Prevention of preterm birth in twin pregnancy: international Delphi consensus

H. J. MUSTAFA¹, J. SHEIKH², V. BERGHELLA³, W. A. GROBMAN⁴, A. A. SHAMSHIRSAZ⁵, S. J. GORDIJN⁶, W. GANZEVOORT⁷, A. ROMAN³ and A. KHALIL^{8,9,10}, on behalf of the Preterm Birth in Twins Working Group[†]

¹The Fetal Center at Riley Children's and Indiana University Health, Division of Maternal-Fetal Medicine, Indiana University School of Medicine, Indianapolis, IN, USA; ²Guy's and St Thomas' Hospital NHS Foundation Trust, London, UK; ³Division of Maternal-Fetal Medicine, Thomas Jefferson University, Philadelphia, PA, USA; ⁴Division of Maternal-Fetal Medicine, Ohio State University, Columbus, OH, USA; ⁵Maternal Fetal Care Center, Division of Maternal-Fetal Medicine and Surgery, Boston Children's Hospital, Harvard Medical School, Boston, MA, USA; ⁶Department of Obstetrics and Gynecology, University Medical Center Groningen, University of Groningen, Groningen, The Netherlands; ⁷Department of Obstetrics and Gynecology, Amsterdam UMC, The Netherlands; ⁸Fetal Medicine Unit, St George's University Hospitals NHS Foundation Trust, University of London, London, UK; ⁹Vascular Biology Research Centre, Molecular and Clinical Sciences Research Institute, St George's University of London, London, UK; ¹⁰Fetal Medicine Unit, Liverpool Women's Hospital, University of Liverpool, Liverpool, UK

KEYWORDS: cerclage; cervical length measurement; pessary; premature birth; prevention; progesterone; screening; twin pregnancies

ABSTRACT

Objective To use the Delphi method to gain insight into approaches to prenatal diagnosis and management of preterm birth (PTB) in twin pregnancies, including complications such as twin-to-twin transfusion syndrome (TTTS) and a short and/or dilated cervix.

Methods A three-round Delphi process was conducted among an international panel of experts to assess their approach to prevention, monitoring and management strategies for PTB in twin pregnancies. Experts were selected based on their publication record or membership of related organizations. Response options were multiple-choice answers or a five-point Likert scale. A priori, a cut-off of \geq 70% agreement was used to define consensus.

Results A total of 117 experts participated in the first round, of whom 94/117 (80.3%) completed all subsequent rounds. Representatives came from at least 22 countries (across five continents), most commonly the USA (50.4%) and the UK (12.0%). Over 70% of experts performed routine screening of cervical length (CL) using transvaginal ultrasound at 18-23 weeks' gestation, using CL ≤ 25 mm to diagnose short cervix

in twin pregnancies, regardless of a history of PTB. In twin pregnancies with a short non-dilated cervix, most experts offered vaginal progesterone rather than pessary or cervical cerclage, regardless of a history of PTB. In twin pregnancies with asymptomatic dilated cervix, consensus was reached (88.3% agreement) for placement of cervical cerclage, performed up to 24 weeks' gestation (67.5% agreement; no consensus). Similarly, 96.1% of experts agreed that performing serial transvaginal ultrasound measurements of CL at 16-24 weeks' gestation was warranted in women with a current singleton pregnancy who had a previous twin pregnancy that required physical examination-indicated cerclage; these patients should be considered high risk for PTB (83.1% agreement). In twin pregnancies with TTTS, laser surgery is offered by most experts, regardless of preoperative CL. In patients with TTTS and short CL, most experts would recommend *cervical cerclage* (71.9%) *or vaginal progesterone* (65.6%) rather than pessary or expectant management. However, no consensus was reached on measures to prevent PTB in cases of TTTS with cervical dilation.

Conclusions This Delphi consensus study highlights practice variations among healthcare providers worldwide in the evaluation and management of PTB in twin

†Members of the Preterm Birth in Twins Working Group are listed in Appendix S1.

Accepted: 26 February 2025

Check for updates

Correspondence: Dr H. J. Mustafa, The Fetal Center at Riley Children's and Indiana University Health, Division of Maternal-Fetal Medicine, Indiana University School of Medicine, Indianapolis, IN, USA (email: hmustafa@iu.edu)

pregnancies, which often differ from recommendations given by national and international societies. © 2025 The Author(s). Ultrasound in Obstetrics & Gynecology published by John Wiley & Sons Ltd on behalf of International Society of Ultrasound in Obstetrics and Gynecology.

INTRODUCTION

The incidence of preterm birth (PTB) in twin pregnancies has been reported to be up to $61.3\%^{1}$. This risk is further linked to previous PTB, smoking, short cervical length (CL) and other factors².

Data suggest that the risk of PTB in twin pregnancies < 24 weeks' gestation is significantly higher among women with CL measurement $\leq 25 \text{ mm}$ on transvaginal ultrasound (TVS)^{3,4}. Evidence synthesis and randomized controlled trials (RCTs) have shown conflicting evidence on the use of vaginal progesterone, pessary and cervical cerclage in such pregnancies, and no consensus has been reached on recommendations to reduce the risk of PTB⁵⁻⁷. In twin pregnancies with asymptomatic cervical dilation < 24 weeks' gestation, a recent RCT reported that a combination of physical examination-indicated cerclage, indomethacin and antibiotics significantly decreased the risk of PTB, with an associated 50% decrease in early PTB < 28 weeks' gestation and a 78% decrease in neonatal mortality⁸. Previous evidence synthesis on this topic is unclear on the recommended use of cervical cerclage in twin pregnancies with short CL, therefore further consensus is required⁹.

Monochorionic twins with twin-to-twin transfusion syndrome (TTTS) undergoing fetoscopic laser photocoagulation (FLP) are at further increased risk for PTB and neonatal morbidity and mortality^{10–13}. This is reported to be associated with a mean gestational age at delivery of 31–33 weeks, of which 48% of cases are due to spontaneous PTB¹⁴. Preoperative short CL remains a major risk factor for PTB after FLP for TTTS, although the definition of 'short' varies across the literature^{15–21}. Interventions to prolong pregnancy, including cervical cerclage, vaginal progesterone, pessary or combination therapy, remain elusive²².

The aim of this study was to use the Delphi method to assess approaches to prenatal diagnosis, monitoring and management of PTB in twin pregnancies with and without TTTS with short CL and/or dilated cervix.

METHODS

Delphi design

The Delphi method consists of scoring a series of structured statements that are revised, fed back to the participants and repeated in multiple rounds, in increasing detail, until a certain level of agreement, selected *a priori* and defined as a 'consensus', is reached²³. This process aims to refine the opinions of participating experts while minimizing confounding factors that are present in other

group-response methods²⁴. Delphi is a well-established instrument used to reach consensus among a panel of experts on research questions that cannot be answered with complete certainty. Participants provided informed consent before commencement of the first round and were reminded of their right to anonymity and the option to withdraw before each subsequent round. Institutional Review Board (IRB) exempt approval was obtained from Indiana University (IRB #18404).

