The Royal Australian and New Zealand College of Obstetricians and Gynaecologists
Excellence in Women's Health

Measurement of cervical length for prediction of preterm birth

This statement has been developed and reviewed by the Women's Health Committee and approved by the RANZCOG Board and Council.

A list of Women's Health Committee Members can be found in Appendix A.

Disclosure statements have been received from all members of this committee.

First endorsed by RANZCOG: November 2008
Current: July 2017
Review due: July 2020

Values: The evidence was reviewed by the Women's Health Committee (RANZCOG), and applied to local factors relating to Australia and New Zealand.

Validation: This statement was compared with WHO and SOGC guidance on this topic.

Background: This statement was first developed by Women's Health Committee in November 2006 and reviewed in July 2017.

Funding: The development and review of this statement was funded by RANZCOG.

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1. Patient summary

The length of the cervix in mid-pregnancy relates to the chance of early birth, with a greater risk of preterm birth, the shorter the cervix. Although most women with a short cervix in mid-pregnancy will still deliver at term, identifying women at risk of preterm birth may allow treatments to reduce that risk. In some locations the length of the cervix is assessed routinely at the ultrasound assessing the fetal anatomy at around 20 weeks. In others, cervical length assessment is performed only in women who have risk factors for preterm birth or who have symptoms such as uterine contractions prior to term.

2. Summary of recommendations

Recommendation 1	Grade
Assessment of cervical length at 18-24 weeks in women at low risk of preterm birth should be considered.	Consensus-based recommendation
Recommendation 2	
Cervical length assessment may be useful in clinical management of women with risk factors for preterm birth or in those who are symptomatic.	Consensus-based recommendation
Recommendation 3	
Ultrasound cervical length assessment should be performed according to a standardised technique. Transabdominal assessment with a partially full bladder is a potential first line screening test, potentially reducing the need for transvaginal assessment in a proportion of women.[12]	Consensus-based recommendation

3. Introduction

There is controversy around the routine ultrasound assessment of the cervix as a means of defining risk of preterm delivery in low risk women.[1,2] There is also good data showing that therapeutic intervention with progesterone or cervical cerclage in women with a short cervix may reduce the incidence of preterm birth among these women.[3,4,5] There is currently little evidence to suggest that cervical pessaries have a role in women with a short cervix.[5,6,7,8] This document highlights some of the contemporary issues around this topic.

4. Discussion and recommendations

4.1 Measurement technique

- Accurately measured ultrasound cervical length has an inverse relationship with the risk of preterm birth in low-risk asymptomatic women.[1,2,9] The bulk of the evidence for short cervical length and risk of preterm birth is from studies using a single cut-off of either 20 or 25mm between 18 and 24 weeks gestation.
  Various studies across different populations show similar results. For example, cervical lengths of 30mm (10th centile), 27mm (5th centile) and 22mm (2.5th centile) gave relative risks of preterm birth prior to 37 weeks of 3.8, 5.4, and 6.3, respectively, with even greater relative risk at earlier gestations.[10]

- Cervical length is most accurately measured by transvaginal ultrasound examination. Most normal ranges / likelihood ratios describing the risk of preterm labour have been calculated using a standardised technique for measurement. The patient should have an empty bladder and the vaginal probe should be placed in the anterior fornix, minimising pressure on the cervix as this increases cervical length. The length of the endocervical canal should be measured from the internal to the external cervical os. As the cervix is dynamic, three measurements should be made over a five minute period and the shortest measurement reported for clinical use.[11]

- Transabdominal assessment with a partially full bladder is a potential first line screening test, potentially reducing the need for transvaginal assessment in a proportion of women.[12] A transabdominal cervical length greater than 35mm precludes a transvaginal cervical length below 25mm with over 95% sensitivity.[13] A limitation of this approach is that the cervix may not be adequately visualised in as many as 60% of women who then require transvaginal assessment.[14] Transperineal assessment of cervical length has not been as thoroughly studied.[15]

- Other sonographic features of the cervix such as funnelling (effacement of the internal aspect of the cervix), shortening in response to fundal pressure or uterine activity, and intra-amniotic "sludge" are known to be associated with preterm delivery – but may not add substantially to predictive modelling when compared to accurate measurement of cervical length alone.

