Appendix A. Search Strategy

Search Strategy:

1. Premature Birth
2. ((preterm or pre-term or premature or pre-mature) and (birth* or childbirth* or deliver* or parturit*))
3. Fetal Membranes, Premature Rupture
4. pprom
5. Obstetric Labor, Premature
6. ((preterm or pre-term or premature or pre-mature) and (labor or labour))
7. Recurrence
8. recur* or repeat
9. (1 or 2 or 3 or 4 or 5 or 6) and (7 or 8)

Initial Search Run on June 17, 2015
Updated Search Run on July 29, 2016
Updated Search Run on May 24, 2017

Appendix B. Included studies

Table B1 – Recurrence rate of spontaneous preterm birth

Author	Time Period	Country	Study Design	Inclusion/Exclusion Criteria	Gestational Age at Spontaneous Preterm Birth (weeks)		Recurrence Rate of Spontaneous Preterm Birth
					Pregnancy 1	Pregnancy 2	
Ananth 2006 (14)	1989-1997	USA	Cohort	*Inclusion:* Prior sPTB *Exclusion:* Multiple gestation pregnancies	<37	<37	2,626/12,670 (20.7%)
						<35	698/12,670 (5.5%)
						<32	164/12,670 (1.3%)
					<35	<35	698/4,463 (15.6%)
					<32	<32	164/2,022 (8.1%)
Asrat 1991 (15)		USA	Cohort	*Inclusion:* Prior PPROM *Exclusion:* Incompetent cervix, uterine anomalies, diethelstilbestrol exposure, multiple gestations, and neonates with congenital anomalies	<36	<36	39/121 (32.2%)
Care 2014 (16)	2010-2012	UK	Cohort	*Inclusion:* Prior sPTB or PROM; cervical length >25mm at 20-24 weeks *Exclusion:* Prior cervical surgery, non-viable pregnancy, history of iPTB, cerclage, uterine anomalies, Ehlers-Danlos syndrome, intrauterine death, twins, congenital abnormalities	<34	<37	53/196 (27.0%)
						<34	32/196 (16.3%)
Carr-Hill 1985 (17)	unspecified	UK	Cohort	*Inclusion:* Prior sPTB, singleton *Exclusion:* Multiple gestation, stillbirth, induced labor	<37	<37	76/494 (15.4%)

Author	Time Period	Country	Study Design	Inclusion/Exclusion Criteria	Gestational Age at Spontaneous Preterm Birth (weeks)		Recurrence Rate of Spontaneous Preterm Birth
					Pregnancy 1	Pregnancy 2	
Coleman 2012 (18)	2007-2010	USA	Cohort	*Inclusion:* Prior sPTB, received 17P injections *Exclusion:* Non-compliance with 17P injections	<37	<37	426/1,183 (36.0%)
						<35	156/1,183 (13.2%)
						<32	61/1,183 (5.2%)
Crane 2008 (19)	2000-2006	Canada	Cohort	*Inclusion:* Prior sPTB *Exclusion:* Cervical cerclage	<37	<37	21/90 (23.3%)
						<35	11/90 (12.2%)
						<34	8/90 (8.9%)
Drassinower 2015 (20)	2009-2014	USA	Cohort	*Inclusion:* Prior sPTB, singleton *Exclusion:* Multiple gestations, major fetal anomalies, cerclage, history of iPTB or placental abruption	<37	<37	178/522 (34.1%)
						<34	78/522 (14.9%)
						<28	34/522 (6.5%)
Ekwo 1998 (21)	1988-1993	USA	Cohort	*Inclusion:* Prior sPTB *Exclusion:* Fetal loss, multiple gestation	<37	<37	56/108 (51.9%)
Elimian 2016 (22)	2007-2010	USA	RCT	*Inclusion:* Prior sPTB *Exclusion:* Multiple gestation, major fetal anomaly or chromosomal anomalies, prior progesterone use in the current pregnancy, use of heparin in the current pregnancy, uterine anomaly, maternal medical conditions, no ultrasound before 20^{+6} in the current pregnancy	<37	<37	59/145 (40.7%)
						<34	27/145 (18.6%)
						<28	15/145 (10.3%)
Esplin 2008 (23)	1989-2001	USA	Cohort	*Inclusion:* First live birth in Utah and a subsequent live birth in the study period	<37	<37	1663/6,199 (26.8%)
					<34	<37	587/1,669 (35.2%)