Panel selection

Key stakeholder groups were identified by a Steering Group (H.M., J.S., V.B., W.A.G., A.A.S., S.J.G., W.G., A.R. and A.K.) and comprised general obstetricians and maternal-fetal medicine specialists. Eligibility to participate as an expert was based on satisfying at least one of the following inclusion criteria: (i) expertise in management of PTB in twin pregnancies, based on a relevant publication record; (ii) membership of a pertinent scientific organization, including the Society for Maternal-Fetal Medicine (SMFM), the North American Fetal Therapy Network, the International Fetal Medicine and Surgery Society and the International Society for Prenatal Diagnosis; and (iii) nomination of specialists with relevant expertise by another invitee. The Steering Group endeavored to ensure global geographic representation. Potential participants were sent an invitation email with a detailed description of the study's background, goals, methodology and selection criteria. The intended sample size was more than 50 participants to ensure sufficient international representation of expert views. The minimum cut-off of 50 experts was based on published Delphi design guidelines²⁴.

First round

Five domains were used to structure the first round: (i) screening of PTB with CL assessment; (ii) use of vaginal progesterone for prevention of PTB; (iii) use of cervical cerclage for prevention of PTB; (iv) use of pessary for prevention of PTB; and (v) prevention of PTB in monochorionic twins complicated by TTTS. The first four domains were structured regardless of chorionicity.

Response options were multiple-choice answers or a five-point Likert scale (1=strongly disagree to 5=strongly agree). A predefined cut-off for group consensus on an item or group of similar answers was $\geq 70\%$ agreement²⁵. Items with 60–69% agreement were reconsidered in the next round. In contrast, < 60% agreement reflected a lack of consensus and those items were not considered in the following rounds, unless rewording was considered necessary. Participants could provide feedback or suggest additional items in each round, which were used by the Steering Group to adjust items in subsequent rounds.

Second and third rounds

Items that reached consensus in the first round were presented to the panel for confirmation in the second round. Items with 60–69% agreement were reconsidered following rephrasing of the question-and-answer options, or a new question was added to clarify. Items with no consensus were presented for agreement of no further evaluation. Additional suggested items were discussed among the Steering Group before they were introduced in the next round. In the third round, the same rules as in the second round were applied, with the exception that a subsequent round was not performed once a decision for each item had been made.

Data collection and analysis

Data were collected during three consecutive rounds using online questionnaires presented to panelists via a unique token-secured link for each round. Responses were captured in REDCap version 13.7.19 (Vanderbilt University, Nashville, TN, USA). Non-responders received reminder e-mails after 2 and 4 weeks and were excluded from subsequent rounds if no response was obtained. The panel categorized and considered newly suggested items carefully for their applicability. The practice characteristics of the participants were collected. Analyses were performed using REDCap and results are presented in frequency tables.

RESULTS

Participants

A total of 146 experts were identified and invited to participate. Of these, 117 (80.1%) completed the first round. A total of 94/117 (80.3%) experts completed all subsequent rounds. The practice characteristics of the participants are shown in Table 1. Overall, there was representation from at least 22 countries (across five continents), most commonly the USA (50.4%), followed by the UK (12.0%). The most common practice setting was academic (81.2%). A total of 47/117 (40.2%) experts practiced fetal intervention. The most common academic rank was professor (45.3%), followed by associate/assistant professor (35.0%). Experts had most commonly spent 10–14 years in practice, and 79.5% had published on PTB in twin pregnancies. Practice characteristics for institutions performing laser surgery for TTTS are outlined in Table 1.

Ultrasound screening of CL in twin pregnancies

There was consensus on the routine screening of CL in twin pregnancies via TVS at 18-23 weeks' gestation (71.3% agreement). There was consensus that CL ≤ 25 mm should be considered short in twin pregnancies with (89.4% agreement) or without (84.0% agreement) a history of PTB (Table 2).

Twin pregnancies with short cervical length

Regarding the use of vaginal progesterone in twin pregnancies with mid-trimester short, non-dilated cervix, there was consensus to offer it to women with $CL \le 25$ mm in those with (77.7% agreement) and those without (73.4% agreement) a history of PTB. Consensus remained for $CL \le 15$, ≤ 10 and ≤ 5 mm (82.4%, 81.3%, and 79.1%, respectively), regardless of history of PTB (Table 2).

Although there was no consensus to offer cervical cerclage in twin pregnancies with or without a history of PTB with a currently short, non-dilated cervix, 62.6% of experts stated that they offer it for $CL \le 10$ mm, while 61.5% stated that they offer it for $CL \le 5$ mm, regardless of a history of PTB (Table 2).

Regarding pessary use in twin pregnancies with or without a history of PTB with a currently short, non-dilated cervix, there was consensus not to offer it (86.2% and 83.0% agreement, respectively). Lack of consensus to offer pessary did not change for CL ≤ 15 , ≤ 10 and ≤ 5 mm (16.5%, 14.3% and 14.3%, respectively) (Table 2).

Cervical cerclage in twin pregnancies with cervical dilation

There was consensus on the following items related to cervical cerclage (Table S1): (i) to routinely offer cerclage in twin pregnancies with a dilated cervix (88.3% agreement), for a digitally examined cervix with maximum dilation of 5 cm (84.4% agreement), regardless of the amount of membrane prolapse as long as the procedure is technically feasible (80.5% agreement); (ii) to place the cerclage once infection is ruled out and the patient does not appear to be in labor (71.4% agreement); (iii) not to routinely offer preoperative amniocentesis to rule out infection (74.0%) agreement); and (iv) to routinely offer perioperative indomethacin for tocolysis (83.1% agreement) and intraoperative antibiotics (89.6% agreement). Consensus was reached (80.5% agreement) on using the McDonald surgical technique for cervical cerclage over the Shirodkar technique, if technically feasible. Monofilament suture material, such as Ethilon (Ethicon Inc, Raritan, NJ, USA), is the most frequently used (72.7% agreement), with cerclage removed at 36-37 weeks' gestation if vaginal delivery is planned (98.7% agreement) or at the time of Cesarean if Cesarean delivery is planned (90.9% agreement). There was consensus to consider the current singleton pregnancy at higher risk for PTB if a previous twin pregnancy required physical examination-indicated cerclage (83.1% agreement), with consensus that management should include monitoring the singleton pregnancy with serial TVS assessment of CL at 16-24 weeks (96.1% agreement). Consensus reached on other practices relating to cerclage placement is given in Table S1.