- Charts describing normal cervical length from 16-36 weeks have been constructed. The median cervical length at 20 weeks is 42mm, the 1st centile is 23mm.[16]

4.2 Treatment of short cervix in otherwise low risk women

- There is a growing body of evidence suggesting that interventions, such as progesterone or cervical cerclage may be of benefit for women otherwise considered low risk of preterm birth found to have a short cervix in the midtrimester.[3] Accordingly, it is becoming more common for cervical length assessment to be offered, and performed, at the time of the routine midtrimester ultrasound. Economic analyses in various settings have generally shown this to be cost-effective, however, this is heavily influenced by local characteristics.[17,18] The decision to institute routine mid-pregnancy cervical length assessment requires careful consideration of local factors including the population preterm birth rate, acceptability to women and other cultural influences, resource availability, education and training, and quality assurance procedures, in addition to health economics.

- Studies have used variable cut-offs to define a 'high risk' cohort that merits therapeutic intervention, but on current evidence using a cut-off of either 20 or 25mm appears to be appropriate.

- Although not without controversy, a meta-analysis of randomised controlled trials suggests that treatment of such women with vaginal progesterone reduces the risk of preterm delivery before 34 weeks or fetal death by 34% and significantly reduces neonatal morbidity.[3] Approximately 11 women need to be treated to prevent one preterm delivery before 34 weeks. The use of progesterone is discussed in more detail in a separate RANZCOG clinical guideline (C-Obs 29b).[19]

- Cervical cerclage may also be effective in reducing preterm birth in women with a short cervix (RR 0.74), in particular in those with a history of previous preterm birth (RR 0.61) or midtrimester pregnancy loss (RR 0.57).[20] In the absence of clear benefit of cerclage over vaginal progesterone in otherwise low risk women with a short cervix, progesterone is generally the preferred treatment due to the lower risk of surgical complications.

4.3 Cervical length assessment among women with risk factors for preterm birth

- Women with risk factors for preterm birth such as a history of preterm birth or mid trimester pregnancy loss, deep or repeated cervical excisional procedures, congenital uterine anomalies, or multiple pregnancy should have individually considered surveillance and risk-reduction strategies instituted from early pregnancy. Large obstetric services may offer specialist clinics with a specific focus on preterm birth prevention to those women at particular risk. Measurement of cervical length is just one of several strategies that may be required in high risk women.

- Previous preterm birth: Meta-analysis has also shown that a subgroup of women who have other risk factors for preterm birth, especially previous history of preterm birth, may benefit from vaginal progesterone or cervical cerclage.[9] There is some evidence to support cervical length surveillance in women with previous preterm birth with recourse to cervical cerclage in only those women who develop a short cervix.[21] Further research in this area would be of value, including defining those women who do better with progesterone or cerclage.

- Multiple pregnancy: Whilst cervical length also has predictive value in twin pregnancies, the evidence regarding therapeutic intervention for those with a short cervix is conflicting.[22] There may, at least, be some benefit in recognising multiple pregnancies at particular risk of preterm delivery, so that appropriate arrangements can be made to optimise outcomes should preterm birth occur.

- Previous cervical excisional procedures: Previous excisional treatment of cervical dysplasia is an independent risk factor for preterm birth (relative risk 1.61).[23] Of those women with previous excisions, a midtrimester cervical length less than 25 or 30mm confers a greater risk of preterm birth (positive predictive value 30-50%) compared to a longer cervix (negative predictive value 94-95%).[24,25] Assessment of cervical length may therefore be useful to stratify risk for women with

previous cervical excisions.

- Ultrasound assessment of cervical length can also be useful in defining management for women attending with symptoms and signs of threatened preterm labour at 24-34 weeks.[26,27,28]

5. Conclusion

Mid-pregnancy cervical length assessment is of value in identifying women at increased risk of preterm birth who may benefit from interventions such as vaginal progesterone or cervical cerclage. This may be used to further stratify risk in women with other identified preterm birth risk factors. Routine mid-pregnancy cervical length assessment in low risk women can be a cost-effective method of preterm birth reduction but implementation of such a policy is highly dependent upon local factors. If it is to be undertaken, cervical length assessment should be performed according to a standardised technique.

