The burden of Group B *Streptococcus* worldwide for pregnant women, stillbirths and children

Paper 8: Infant Group B Streptococcal disease incidence and serotypes worldwide: systematic review and meta-analyses

Supplementary information

Contents

Supplementary Table S1: Search terms

infant
outcome
Death
Mortality
Case AND Fatality AND rate
Death [MeSH Terms]
Mortality [MeSH Terms]
Case fatality rate [MeSH Terms]
AND
Streptococcus
Streptococcal
Streptococci AND (Group AND B) or agalactiae
Streptococcus agalactiae [MeSH Terms]
AND
Streptococcus serotype
Streptococcal serotype
Streptococcus agalactiae erotype[MeSH Terms]

Supplementary Table S2: Inclusion and exclusion criteria

	Inclusion criteria	**Exclusion criteria**
Population	Invasive GBS disease in infants aged 0-89 days at onset of infection	Studies containing only information on very high-risk groups
Laboratory	GBS confirmed by blood / CSF culture.	
Search	No language restrictions	Foreign language papers where it was not possible to obtain English translation
Article type	Study reporting more recent data from country with dynamic trend	Case reports, case series, reviews. Studies from the same country reporting repeated years or with dynamic trend over time

Supplementary Table S3: Characteristics of studies included and data type extracted for invasive infant GBS disease

Author	Country	Year	Year data collection	Study type	Incidence	Case fatality risk	Serotype	IAP use	Included in previous review[1]
Andersen[2]	Denmark	2004	1992-2001	Community-based	Yes			Yes	Yes
Bell[3]	Jamaica	2005	1995-2000	Facility-based	Yes			No	Yes
Carbonell-Estrany[4]	Spain	2008	2004-2005	Facility-based	Yes	Yes		Yes	Yes
Chang[5]	Taiwan	2003	1986-2001	Facility-based		Yes	Yes	Yes	Yes
Davies[6]	Canada	2001	1993-1999	Community-based			Yes	Yes	Yes
Ekelund[7]	Denmark	2004	1984-2002	Facility-based	Yes		Yes	Yes	Yes
Fluegge[8]	Germany	2006	2001-2003	Community-based	Yes	Yes		Yes	Yes
Hasseltvedt[9]	Norway	2001	2000	Community-based	Yes	Yes		Yes	Yes
Janek[10]	Slovakia	2004	2000-2003	Facility-based	Yes			Yes	Yes
Jiang[11]	Taiwan	2004	1992-2001	Facility-based		Yes		No	Yes
Kim[12]	South Korea	2004	1999-2001	Community-based	Yes			No	Yes
Neto[13]	Portugal	2008	2001-2005	Community-based	Yes	Yes		Yes	Yes
Niduvaje[14]	Singapore	2006	1999-2000	Facility-based	Yes			Yes	Yes
Ben Hamida[15]	Tunisia	2008	2001-2003	Facility-based	Yes			No	Yes
Trijbels-Smeulders[16]	Netherlands	2007	1997-2001	Facility-based	Yes	Yes		Yes	Yes
Trotman[17]	Jamaica	2006	1991-2000	Facility-based	Yes	Yes		No	Yes
Yossuck[18]	Thailand	2002	1996-2001	Facility-based	Yes			No	Yes
Hoshina[19]	Japan	2002	1983-1997	Facility-based			Yes	No	Yes
Gray[20]	Malawi	2007	2004-2005	Facility-based	Yes	Yes		No	Yes
Figueira-Coelho[21]	Portugal	2004	1999-2000	Facility-based			Yes	Yes	Yes
Hajdu[22]	Norway	2006	2006	UNK	Yes	Yes		Yes	Yes
Vaciloto[23]	Brazil	2002	1991-2000	Facility-based	Yes			No	Yes
Strakova[24]	Czech Republic	2004	2001-2002	Facility-based	Yes	Yes	Yes	No	Yes
Park[25]	South Korea	2010	1996-2005	Facility-based		Yes		No	Yes
Matsubara[26]	Japan	2009	1998-2007	Facility-based			Yes	No	Yes
Darmstadt[27]	Bangladesh	2009	2004-2006	Community-based	Yes			Yes	Yes
Al-Zwaini[28]	Iraq	2002	2000-2001	Facility-based	Yes			No	Yes
Sundaram[29]	India	2009	1995-2006	Facility-based	Yes			No	Yes
Martin[30]	Antigua and Barbuda	2007	1994-2002	Facility-based	Yes			Yes	Yes
Cho[31]	South Korea	2010	1996-2005	Facility-based		Yes		No	Yes
Van den Hoogen[32]	Netherlands	2010	1978-2006	Facility-based	Yes			Yes	Yes
Kuhn[33]	France	2010	2003-2004	Community-based	Yes		Yes	Yes	Yes
Milledge[34]	Malawi	2005	1996-2001	Facility-based		Yes		No	Yes
Zhao[35]	Australia	2008	1994-2005	Facility-based			Yes	Yes	Yes
Martins[36]	Portugal	2007	2000-2004	UNK			Yes	Yes	Yes
Trijbels-Smeulders[37]	Netherlands	2006	1997-1999	Facility-based			Yes	Yes	Yes
Fluegge[38]	Germany	2005	2001-2003	Facility-based			Yes	Yes	Yes
Persson[39]	Sweden	2004	1998-2001	Facility-based	Yes	Yes	Yes	Yes	Yes
Davies[40]	Canada	2004	1995-1999	Community-based			Yes	Yes	Yes

Bidet[41]	France	2003	1990-2002	Facility-based			Yes	No	Yes
Lopardo[42]	Argentina	2003	1998-1999	Facility-based			Yes	No	Yes
El-Said[43]	Saudi Arabia	2002	1998-2000	Facility-based	Yes			No	Yes
Ojukwu[44]	Nigeria	2005	2002-2003	Facility-based	Yes			No	Yes
Tiskumara[45]	India	2009	2008-2009	Facility-based	Yes			Yes	Yes
Tiskumara[45]	Kuwait	2009	2006-2009	Facility-based	Yes			Yes	Yes
Tiskumara[45]	Macau	2009	2006-2008	Facility-based	Yes			Yes	Yes
Tiskumara[45]	Malaysia	2009	2006-2009	Facility-based	Yes			Yes	Yes
Tiskumara[45]	Thailand	2009	2007-2009	Facility-based	Yes			Yes	Yes
Abdelmaaboud[46]	Qatar	2011	2003-2009	Facility-based	Yes	Yes	Yes	Yes	No
Al-Taiar[47]	China	2013	2006-2009	Facility-based	Yes			UNK	No
Al-Taiar[47]	Malasya	2013	2006-2009	Facility-based	Yes			UNK	No
Al-Taiar[47]	Thailand	2013	2006-2009	Facility-based	Yes			UNK	No
Al-Taiar[47]	Kuwait	2011	2005-2009	Facility-based	Yes	Yes		Yes	No
Bekker[48]	Netherlands	2014	1987-2011	Facility-based			Yes	Yes	No
Berardi[49]	Italy	2013	2003-2010	Community-based	Yes	Yes		Yes	No
Bromiker[50]	Israel	2013	1997-2007	Facility-based	Yes			Yes	No
Chang[51]	Japan	2014	2007-2012	Community-based			Yes	Yes	No
Cutland[52]	South Africa	2015	2004-2008	Facility-based	Yes	Yes		Yes	No
Cantoni[53]	Italy	2013	2004-2006	Community-based		Yes		Yes	No
Didier[54]	France	2012	2007	Community-based	Yes	Yes		Yes	No
Evangelista[55]	Brazil	2015	2012-2013	Facility-based	Yes	Yes		No	No
Fiolo[56]	Brazil	2012	2007-2011	Facility-based	Yes	Yes	Yes	Yes	No
Giannoni[57]	Switzerland	2016	2011-2015	Facility-based	Yes	Yes		Yes	No
Giménez[58]	Spain	2015	2004-2010	Facility-based	Yes	Yes	Yes	Yes	No
Hashavya[59]	Israel	2011	2005-2009	Facility-based		Yes		Yes	No
Juncosa-Morros[60]	Spain	2014	1996-2010	Facility-based	Yes	Yes		Yes	No
Kruse[61]	Vietnam	2013	2009-2010	Facility-based	Yes			No	No
Liu[62]	China	2015	2013-2014	Facility-based	Yes		Yes	No	No
Matsubara[63]	Japan	2013	2004-2010	Facility-based	Yes	Yes	Yes	Yes	No
Miyata[64]	Japan	2012	2002-2009	Facility-based	Yes	Yes		Yes	No
Oladottir[65]	Iceland	2011	1975-2006	Facility-based			Yes	UNK	No
Petersen[66]	Denmark	2014	2002-2010	Facility-based	Yes			Yes	No
Sakata[67]	Japan	2014	2010-2012	Facility-based		Yes		UNK	No
Sridhar[68]	India	2014	1998-2010	Facility-based	Yes			Yes	No
Yu[69]	Taiwan	2011	2001-2005	Facility-based	Yes	Yes		Yes	No
Thatrimontrichai[70]	Thailand	2014	1995-2010	Facility-based	Yes			UNK	No
Ko Danny[71]	Australia	2015	2005-2008	Community-based	Yes	Yes	Yes	Yes	No
Morozumi[72]	Japan	2014	2006-2011	Community-based			Yes	Yes	No
Almeida[73]	France	2015	2008-2012	Facility-based			Yes	No	No
Brzychczy-Wloch[74]	Poland	2014	2006-2010	Facility-based			Yes	UNK	No
Fluegge[75]	Germany	2011	2001-2003	Facility-based	Yes		Yes	UNK	No
Imperi[76]	Italy	2011	2005-2008	Facility-based	Yes		Yes	UNK	No
Joubrel[77]	France	2015	2007-2012	Facility-based	Yes			Yes	No
Six[78]	France	2016	2006-2013	Facility-based			Yes	Yes	No
Souza[79]	Brazil	2013	2008-2010	Facility-based			Yes	UNK	No

Teatero[80]	Canada	2014	2009-2012	Community-based			Yes	Yes	No
Yoon[81]	Korea	2015	1995-2004	Facility-based			Yes	No	No
Wang[82]	China	2015	2008-2013	Facility-based			Yes	UNK	No
Sakata[83]	Japan	2012	2009-2011	Facility-based	Yes			Yes	No
Rivera[84]	Panama	2015	UNK	Facility-based	Yes	Yes	Yes	Yes	No
Villanueva-Uy[85]	Thailand	2015	UNK	Facility-based	Yes	Yes		UNK	No
Larcher[86]	Argentina	2005	2001-2002	Facility-based	Yes			Yes	No
Sigauque[87]	Mozambique	2015	2001-2015	Facility-based	Yes	Yes	Yes	No	No
Vinod[88]	India	2016	2011-2015	Facility-based	Yes	Yes		Yes	No
Le Doare[89]	Gambia	2016	2014	Facility-based	Yes	Yes		No	No
Saha[90]	Bangladesh	2016	2012-2013	Facility-based	Yes	Yes		No	No
Araujo da Silva[91]	Brazil	2016	2015-2016	Facility-based	Yes			Yes	No
Dhaded[92]	India	2016	2014-2015	Facility-based	Yes	Yes		Yes	No
Dangor[93]	South Africa	2016	2005-2014	Facility-based	Yes	Yes	Yes	Yes	No
Rivera[84]	Dominican Republic	2015	UNK	Facility-based	Yes	Yes		Yes	No
Rivera[84]	Hong Kong	2015	UNK	Facility-based	Yes	Yes		Yes	No
Rivera[84]	Dominican Republic	2015	UNK	Facility-based	Yes	Yes		Yes	No
Villanueva-Uy[85]	Philippines	2015	UNK	Facility-based	Yes	Yes		UNK	No
CDC[94]	United States	2014	2014	Community-based	Yes	Yes	Yes	Yes	No
O´Sullivan[95]	United Kingdom	2015	2014-2015	Community-based	Yes	Yes	Yes	Yes	No
Seale [96]	Kenya	2016	1998-2013	Community-based	Yes	Yes	Yes	No	No
Alhhazmi[97]	Canada	2016	2003-2013	Community-based	Yes		Yes	Yes	No
Barbosa[98]	Brazil	2016	2008-2011	Facility-based	Yes	Yes		No	No
Bartlett[99]	Australia	2017	2000-2015	Facility-based		Yes		Yes	No
Berardi[100]	Italy	2016	2009-2012	Community-based	Yes	Yes		Yes	No
Bulkowstein[101]	Israel	2016	2007-2013	Community-based	Yes			No	No
Campisi[102]	China	2016	2013-2014	Facility-based			Yes	UNK	No
Darlow[103]	Australia	2016	2009-2011	Community-based	Yes	Yes		Yes	No
Fjalstad[104]	Norway	2016	2009-2011	Community-based	Yes	Yes		UNK	No
Freitas[105]	Brazil	2016	2012-2015	Facility-based	Yes	Yes		Yes	No
Ip[106]	Hong Kong	2016	1993-2012	Facility-based			Yes	UNK	No
Hammoud[107]	Kuwait	2017	2013-2015	Facility-based	Yes			Yes	No
Hammoud[107]	United Arab Emirates	2017	2013-2015	Facility-based	Yes			Yes	No
Hammoud[107]	Saudi Arabia	2017	2013-2015	Facility-based	Yes			Yes	No
Kang[108]	South Korea	2017	1995-2015	Facility-based		Yes		No	No
Li YP[109]	Taiwan	2016	2006-2013	Facility-based	Yes	Yes		Yes	No
Lomuto[110]	Argentina	2006	2002-2005	Facility-based	Yes	Yes		Yes	No
Mendoza[111]	Colombia	2013	2005-2012	Facility-based		Yes		UNK	No
Martinez[112]	Chile	2004	1998-2002	Facility-based			Yes	UNK	No
Poliquin[113]	Canada	2016	2008-2013	Facility-based	Yes	Yes		Yes	No
Reinheimer[114]	Germany	2016	2010-2016	Facility-based		Yes		Yes	No
Zeng[115]	China	2016	2012-2014	Facility-based		Yes		UNK	No
Tapia[116]	Chile	2007	2001-2004	Facility-based	Yes			Yes	No
Kabwe[117]	Zambia	2016	2013-2014	Facility-based	Yes			No	No
Akindolire[118]	Nigeria	2016	2104	Facility-based	Yes			No	No

Ovalle[119]	Chile	2002	1990-2001	Facility-based		Yes	Yes	No
Delgado-Picado[120]	Costa Rica	2004	2002-2004	Facility-based	Yes		No	No
Diaz Alvarez[121]	Cuba	2008	1992-2007	Facility-based		Yes	No	No
Costa[122]	Brazil	2010	2003-2006	Facility-based		Yes	Yes	No
Frigarti[123]	South Africa	2014	2010-2011	Facility-based	Yes	Yes	Yes	No

CFR: case fatality risk. IAP: intrapartum antibiotic prophylaxis. UNK: unknown (information not available).