Twin pregnancies with TTTS

Table 3 shows consensus for the following items regarding twin pregnancies with TTTS: (i) to routinely perform TVS CL assessment before the laser procedure (93.8% agreement) and following the procedure (75.0% agreement); (ii) to define short CL as $\leq 25 \text{ mm}$ (93.8% agreement); (iii) and to offer laser surgery, if indicated, regardless of the

Table 1 Practice characteristics of experts participating in first round of Delphi process on prevention of preterm birth (PTB) in twin pregnancies

Characteristic	Participants (n = 117)
Region of practice	
USA	59 (50.4)
UK	14 (12.0)
The Netherlands	10 (8.5)
France	4 (3.4)
Spain	4 (3.4)
Italy	3 (2.6)
Other*	21(17.9)
Unknown	2(1./)
Iractice community	99(846)
Suburban	12 (10.3)
Rural	6 (5.1)
Practice setting	0 (012)
Academic/university hospital	95 (81.2)
Community hospital	7 (6.0)
Private practice (independently owned group)	6 (5.1)
Private practice (owned by health system	4 (3.4)
or hospital)	
Military	2(1.7)
Other	3 (2.6)
Speciality Maternal-fetal medicine including fetal	47(40.2)
intervention	47 (40.2)
Maternal-fetal medicine not including fetal	70 (59.8)
intervention	, ,
Academic rank	
Professor	53 (45.3)
Specialist/consultant	23 (19.7)
Associate/assistant professor	41 (35.0)
Years in practice	2(1,7)
< 5	2(1./)
10-14	34(291)
15–19	2.6 (2.22)
20-24	24 (20.5)
≥25	21 (17.9)
Published on PTB in twins	93 (79.5)
Principal investigator, first, second or last author	53/93 (57.0)
Annual number of pregnancies requiring cerclage	
assessment at institution	2 (1 =)
0	2(1.7)
1-4 5 14	2(1.7) 21(179)
15-24	18(154)
25-34	7 (6.0)
> 35	60 (51.3)
Unsure	7 (6.0)
Annual number of cerclages placed in twin	
pregnancies at institution	
0	3 (2.7)
1-4	36 (30.8)
5-14	49 (41.9)
15-24	12(10.3)
23-3 1 > 35	4(0.0)
Unsure	6(5.1)
Annual number of twin pregnancies that undergo	0 (0+1)
cerclage and deliver at institution	
0	6 (5.1)
1-4	39 (33.3)

Table 1 Continued

Characteristic	Participants (n = 117)
5-14	41 (35.0)
15–24	15 (12.8)
25-34	4 (3.4)
≥ 35	1 (0.9)
Unsure	11 (9.4)
Perform laser surgery for TTTS	47 (40.2)
Annual number of twin pregnancies evaluated	
for TTTS at institution	
< 5	6 (5.1)
5 -14	17 (14.5)
15–24	33 (28.2)
25-34	12 (10.3)
35-49	17 (14.5)
\geq 50	22 (18.8)
Unsure	10 (8.5)
Annual number of twin pregnancies requiring	
laser surgery for TTTS at institution	
< 5	49 (41.9)
5-14	29 (24.8)
15-24	9 (7.7)
25-34	6 (5.1)
35-49	6 (5.1)
≥ 50	8 (6.8)
Unsure	10 (8.5)

Data are given as n (%) or n/N (%). *Two each in Albania, Belgium, Brazil, Egypt, Germany; one each in Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Australia, Canada, Hong Kong, Lebanon, Mexico, Sri Lanka. TTTS, twin-to-twin transfusion syndrome.

preoperative CL (96.9% agreement). However, no consensus was reached on whether a laser procedure that was otherwise indicated should be performed if there is cervical dilation. Although there was no consensus, 68.8% stated that they use the CL following the laser procedure and amnioreduction, rather than using the preoperative CL, when considering PTB prevention measures. There was consensus to administer inpatient perioperative tocolysis regardless of CL (93.8% agreement) but not outpatient tocolysis (87.5% agreement) (Table 3).

In the case of TTTS requiring laser surgery with preoperative short CL, most respondents would recommend use of vaginal progesterone (65.6% agreement) following laser surgery and cervical cerclage (71.9% agreement) before or at the time of the laser procedure, but not pessary (84.4% agreement) (Table 3). For TTTS requiring laser surgery with preoperative cervical dilation, there was no consensus on the PTB prevention measures that are used, although 59.4% favored cervical cerclage and 40.6% favored vaginal progesterone (Table 3).

Table 4 presents selected findings from the current study, along with related statements from national and international organizations, showing variation among different societies and between the practices of the participating experts and the societies' guidelines. A subgroup analysis was conducted for practices among participants from the USA, which showed some variation compared with the American societies' recommendations (Table 4). Table 2 Responses from experts participating in the Delphi process on prevention of preterm birth (PTB) in twin pregnancies with short cervical length (CL)

	Rou	nd in which item wa	s included
	Round 1	Round 2	Round 3
Item	(n = 117)	(n = 94)	(n = 91)
Initial assassment of CI			
Routine TVS for CL at 16 weeks	8 (6.8)	_	_
Routine TVS for CL at time of anatomy ultrasound at 18-23 weeks	42 (35.9)	67 (71.3)	_
Routine TAS for CL at time of anatomy ultrasound at 18–23 weeks and	34 (29.1)		_
switch to TVS if cervix appears short or dilated			
Serial TVS CL measurements at 16-23 weeks	18 (15.4)	—	_
Do not offer screening ultrasound	11 (9.4)	_	—
Other	4 (3.4)	—	—
Definition of short CL on TVS			
With PTB history	1((12.7))		
$CL \leq 30 \text{ mm}$	16(13.7)	<u> </u>	_
$CL \leq 20 \text{ mm}$	9(77)	04 (02.4)	
$CL \leq 15 \text{ mm}$	7(7.7) 7(6.0)	_	_
$CL \leq 10 \text{ mm}$	3 (2.6)	_	_
Other	0(0)	_	_
Without PTB history			
$CL \leq 30 \text{ mm}$	11 (9.4)	_	_
$CL \le 25 \text{ mm}$	82 (70.1)	79 (84.0)	_
$CL \le 20 \text{ mm}$	18 (15.4)		_
$CL \le 15 \text{ mm}$	5 (4.3)	—	_
$CL \le 10 \text{ mm}$	0 (0)	—	—
Other	1 (0.9)	—	—
Offer vaginal progesterone			
With PTB history and current non-dilated short CL	1((127)		
Do not offer progesterone	16(13./)	—	—
$CL \leq 30 \text{ mm}$	10(8.5)	$\frac{-}{72}$	_
$CL \leq 20 \text{ mm}$	10 (8 5)	/3 (//./)	
$CL \leq 15 \text{ mm}$	4(34)	_	75(824)
$CL \leq 10 \text{ mm}$	0(0)	_	74 (81.3)
CL < 5 mm	0(0)	_	72 (79.1)
Always offer progesterone	21 (17.9)	_	
Other	2 (1.7)	_	_
Without PTB history and with current non-dilated short CL			
Do not offer progesterone	19 (16.2)	—	_
$CL \le 30 \text{ mm}$	8 (6.8)		—
$CL \le 25 \text{ mm}$	61 (52.1)	69 (73.4)	_
$CL \leq 20 \mathrm{mm}$	15(12.8)	_	75 (02 4)
$CL \leq 10 \text{ mm}$	2(1.7)	_	/ 5 (82.4)
$CL \leq 5$ mm	3 (2.6) 0 (0)		74 (01.3)
Always offer progesterone	7(6.0)	_	/2 (/).1)
Other	2(1.7)	_	_
Offer cervical cerclage	= (117)		
With PTB history and current non-dilated short CL			
Do not offer cerclage	14 (12.0)	37 (39.4)	_
If patient was on progesterone and there was further cervical shortening	11 (9.4)	—	—
$CL \leq 30 \text{ mm}$	3 (2.6)	—	_
$CL \le 25 \text{ mm}$	42 (35.9)	—	—
$CL \le 20 \text{ mm}$	13 (11.1)	—	
$CL \le 15 \text{ mm}$	17 (14.5)	—	47 (51.6)
$CL \le 10 \text{mm}$	4 (3.4)	_	57 (62.6)
$OL \ge 0.1000$	0(0) 13(111)		30 (61.3)
Without PTB history and current non-dilated short CI	13 (11.1)		—
Do not offer cerclage	41 (35 0)	52 (55 3)	_
If patient was on progesterone and there was further cervical shortening	13 (11.1)		_
$CL \leq 30 \text{ mm}$	0 (0.0)		_
$CL \le 25 \text{ mm}$	9 (7.7)	_	_
$CL \leq 20 mm$	13 (11.1)	_	—
CL < 15 mm	16 (13.7)	_	47 (51.6)

