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SMFM Special Statement

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Society for Maternal-Fetal Medicine Special Statement: Grading of Recommendations Assessment, Development, and Evaluation (GRADE) update

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The Society for Maternal-Fetal Medicine Publications Committee first adopted the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) system in 2013. This document provides an update on the Society for Maternal-Fetal Medicine Publications Committee process for creating evidence-based practice recommendations and describes the GRADE process as it is currently implemented in the SMFM Consult and Guidelines series.

Key words: clinical guideline, clinical recommendation, evidence-based recommendation, GRADE (Grading of Recommendations Assessment, Development, and Evaluation) system

Introduction

In 2013, the Society for Maternal-Fetal Medicine (SMFM) Publications Committee adopted the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) system for evaluating and rating scientific evidence and practice recommendations for SMFM Clinical Guidelines and Consults.[1] This decision to adopt the GRADE system was 2-fold: to achieve a singular classification system to improve consistency with other organizations that create guidelines and address some of the limitations of previous classification systems. Since the initial adoption of the GRADE system, the SMFM Publications Committee has continued to refine its guideline development process to provide additional benefit to clinicians and policymakers and improve the quality of care for our patients. This document serves to update our process for creating evidence-based practice recommendations and describe the GRADE process as it is currently implemented in the SMFM Consult and Guidelines series.

Defining Clinical Questions

The GRADE system starts with formulating a question in the format of population, intervention, comparison, and outcome (PICO).[2] When reviewing an outline for a new guideline, the SMFM Publications Committee formulates clinical questions and topic areas that will lead to a recommendation. The PICO elements of these clinical questions are then determined. Structuring clinical questions in the PICO format serves the following two purposes: (1) identifying keywords for the literature search and (2) developing actionable, evidence-based recommendations.

Acquiring the Available Evidence

Once the PICO elements have been determined, a search of the medical literature is performed using the identified key words for each clinical question. Key words are entered into electronic databases, including PubMed, Embase, Cochrane Library, and others, and relevant articles are identified. References from these articles are also reviewed to identify additional studies and publications.

Rating the Quality of Evidence

The GRADE system provides explicit criteria for rating the quality of evidence that include assessment of study design, risk of bias, imprecision, inconsistency, indirectness, and magnitude of effect.[3] The SMFM Publications Committee has formalized the use of a summary of evidence table to display the assessment of the quality of evidence for each clinical question in a guideline (Table 1). This table summarizes the evidence supporting each clinical question and categorizes the quality as one of the following: high (level A), moderate (level B), or low (level C) (Table 2).

Writing and Characterizing the Strength of Recommendations

Recommendations are written by the SMFM Publications Committee reviewers after the quality of evidence has been

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TABLE 1
Example of a summary of evidence table: Venous thromboembolism prophylaxis following cesarean delivery, clinical question number 2

Clinical question		
Is there sufficient evidence to recommend one specific guideline over the other?		
Recommendation statement:		
We recommend that all women undergoing cesarean delivery receive sequential compression devices starting before surgery and that they be continued until the patient is fully ambulatory.		
Other organization recommendations:		
ACOG: "Placement of pneumatic compression devices before cesarean delivery is recommended for all women, and early mobilization is advised after cesarean delivery" (statement is based on one meta-analysis of 60 observational studies and ACCP VTE and pregnancy guidelines). **ACCP:** "For women undergoing cesarean section without additional thrombosis risk factors, we recommend against the use of thrombosis prophylaxis other than early mobilization"; "For women at increased risk of VTE after cesarean section . . . we suggest pharmacologic thromboprophylaxis or mechanical prophylaxis (elastic stockings or intermittent pneumatic compression) in those with contraindications to anticoagulants while in hospital following delivery rather than no prophylaxis" (statements are based on ACCP VTE prevention in nonorthopedic surgical patients guidelines). **NPMS:** "All women undergoing cesarean birth who are not receiving pharmacologic prophylaxis receive perioperative mechanical thromboprophylaxis with pneumatic compression devices, which should be continued until the patient is fully ambulatory" (statement is based on RCOG VTE pregnancy guidelines).		
Level A evidence	**Level B evidence**	**Level C evidence**
None	None	Clark 2014: retrospective chart review of 1,256,020 deliveries examining efficacy of a policy of universal use of pneumatic compression devices for all women who underwent cesarean delivery found a decrease in postoperative pulmonary embolism deaths from 7 of 458,097 cesarean births to 1 of 465,880 births ($P=.038$)[4]

ACCP, American College of Chest Physicians; *ACOG*, American College of Obstetricians and Gynecologists; *NPMS*, National Partnership for Maternal Safety; *RCOG*, Royal College of Obstetricians and Gynaecologists; *VTE*, venous thromboembolism.

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TABLE 2
Quality of evidence

Quality	Description
High—A	Consistent evidence from well-performed randomized, controlled trials or overwhelming evidence of some other form; further research is unlikely to change our confidence in estimate of benefit and risks.
Moderate—B	Evidence from randomized, controlled trials with important limitations (inconsistent results, methodological flaws, indirect or imprecise), or very strong evidence of some other research design; further research (if performed) is likely to have impact on our confidence in estimate of benefit and risks and may change estimate.
Low—C	Evidence from observational studies, unsystematic clinical experience, or randomized, controlled trials with serious flaws; any estimate of effect is uncertain.

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determined and are characterized as either strong (GRADE 1) or weak (GRADE 2) (Table 3). The recommendations are reviewed and approved by the SMFM Publications Committee members. The SMFM Publications Committee has standardized the language used for recommendation statements, as reflected in the SMFM grading system (Table 4). Generally, GRADE 1 evidence results in a statement that "we recommend," whereas GRADE 2 evidence results in a statement that "we suggest."