Supplementary Table S4: Studies excluded (repeated data or more recent data available)

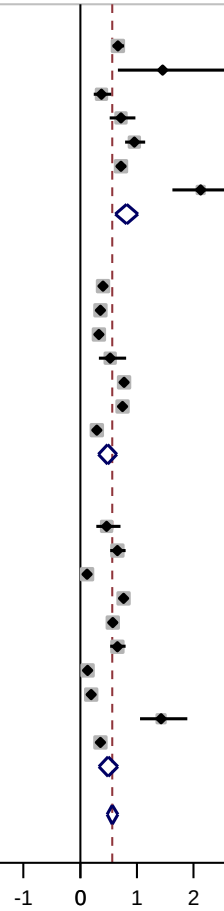
Author	Country	Year	Year data collection	Study type
Angstetra[124]	Australia	2007	1994-2006	Facility-based
Ireland[125]	Australia	2014	2002-2011	Facility-based
Daley[126]	Australia & NewZealand	2004	1992-2001	Facility-based
May[127]	Australia & NewZealand	2005	1992-2002	Facility-based
Meehan[128]	Ireland	2014	2007-2011	Facility-based
Berardi[129]	Italy	2007	2003-2005	Community- based
Berardi[130]	Italy	2011	2003-2010	Community- based
Berardi [131]	Italy	2013	2003-2011	Community- based
Berkley[132]	Kenya	2005	1998-2002	Facility-based
Sigauque [133]	Mozambique	2009	2001-2006	Facility-based
Eastwood[134]	Northern Ireland	2015	2008-2010	Facility-based
Madhi[135]	South Africa	2003	1997-1999	Facility-based
Cutland [136]	South Africa	2009	2004-2007	Facility-based
Cutland [137]	South Africa	2012	2004-2007	Unknown
Dangor[138]	South Africa	2015	2012-2014	Facility-based
Schrag[139]	South Africa	2012	2004-2007	Facility-based
Andreu[140]	Spain	2003	1994-2001	Facility-based
Lopez Sastre[141]	Spain	2005	2000-2001	Facility-based
Martins[142]	Spain	2011	1994-2009	Facility-based
Vergnano[143]	United Kingdom	2010	2006-2008	Facility-based
Lamagni[144]	United Kingdom	2013	1991-2010	Facility-based
Weisner[145]	United Kingdom	2004	2000-2001	Community- based
Meehan[146]	United Kingdom	2015	2011-2013	Facility-based
Oddie[147]	United Kingdom	2002	1998-2000	Facility-based
Okike[148]	United Kingdom	2014	2010-2011	Community- based
Heath[149]	United Kingdom & Ireland	2004	2000-2001	Community- based
Brooks[150]	United States	2005	1996-2004	Community- based
Castrodale[151]	United States	2007	2000-2004	Community- based
Chen[152]	United States	2005	1990-2002	Facility-based
Cordero[153]	United States	2004	1986-2002	Facility-based
Hyde[154]	United States	2002	1998-2000	Community- based
Mayor-Lynn[155]	United States	2005	1998-2002	Facility-based
Phares[156]	United States	2008	1999-2005	Community- based
Puopolo[157]	United States	2005	1997-2003	Facility-based
CDC[158]	United States	2007	2003-2005	Community- based
Stoll[159]	United States	2002	1998-2000	Facility-based
Jordan[160]	United States	2008	1990-2005	Community- based
CDC[161]	United States	2009	2000-2006	Community- based
Ecker [162]	United States	2013	1990-2007	Facility-based
Greenhow[163]	United States	2012	2005-2009	Community- based
Greenhow[164]	United States	2014	2005-2011	Community- based
Mukhopadhyay[165]	United States	2013	2008-2009	Facility-based
Mukhopadhyay[166]	United States	2014	2009-2012	Facility-based
Tudela[167]	United States	2012	2000-2008	Facility-based

Weston[168]	United States	2011	2005-2008	Community- based
Stafford[169]	United States	2012	2000-2008	Facility-based
Stoll[170]	United States	2011	2006-2009	Facility-based
Parente[171]	United States	2017	2002-2012	Community- based
Wortham[172]	United States	2016	2006-2009	Facility-based

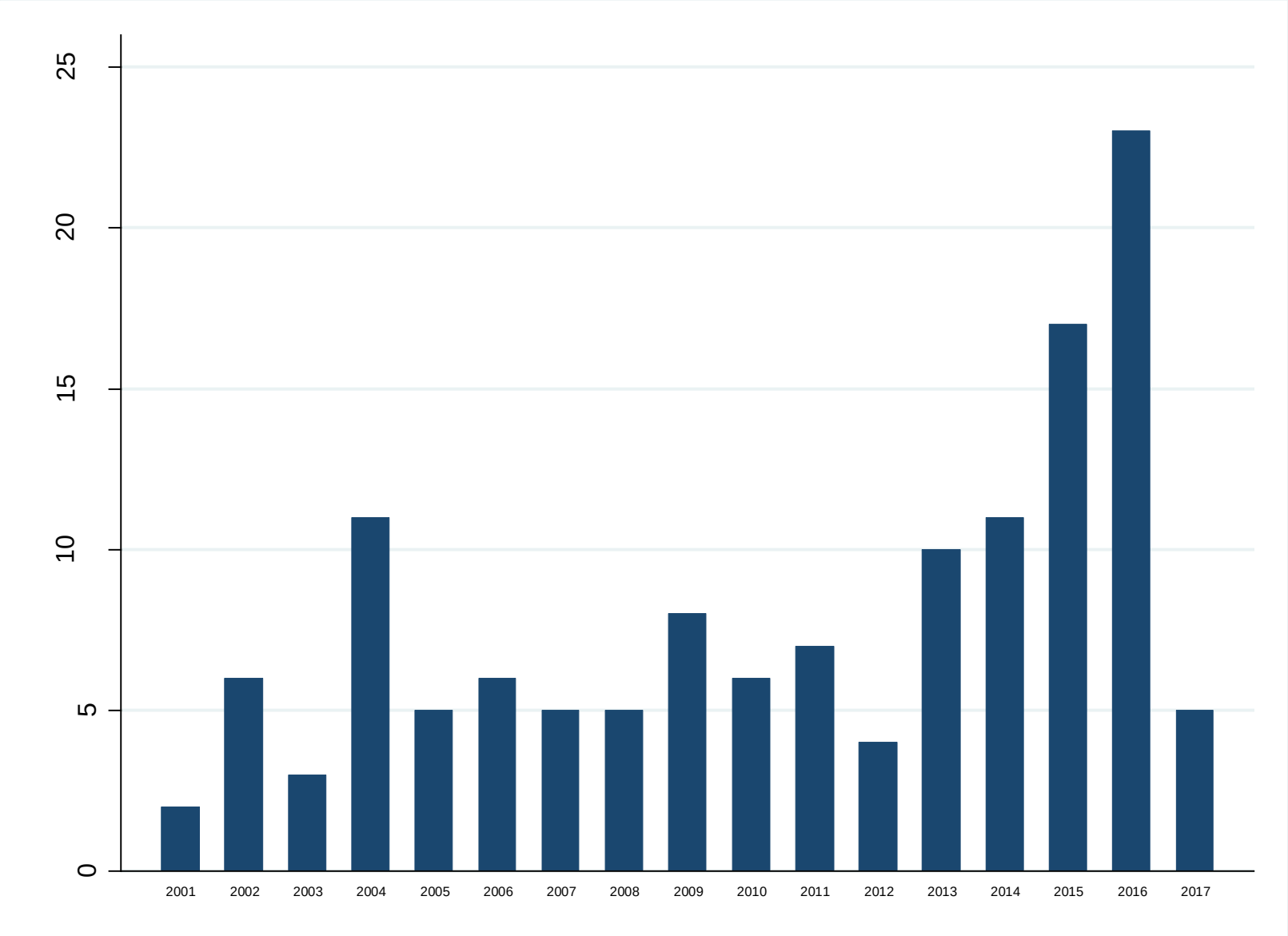
Supplementary Figure S1: Incidence of invasive infant GBS disease in studies from United States, 2002-2017, grouped in year periods

Author	Year	Nºof livebirths	Cases of GBS	ES (95% CI)	% Weight
2001-2006					
Hyde[32]	2002	248184	166	0.67 (0.57, 0.78)	4.56
Stoll [37]	2002	6204	9	1.45 (0.66, 2.75)	0.75
Puopolo[35]	2005	67260	25	0.37 (0.24, 0.55)	4.29
Cordero [31]	2004	59664	43	0.72 (0.52, 0.97)	3.84
Chen[30]	2005	120952	116	0.96 (0.79, 1.15)	4.14
Brooks [28]	2005	427000	308	0.72 (0.64, 0.81)	4.65
Mayor-Lynn[33]	2005	28659	61	2.13 (1.63, 2.73)	1.91
Subtotal (I-squared = 88.9%, p = 0.000)				0.82 (0.62, 1.02)	24.14
2007-2011					
Stoll[48]	2011	396586	160	0.40 (0.34, 0.47)	4.71
Jordan[38]	2008	4862508	1726	0.35 (0.34, 0.37)	4.79
CDC[36]	2007	1363636	450	0.33 (0.30, 0.36)	4.78
Castrodale [29]	2007	39628	21	0.53 (0.33, 0.81)	3.73
CDC[39]	2009	2854761	2204	0.77 (0.74, 0.80)	4.78
Phares[34]	2008	3047059	2268	0.74 (0.71, 0.78)	4.78
Weston [46]	2011	858000	249	0.29 (0.26, 0.33)	4.77
Subtotal (I-squared = 99.4%, p = 0.000)				0.49 (0.32, 0.65)	32.33
2012-2017					
Ecker [40]	2013	45000	21	0.47 (0.29, 0.71)	3.92
Tudela [45]	2012	143384	94	0.66 (0.53, 0.80)	4.40
Greenhow[41]	2012	160818	19	0.12 (0.07, 0.18)	4.73
Parente[49]	2017	642675	492	0.77 (0.70, 0.84)	4.69
CDC	2014	434908	249	0.57 (0.50, 0.65)	4.68
Stafford[47]	2012	143467	94	0.66 (0.53, 0.80)	4.40
Greenhow [42]	2014	224553	29	0.13 (0.09, 0.19)	4.74
Wortham[50]	2016	396586	78	0.20 (0.16, 0.25)	4.75
Mukhopadhyay[44]	2014	33616	48	1.43 (1.05, 1.89)	2.56
Mukhopadhyay[43]	2013	263793	95	0.36 (0.29, 0.44)	4.67
Subtotal (I-squared = 97.9%, p = 0.000)				0.50 (0.33, 0.66)	43.54
Overall (I-squared = 98.6%, p = 0.000)				0.57 (0.47, 0.67)	100.00

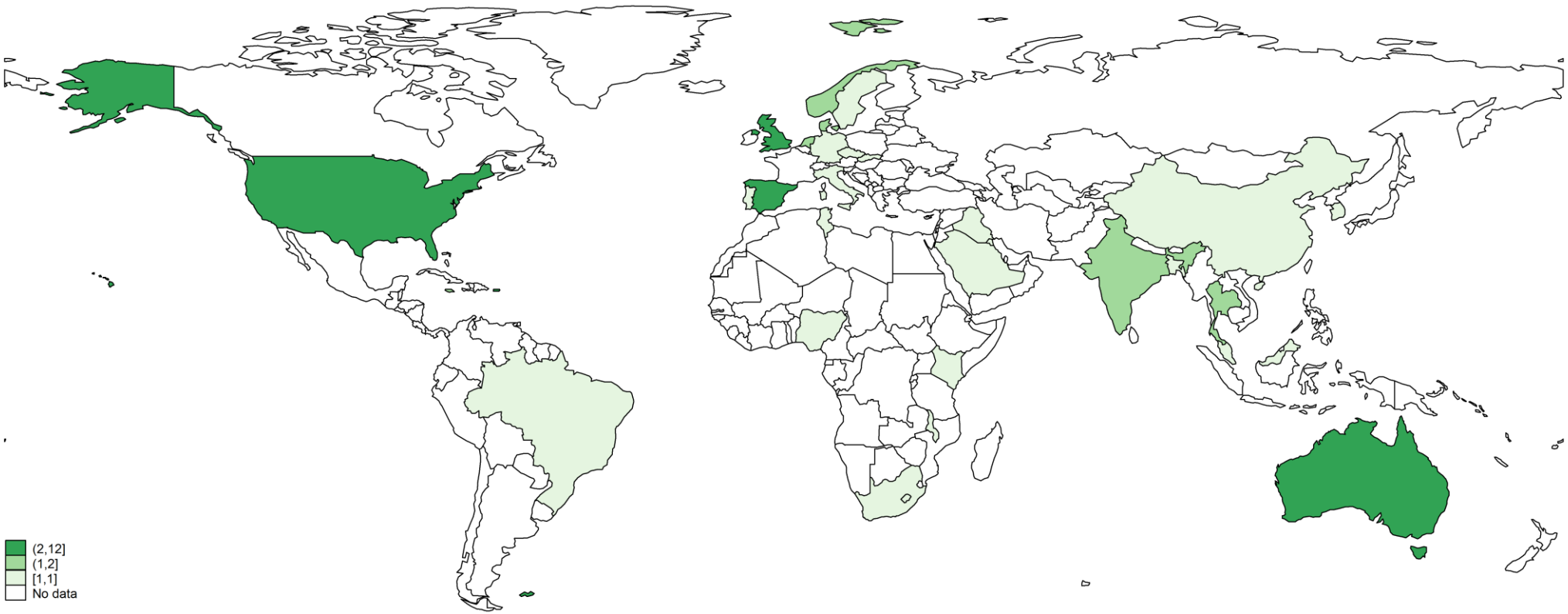
NOTE: Weights are from random effects analysis