Continued over.

Table 2 Continued

	Rou	nd in which item wa	s included
Item	<i>Round</i> 1 (n = 117)	Round 2 $(n = 94)$	Round 3 $(n=91)$
$CL \le 10 \text{ mm}$	12 (10.3)	—	57 (62.6)
$CL \le 5 \text{ mm}$	0 (0)	_	56 (61.5)
Other	13 (11.1)	_	
Offer cervical pessary With PTB history and current non-dilated short CL			
Do not offer pessarv	92 (78.6)	81 (86.2)	_
If patient was on progesterone and there was further cervical shortening	4 (3.4)		_
CL < 30 mm	4 (3.4)		
$CL \leq 25 \text{ mm}$	6 (5.1)	_	
$CL \leq 20 \text{ mm}$	2(1.7)	_	_
$CL \le 15 \text{ mm}$	0 (0.0)	_	_
$CL \le 10 \text{ mm}$	1 (0.9)	_	_
Other	8 (6.8)	_	_
Without PTB history and current non-dilated short CL			
Do not offer pessary	89 (76.1)	78 (83.0)	_
If patient was on progesterone and there was further cervical shortening	5 (4.3)		_
$CL \le 30 \text{ mm}$	3 (2.6)	_	_
$CL \le 25 \text{ mm}$	4 (3.4)	_	_
$CL \le 20 \text{ mm}$	3 (2.6)	_	_
$CL \le 15 \text{ mm}$	2 (1.7)	_	15 (16.5)
$CL \le 10 \text{ mm}$	2 (1.7)	_	13 (14.3)
$CL \le 5 mm$	0(0)	_	13 (14.3)
Other	9 (7.7)	—	_

Data are given as n (%). Consensus was defined as \geq 70% agreement, significant agreement as 60–69% and no agreement as < 60%. —, item not addressed in round; TAS, transabdominal ultrasound; TVS, transvaginal ultrasound.

DISCUSSION

In this three-round Delphi process, including 117 experts from at least 22 countries on five continents, at least 70% of respondents (defined as a consensus *a priori*) noted that they use routine screening of CL on TVS at 18-23 weeks' gestation, with $CL \le 25$ mm used as the cut-off to diagnose short cervix. Most experts agreed on the use of vaginal progesterone, but not pessary, in twin pregnancies with mid-trimester CL \leq 25 mm, although there was a notable minority (22.3%) who do not use this approach. Although there was no consensus, 62.6% and 61.5% of respondents stated that they offer cervical cerclage for CL < 10 and \leq 5 mm, respectively. Consensus was reached on cerclage placement (and to use adjunctive perioperative treatments) in twin pregnancies with asymptomatic cervical dilation. Furthermore, there was consensus that women with a current singleton pregnancy and previous twin pregnancy that required physical examination-indicated cerclage should be considered at high risk for PTB and should undergo serial TVS assessment of CL. In twin pregnancies complicated by TTTS, a laser procedure is offered, if indicated, by most respondents, regardless of short cervix. They would also consider cerclage or vaginal progesterone, but not pessary, in the case of TTTS requiring laser surgery with preoperative short CL.

Interpretation of key findings

PTB is the leading cause of perinatal morbidity and mortality in multiple pregnancy and this risk is further enhanced in the presence of short CL or dilated cervix^{3,4}, or in the presence of TTTS for monochorionic twins^{14,26}. The role of preventive strategies for PTB in twin pregnancies is controversial and management strategies continue to evolve, with little consensus among international societies^{27–30}.

Among this group of experts, there was consensus on routine TVS CL screening at least once during the mid-trimester ultrasound scan. Recommendations in this regard are conflicting among different national and international guidelines. The SMFM recommend against a transvaginal approach unless short CL is suspected³¹, whereas National Institute for Health and Care Excellence (NICE) guidelines, which are also adopted by the Royal College of Obstetricians and Gynaecologists (RCOG)³² and the International Society of Ultrasound in Obstetrics and Gynecology (ISUOG)³³, do not specify the method of screening. The Society of Obstetricians and Gynaecologists of Canada (SOGC) recommend the use of TVS or transabdominal ultrasound³⁴. Short CL is predictive of PTB in twins³⁵ and some data suggest that serial monitoring of CL in twin pregnancies can improve the prediction³⁶. However, the main argument against routine screening of CL is the lack of effective interventions that can be offered to women with a twin pregnancy and short CL. Accordingly, 28.7% of experts did not endorse this routine screening approach.

