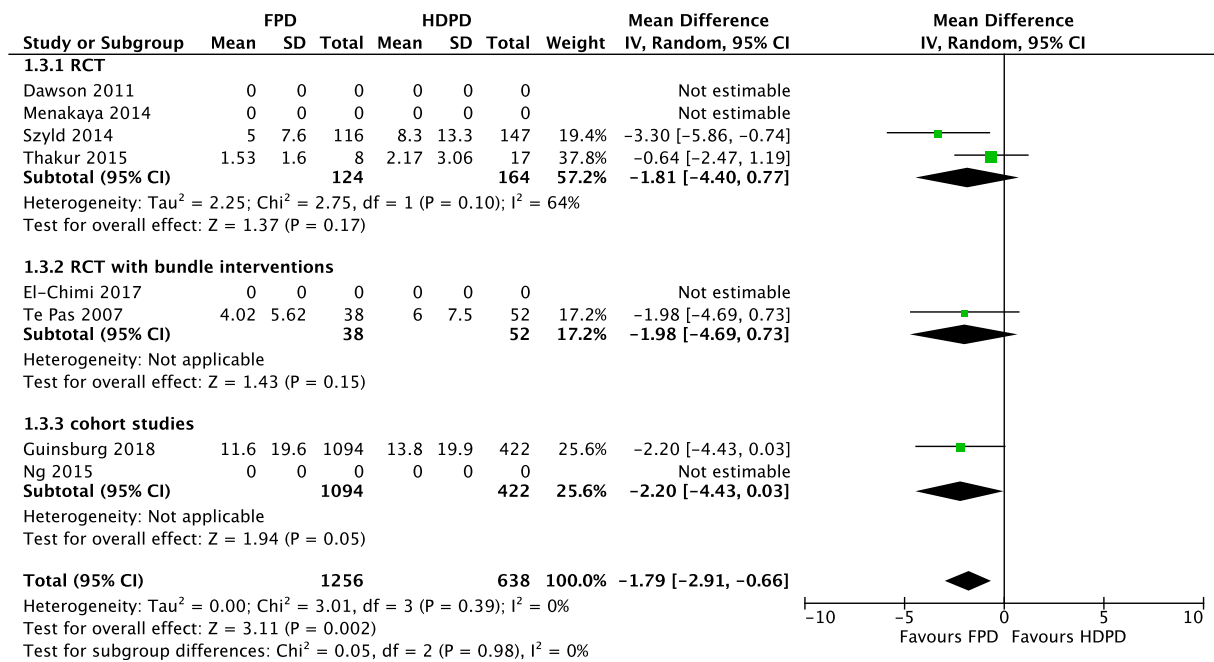
Need for surfactant^{25,27,28,32}



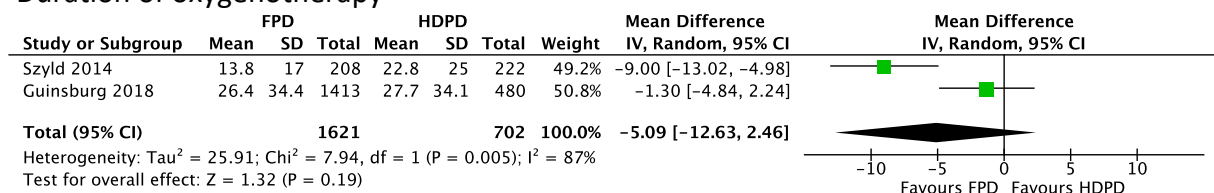
Mechanical ventilation requirements^{25,27-32}