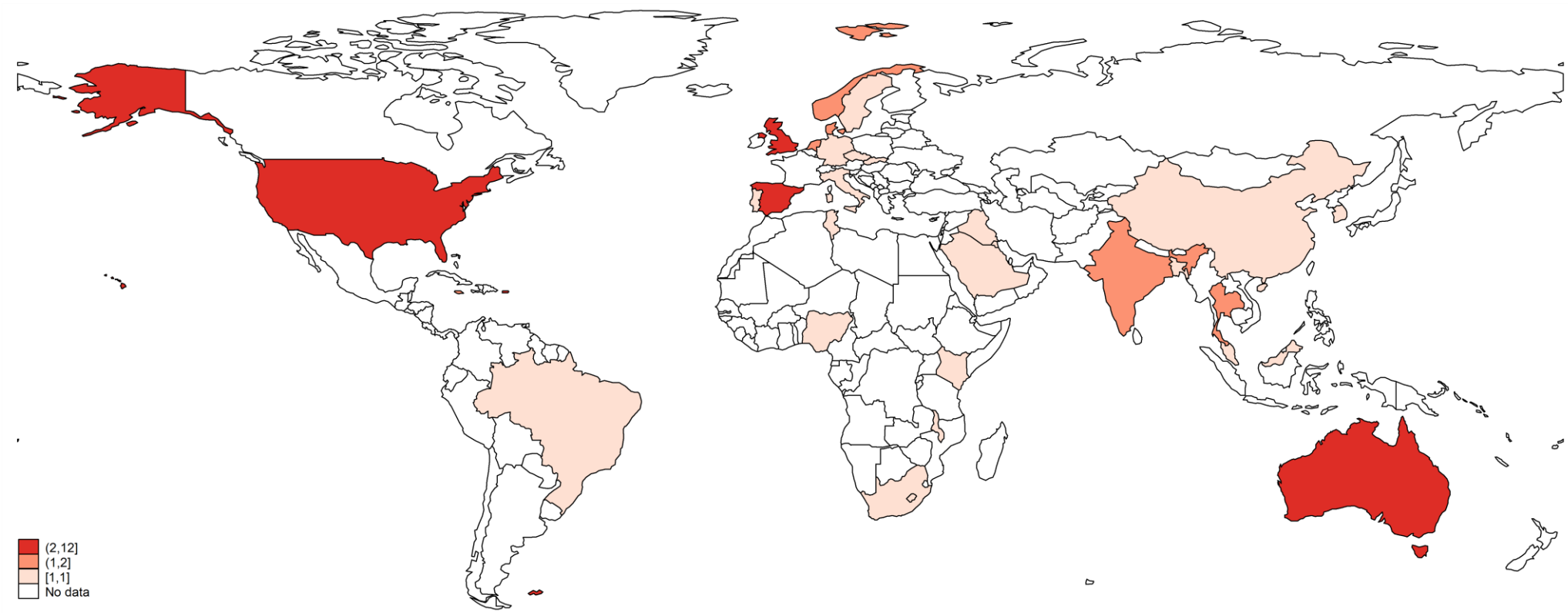
Supplementary Figure S2: Publication years of included studies on incidence of invasive infant GBS disease



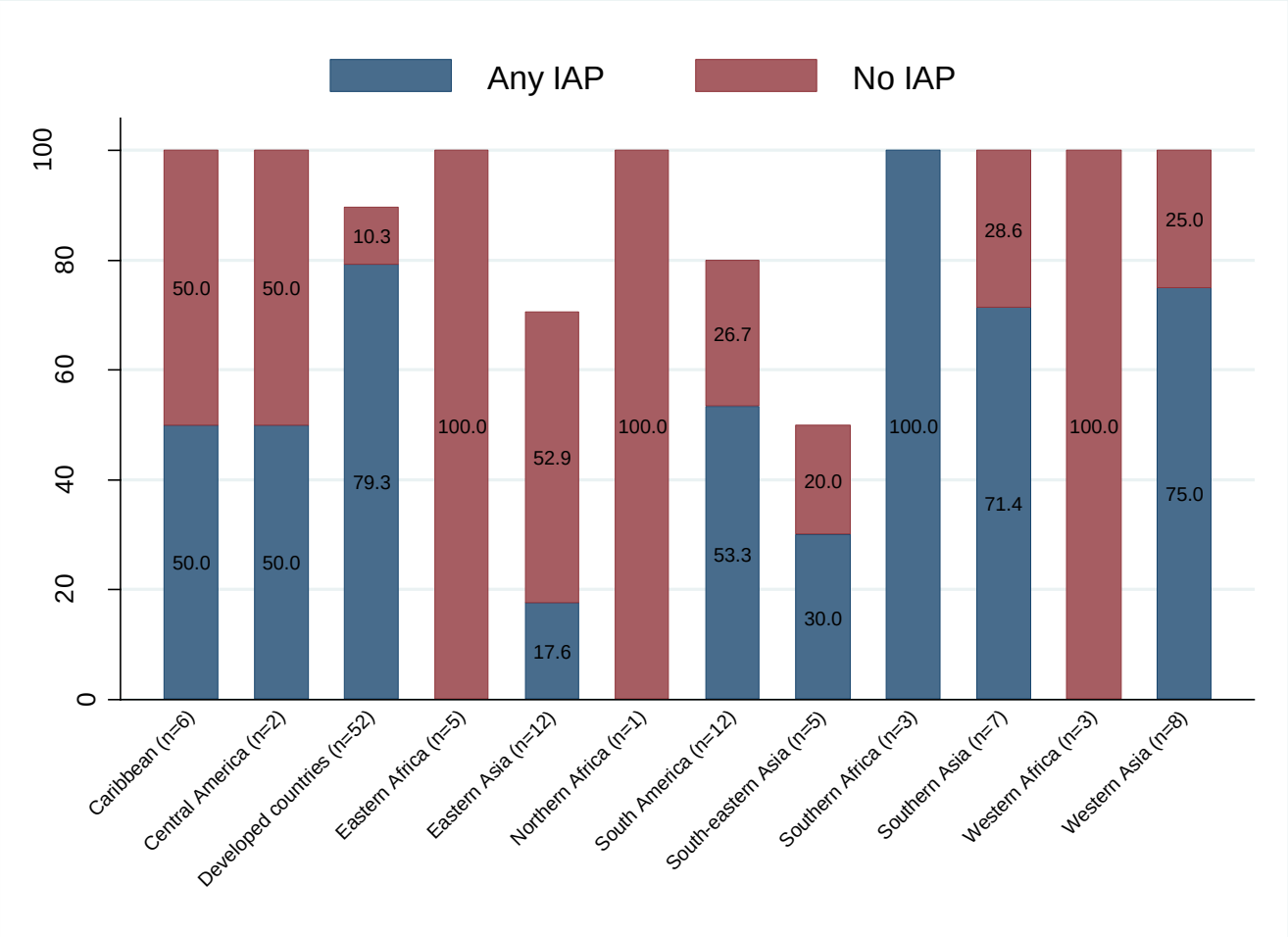
Supplementary Figure S3A. Map illustrating number of studies by country reporting incidence of GBS invasive disease in the previous systematic review by Edmond[1].



Supplementary Figure S3B. Map illustrating overall incidence of GBS disease among infants aged 0-89 days by country included in the previous meta-analysis by Edmond[1].



Supplementary Figure S4. Regional distribution of included studies assessing incidence of infant GBS disease, and use of intrapartum antibiotic prophylaxis, 2000-2017. *

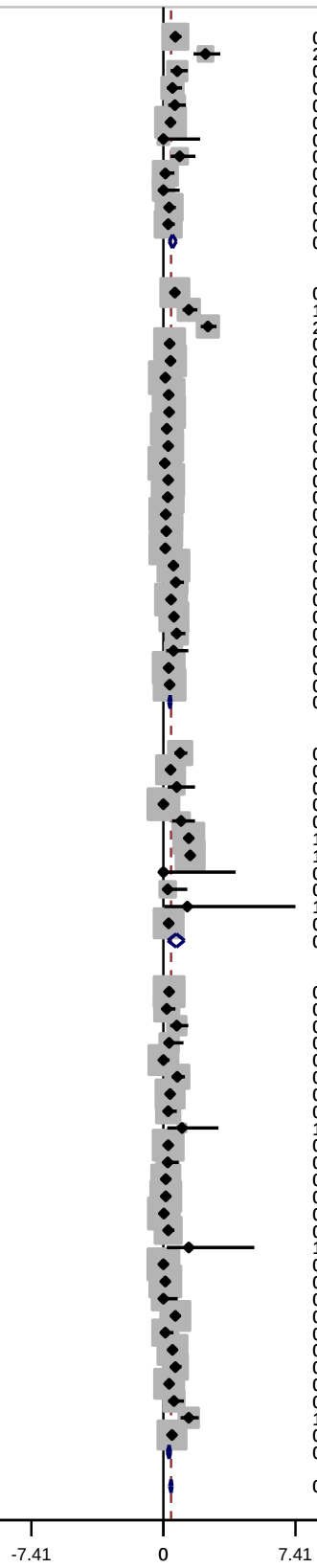


* Information about intrapartum antibiotic prophylaxis (IAP) was available for 116 of 135 studies included in the meta-analysis. Not available information for 6 developed countries, 5 countries from Eastern Asia, 3 countries from South America and 5 countries form South-eastern Asia.

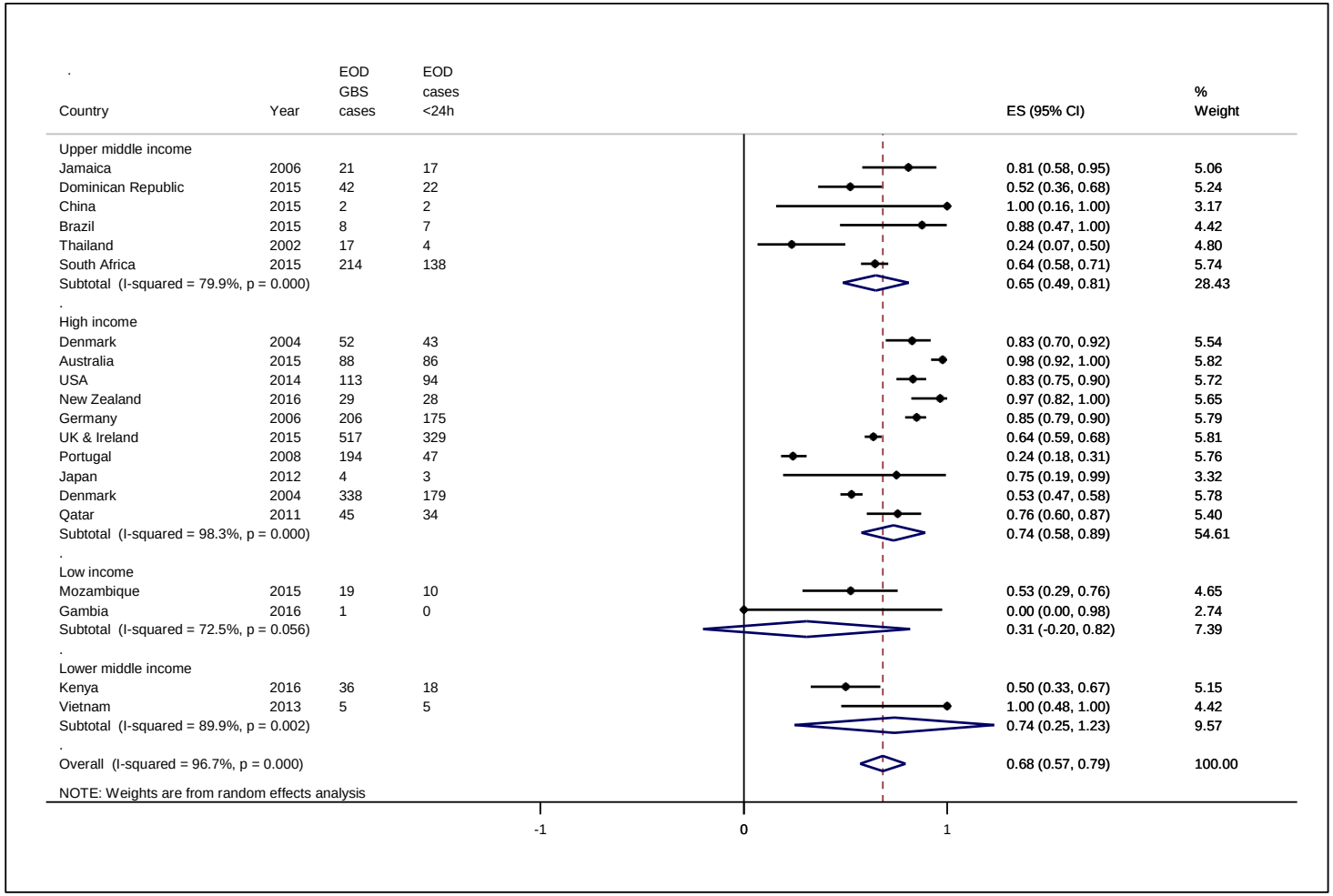
Supplementary Figure S5: Incidence risk of early-onset GBS disease worldwide