There was consensus on the use of vaginal progesterone for $CL \le 25$ mm and that consensus remained for $CL \le 15$, ≤ 10 and ≤ 5 mm. In a recent individual data meta-analysis of six RCTs, including 95 patients with a twin pregnancy and mid-trimester $CL \le 25$ mm, vaginal **Table 3** Responses from experts participating in the Delphi process on prevention of preterm birth (PTB) in twin pregnancies with
twin-to-twin transfusion syndrome (TTTS)

	Round item w	d in which as included
Item	Round 1 $(n = 47)$	Round 2 $(n = 32)$
	(11 - 77)	(11-32)
Prior to leser procedure		
Strongly agree	36 (76 6)	
Agree	6 (12.8)	30 (93.8)+
Neither agree nor disagree	1 (2.1)	_
Disagree	2(4.3)	_
Strongly disagree	2(4.3)	_
Following laser procedure		
Strongly agree	26 (55.3)	24 (75.0)
Agree	2 (4.3)	24 (75.0)
Neither agree nor disagree	7 (14.9)	_
Disagree	8 (17.0)	_
Strongly disagree	4 (8.5)	—
Short CL and laser procedure		
Definition of short CL		
$CL \le 30 \text{ mm}$	5 (10.6)	3 (9.4)
$CL \le 25 \text{ mm}$	26 (55.3)	30 (93.8)
$CL \le 20 \text{ mm}$	11 (23.4)	—
$CL \le 15 \text{ mm}$	3 (6.4)	—
$CL \le 10 \text{ mm}$	2 (4.3)	—
Do not offer laser procedure with short CL		
$CL \leq 30 \text{ mm}$	1 (2.1)	—
$CL \le 25 \text{ mm}$	3 (6.4)	—
$CL \leq 20 \text{ mm}$	1 (2.1)	—
$CL \le 15 \text{ mm}$	3 (6.4)	—
$CL \le 10 \text{ mm}$	3 (6.4)	—
$CL \leq 5 \text{ mm}$	3 (6.4)	
Offer laser procedure regardless of CL	33 (70.2)	31 (96.9)
Offer laser for TTTS with defined short CL	—	29 (90.6)
Do not offer laser procedure with digitally evaluated cervical dilation	0 (17 0)	
Any cervical dilation	8 (17.0)	_
$\geq 1 \text{ cm}$ dilation	1(2.1)	_
$\geq 2 \text{ cm}$ dilation	6(12.8) 9(19.1)	—
\geq 5 cm dilation	2(17.1)	_
\geq 4 cm dilation	5(0.4) 5(10.6)	_
Offer laser procedure regardless of cervical dilation	15(10.0)	9(28.1)
Offer PTB prevention treatment based on timing of CL assessment	15 (51.9)	> (20.1)
CL prior to laser procedure		10(31.1)
CL following laser procedure and amnioreduction	_	22 (68.8)
PTB preventative measures for preoperative short CL*		(0010)
Start vaginal progesterone following laser procedure	19 (40.4)	21 (65.6)
Start vaginal progesterone if CL remains short after laser procedure	6 (12.8)	
Cervical cerclage before or at time of laser procedure	7 (14.9)	23 (71.9)
Cervical cerclage following laser procedure if CL remains short after laser procedure	19 (40.4)	
Cervical pessary following laser procedure	6 (12.8)	_
Cervical pessary if postlaser CL remains short	3 (6.4)	_
No cervical pessary	6 (12.8)	27 (84.4)
Other	1 (2.1)	—
Favored management for preoperative cervical dilation alongside laser procedure		
Expectant management	6 (12.8)	3 (9.4)
Cervical pessary	0 (0)	—
Cervical cerclage	_	19 (59.4)
Cervical cerclage before laser procedure	5 (10.6)	1/19 (5.3)
Cervical cerclage immediately following laser procedure	18 (38.3)	13/19 (68.4)
Cervical cerclage after 12–24 h observation following laser procedure	9 (19.1)	5/19 (26.3)
Vaginal progesterone	9 (19.1)	13 (40.6)
Other	0 (0)	_

Continued over.

Table 3 Continued

	Round item was	in which included
Item	Round 1 $(n = 47)$	<i>Round 2</i> (n = 32)
Tocolysis		
Inpatient perioperative tocolysis*	_	30 (93.8)
Magnesium sulfate	8 (17.0)	
Indomethacin	24 (51.1)	_
Atosiban	12 (25.5)	_
Nifedipine	10 (21.3)	_
Do not use tocolysis	5 (10.6)	_
Other	2 (4.3)	_
Same form of inpatient perioperative tocolysis for laser procedure whether CL is normal or short, or dilated cervix		
Yes	44 (93.6)	30 (93.8)
Discharge with outpatient tocolysis (daily or as required) for at least a few weeks following laser*		
Nifedipine	8 (17.0)	_
Indomethacin	2 (4.3)	_
Terbutaline	0 (0.0)	_
Do not prescribe outpatient tocolysis	31 (66.0)	28 (87.5)
Other	6 (12.8)	_

Data are given as n (%) or n/N (%). Consensus was defined as \geq 70% agreement, significant agreement as 60–69% and no agreement as < 60%. *Participants could select multiple options. †Response options combined in round 2 question. —, item not addressed in round; CL, cervical length; TVS, transvaginal ultrasound.

progesterone showed a reduction in PTB < 33 weeks' gestation compared with no treatment/placebo (relative risk (RR), 0.60 (95% CI, 0.38–0.95); 20/52 (38.5%) vs 24/43 (55.8%)) and showed a reduction in composite neonatal morbidity and mortality (RR, 0.54 (95% CI, 0.34–0.86) assuming independence between twins; 24/102 (23.1%) vs 31/84 (36.9%))³⁷. Other similar studies have not shown this benefit. The Evaluating Progestogens for Preventing Preterm birth International Collaborative meta-analysis showed that, in twin pregnancies, vaginal progesterone did not reduce preterm birth before 34 weeks' gestation (eight trials, 2046 women; RR, 1.01 (95% CI, 0.84–1.20)) and no consistent evidence of benefit or harm for other investigated outcomes was found³⁸. In the current study, approximately 20% of participants did not endorse its use.

There was consensus against the use of pessary or cervical cerclage in twin pregnancies with $CL \le 25$ mm and that consensus remained for $CL \le 15$, ≤ 10 and ≤ 5 mm. This is consistent with a recent systematic review and meta-analysis of six RCTs, including 2983 pregnancies and 5982 neonates, which showed no significant increase in gestational age at delivery (mean difference, 0.36 weeks (95% CI, -0.27 to 0.99); P = 0.270), no reduction of spontaneous PTB < 37 weeks' gestation (risk ratio, 0.88 (95% CI, 0.77 - 1.00); P = 0.061) and no difference in composite neonatal adverse outcome²⁷. An ongoing RCT of pessary and/or progesterone to prevent PTB in twin pregnancies with a short cervix (PROSPECT trial; NCT02518594) will provide further information about this prophylactic modality.