Author	Time Period	Country	Study Design	Inclusion/Exclusion Criteria	Gestational Age at Spontaneous Preterm Birth (weeks)		Recurrence Rate of Spontaneous Preterm Birth
					Pregnancy 1	Pregnancy 2	
						<34	299/1,669 (17.9%)
Getahun 2010 (24) *PPROM only	1989-1997	USA	Cohort	*Inclusion:* Prior PPROM *Exclusion:* Multiple gestations, births <20 weeks, non White or Black race, >1 pregnancy before 1989	<37	<37	157/2,259 (6.9%)
					<34	<34	97/1,071 (9.1%)
					<32	<32	67/697 (9.6%)
					<28	<28	22/323 (6.8%)
Glover 2011 (25)	2006-2009	USA	RCT	*Inclusion:* Prior sPTB, initiated prenatal care prior to 20 weeks gestation *Exclusion:* Multiple gestations, major fetal anomaly	<37	<37	13/33 (39.4%)
Goldenberg 2006 (26)	1996-2001	USA	Cohort	*Inclusion:* Prior sPTB	<32	<37	71/83 (85.5%)
Gonzalez-Quintero 2011 (27)	2006-2009	USA	Cohort	*Inclusion:* Prior sPTB, singleton *Exclusion:* iPTB, >1 prior PTB, cerclage in current pregnancy	<37	<37	597/2,123 (28.1%)
						<35	274/2,123 (12.9%)
						<32	113/2,123 (5.3%)

Author	Time Period	Country	Study Design	Inclusion/Exclusion Criteria	Gestational Age at Spontaneous Preterm Birth (weeks)		Recurrence Rate of Spontaneous Preterm Birth
					Pregnancy 1	Pregnancy 2	
Harper 2010 (28)	2005-2006	USA	RCT	*Inclusion:* Prior sPTB, singleton *Exclusion:* Major fetal anomaly, intake of a fish oil supplement >500mg/week at any time during the preceding month, allergy to fish, anticoagulation therapy, hypertension, White's classification D or higher diabetes, drug or alcohol abuse, seizure disorder, uncontrolled thyroid disease, clotting disorder, current or planned cerclage, or a plan to deliver either elsewhere or before 37 weeks of gestation	<37	<37	292/852 (34.3%)
Himes 2008 (29)	2001-2006	USA	Cohort	*Inclusion:* Prior sPTB placenta pathology information available	<37	<37	102/245 (41.6%)
Hsieh 2005 (30)	1991-1997	Taiwan	Cohort	*Exclusion:* Multiple gestation, fetal anomaly, cervical incompetence, stillbirth, iPTB	<37	<37	52/228 (22.8%)
Laughon 2014 (31)	2002-2010	USA	Cohort	*Inclusion:* Singleton pregnancies	<37	<37	921/3,139 (29.3%)
Lykke 2009 (32)	1978-2007	Denmark	Cohort	*Inclusion:* Maternal age between 15-50 *Exclusion:* Women with cardiovascular disease, type 1 or 2 diabetes, women who emigrated within 3 months of 2nd delivery	<37	<37	2742/17,334 (15.8%)
					<33		444/1,734 (25.6%)
					<28		139/535 (26.0%)