Country	year	Nº of livebirths	EOD GBS cases	ES (95% CI)	% Weight
Latin America & the Caribbean					
Jamaica	2006	32029	21	0.66 (0.41, 1.00)	1.27
Dominican Republic	2015	17867	42	2.35 (1.69, 3.18)	0.43
Panama	2015	15500	12	0.77 (0.40, 1.35)	0.80
Brazil	2012	13749	7	0.51 (0.20, 1.05)	0.92
Brazil	2015	12585	8	0.64 (0.27, 1.25)	0.78
Brazil	2002	111241	43	0.39 (0.28, 0.52)	1.87
Argentina	2005	1784	0	0.00 (0.00, 2.07)	0.25
Brazil	2016	8818	8	0.91 (0.39, 1.79)	0.47
Chile	2007	9002	1	0.11 (0.00, 0.62)	1.24
Brazil	2016	4120	0	0.00 (0.00, 0.89)	0.86
Brazil	2016	21219	7	0.33 (0.13, 0.68)	1.35
Argentina	2006	18444	5	0.27 (0.09, 0.63)	1.36
Subtotal (I-squared = 74.5%, p = 0.000)				0.51 (0.30, 0.71)	11.60
Developed countries					
Denmark	2004	80263	52	0.65 (0.48, 0.85)	1.67
Denmark	2014	33616	48	1.43 (1.05, 1.89)	0.93
Canada	2016	53537	134	2.50 (2.10, 2.96)	0.90
Israel	2013	91590	31	0.34 (0.23, 0.48)	1.85
Spain	2008	107021	42	0.39 (0.28, 0.53)	1.86
Australia	2015	847783	88	0.10 (0.08, 0.13)	2.04
Spain	2015	168277	49	0.29 (0.22, 0.38)	1.96
Norway	2016	168877	53	0.31 (0.24, 0.41)	1.95
Italy	2016	146682	27	0.18 (0.12, 0.27)	1.98
Canada	2016	50000	13	0.26 (0.14, 0.44)	1.77
Japan	2013	438359	36	0.08 (0.06, 0.11)	2.04
USA	2014	434908	113	0.26 (0.21, 0.31)	2.02
New Zealand	2016	127134	29	0.23 (0.15, 0.33)	1.95
Germany	2006	1454520	206	0.14 (0.12, 0.16)	2.05
Israel	2016	108000	17	0.16 (0.09, 0.25)	1.96
Switzerland	2016	69118	8	0.12 (0.05, 0.23)	1.95
UK & Ireland	2015	914132	517	0.57 (0.52, 0.62)	2.02
Netherlands	2010	21429	15	0.70 (0.39, 1.15)	1.03
Portugal	2008	448531	194	0.43 (0.37, 0.50)	2.00
Sweden	2004	72641	42	0.58 (0.42, 0.78)	1.67
France	2010	20131	15	0.75 (0.42, 1.23)	0.96
Japan	2012	7332	4	0.55 (0.15, 1.40)	0.56
Denmark	2004	1203999	338	0.28 (0.25, 0.31)	2.04
Netherlands	2007	1000516	353	0.35 (0.32, 0.39)	2.03
Subtotal (I-squared = 97.0%, p = 0.000)				0.37 (0.30, 0.44)	41.16
Africa					
Malawi	2007	31458	29	0.92 (0.62, 1.32)	1.10
Mozambique	2015	47651	19	0.40 (0.24, 0.62)	1.64
Kenya	2016	6598	5	0.76 (0.25, 1.77)	0.41
Zambia	2016	21120	0	0.00 (0.00, 0.17)	1.95
Tunisia	2008	11201	11	0.98 (0.49, 1.76)	0.55
South Africa	2016	316767	447	1.41 (1.28, 1.55)	1.83
South Africa	2015	142700	214	1.50 (1.31, 1.71)	1.59
Nigeria	2016	908	0	0.00 (0.00, 4.05)	0.07
Nigeria	2005	4135	1	0.24 (0.01, 1.35)	0.50
Gambia	2016	750	1	1.33 (0.03, 7.41)	0.02
South Africa	2014	49030	14	0.29 (0.16, 0.48)	1.74
Subtotal (I-squared = 97.6%, p = 0.000)				0.71 (0.24, 1.17)	11.41
Asia					
China	2013	76141	24	0.32 (0.20, 0.47)	1.83
China	2015	10924	2	0.18 (0.02, 0.66)	1.20
Hong Kong	2015	13244	10	0.76 (0.36, 1.39)	0.73
Macau	2009	6400	2	0.31 (0.04, 1.13)	0.67
Taiwan	2016	11123	0	0.00 (0.00, 0.33)	1.73
Malaysia	2013	25768	20	0.78 (0.47, 1.20)	1.08
Malaysia	2009	46140	17	0.37 (0.21, 0.59)	1.65
Philippines	2015	11768	3	0.25 (0.05, 0.74)	1.12
Thailand	2013	2849	3	1.05 (0.22, 3.07)	0.14
Thailand	2002	62761	17	0.27 (0.16, 0.43)	1.81
Thailand	2015	8409	2	0.24 (0.03, 0.86)	0.94
Thailand	2009	21299	3	0.14 (0.03, 0.41)	1.64
Vietnam	2013	39529	5	0.13 (0.04, 0.30)	1.85
Thailand	2014	41483	1	0.02 (0.00, 0.13)	1.99
Bangladesh	2016	19230	5	0.26 (0.08, 0.61)	1.40
India	2016	1416	2	1.41 (0.17, 5.09)	0.05
India	2009	34362	0	0.00 (0.00, 0.11)	2.01
India	2015	88636	8	0.09 (0.04, 0.18)	1.99
India	2009	4689	0	0.00 (0.00, 0.79)	0.99
India	2014	107692	73	0.68 (0.53, 0.85)	1.74
Bangladesh	2009	10000	1	0.10 (0.00, 0.56)	1.34
Qatar	2011	87260	45	0.52 (0.38, 0.69)	1.75
Saudi Arabia	2017	30389	20	0.66 (0.40, 1.02)	1.24
Kuwait	2009	44990	14	0.31 (0.17, 0.52)	1.69
United Arab Emirates	2017	13584	8	0.59 (0.25, 1.16)	0.85
Kuwait	2017	23501	33	1.40 (0.97, 1.97)	0.75
Kuwait	2011	56134	27	0.48 (0.32, 0.70)	1.64
Subtotal (I-squared = 87.0%, p = 0.000)				0.31 (0.22, 0.41)	35.83
Overall (I-squared = 95.3%, p = 0.000)				0.41 (0.36, 0.46)	100.00

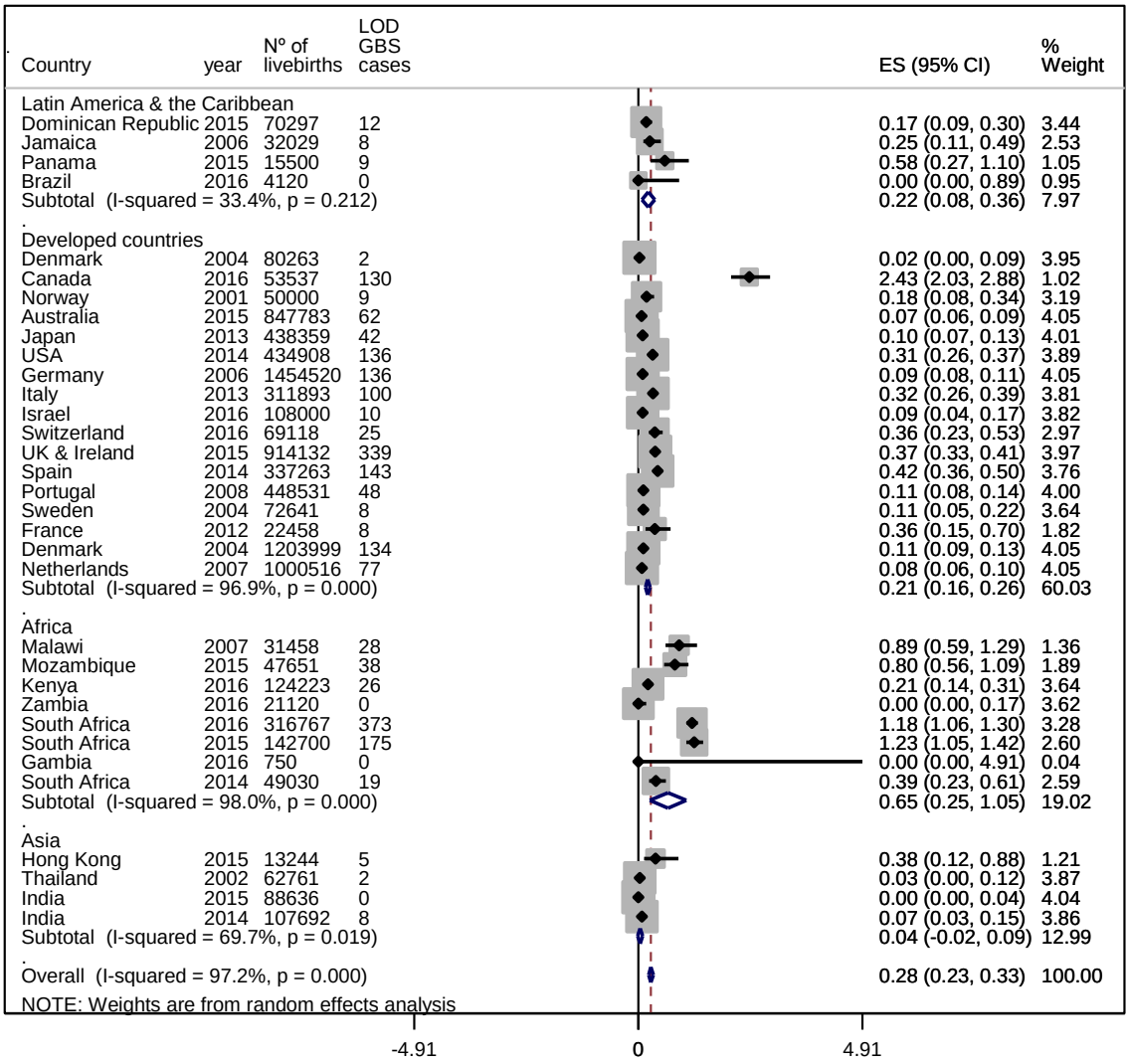
NOTE: Weights are from random effects analysis



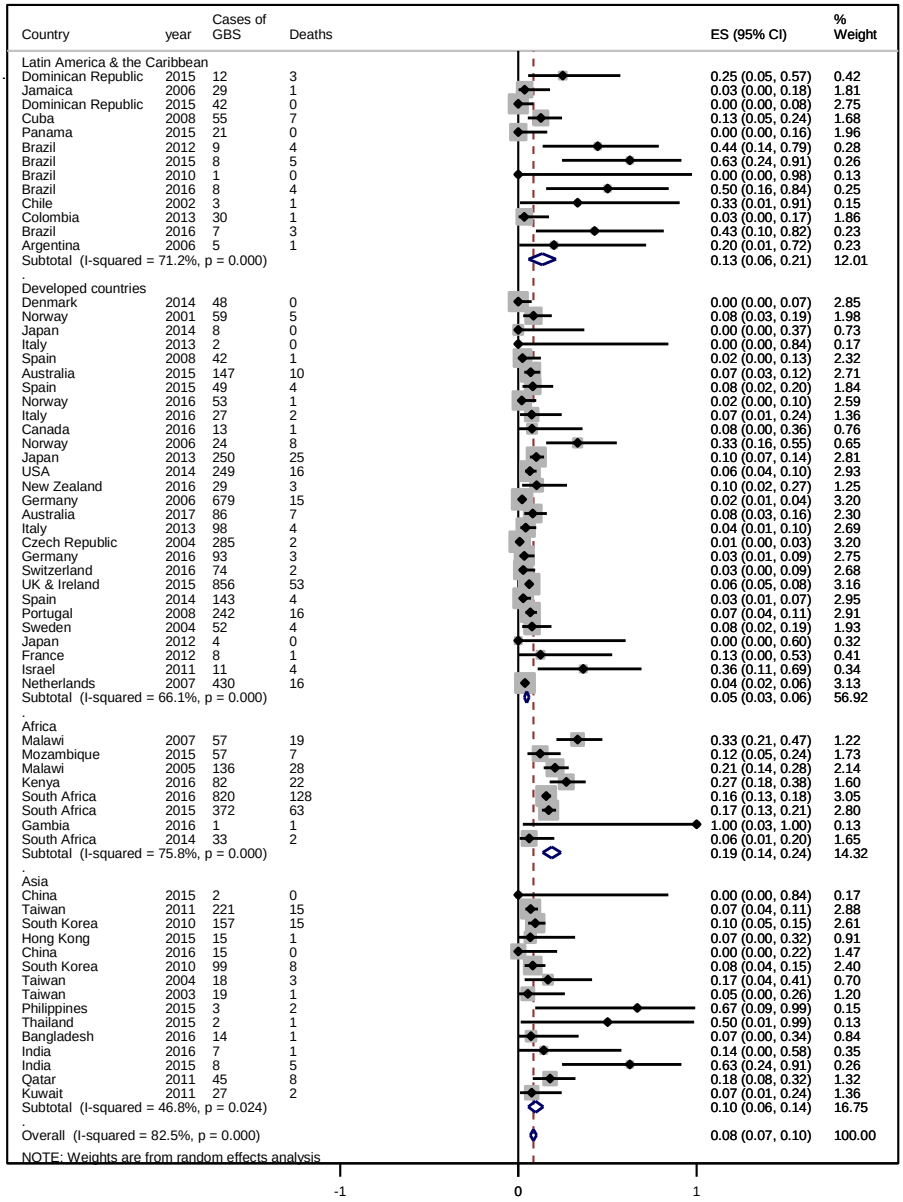
Supplementary Figure S6: Percentage of early-onset GBS disease cases in the first 24 hours after birth, of all early-onset (days 0-6) cases.



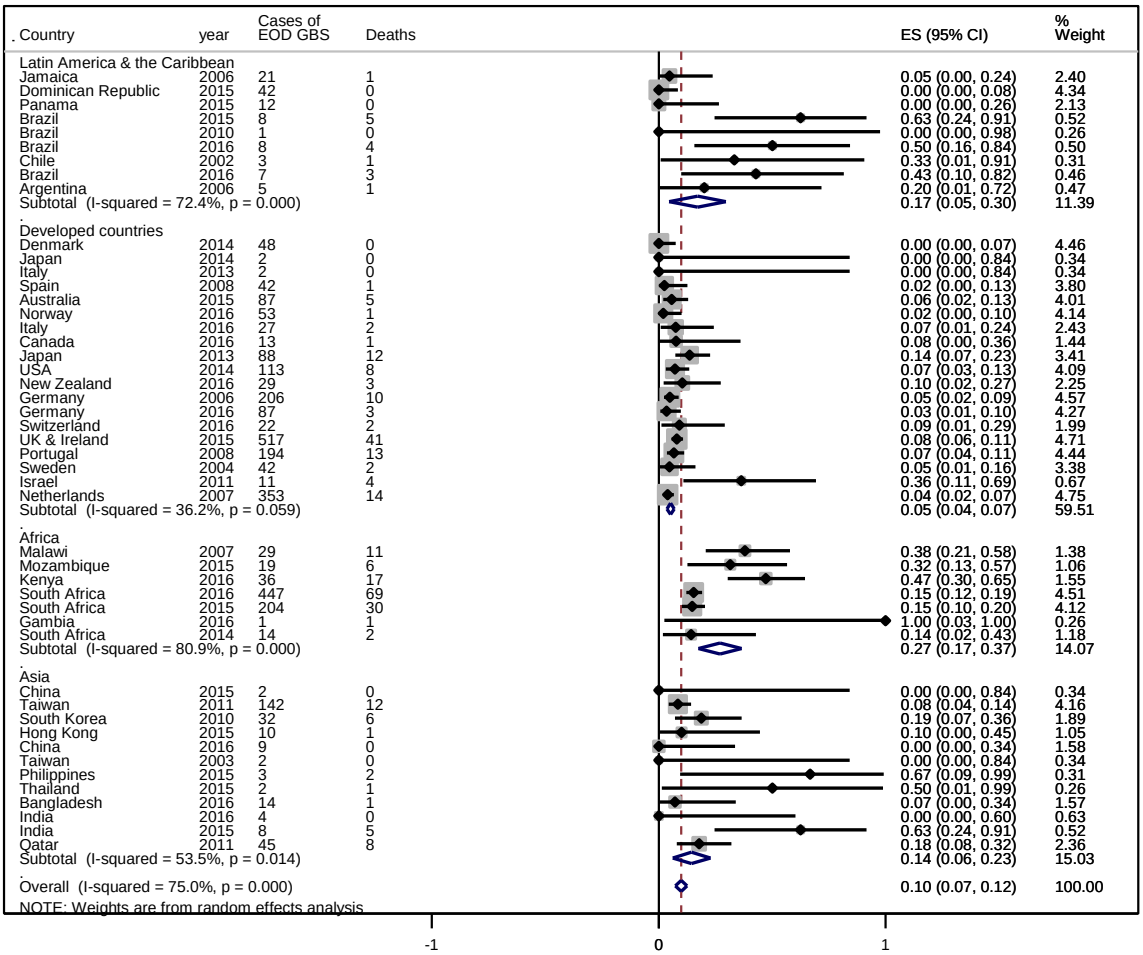
Supplementary Figure S7: Incidence risk of late-onset GBS disease worldwide by region



Supplementary Figure S8: Case fatality risk of GBS disease in infants aged 0-89 days worldwide by region



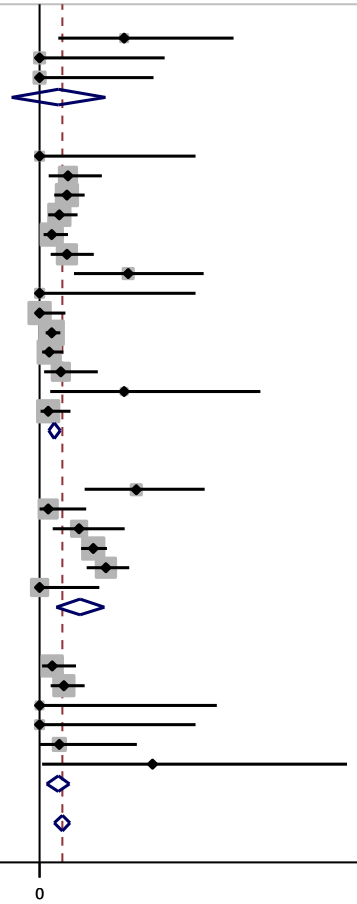
Supplementary Figure S9: Case fatality risk of early-onset GBS disease by region.