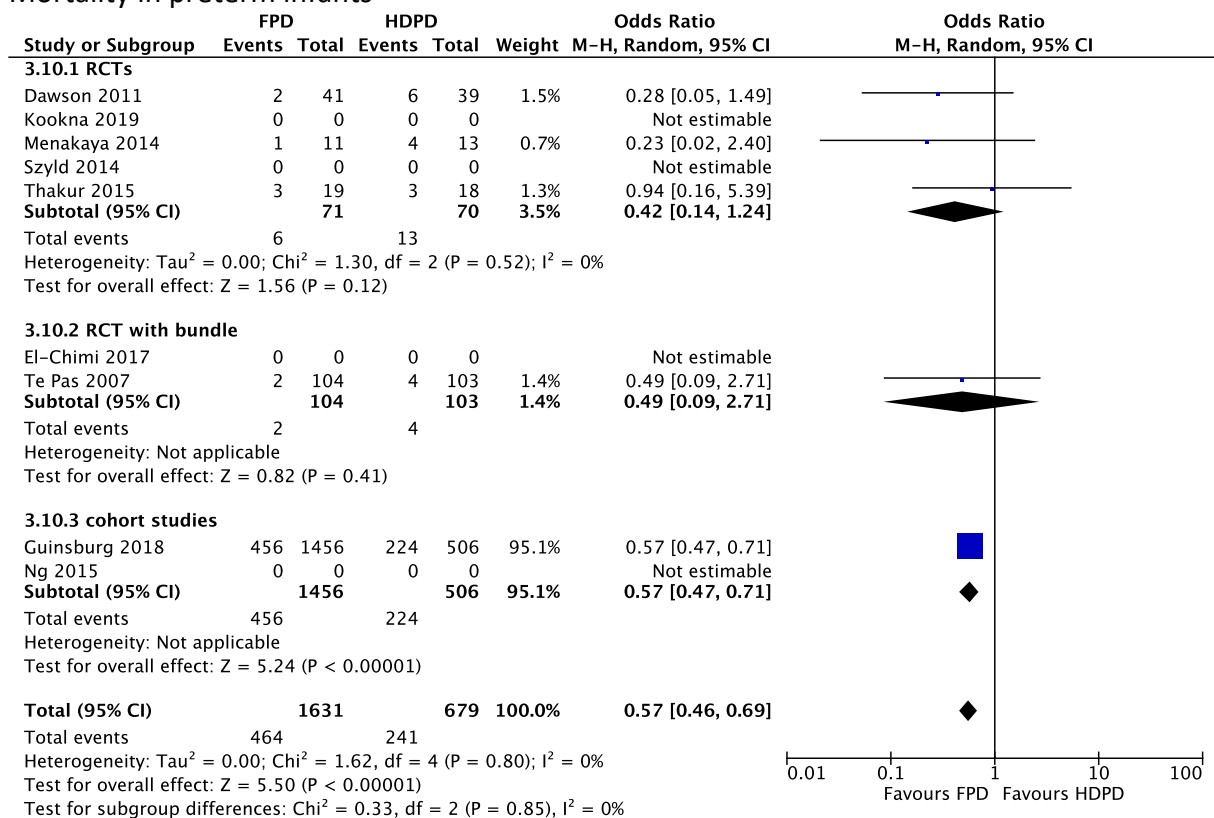
Mechanical ventilation duration



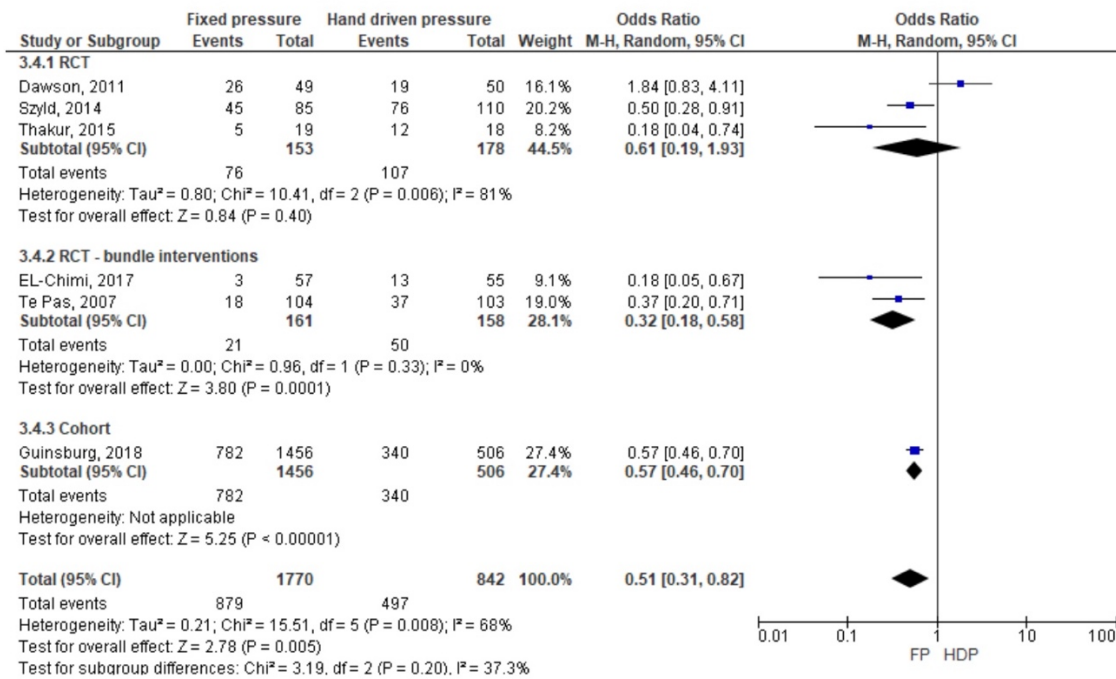