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7. Links to other College statements

Evidence-based Medicine, Obstetrics and Gynaecology (C-Gen 15)

Progesterone Use in the second and third trimester (C-Obs 29b)

8. Patient information

A range of RANZCOG Patient Information Pamphlets can be ordered via:
http://www.ranzcog.edu.au/publication/womens-health-publications/patient-information pamphlets.html

Appendices

Appendix A Women's Health Committee Membership

Name	Position on Committee
Professor Yee Leung	Chair
Dr Joseph Sgroi	Deputy Chair, Gynaecology
Associate Professor Janet Vaughan	Deputy Chair, Obstetrics
Associate Professor Ian Pettigrew	EAC Representative
Dr Tal Jacobson	Member
Dr Ian Page	Member
Dr John Regan	Member
Dr Craig Skidmore	Member
Associate Professor Lisa Hui	Member
Dr Bernadette White	Member
Dr Scott White	Member
Associate Professor Kirsten Black	Member
Dr Greg Fox	College Medical Officer
Dr Marilyn Clarke	Chair of the ATSI WHC
Dr Martin Byrne	GPOAC Representative
Ms Catherine Whitby	Community Representative
Ms Sherryn Elworthy	Midwifery Representative
Dr Amelia Ryan	Trainee Representative

Appendix B Overview of the development and review process for this statement

i. Steps in developing and updating this statement

This statement was originally developed in November 2006 and was most recently reviewed in July 2017. The Women's Health Committee carried out the following steps in reviewing this statement:

- Declarations of interest were sought from all members prior to reviewing this statement.
- Structured clinical questions were developed and agreed upon.
- An updated literature search to answer the clinical questions was undertaken.
- At the July 2017 face-to-face committee meeting, the existing consensus-based recommendations were reviewed and updated (where appropriate) based on the available body of evidence and clinical expertise. Recommendations were graded as set out below in Appendix B part iii)

ii. Declaration of interest process and management

Declaring interests is essential in order to prevent any potential conflict between the private interests of members, and their duties as part of the Women's Health Committee.

A declaration of interest form specific to guidelines and statements was developed by RANZCOG and approved by the RANZCOG Board in September 2012. The Women's Health Committee members were required to declare their relevant interests in writing on this form prior to participating in the review of this statement.

Members were required to update their information as soon as they become aware of any changes to their interests and there was also a standing agenda item at each meeting where declarations of interest were called for and recorded as part of the meeting minutes.

There were no significant real or perceived conflicts of interest that required management during the process of updating this statement.

iii. Grading of recommendations

Each recommendation in this College statement is given an overall grade as per the table below, based on the National Health and Medical Research Council (NHMRC) Levels of Evidence and Grades of Recommendations for Developers of Guidelines. Where no robust evidence was available but there was sufficient consensus within the Women's Health Committee, consensus-based recommendations were developed or existing ones updated and are identifiable as such. Consensus-based recommendations were agreed to by the entire committee. Good Practice Notes are highlighted throughout and provide practical guidance to facilitate implementation. These were also developed through consensus of the entire committee.

Recommendation category		Description
Evidence-based	A	Body of evidence can be trusted to guide practice
	B	Body of evidence can be trusted to guide practice in most situations
	C	Body of evidence provides some support for recommendation(s) but care should be taken in its application
	D	The body of evidence is weak and the recommendation must be applied with caution
Consensus-based		Recommendation based on clinical opinion and expertise as insufficient evidence available
Good Practice Note		Practical advice and information based on clinical opinion and expertise

Appendix C Full Disclaimer

This information is intended to provide general advice to practitioners, and should not be relied on as a substitute for proper assessment with respect to the particular circumstances of each case and the needs of any patient.

This information has been prepared having regard to general circumstances. It is the responsibility of each practitioner to have regard to the particular circumstances of each case. Clinical management should be responsive to the needs of the individual patient and the particular circumstances of each case.

This information has been prepared having regard to the information available at the time of its preparation, and each practitioner should have regard to relevant information, research or material which may have been published or become available subsequently.

Whilst the College endeavours to ensure that information is accurate and current at the time of preparation, it takes no responsibility for matters arising from changed circumstances or information or material that may have become subsequently available.