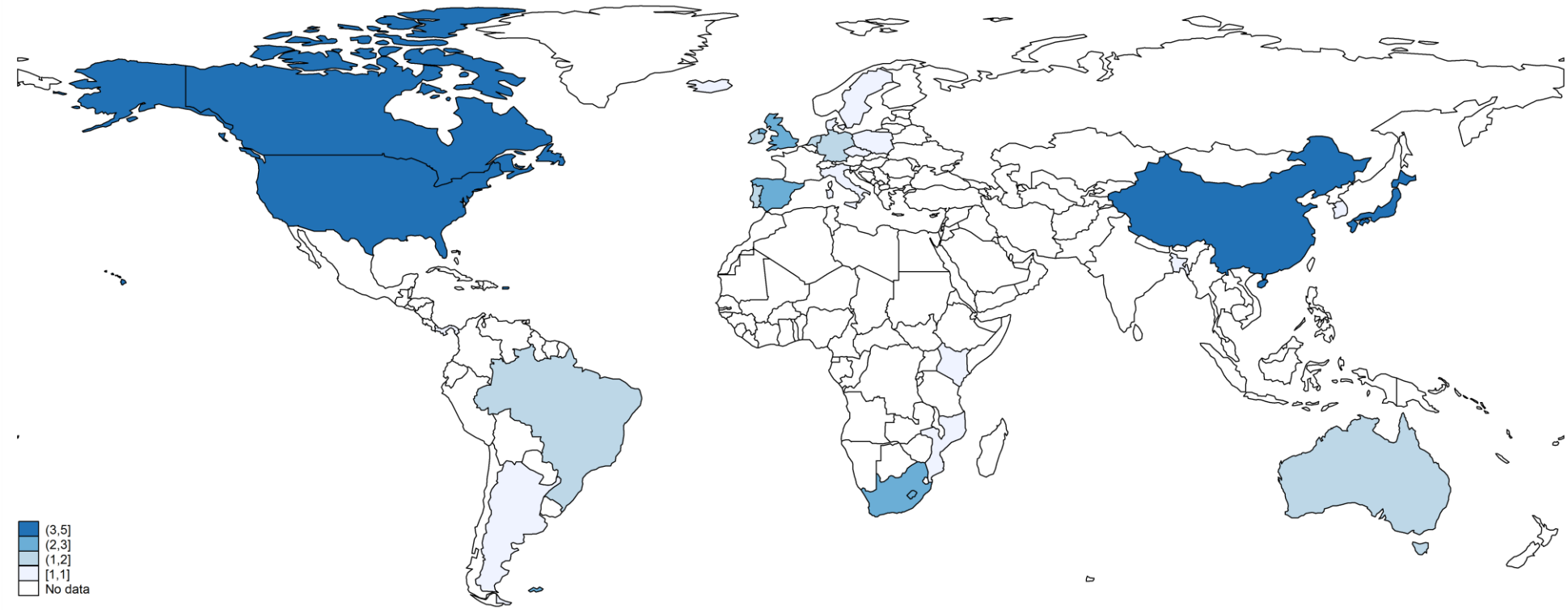
Supplementary Figure S10: Case fatality risk of late-onset GBS disease by region.

Country	Year	Cases of LOD GBS	Deaths	ES (95% CI)	% Weight
Latin America & the Caribbean					
Dominican Republic	2015	12	3	0.25 (0.05, 0.57)	0.72
Jamaica	2006	8	0	0.00 (0.00, 0.37)	1.28
Panama	2015	9	0	0.00 (0.00, 0.34)	1.49
Subtotal (I-squared = 31.5%, p = 0.232)				0.06 (-0.08, 0.19)	3.50
.					
Developed countries					
Japan	2014	6	0	0.00 (0.00, 0.46)	0.89
Australia	2015	60	5	0.08 (0.03, 0.18)	3.97
Japan	2013	162	13	0.08 (0.04, 0.13)	5.70
USA	2014	136	8	0.06 (0.03, 0.11)	5.79
Germany	2006	136	5	0.04 (0.01, 0.08)	6.19
Australia	2017	86	7	0.08 (0.03, 0.16)	4.69
Italy	2013	23	6	0.26 (0.10, 0.48)	1.22
Germany	2016	6	0	0.00 (0.00, 0.46)	0.89
Switzerland	2016	46	0	0.00 (0.00, 0.08)	6.05
UK & Ireland	2015	339	12	0.04 (0.02, 0.06)	6.86
Spain	2014	143	4	0.03 (0.01, 0.07)	6.43
Portugal	2008	48	3	0.06 (0.01, 0.17)	3.91
Sweden	2004	8	2	0.25 (0.03, 0.65)	0.52
Netherlands	2007	77	2	0.03 (0.00, 0.09)	5.77
Subtotal (I-squared = 32.9%, p = 0.112)				0.04 (0.03, 0.06)	58.85
.					
Africa					
Malawi	2007	28	8	0.29 (0.13, 0.49)	1.37
Mozambique	2015	38	1	0.03 (0.00, 0.14)	4.42
Kenya	2016	43	5	0.12 (0.04, 0.25)	2.87
South Africa	2016	373	59	0.16 (0.12, 0.20)	6.06
South Africa	2015	168	33	0.20 (0.14, 0.26)	4.73
South Africa	2014	19	0	0.00 (0.00, 0.18)	3.52
Subtotal (I-squared = 81.1%, p = 0.000)				0.12 (0.05, 0.19)	22.98
.					
Asia					
Taiwan	2011	79	3	0.04 (0.01, 0.11)	5.45
South Korea	2010	125	9	0.07 (0.03, 0.13)	5.46
Hong Kong	2015	5	0	0.00 (0.00, 0.52)	0.71
China	2016	6	0	0.00 (0.00, 0.46)	0.89
Taiwan	2003	17	1	0.06 (0.00, 0.29)	1.92
India	2016	3	1	0.33 (0.01, 0.91)	0.25
Subtotal (I-squared = 0.0%, p = 0.734)				0.05 (0.02, 0.09)	14.67
.					
Overall (I-squared = 68.4%, p = 0.000)				0.07 (0.04, 0.09)	100.00

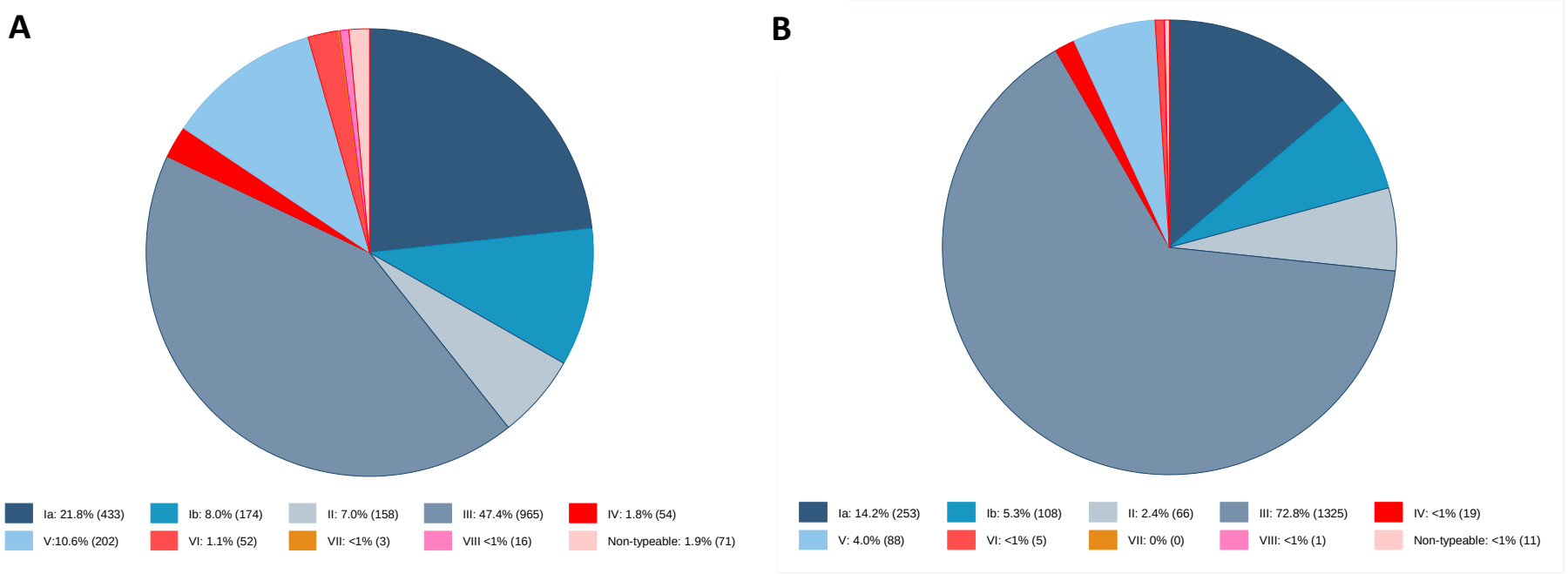
NOTE: Weights are from random effects analysis



Supplementary Figure S11: Map of included studies reporting serotype data for infant GBS disease



Supplementary Figure S12: Distribution of GBS serotypes for A) early onset GBS disease and B) late onset GBS disease

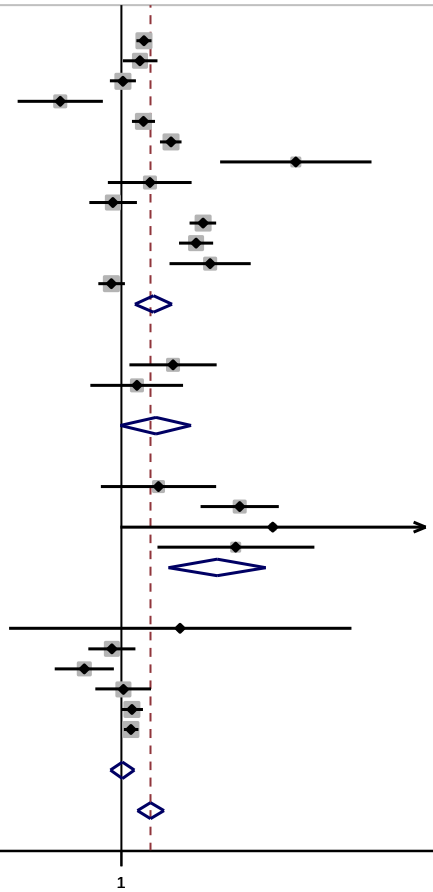


*Figures presenting prevalence of serotype in % (n).

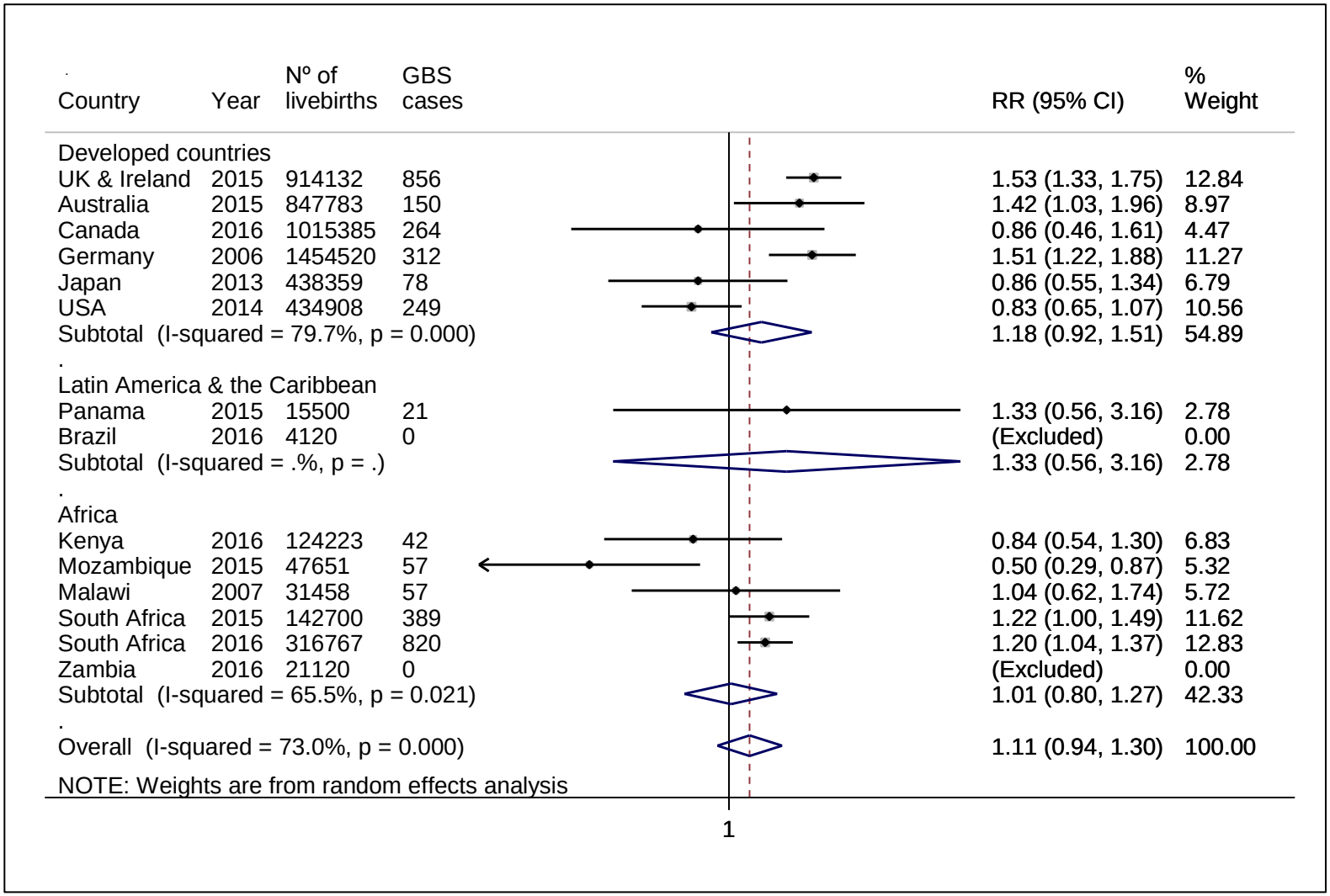
Supplementary Figure S13A: Ratio of early to late-onset GBS disease cases among infant GBS disease cases