Duration of oxygenotherapy^{27,32}



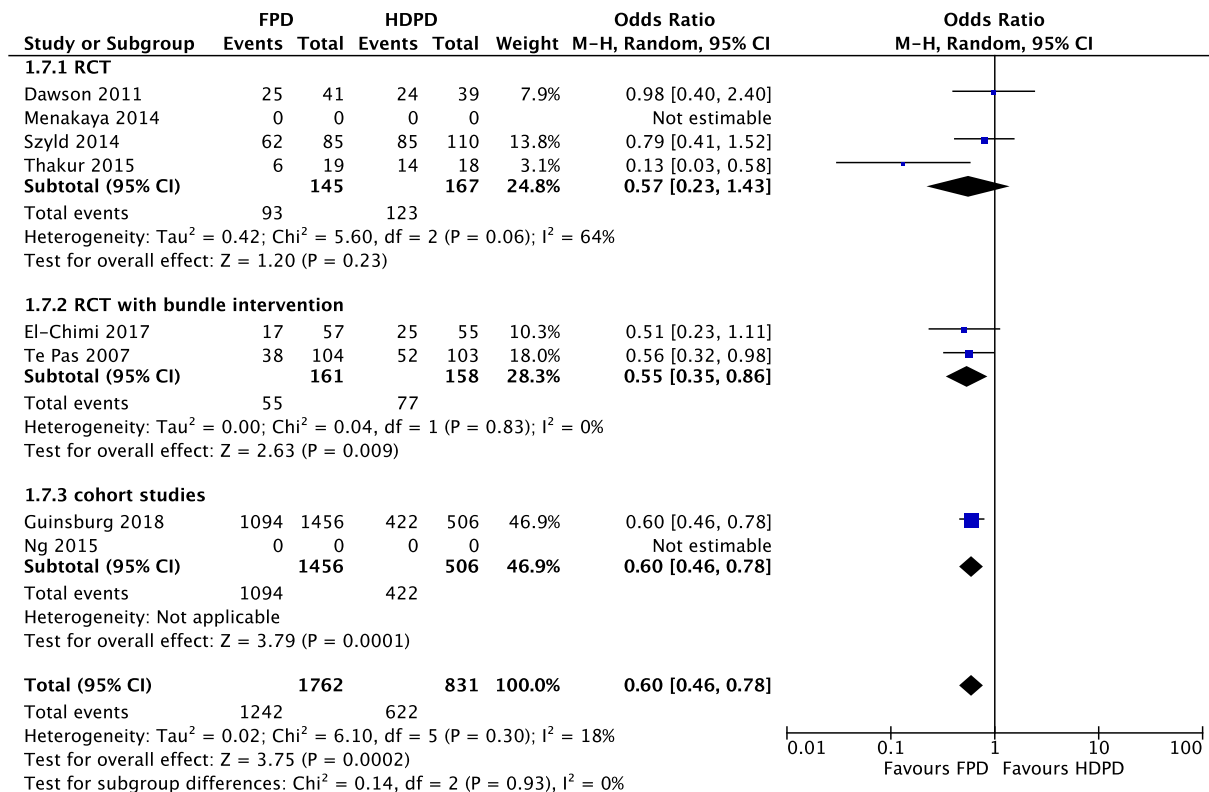
Mortality in preterm infants^{24,25,28,30,32}