There was no consensus regarding cerclage placement in twin pregnancies with a short cervix, although agreement on offering cerclage for $CL \le 10$ and ≤ 5 mm was 62.6% and 61.5%, respectively. A meta-analysis from 2018 on

ultrasound-indicated cerclage in twin pregnancies compared with no cerclage showed that cerclage placement resulted in prolongation of pregnancy with CL ≤ 15 mm and a reduction in PTB < 37, < 34 and < 32 weeks' gestation³⁹. A recent meta-analysis from 2023 showed similar results, whereby cerclage resulted in a reduction of PTB < 34 weeks' gestation in women with CL ≤ 15 mm (RR, 0.74 (95% CI, 0.58–0.95); P = 0.02; attributable risk, 29.17%)²⁸. An ongoing RCT (NCT03340688) is evaluating the efficacy of cerclage for the prevention of PTB < 34 weeks' gestation in twin pregnancies with CL ≤ 15 mm, excluding twins with TTTS.

For twin pregnancies with asymptomatic cervical dilation, most experts agreed on the role of cervical cerclage. Consensus was also reached for multiple adjunctive approaches surrounding cerclage placement, such as no role for amniocentesis, and the use of tocolysis, antibiotics, steroids and operative techniques. These approaches are supported by the only RCT on physical examination-indicated cerclage in twins, which reported a reduction in spontaneous PTB < 24 weeks' gestation (29% vs 85%; RR, 0.35 (95% CI, 0.16-0.75)), < 28 weeks (41% vs 85%; RR, 0.49 (95% CI, 0.26-0.89)), < 32 weeks (65% vs 100%;RR, 0.65 (95% CI, 0.46–0.92)) and < 34 weeks (71% vs 100%; RR, 0.71 (95% CI, 0.52-0.96)), and in perinatal mortality (18% vs 77%; RR, 0.23 (95% CI, 0.10-0.49); number needed to treat, $(1.7)^8$.

Regarding twin pregnancies with TTTS, data are more conflicting or there is a notable lack of high-quality evidence from adequately powered RCTs. Nevertheless, our experts agreed on offering vaginal progesterone and cervical cerclage, and not recommending pessary in twin pregnancies with short CL, although no consensus was reached

	115.4								Converse	Current Dolb bi. 118 A
Topic	0.00 (ACOG, SMFM) ^{31,41–43}	UK (RCOG, NICE) ^{32,44}	Canada (SOGC) ^{34,45–47}	ISU0G ³³	FIGO ⁴⁸⁻⁵⁰	France (CNGOF) ^{51,52}	Germany (A WMF) ⁵³	Agreement	Delphi (% agreement)	participants (% agreement)
US screening of CL Routine	R	R	К	R	К	NR	R	No	Yes (71.3)	Yes (70.2)
screening Timing Approach	18–23 weeks TAS, if suspected to be short then TVS	16-20 weeks —	Anatomy scan TAS or TVS	18–24 weeks —	18–24 weeks TVS		20 weeks —	No No	18–23 weeks TVS	18–23 weeks TVS
Definition of short CL	≤ 25 mm	≤25 mm	I	≤25 mm	≤20mm	I	≤25 mm	No	≤25 mm	≤ 25 mm
Prevention of PTB Vaginal progesterone	with short CL NR	200 mg until 34 weeks	400 mg if CL ≤25 mm at 16–24 weeks	May be considered	I	NR	200-2400 mg if CL $\leq 25 \text{ mm}$ at $<24 \text{ weeks}$	Ňo	Yes (73.4)	Yes (89.1)
Cerclage	NR	NR	Consider if CL ≤15mm	NR	May consider for CL ≤15 mm	NR	NR	No	Yes (62.6) if CL $\leq 10 \text{ mm}$ Yes (61.5) if CL	Yes (63.0) if CL $\leq 10 \mathrm{mm}$ Yes (66.0) if CL
Pessary	NR	NR	NR	NR	NR	NR	Can be placed if CL ≤ 25 mm at <24 weeks	No	nun c≥ No (78.6)	≤ 2 mm No (91.3)
Cerclage for cervical dilation	May be considered	May be considered	К	May be considered	R	I	May be considered	Yes	Yes (88.3)	Yes (95.7)
ACOG, American (Obstetriciens Franc and Care Excellenco Society of Maternal	College of Obstetric ais; FIGO, Internat e; NR, not recomm I-Fetal Medicine: T.	cians and Gynecol tional Federation (tended; R, recomm AS, transabdomin	ogists; AWMF, Asso of Gynecology and C nended; RCOG, Roy al sonography; TVS	ociation of Scienti Obstetrics; ISUOG yal College of Obs	fic Medical Societié i, International Soc stetricians and Gyn. ography, US, ultras	ss in Germany; Cl iety of Ultrasound aecologists; SOG sound.	, cervical length; C I in Obstetrics and C C, Society of Obstet	NGOF, Coll Gynecology; ricians and C	ege National des G NICE, National In Synaecologists of C	ynecologues et stitute for Health Zanada; SMFM,

© 2025 The Author(s). Ultrasound in Obstetrics & Gynecology published by John Wiley & Sons Ltd on behalf of International Society of Ultrasound in Obstetrics and Gynecology.

14697075, 0, Downloaded from https://obgyn.onlinelibrary.wiley.com/doi/10.1002/uog.29220 by Test, Wiley Online Library on [08/05/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

9

on preferred management for twin pregnancies with cervical dilation. In a multicenter cohort study that included twin pregnancies with TTTS undergoing FLP, 151 (59%) were managed expectantly, 32 (13%) had only vaginal progesterone, 21 (8%) had only pessary, 21 (8%) had only cervical cerclage and 30 (12%) had a combination of treatments. Regardless of treatment, there was no significant difference in FLP-to-delivery interval, gestational age at delivery, live birth or neonatal survival between groups. Vaginal progesterone was associated with a decrease in the risk of delivery at <28 weeks' gestation compared with cervical cerclage and combined treatment (P = 0.03). Using propensity-score matching for CL, cervical cerclage was associated with a reduction in FLP-to-delivery interval of 13 days compared with expectant management²².

Strengths and limitations

The strengths of our study include the use of the well-established Delphi method and inclusion of a diverse group of international experts. Our selection criteria, based on clinical and academic experience, resulted in a high degree of expertise among our participants. Moreover, a relatively low attrition rate was achieved across the three rounds of the Delphi process. We were able to provide insight into how experts synthesize conflicting data and make choices when no high-quality data exist, and build on current knowledge gaps surrounding PTB in twin pregnancies, including monochorionic twins complicated with TTTS. This may drive the collection of more evidence for treatment efficacy and provides a useful guide for shared decision-making and treatment assessment.

Limitations include that Delphi responses reflect contemporary interpretation of existing literature, which can change over time. As a summary of expert opinions, the study also provides a different insight compared with a systematic review or society guidelines. Furthermore, given the presentation of consensus results in follow-up rounds, participants may have altered their initial thoughts to prioritize the consensus views in an effort to emphasize group unanimity⁴⁰. This was minimized by masking individual expert opinions that could steer the group in a particular direction, adding relevant questions raised by individual participants guided by a Steering Group and the independent nature of the questionnaire itself. There was overrepresentation of Western countries and underrepresentation of countries in Africa, Asia and South America. Lastly, this represents the views of a selected group of participants, therefore it cannot be known whether it is representative of the wider community.