Author	Time Period	Country	Study Design	Inclusion/Exclusion Criteria	Gestational Age at Spontaneous Preterm Birth (weeks)		Recurrence Rate of Spontaneous Preterm Birth
					Pregnancy 1	Pregnancy 2	
Manuck 2011 (33)	2002-2010	USA	Cohort	*Inclusion:* Prior sPTB, singleton *Exclusion:* History of iPTB or incompetent cervix	<35	<37	131/223 (58.7%)
						<32	25/223 (11.2%)
Markham 2014 (34)	1998-2012	USA	Cohort	*Inclusion:* Prior sPTB *Exclusion:* Multiple gestations, known uterine anomalies,	<37	<37	459/1,066 (43.1%)
						<35	269/1,066 (25.2%)
						<32	139/1,066 (13.0%)
Meis 2003 (35)	1999-2002	USA	RCT	*Inclusion:* Prior sPTB *Exclusion:* Multiple gestations, fetal anomaly, progesterone or heparin treatment during the current pregnancy, current or planned cervical cerclage, hypertension requiring medication, seizure disorder, or a plan to deliver elsewhere	<37	<37	159/463 (34.3%)
Mercer 1999 (36)	1992-1994	USA	Cohort	*Inclusion:* Singleton *Exclusion:* Placenta previa, major fetal malformations, cervical cerclage, polyhydramnios, oligohydramnios, cervical dilatation of ≥2 cm for nulliparous women and ≥3 cm for multiparous women.	<37	<37	89/410 (21.7%)
						<35	55/410 (13.4%)
						<32	21/410 (5.1%)
						<30	12/410 (2.9%)
						<28	10/410 (2.4%)
Owen 2001 (37)	1997-1999	USA	Cohort	*Inclusion:* Prior sPTB, singleton *Exclusion:* chronic medical or obstetrical problems, history of	<32	<35	48/183 (26.2%)
						<32	35/183 (19.1%)
						<28	29/183 (15.8%)

Author	Time Period	Country	Study Design	Inclusion/Exclusion Criteria	Gestational Age at Spontaneous Preterm Birth (weeks)		Recurrence Rate of Spontaneous Preterm Birth
					Pregnancy 1	Pregnancy 2	
				substance abuse, uterine anomalies, cerclage		<24	20/183 (10.9%)
Rittenberg 2009 (38)	1995-2005	USA	Cohort	*Inclusion:* Prior sPTB, singleton pregnancies, referred for weekly 17P administration *Exclusion:* Diagnosis of preterm labour, cerclage or vaginal bleeding at enrollment	<37	<37	185/684 (27.0%)
						<35	78/684 (11.4%)
						<32	30/684 (4.4%)
Turitz 2016 (39)	2009-2013	USA	Cohort	*Inclusion:* Prior sPTB	<37	<37	80/218 (36.7%)
Uquillas 2017 (45)	2005-2011	USA	Cohort	*Inclusion:* Prior sPTB *Exclusion:* Current cerclage, prior iPTB	<37	<37	43/181 (23.7%)
						<32	6/181 (3.3%)
Vermeulen 1999 (40)	1994-1996	Netherlands	RCT	*Inclusion:* Prior sPTB *Exclusion:* Fetal anomaly, previous iPTB, known allergy to clindamycin	<37	<37	41/168 (24.4%)
						<34	14/168 (8.3%)
Vogel 2007 (41)	2000-2001	USA	Cohort	*Inclusion:* Prior sPTB *Exclusion:* Multiple gestations, ruptured membranes, cerclage in a previous pregnancy	<30	<37	20/62 (32.3%)
						<35	15/62 (24.2%)
Wallace 2016 (42)	1986-2013	UK	Cohort		<37	<37	449/1,900 (23.6%)
Yamashita 2015 (43)	2008-2012	Japan	Cohort	*Inclusion:* Prior sPTB *Exclusion:* First antenatal visit after	<37	<37	89/547 (16.3%)
						<34	28/547 (5.1%)

Author	Time Period	Country	Study Design	Inclusion/Exclusion Criteria	Gestational Age at Spontaneous Preterm Birth (weeks)		Recurrence Rate of Spontaneous Preterm Birth
					Pregnancy 1	Pregnancy 2	
				14 weeks, previous iPTB, placenta previa, placental abruption, multiple gestation, fetal anomaly, antepartum fetal demise		<28	10/547 (1.8%)
Yang 2016 (44)	2005-2011	USA	Cohort		<37	<37	588/1,068 (55.1%)
						<32	71/1,068 (6.6%)
					<32	<32	43/177 (24.3%)

Table B2 – Occurrence of Indicated Preterm Birth Following Spontaneous Preterm Birth