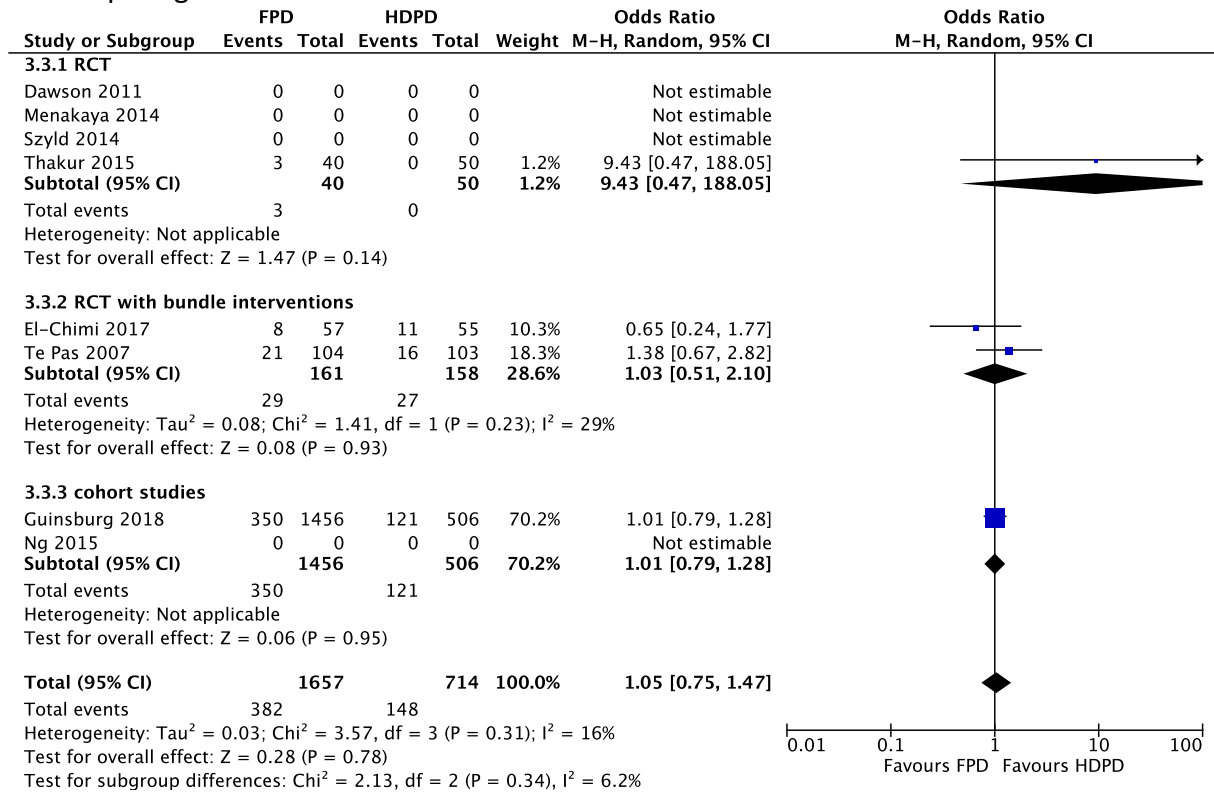
DR intubation in preterm infants^{25,27-30,32}



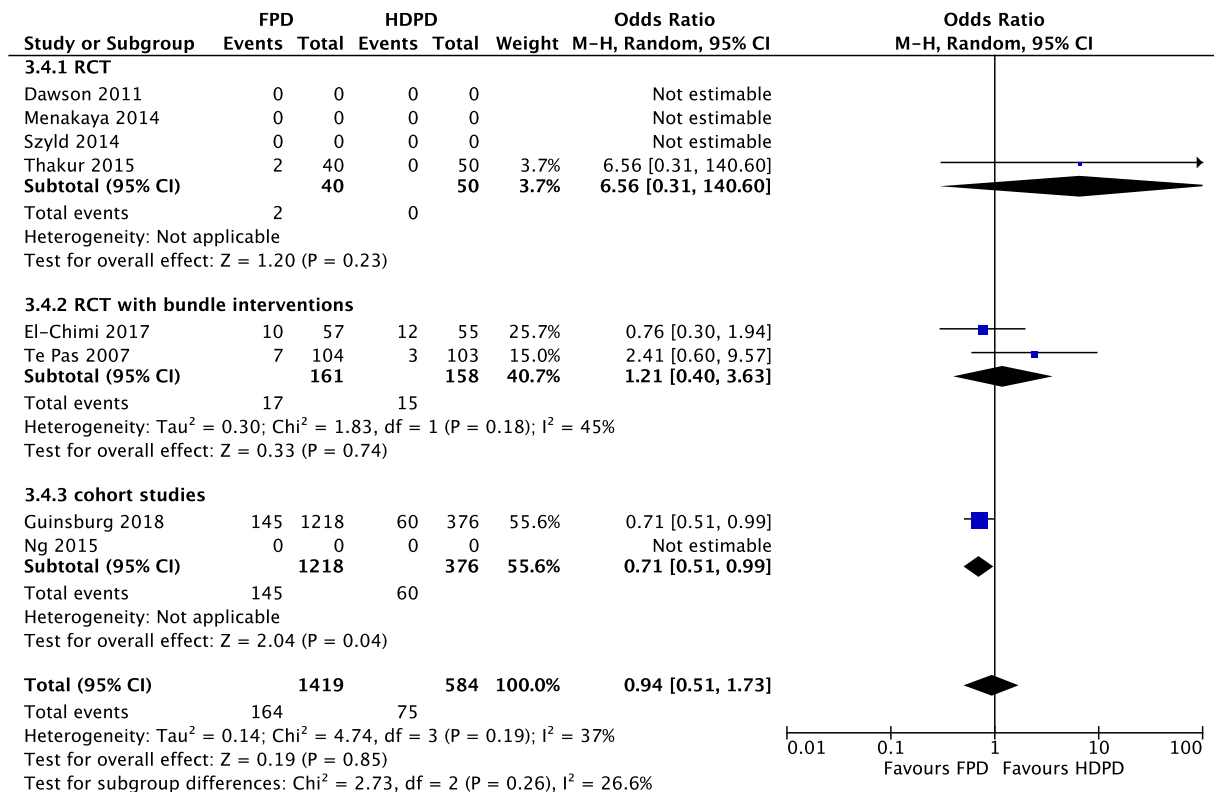
MV requirements in preterm infants^{25,27-30,32}