Conclusions

The results of this Delphi study highlight the apparent practice variations among maternal-fetal medicine specialists worldwide in the evaluation and management of PTB in twin pregnancies, and how management often differs from the recommendations of most national and international societies. Most respondents consider using vaginal progesterone for short CL and more than 60% consider cerclage for very short CL, which could reflect that physicians, as well as patients, feel more comfortable pursuing interventions over expectant management, even when data are insufficient or conflicting. These findings reflect the need for high-quality prospective studies on prevention of PTB in twin pregnancies and the need to improve consistency across guidelines produced by international societies by including specialist representatives from different countries.

ACKNOWLEDGMENTS

We would like to thank our expert panel for participating in the study.

REFERENCES

- Osterman MJK, Hamilton BE, Martin JA, Driscoll AK, Valenzuela CP. Births: final data for 2022. Natl Vital Stat Rep. 2024;73(2):1-56.
- Goldenberg RL, Culhane JF, Iams JD, Romero R. Epidemiology and causes of preterm birth. Lancet. 2008;371(9606):75-84.
- Makrydimas G, Sotiriadis A. Prediction of preterm birth in twins. Best Pract Res Clin Obstet Gynaecol. 2014;28(2):265-272.
- Conde-Agudelo A, Romero R, Hassan SS, Yeo L. Transvaginal sonographic cervical length for the prediction of spontaneous preterm birth in twin pregnancies: a systematic review and metaanalysis. Am J Obstet Gynecol, 2010;203(2):e121-e112.
- Roman AS, Rebarber A, Pereira L, Sfakianaki AK, Mulholland J, Berghella V. The efficacy of sonographically indicated cerclage in multiple gestations. J Ultrasound Med. 2005;24(6):763-768.
- Roman A, Rochelson B, Fox NS, et al. Efficacy of ultrasound-indicated cerclage in twin pregnancies. *Am J Obstet Gynecol*. 2015;212(6):788.e1-788.e7886.
 Berghella V, Odibo AO, To MS, Rust OA, Althuisius SM. Cerclage for short
- Berghella V, Odibo AO, To MS, Rust OA, Althuisius SM. Cerclage for short cervix on ultrasonography: meta-analysis of trials using individual patient-level data. Obstet Gynecol. 2005;106(1):181-189.
- Roman A, Zork N, Haeri S, et al. Physical examination-indicated cerclage in twin pregnancy: a randomized controlled trial. Am J Obstet Gynecol. 2020;223(6):902.e1-902.e11.
- Saccone G, Rust O, Althuisius S, Roman A, Berghella V. Cerclage for short cervix in twin pregnancies: systematic review and meta-analysis of randomized trials using individual patient-level data. Acta Obstet Gynecol Scand. 2015;94(4):352-358.
- Papanna R, Block-Abraham D, Mann LK, et al. Risk factors associated with preterm delivery after fetoscopic laser ablation for twin-twin transfusion syndrome. *Ultrasound Obstet Gynecol.* 2014;43(1):48-53.
- Mustafa HJ, Aghajani F, Patrick E, Baerz MM, Arias-Sánchez P, Khalil A. Perinatal outcomes following fetoscopic laser surgery for early twin-to-twin transfusion syndrome: systematic review and meta-analysis. *Acta Obstet Gynecol Scand*. 2024;103(5):824-831.
- Mustafa HJ, Javinani A, Goetzinger K, et al. Single fetal demise following fetoscopic ablation for twin-to-twin transfusion syndrome-cohort study, systematic review, and meta-analysis. *Am J Obstet Gynecol*. 2022;226(6):843.e1-843.e28.
- Mustafa HJ, Krispin E, Tadbiri H, et al. Efficacy of long-term indomethacin therapy in prolonging pregnancy after fetoscopic laser surgery for twin-to-twin transfusion syndrome: a collaborative cohort study. BJOG. 2022;129(4):597-606.
- Beck V, Lewi P, Gucciardo L, Devlieger R. Preterm prelabor rupture of membranes and fetal survival after minimally invasive fetal surgery: a systematic review of the literature. *Fetal Diagn Ther.* 2012;31(1):1-9.
- Robyr R, Boulvain M, Lewi L, et al. Cervical length as a prognostic factor for preterm delivery in twin-to-twin transfusion syndrome treated by fetoscopic laser coagulation of chorionic plate anastomoses. Ultrasound Obstet Gynecol. 2005;25(1):37-41.
- Papanna R, Mann LK, Baschat AA, et al. Cervical length in prediction of preterm birth after laser surgery for twin-twin transfusion syndrome. Ultrasound Obstet Gynecol. 2015;45(2):175-182.
- Cobo T, Palacio M, Eixarch E, et al. Clinical and biochemical predictors of very preterm birth in twin-to-twin transfusion syndrome treated by fetoscopy. Am J Obstet Gynecol. 2011;204(1):58.e1-58.e585.
- Finneran M, Temming L, Templin M, Stephenson C. Effect of cervical length recovery after laser surgery for twin-twin transfusion syndrome. AJP Rep. 2016;6(1):e137-e141.
- Aboudiab MS, Chon AH, Korst LM, Llanes A, Ouzounian JG, Chmait RH. Management of twin-twin transfusion syndrome with an extremely short cervix. *J Obstet Gynaecol.* 2018;38(3):359-362.
- Chmait RH, Korst LM, Llanes A, Mullin P, Lee RH, Ouzounian JG. Perioperative characteristics associated with preterm birth in twin-twin transfusion syndrome treated by laser surgery. *Am J Obstet Gynecol.* 2013;209(3): 264.e1-264.e2648.