Author	Time Period	Country	Study Design	Inclusion/Exclusion Criteria	Gestational Age at Preterm Birth (weeks) Pregnancy 1	Gestational Age at Preterm Birth (weeks) Pregnancy 2	Occurrence Rate of Indicated Preterm Birth Following a Prior Spontaneous Preterm Birth
Ananth 2006 (14)	1989-1997	USA	Cohort	*Inclusion:* Prior sPTB *Exclusion:* Multiple gestation pregnancies	<37	<37	342/12,670 (2.70%)
						<35	121/12,670 (0.96%)
						<32	40/12,670 (0.32%)
					<35	<35	121/4,463 (2.71%)
					<32	<32	40/2,022 (1.98%)
Harper 2010 (28)	2005-2006	USA	RCT	*Inclusion:* Prior sPTB, singleton *Exclusion:* Major fetal anomaly, intake of a fish oil supplement >500mg/week at any time during the preceding month, allergy to fish, anticoagulation therapy, hypertension, White's classification D or higher diabetes, drug or alcohol abuse, seizure disorder, uncontrolled thyroid disease, clotting disorder, current or planned cerclage, or a plan to deliver either elsewhere or before 37 weeks of gestation	<37	<37	46/852 (5.63%)
Laughon 2014 (31)	2002-2010	USA	Cohort	*Inclusion:* Singleton pregnancies	<37	<37	17/3,139 (0.54%)

Author	Time Period	Country	Study Design	Inclusion/Exclusion Criteria	Gestational Age at Preterm Birth (weeks)		Occurrence Rate of Indicated Preterm Birth Following a Prior Spontaneous Preterm Birth
					Pregnancy 1	Pregnancy 2	
Meis 2003 (35)	1999-2002	USA	RCT	*Inclusion:* Prior sPTB *Exclusion:* Multiple gestations, fetal anomaly, progesterone or heparin treatment during the current pregnancy, current or planned cervical cerclage, hypertension requiring medication, seizure disorder, or a plan to deliver elsewhere	<37	<37	36/463 (7.78%)
Owen 2001 (37)	1997-1999	USA	Cohort	*Inclusion:* Prior sPTB, singleton *Exclusion:* chronic medical or obstetrical problems, history of substance abuse, uterine anomalies, cerclage	<32	<35	5/183 (2.73%)
Rittenberg 2009 (38)	1995-2005	USA	Cohort	*Inclusion:* Prior sPTB, singleton pregnancies, referred for weekly 17P administration *Exclusion:* Diagnosis of preterm labour, cerclage or vaginal bleeding at enrollment	<37	<37	84/684 (12.28%)

Author	Time Period	Country	Study Design	Inclusion/Exclusion Criteria	Gestational Age at Preterm Birth (weeks)		Occurrence Rate of Indicated Preterm Birth Following a Prior Spontaneous Preterm Birth
					Pregnancy 1	Pregnancy 2	
Yamashita 2015 (43)	2008-2012	Japan	Cohort	*Inclusion:* Prior sPTB *Exclusion:* First antenatal visit after 14 weeks, previous iPTB, placenta previa, placental abruption, multiple gestation, fetal anomaly, antepartum fetal demise	<37	<37	23/547 (4.20%)

Appendix C: Quality Assessment

Table C1 – Quality Scores for Included Studies

Author	**Representatives of the exposed cohort (0, 1)**	**Selection of the non-exposed cohort (0, 1)**	**Ascertainment of exposure (0, 1)**	**Demonstration that outcome of interest was not present at start of study (0, 1)**	**Comparability of cohorts on the basis of design or analysis (0, 1)**	**Assessment of outcome (0, 1)**	**Was follow-up long enough for outcomes to occur (0, 1)**	**Adequacy of follow-up of cohorts (0, 1)**
Ananth 2006 (14) *Score: 4/6*	1	N/A	0	1	N/A	0	1	1
Asrat 1991 (15) *Score: 5/6*	0	N/A	1	1	N/A	1	1	1
Care 2014 (16) *Score: 5/6*	0	N/A	1	1	N/A	1	1	1
Carr-Hill 1985 (17) *Score: 4/6*	1	N/A	0	1	N/A	0	1	1
Coleman 2012 (18) *Score: 5/6*	0	N/A	1	1	N/A	1	1	1
Crane 2008 (19) *Score: 5/6*	0	N/A	1	1	N/A	1	1	1