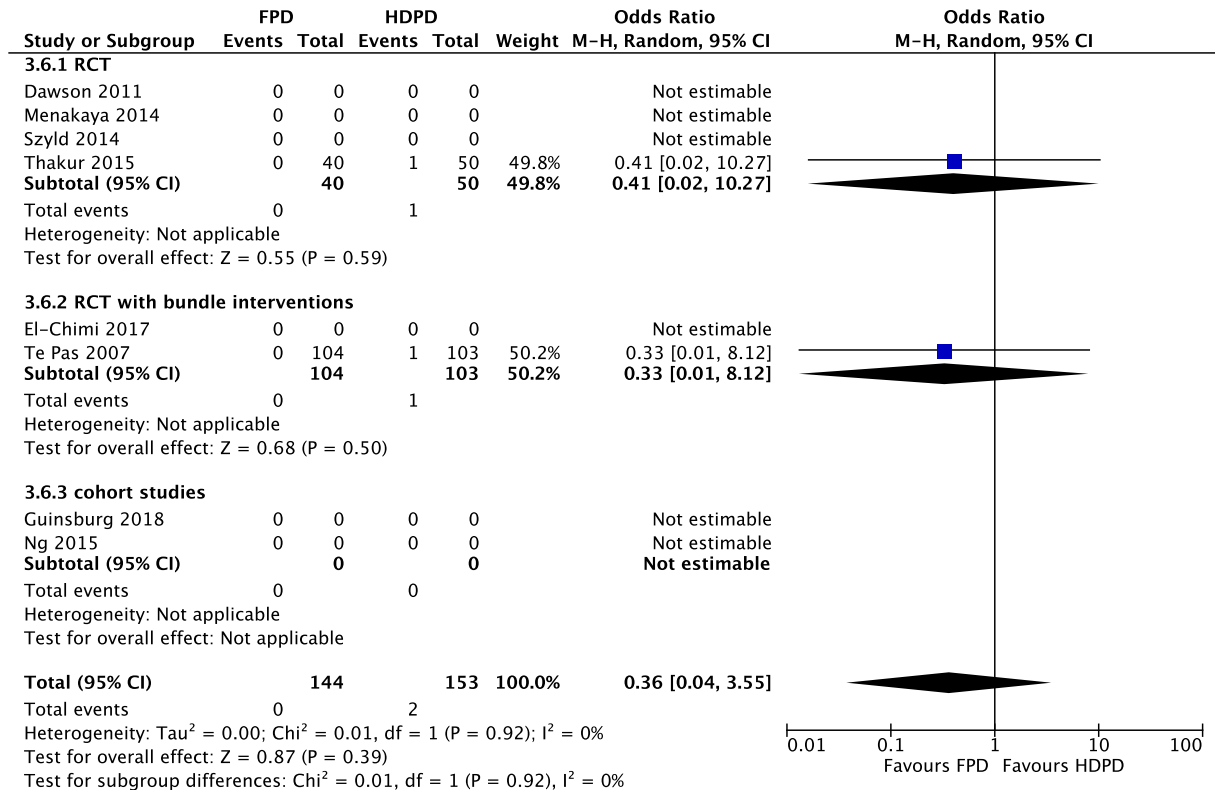
PDA requiring treatment^{28-30,32}



IVH^{28-30,32}



ROP^{28,30}



NEC^{29,30,32}