- Malshe A, Snowise S, Mann LK, et al. Preterm delivery after fetoscopic laser surgery for twin-twin transfusion syndrome: etiology and risk factors. Ultrasound Obstet Gynecol. 2017;49(5):612-616.
- Buskmiller C, Bergh EP, Brock C, et al. Interventions to prevent preterm delivery in women with short cervix before fetoscopic laser surgery for twin-twin transfusion syndrome. Ultrasound Obstet Gynecol. 2022;59(2):169-176.
- Murphy MK, Black NA, Lamping DL, et al. Consensus development methods, and their use in clinical guideline development. *Health Technol Assess*. 1998;2(3):1-88.
- Sinha IP, Smyth RL, Williamson PR. Using the Delphi technique to determine which outcomes to measure in clinical trials: recommendations for the future based on a systematic review of existing studies. *PLoS Med.* 2011;8(1):e1000393.
- Hohmann E, Cote MP, Brand JC. Research pearls: expert consensus based evidence using the Delphi method. *Arthroscopy*. 2018;34(12):3278-3282.
- Habli M, Bombrys A, Lewis D, et al. Incidence of complications in twin-twin transfusion syndrome after selective fetoscopic laser photocoagulation: a single-center experience. Am J Obstet Gynecol. 2009;201(4):417.e1-417.e4177.
- Norooznezhad AH, Zargarzadeh N, Javinani A, et al. The effect of cervical pessary on increasing gestational age at delivery in twin pregnancies with asymptomatic short cervix: a systematic review and meta-analysis of randomized controlled trials. *AJOG Glob Rep.* 2024;4(2):100347.
- D'Antonio F, Eltaweel N, Prasad S, Flacco ME, Manzoli L, Khalil A. Cervical cerclage for prevention of preterm birth and adverse perinatal outcome in twin pregnancies with short cervical length or cervical dilatation: a systematic review and meta-analysis. *PLoS Med.* 2023;20(8):e1004266.
- D'Antonio F, Eltaweel N, D'Amico A, Khalil A. Role of cerclage in twin and singleton pregnancy: evidence from systematic review and meta-analysis. Ultrasound Obstet Gynecol. 2024;63(4):567-569.
- D'Antonio F, Berghella V, di Mascio D, et al. Role of progesterone, cerclage and pessary in preventing preterm birth in twin pregnancies: a systematic review and network meta-analysis. *Eur J Obstet Gynecol Reprod Biol.* 2021;261:166-177.
- Multifetal gestations: twin, triplet, and higher-order multifetal pregnancies: ACOG Practice Bulletin, Number 231. Obstet Gynecol. 2021;137(6):e145-e162.
 NOF Control and Co
- NICE Guideline. Twin and triplet pregnancy. National Institute for Health and Care Excellence (NICE); 2024.
- Khalil A, Rodgers M, Baschat A, et al. ISUOG Practice Guidelines: role of ultrasound in twin pregnancy. Ultrasound Obstet Gynecol. 2016;47(2):247-263.
 Mei-Dan F, Jain V, Melamed N, et al. Guideline No. 428: Management of
- Mei-Dan E, Jain V, Melamed N, et al. Guideline No. 428: Management of Dichorionic Twin Pregnancies. J Obstet Gynaecol Can. 2022;44(7):819-834.e811.
- Brock CO, Moroz LA, Gyamfi-Bannerman C. Cervical length as a predictor of preterm delivery in an unselected cohort of women with twin pregnancies. Am J Perinatol. 2019;36(12):1288-1294.
- Conde-Agudelo A, Romero R. Predictive accuracy of changes in transvaginal sonographic cervical length over time for preterm birth: a systematic review and metaanalysis. *Am J Obstet Gynecol.* 2015;213(6):789-801.
- 37. Romero R, Conde-Agudelo A, Rehal A, et al. Vaginal progesterone for the prevention of preterm birth and adverse perinatal outcomes in twin gestations

with a short cervix: an updated individual patient data meta-analysis. Ultrasound Obstet Gynecol. 2022;59(2):263-266.

- The EPPPIC Group. Evaluating Progestogens for Preventing Preterm birth International Collaborative (EPPPIC): meta-analysis of individual participant data from randomised controlled trials. *Lancet*. 2021;397(10280):1183-1194.
- Li C, Shen J, Hua K. Cerclage for women with twin pregnancies: a systematic review and metaanalysis. Am J Obstet Gynecol. 2019;220(6):543-557.e541.
- Baron RS. So right it's wrong: groupthink and the ubiquitous nature of polarized group decision making. In: Zanna MP, ed. Advances in Experimental Social Psychology. Vol 37. Elsevier Academic Press; 2005:219-253.
- Prediction and Prevention of Spontaneous Preterm Birth: ACOG Practice Bulletin, Number 234. Obstet Gynecol. 2021;138(2):e65-e90.
- SMFM Publications Committee. SMFM Consult Series #70: Management of short cervix in individuals without a history of spontaneous preterm birth. Am J Obstet Gynecol. 2024;231(2):B2-B13.
- ACOG Practice Bulletin No.142: Cerclage for the management of cervical insufficiency. Obstet Gynecol. 2014;123(2 Pt 1):372-379.
- Management of Monochorionic Twin Pregnancy: Green-top Guideline No. 51. BJOG. 2017;124(1):e1-e45.
- Lee HS, Abbasi N, Van Mieghem T, et al. Guideline no. 440: Management of monochorionic twin pregnancies. J Obstet Gynaecol Can. 2023;45(8):587-606.e8.
- Brown R, Gagnon R, Delisle MF. No. 373-cervical insufficiency and cervical cerclage. J Obstet Gynaecol Can. 2019;41(2):233-247.
 Iain V, McDonald SD, Mundle WR, Farine D, Guideline no. 398: Proges-
- Jain V, McDonald SD, Mundle WR, Farine D. Guideline no. 398: Progesterone for prevention of spontaneous preterm Birth. J Obstet Gynaecol Can. 2020;42(6):806-812.
- FIGO Working Group on Good Clinical Practice in Maternal-Fetal Medicine. Good clinical practice advice: Role of ultrasound in the management of twin pregnancy. *Int J Gynecol Obstet.* 2019;144(3):338-339.
- Shennan A, Story L, Jacobsson B, Grobman WA. FIGO good practice recommendations on cervical cerclage for prevention of preterm birth. *Int J Gynecol Obstet*. 2021;155(1):19-22.
- Grobman WA, Norman J, Jacobsson B. FIGO good practice recommendations on the use of pessary for reducing the frequency and improving outcomes of preterm birth. *Int J Gynaecol Obstet.* 2021;155(1):23-25.
- Vayssière C, Benoist G, Blondel B, et al. Twin pregnancies: guidelines for clinical practice from the French College of Gynaecologists and Obstetricians (CNGOF). *Eur J Obstet Gynecol Reprod Biol.* 2011;156(1):12-17.
- Komatsu Y, McKain L, Powell M. Prevention of spontaneous preterm birth: Guidelines for clinical practice from the French College of Gynaecologists and Obstetricians (CNGOF). Eur J Obstet Gynecol Reprod Biol. 2017;219:130.
- 53. Berger R, Abele H, Bahlmann F, et al. Prevention and Therapy of Preterm Birth. Guideline of the DGGG, OEGGG and SGGG (S2k Level, AWMF Registry Number 015/025, February 2019) - Part 2 with Recommendations on the Tertiary Prevention of Preterm Birth and the Management of Preterm Premature Rupture of Membranes. *Geburtshilfe Frauenheilkd.* 2019;79(8):813-833.

SUPPORTING INFORMATION ON THE INTERNET

The following supporting information may be found in the online version of this article:

Appendix S1 Members of the Preterm Birth in Twins Working Group

Table S1 Responses from experts participating in the Delphi process on prevention of preterm birth (PTB) considering cervical cerclage in twin pregnancies with cervical dilation