Country	Year	Nº of livebirths	GBS cases	RR (95% CI)	% Weight
Developed countries					
UK & Ireland	2015	914132	856	1.53 (1.33, 1.75)	5.44
Australia	2015	847783	150	1.42 (1.03, 1.96)	5.05
Canada	2016	1015385	264	1.03 (0.81, 1.31)	5.26
Switzerland	2016	69118	33	0.32 (0.14, 0.71)	3.52
Germany	2006	1454520	312	1.51 (1.22, 1.88)	5.31
Denmark	2004	1203999	472	2.52 (2.07, 3.08)	5.34
Denmark	2004	80263	54	26.00 (6.33, 106.74)	1.98
Israel	2016	108000	27	1.70 (0.78, 3.71)	3.57
Japan	2013	438359	78	0.86 (0.55, 1.34)	4.70
Netherlands	2007	1000516	430	4.58 (3.58, 5.87)	5.25
Portugal	2008	448531	242	4.04 (2.95, 5.54)	5.08
Sweden	2004	72641	50	5.25 (2.47, 11.18)	3.65
USA	2014	434908	249	0.83 (0.65, 1.07)	5.24
Subtotal (I-squared = 94.3%, p = 0.000)				1.82 (1.29, 2.57)	59.39
.					
Latin America & the Caribbean					
Jamaica	2006	32029	29	2.63 (1.16, 5.93)	3.47
Panama	2015	15500	21	1.33 (0.56, 3.16)	3.31
Brazil	2016	4120	0	(Excluded)	0.00
Subtotal (I-squared = 20.2%, p = 0.263)				1.90 (0.98, 3.69)	6.77
.					
Asia					
Hong Kong	2015	13244	15	2.00 (0.68, 5.85)	2.72
India	2014	107692	81	9.13 (4.40, 18.93)	3.74
India	2015	88636	8	17.00 (0.98, 294.53)	0.66
Thailand	2002	62761	19	8.50 (1.96, 36.79)	1.89
Subtotal (I-squared = 51.5%, p = 0.103)				5.99 (2.40, 14.92)	9.01
.					
Africa					
Gambia	2016	750	1	3.00 (0.12, 73.52)	0.54
Kenya	2016	124223	42	0.84 (0.54, 1.30)	4.70
Mozambique	2015	47651	57	0.50 (0.29, 0.87)	4.35
Malawi	2007	31458	57	1.04 (0.62, 1.74)	4.45
South Africa	2015	142700	389	1.22 (1.00, 1.49)	5.34
South Africa	2016	316767	820	1.20 (1.04, 1.37)	5.44
Zambia	2016	21120	0	(Excluded)	0.00
Subtotal (I-squared = 58.1%, p = 0.036)				1.02 (0.82, 1.27)	24.83
.					
Overall (I-squared = 91.9%, p = 0.000)				1.72 (1.35, 2.21)	100.00

NOTE: Weights are from random effects analysis

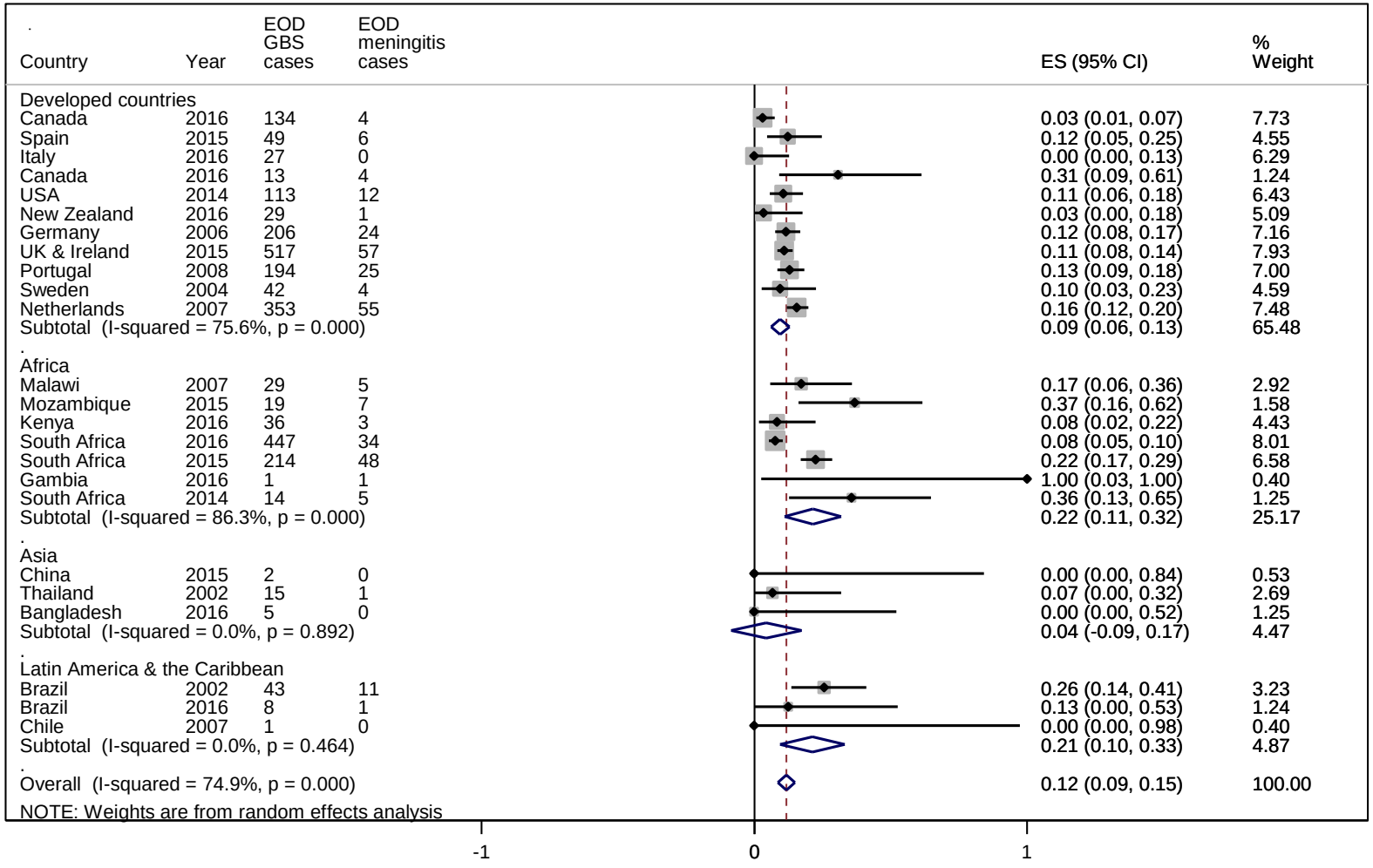


Supplementary Figure S13B: Early to late-onset ratio for infant invasive GBS disease in high quality studies.

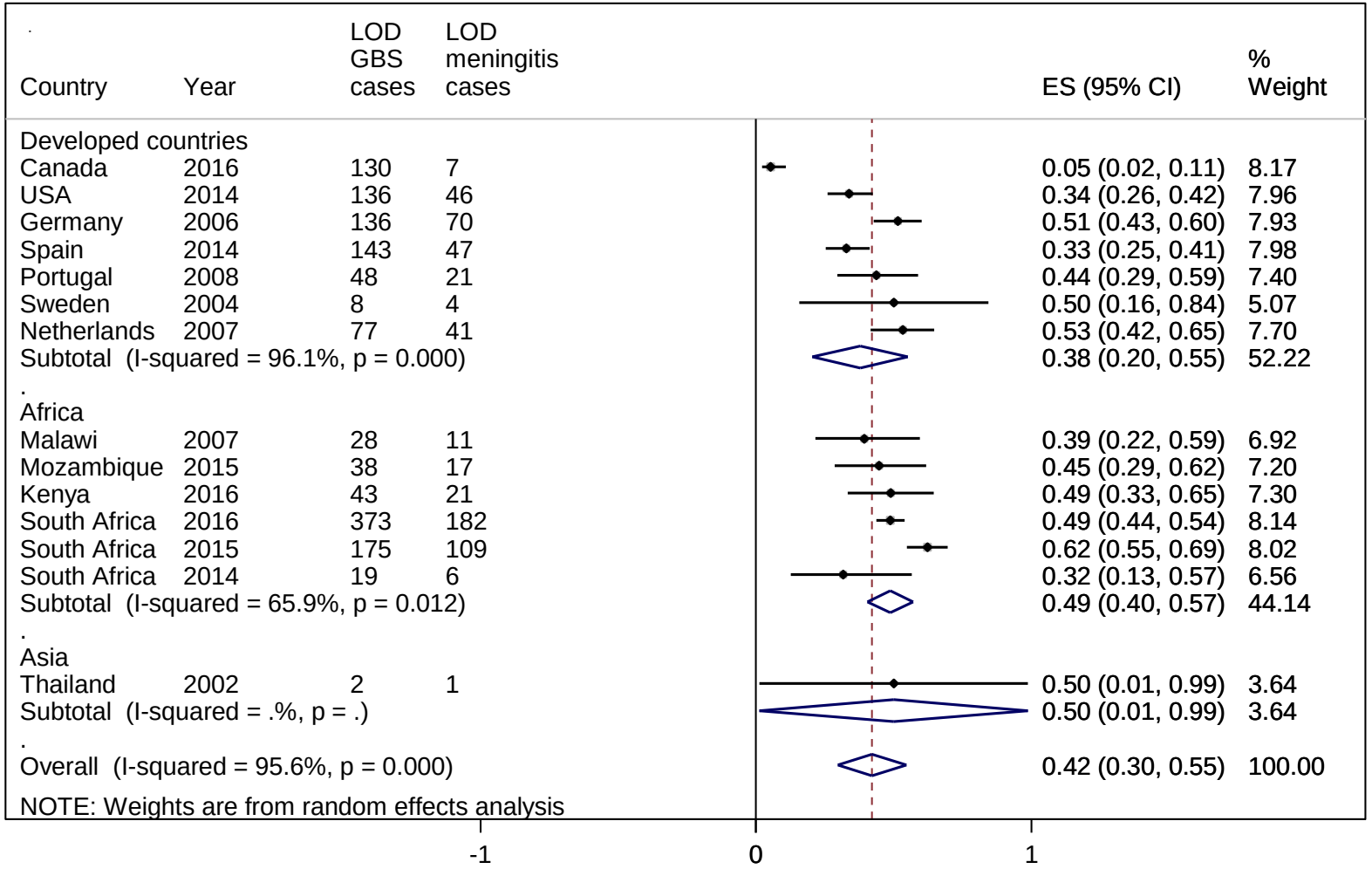


*Analysis was restricted to those studies reporting early to late-onset ratio between 0.5 and 1.5 based on high quality studies in high, lower-middle and upper-middle income countries[93-96].

Supplementary Figure S14: Meningitis cases among early-onset GBS cases.



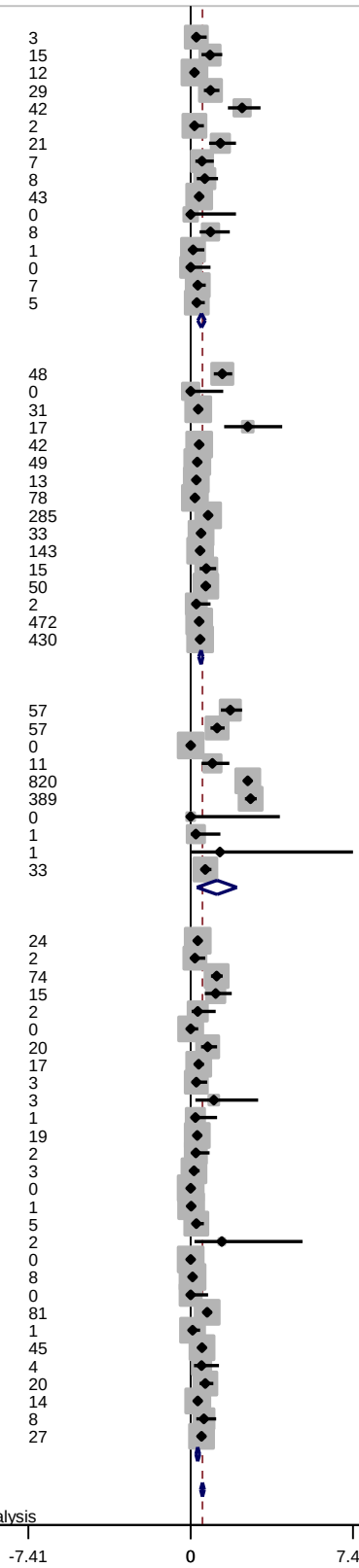
Supplementary Figure S15: Meningitis cases among late-onset GBS cases



Supplementary Figure S16: Incidence of GBS disease among infants aged 0-89 days in facility-based studies by region.