Author	Representatives of the exposed cohort (0, 1)	Selection of the non-exposed cohort (0, 1)	Ascertainment of exposure (0, 1)	Demonstration that outcome of interest was not present at start of study (0, 1)	Comparability of cohorts on the basis of design or analysis (0, 1)	Assessment of outcome (0, 1)	Was follow-up long enough for outcomes to occur (0, 1)	Adequacy of follow-up of cohorts (0, 1)
Drassinower 2015 (20) *Score: 5/6*	0	N/A	1	1	N/A	1	1	1
Ekwo 1998 (21) *Score: 5/6*	0	N/A	1	1	N/A	1	1	1
Elimian 2016 (22) *Score: 7/8*	0	1	1	1	1	1	1	1
Esplin 2008 (23) *Score: 4/6*	1	N/A	0	1	N/A	0	1	1
Getahun 2010 (24) *PPROM only *Score: 4/6*	1	N/A	0	1	N/A	0	1	1
Goldenberg 2006 (26) *Score: 5/6*	0	N/A	1	1	N/A	1	1	1
Glover 2011 (25) *Score: 7/8*	0	1	1	1	1	1	1	1

Author	Representatives of the exposed cohort (0, 1)	Selection of the non-exposed cohort (0, 1)	Ascertainment of exposure (0, 1)	Demonstration that outcome of interest was not present at start of study (0, 1)	Comparability of cohorts on the basis of design or analysis (0, 1)	Assessment of outcome (0, 1)	Was follow-up long enough for outcomes to occur (0, 1)	Adequacy of follow-up of cohorts (0, 1)
Gonzalez-Quintero 2011 (27) *Score: 5/6*	0	N/A	1	1	N/A	1	1	1
Harper 2010 (28) *Score: 7/8*	0	1	1	1	1	1	1	1
Himes 2008 (29) *Score: 5/6*	0	N/A	1	1	N/A	1	1	1
Hsieh 2005 (30) *Score: 5/6*	0	N/A	1	1	N/A	1	1	1
Laughon 2014 (31) *Score: 4/6*	1	N/A	0	1	N/A	0	1	1
Lykke 2009 (32) *Score: 4/6*	1	N/A	0	1	N/A	0	1	1
Manuck 2011 (33) *Score: 5/6*	0	N/A	1	1	N/A	1	1	1

Author	Representatives of the exposed cohort (0, 1)	Selection of the non-exposed cohort (0, 1)	Ascertainment of exposure (0, 1)	Demonstration that outcome of interest was not present at start of study (0, 1)	Comparability of cohorts on the basis of design or analysis (0, 1)	Assessment of outcome (0, 1)	Was follow-up long enough for outcomes to occur (0, 1)	Adequacy of follow-up of cohorts (0, 1)
Markham 2014 (34) *Score: 5/6*	0	N/A	1	1	N/A	1	1	1
Meis 2003 (35) *Score: 7/8*	0	1	1	1	1	1	1	1
Mercer 1999 (36) *Score: 5/6*	0	N/A	1	1	N/A	1	1	1
Owen 2001 (37) *Score: 5/6*	0	N/A	1	1	N/A	1	1	1
Rittenberg 2009 (38) *Score: 5/6*	0	N/A	1	1	N/A	1	1	1
Turitz 2016 (39) *Score: 5/6*	0	N/A	1	1	N/A	1	1	1
Uquillas 2017 (45) *Score: 5/6*	0	N/A	1	1	N/A	1	1	1

Author	Representatives of the exposed cohort (0, 1)	Selection of the non-exposed cohort (0, 1)	Ascertainment of exposure (0, 1)	Demonstration that outcome of interest was not present at start of study (0, 1)	Comparability of cohorts on the basis of design or analysis (0, 1)	Assessment of outcome (0, 1)	Was follow-up long enough for outcomes to occur (0, 1)	Adequacy of follow-up of cohorts (0, 1)
Vermeulen 1999 (40) *Score: 7/8*	0	1	1	1	1	1	1	1
Vogel 2007 (41) *Score: 5/6*	0	N/A	1	1	N/A	1	1	1
Wallace 2016 (42) *Score: 4/6*	1	N/A	0	1	N/A	0	1	1
Yamashita 2015 (43) *Score: 5/6*	0	N/A	1	1	N/A	1	1	1
Yang 2016 (44) *Score: 4/6*	1	N/A	0	1	N/A	0	1	1