Country	year	Nº of livebirths	GBS cases	ES (95% CI)	% Weight
Latin America & the Caribbean					
Antigua and Barbuda	2007	12000	3	0.25 (0.05, 0.73)	1.46
Jamaica	2005	17262	15	0.87 (0.49, 1.43)	1.20
Dominican Republic	2015	70297	12	0.17 (0.09, 0.30)	1.84
Jamaica	2006	32029	29	0.91 (0.61, 1.30)	1.45
Dominican Republic	2015	17867	42	2.35 (1.69, 3.18)	0.79
Costa Rica	2004	11952	2	0.17 (0.02, 0.60)	1.55
Panama	2015	15500	21	1.35 (0.84, 2.07)	0.96
Brazil	2012	13749	7	0.51 (0.20, 1.05)	1.30
Brazil	2015	12585	8	0.64 (0.27, 1.25)	1.17
Brazil	2002	111241	43	0.39 (0.28, 0.52)	1.82
Argentina	2005	1784	0	0.00 (0.00, 2.07)	0.51
Brazil	2016	8818	8	0.91 (0.39, 1.79)	0.84
Chile	2007	9002	1	0.11 (0.00, 0.62)	1.52
Brazil	2016	4120	0	0.00 (0.00, 0.89)	1.25
Brazil	2016	21219	7	0.33 (0.13, 0.68)	1.59
Argentina	2006	18444	5	0.27 (0.09, 0.63)	1.59
Subtotal (I-squared = 80.1%, p = 0.000)				0.49 (0.32, 0.66)	20.84
.					
Developed countries					
Denmark	2014	33616	48	1.43 (1.05, 1.89)	1.30
Japan	2012	2499	0	0.00 (0.00, 1.48)	0.79
Israel	2013	91590	31	0.34 (0.23, 0.48)	1.81
Slovakia	2004	6538	17	2.60 (1.52, 4.16)	0.35
Spain	2008	107021	42	0.39 (0.28, 0.53)	1.82
Spain	2015	168277	49	0.29 (0.22, 0.38)	1.85
Canada	2016	50000	13	0.26 (0.14, 0.44)	1.78
Japan	2013	438359	78	0.18 (0.14, 0.22)	1.88
Czech Republic	2004	356250	285	0.80 (0.71, 0.90)	1.84
Switzerland	2016	69118	33	0.48 (0.33, 0.67)	1.76
Spain	2014	337263	143	0.42 (0.36, 0.50)	1.86
Netherlands	2010	21429	15	0.70 (0.39, 1.15)	1.38
Sweden	2004	72641	50	0.69 (0.51, 0.91)	1.72
Japan	2012	7943	2	0.25 (0.03, 0.91)	1.27
Denmark	2004	1203999	472	0.39 (0.36, 0.43)	1.88
Netherlands	2007	1000516	430	0.43 (0.39, 0.47)	1.88
Subtotal (I-squared = 93.6%, p = 0.000)				0.46 (0.37, 0.56)	25.17
.					
Africa					
Malawi	2007	31458	57	1.81 (1.37, 2.35)	1.18
Mozambique	2015	47651	57	1.20 (0.91, 1.55)	1.49
Zambia	2016	21120	0	0.00 (0.00, 0.17)	1.85
Tunisia	2008	11201	11	0.98 (0.49, 1.76)	0.94
South Africa	2016	316767	820	2.59 (2.41, 2.77)	1.75
South Africa	2015	142700	389	2.73 (2.46, 3.01)	1.58
Nigeria	2016	908	0	0.00 (0.00, 4.05)	0.17
Nigeria	2005	4135	1	0.24 (0.01, 1.35)	0.88
Gambia	2016	750	1	1.33 (0.03, 7.41)	0.05
South Africa	2014	49030	33	0.67 (0.46, 0.95)	1.64
Subtotal (I-squared = 99.0%, p = 0.000)				1.19 (0.28, 2.11)	11.53
.					
Asia					
China	2013	76141	24	0.32 (0.20, 0.47)	1.80
China	2015	10924	2	0.18 (0.02, 0.66)	1.50
Taiwan	2011	63367	74	1.17 (0.92, 1.47)	1.58
Hong Kong	2015	13244	15	1.13 (0.63, 1.87)	0.96
Macau	2009	6400	2	0.31 (0.04, 1.13)	1.08
Taiwan	2016	11123	0	0.00 (0.00, 0.33)	1.76
Malaysia	2013	25768	20	0.78 (0.47, 1.20)	1.42
Malaysia	2009	46140	17	0.37 (0.21, 0.59)	1.73
Philippines	2015	11768	3	0.25 (0.05, 0.74)	1.45
Thailand	2013	2849	3	1.05 (0.22, 3.07)	0.31
Singapore	2006	4636	1	0.22 (0.01, 1.20)	0.99
Thailand	2002	62761	19	0.30 (0.18, 0.47)	1.79
Thailand	2015	8409	2	0.24 (0.03, 0.86)	1.31
Thailand	2009	21299	3	0.14 (0.03, 0.41)	1.73
Vietnam	2013	726578	0	0.00 (0.00, 0.01)	1.89
Thailand	2014	41483	1	0.02 (0.00, 0.13)	1.87
Bangladesh	2016	19230	5	0.26 (0.08, 0.61)	1.61
India	2016	1416	2	1.41 (0.17, 5.09)	0.12
India	2009	34362	0	0.00 (0.00, 0.11)	1.87
India	2015	88636	8	0.09 (0.04, 0.18)	1.86
India	2009	4689	0	0.00 (0.00, 0.79)	1.36
India	2014	107692	81	0.75 (0.60, 0.93)	1.76
Iraq	2002	12826	1	0.08 (0.00, 0.43)	1.69
Qatar	2011	87260	45	0.52 (0.38, 0.69)	1.78
Saudi Arabia	2002	8000	4	0.50 (0.14, 1.28)	1.03
Saudi Arabia	2017	30389	20	0.66 (0.40, 1.02)	1.52
Kuwait	2009	44990	14	0.31 (0.17, 0.52)	1.75
United Arab Emirates	2017	13584	8	0.59 (0.25, 1.16)	1.24
Kuwait	2011	56134	27	0.48 (0.32, 0.70)	1.73
Subtotal (I-squared = 92.1%, p = 0.000)				0.32 (0.23, 0.41)	42.46
.					
Overall (I-squared = 98.0%, p = 0.000)				0.53 (0.44, 0.61)	100.00

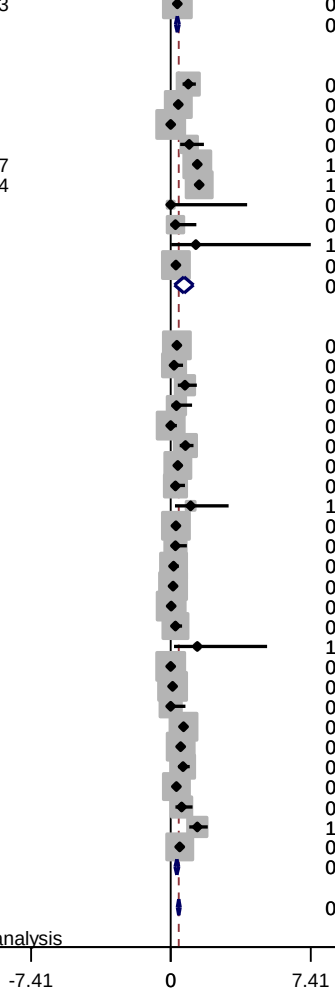
NOTE: Weights are from random effects analysis



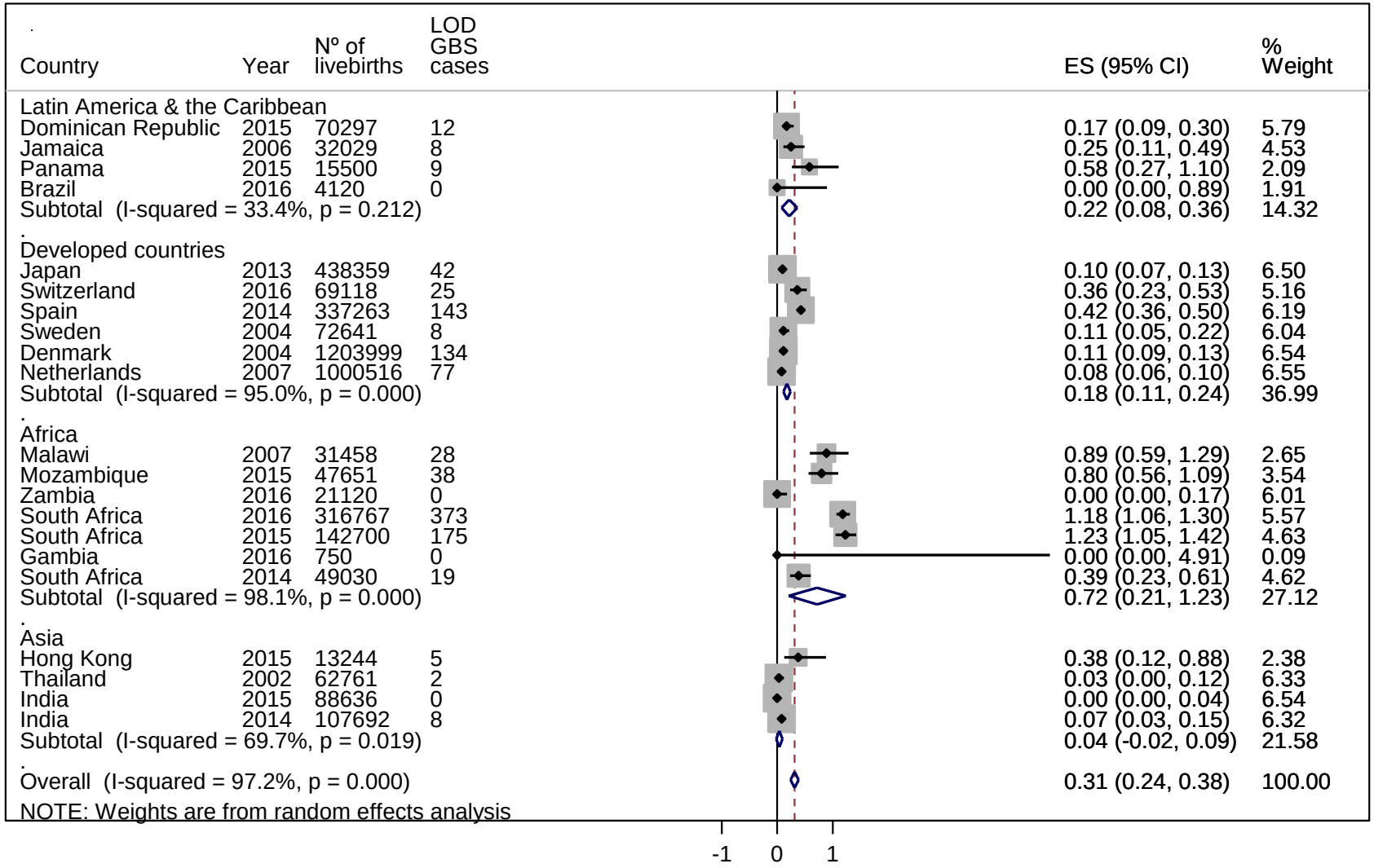
Supplementary Figure S17: Incidence of early-onset GBS disease among infants in facility-based studies by region

Country	year	Nº of livebirths	EOD GBS cases	ES (95% CI)	% Weight
Latin America & the Caribbean					
Jamaica	2006	32029	21	0.66 (0.41, 1.00)	1.73
Dominican Republic	2015	17867	42	2.35 (1.69, 3.18)	0.69
Panama	2015	15500	12	0.77 (0.40, 1.35)	1.19
Brazil	2012	13749	7	0.51 (0.20, 1.05)	1.34
Brazil	2015	12585	8	0.64 (0.27, 1.25)	1.16
Brazil	2002	111241	43	0.39 (0.28, 0.52)	2.30
Argentina	2005	1784	0	0.00 (0.00, 2.07)	0.41
Brazil	2016	8818	8	0.91 (0.39, 1.79)	0.75
Chile	2007	9002	1	0.11 (0.00, 0.62)	1.70
Brazil	2016	4120	0	0.00 (0.00, 0.89)	1.26
Brazil	2016	21219	7	0.33 (0.13, 0.68)	1.82
Argentina	2006	18444	5	0.27 (0.09, 0.63)	1.82
Subtotal (I-squared = 74.5%, p = 0.000)				0.51 (0.30, 0.71)	16.15
.					
Developed countries					
Denmark	2014	33616	48	1.43 (1.05, 1.89)	1.34
Israel	2013	91590	31	0.34 (0.23, 0.48)	2.29
Spain	2008	107021	42	0.39 (0.28, 0.53)	2.29
Spain	2015	168277	49	0.29 (0.22, 0.38)	2.37
Canada	2016	50000	13	0.26 (0.14, 0.44)	2.21
Japan	2013	438359	36	0.08 (0.06, 0.11)	2.44
Switzerland	2016	69118	8	0.12 (0.05, 0.23)	2.37
Netherlands	2010	21429	15	0.70 (0.39, 1.15)	1.46
Sweden	2004	72641	42	0.58 (0.42, 0.78)	2.12
Japan	2012	7332	4	0.55 (0.15, 1.40)	0.87
Denmark	2004	1203999	338	0.28 (0.25, 0.31)	2.44
Netherlands	2007	1000516	353	0.35 (0.32, 0.39)	2.44
Subtotal (I-squared = 95.2%, p = 0.000)				0.35 (0.26, 0.45)	24.64
.					
Africa					
Malawi	2007	31458	29	0.92 (0.62, 1.32)	1.55
Mozambique	2015	47651	19	0.40 (0.24, 0.62)	2.09
Zambia	2016	21120	0	0.00 (0.00, 0.17)	2.37
Tunisia	2008	11201	11	0.98 (0.49, 1.76)	0.85
South Africa	2016	316767	447	1.41 (1.28, 1.55)	2.27
South Africa	2015	142700	214	1.50 (1.31, 1.71)	2.05
Nigeria	2016	908	0	0.00 (0.00, 4.05)	0.12
Nigeria	2005	4135	1	0.24 (0.01, 1.35)	0.79
Gambia	2016	750	1	1.33 (0.03, 7.41)	0.04
South Africa	2014	49030	14	0.29 (0.16, 0.48)	2.19
Subtotal (I-squared = 97.8%, p = 0.000)				0.70 (0.21, 1.19)	14.31
.					
Asia					
China	2013	76141	24	0.32 (0.20, 0.47)	2.26
China	2015	10924	2	0.18 (0.02, 0.66)	1.66
Hong Kong	2015	13244	10	0.76 (0.36, 1.39)	1.10
Macau	2009	6400	2	0.31 (0.04, 1.13)	1.02
Taiwan	2016	11123	0	0.00 (0.00, 0.33)	2.17
Malaysia	2013	25768	20	0.78 (0.47, 1.20)	1.52
Malaysia	2009	46140	17	0.37 (0.21, 0.59)	2.11
Philippines	2015	11768	3	0.25 (0.05, 0.74)	1.57
Thailand	2013	2849	3	1.05 (0.22, 3.07)	0.23
Thailand	2002	62761	17	0.27 (0.16, 0.43)	2.25
Thailand	2015	8409	2	0.24 (0.03, 0.86)	1.36
Thailand	2009	21299	3	0.14 (0.03, 0.41)	2.09
Vietnam	2013	39529	5	0.13 (0.04, 0.30)	2.28
Thailand	2014	41483	1	0.02 (0.00, 0.13)	2.40
Bangladesh	2016	19230	5	0.26 (0.08, 0.61)	1.86
India	2016	1416	2	1.41 (0.17, 5.09)	0.08
India	2009	34362	0	0.00 (0.00, 0.11)	2.42
India	2015	88636	8	0.09 (0.04, 0.18)	2.40
India	2009	4689	0	0.00 (0.00, 0.79)	1.42
India	2014	107692	73	0.68 (0.53, 0.85)	2.19
Qatar	2011	87260	45	0.52 (0.38, 0.69)	2.20
Saudi Arabia	2017	30389	20	0.66 (0.40, 1.02)	1.70
Kuwait	2009	44990	14	0.31 (0.17, 0.52)	2.14
United Arab Emirates	2017	13584	8	0.59 (0.25, 1.16)	1.25
Kuwait	2017	23501	33	1.40 (0.97, 1.97)	1.12
Kuwait	2011	56134	27	0.48 (0.32, 0.70)	2.09
Subtotal (I-squared = 87.5%, p = 0.000)				0.32 (0.23, 0.42)	44.90
.					
Overall (I-squared = 94.3%, p = 0.000)				0.43 (0.35, 0.50)	100.00

NOTE: Weights are from random effects analysis



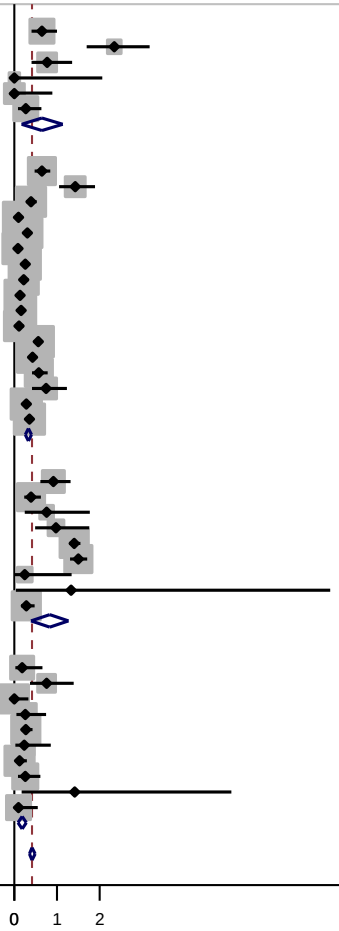
Supplementary Figure S18: Incidence of late-onset GBS disease among infants in facility-based studies by region



Supplementary Figure S19: Incidence of early-onset of GBS disease among infants aged 0-6 days by region*

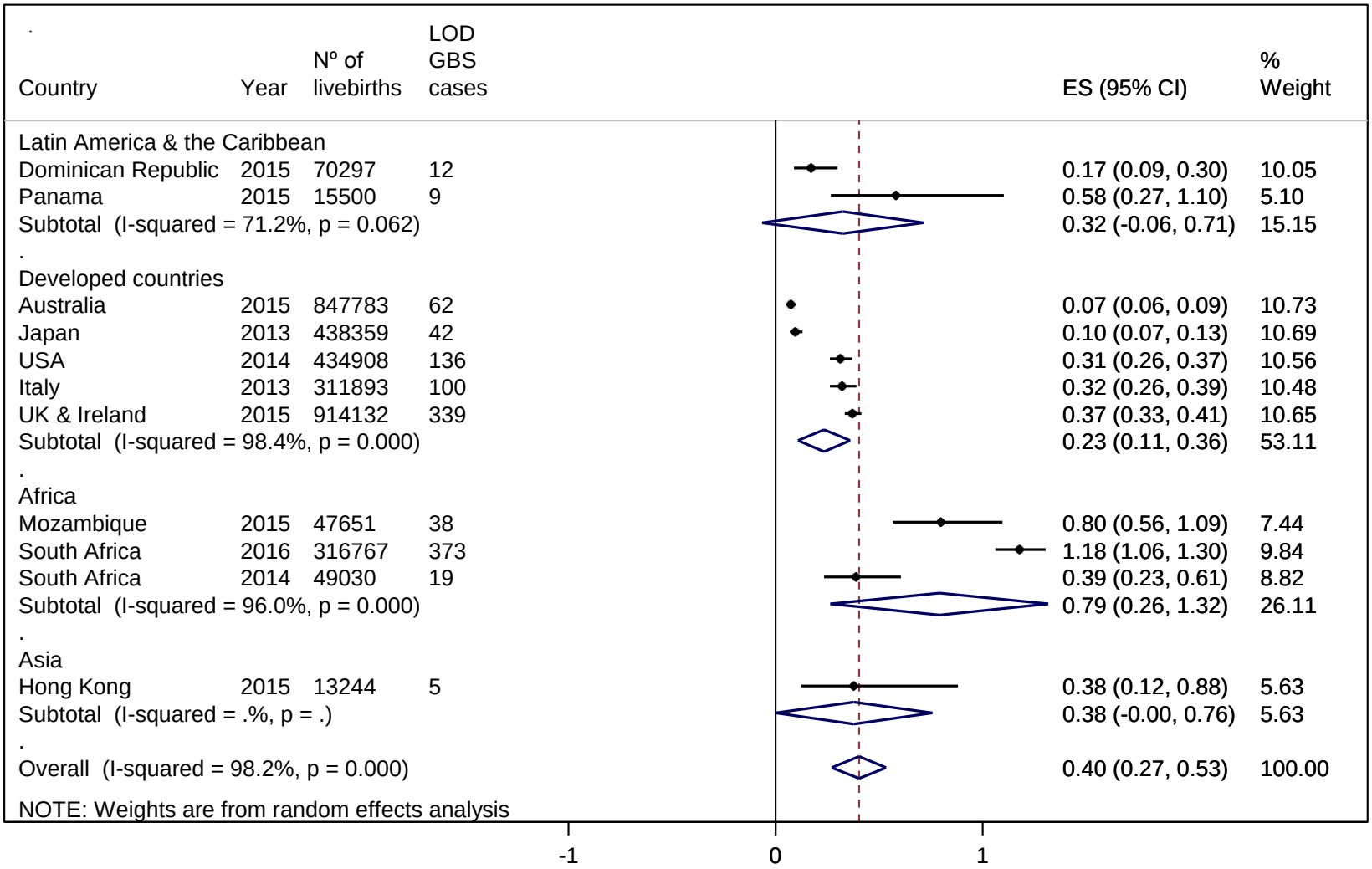
Country	Year	Nº of livebirths	EOD GBS cases	ES (95% CI)	% Weight
Latin America & the Caribbean					
Jamaica	2006	32029	21	0.66 (0.41, 1.00)	2.19
Dominican Republic	2015	17867	42	2.35 (1.69, 3.18)	0.72
Panama	2015	15500	12	0.77 (0.40, 1.35)	1.36
Argentina	2005	1784	0	0.00 (0.00, 2.07)	0.41
Brazil	2016	4120	0	0.00 (0.00, 0.89)	1.47
Argentina	2006	18444	5	0.27 (0.09, 0.63)	2.34
Subtotal (I-squared = 85.6%, p = 0.000)				0.65 (0.17, 1.13)	8.50
Developed countries					
Denmark	2004	80263	52	0.65 (0.48, 0.85)	2.89
Denmark	2014	33616	48	1.43 (1.05, 1.89)	1.58
Spain	2008	107021	42	0.39 (0.28, 0.53)	3.23
Australia	2015	847783	88	0.10 (0.08, 0.13)	3.58
Norway	2016	168877	53	0.31 (0.24, 0.41)	3.40
Japan	2013	438359	36	0.08 (0.06, 0.11)	3.57
USA	2014	434908	113	0.26 (0.21, 0.31)	3.53
New Zealand	2016	127134	29	0.23 (0.15, 0.33)	3.40
Germany	2006	1454520	206	0.14 (0.12, 0.16)	3.58
Israel	2016	108000	17	0.16 (0.09, 0.25)	3.43
Switzerland	2016	69118	8	0.12 (0.05, 0.23)	3.40
UK & Ireland	2015	914132	517	0.57 (0.52, 0.62)	3.53
Portugal	2008	448531	194	0.43 (0.37, 0.50)	3.49
Sweden	2004	72641	42	0.58 (0.42, 0.78)	2.90
France	2010	20131	15	0.75 (0.42, 1.23)	1.64
Denmark	2004	1203999	338	0.28 (0.25, 0.31)	3.57
Netherlands	2007	1000516	353	0.35 (0.32, 0.39)	3.56
Subtotal (I-squared = 97.5%, p = 0.000)				0.33 (0.26, 0.41)	54.29
Africa					
Malawi	2007	31458	29	0.92 (0.62, 1.32)	1.89
Mozambique	2015	47651	19	0.40 (0.24, 0.62)	2.84
Kenya	2016	6598	5	0.76 (0.25, 1.77)	0.69
Tunisia	2008	11201	11	0.98 (0.49, 1.76)	0.92
South Africa	2016	316767	447	1.41 (1.28, 1.55)	3.19
South Africa	2015	142700	214	1.50 (1.31, 1.71)	2.76
Nigeria	2005	4135	1	0.24 (0.01, 1.35)	0.85
Gambia	2016	750	1	1.33 (0.03, 7.41)	0.04
South Africa	2014	49030	14	0.29 (0.16, 0.48)	3.02
Subtotal (I-squared = 95.4%, p = 0.000)				0.83 (0.40, 1.27)	16.20
Asia					
China	2015	10924	2	0.18 (0.02, 0.66)	2.07
Hong Kong	2015	13244	10	0.76 (0.36, 1.39)	1.24
Taiwan	2016	11123	0	0.00 (0.00, 0.33)	3.00
Philippines	2015	11768	3	0.25 (0.05, 0.74)	1.93
Thailand	2002	62761	17	0.27 (0.16, 0.43)	3.16
Thailand	2015	8409	2	0.24 (0.03, 0.86)	1.60
Vietnam	2013	39529	5	0.13 (0.04, 0.30)	3.22
Bangladesh	2016	19230	5	0.26 (0.08, 0.61)	2.41
India	2016	1416	2	1.41 (0.17, 5.09)	0.08
Bangladesh	2009	10000	1	0.10 (0.00, 0.56)	2.31
Subtotal (I-squared = 33.6%, p = 0.139)				0.19 (0.09, 0.28)	21.01
Overall (I-squared = 96.6%, p = 0.000)				0.42 (0.35, 0.49)	100.00

NOTE: Weights are from random effects analysis



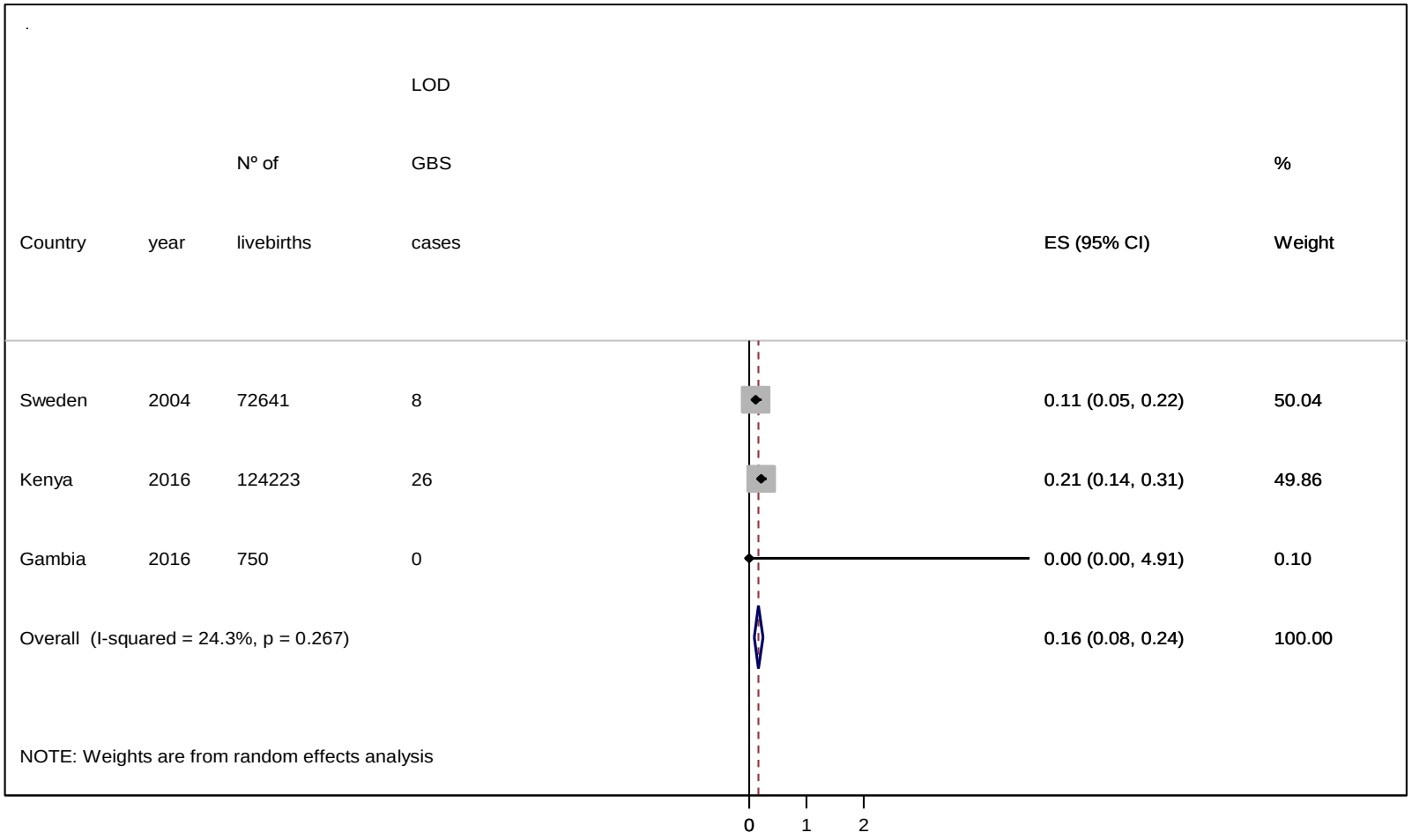
*Analysis was restricted to those studies reporting GBS early-onset incidence for complete period (infants aged 0-6 days).

Supplementary Figure S20: Incidence of late-onset of GBS disease among infants aged 7-89 days by regions*



*Analysis was restricted to those studies reporting GBS late-onset incidence for complete period (infants aged 7-89 days).

Supplementary Figure S21: Incidence of late-onset of GBS disease among infants aged 7-27 days by country



*Analysis was restricted to those studies reporting GBS late-onset incidence in infants aged 7-27 days

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