Other changes to the GRADE process include our use of "Best Practice" recommendations. Previously, the

TABLE 3
Strength of recommendation

1. **Strong**	Benefits clearly outweigh risks and burdens, or vice versa.
2. **Weak**	Benefits closely balanced with risks and burdens.

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TABLE 4
Society for Maternal-Fetal Medicine grading system: GRADE recommendations

GRADE of recommendation	Clarity of risk and benefit	Quality of supporting evidence	Implications	Suggested language
1A. Strong recommendation, high-quality evidence	Benefits clearly outweigh risk and burdens, or vice versa.	Consistent evidence from well-performed randomized, controlled trials or overwhelming evidence of some other form. Further research is unlikely to change our confidence in the estimate of benefit and risk.	Strong recommendations; can apply to most patients in most circumstances without reservation. Clinicians should follow a strong recommendation unless a clear and compelling rationale for an alternative approach is present.	• We strongly recommend … • We recommend that … should be performed or administered… • We recommend that … is indicated, beneficial, or effective…
1B. Strong recommendation, moderate-quality evidence	Benefits clearly outweigh risk and burdens, or vice versa.	Evidence from randomized, controlled trials with important limitations (inconsistent results, methodologic flaws, indirect or imprecise) or very strong evidence of some other research design. Further research (if performed) is likely to have an impact on our confidence in the estimate of benefit and risk and may change the estimate.	Strong recommendation and applies to most patients. Clinicians should follow a strong recommendation unless a clear and compelling rationale for an alternative approach is present.	• We recommend… • We recommend that … should be performed or administered… • We recommend that … is (usually) indicated, beneficial, or effective…
1C. Strong recommendation, low-quality evidence	Benefits seem to outweigh risk and burdens, or vice versa.	Evidence from observational studies, unsystematic clinical experience, or from randomized, controlled trials with serious flaws. Any estimate of effect is uncertain.	Strong recommendation that applies to most patients. Some of the evidence-base practices supporting the recommendation are, however, of low quality.	• We recommend… • We recommend that … should be performed or administered… • We recommend that … is (perhaps) indicated, beneficial, or effective…
2A. Weak recommendation, high-quality evidence	Benefits closely balanced with risks and burdens.	Consistent evidence from well-performed randomized, controlled trials or overwhelming evidence of some other form. Further research is unlikely to change our confidence in the estimate of benefit and risk.	Weak recommendation; best action may differ depending on circumstances or patients or societal values.	• We suggest… • We suggest that … may or might be reasonable…

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(continued)

SMFM Publications Committee has utilized Best Practice recommendations frequently when (1) there is an enormous amount of indirect evidence that clearly justifies a strong recommendation and performing studies to collect direct evidence would not be possible (the classic example is comparing outcomes with or without a parachute when jumping from a plane) or (2) a recommendation to the contrary would be unethical (eg,

TABLE 4
Society for Maternal-Fetal Medicine grading system: GRADE recommendations *(continued)*

GRADE of recommendation	Clarity of risk and benefit	Quality of supporting evidence	Implications	Suggested language
2B. Weak recommendation, moderate-quality evidence	Benefits closely balanced with risks and burdens, some uncertainty in the estimates of benefits, risks, and burdens.	Evidence from randomized, controlled trials with important limitations (inconsistent results, methodologic flaws, indirect or imprecise) or very strong evidence of some other research design. Further research (if performed) is likely to have an impact on our confidence in the estimate of benefit and risk and may change the estimate.	Weak recommendation; alternative approaches likely to be better for some patients under some circumstances.	• We suggest … • We suggest that … may or might be reasonable…
2C. Weak recommendation, low-quality evidence	Uncertainty in the estimates of benefits, risks, and burdens; benefits may be closely balanced with risks and burdens.	Evidence from observational studies, unsystematic clinical experience, or randomized, controlled trials with serious flaws. Any estimate of effect is uncertain.	Very weak recommendation; other alternatives may be equally reasonable.	• We suggest … is an option • We suggest that … may or might be reasonable…
Best Practice	Recommendation in which either (1) there is enormous amount of indirect evidence that clearly justifies a strong recommendation, direct evidence would be challenging and inefficient use of time and resources, to bring together and carefully summarize or (2) a recommendation to the contrary would be unethical.			• We recommend … • We recommend that … should be performed or administered… • We recommend that … is (usually) indicated, beneficial, or effective…

Adapted from Guyatt, et al.[6]

GRADE, Grading of Recommendations Assessment, Development, and Evaluation.

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obtaining informed consent from a patient before a procedure). Moving forward, the committee will carefully consider whether such Best Practice statements are clear, actionable, and necessary and whether, without the statement, clinicians might fail to take the recommended action. In some instances, a more appropriate approach may be a formal GRADE assessment and strong recommendation despite limited evidence.[5]

SMFM will continue to evaluate its implementation of the GRADE system to ensure quality, consistency, and transparency in its guideline development process. For additional information and resources regarding the GRADE system, please check the website http://www.gradeworkinggroup.org.

REFERENCES

1. Society for Maternal-Fetal Medicine (SMFM), Chauhan SP, Blackwell SC. SMFM adopts GRADE (Grading of Recommendations Assessment, Development, and Evaluation) for clinical guidelines. Am J Obstet Gynecol 2013;209:163–5.

2. Schünemann H, Brożek J, Guyatt G, Oxman A. GRADE handbook. 2013. Available at: https://gdt.gradepro.org/app/handbook/handbook.html. Accessed December 15, 2020.

3. Guyatt G, Oxman AD, Akl EA, et al. GRADE guidelines: 1. Introduction-GRADE evidence profiles and summary of findings tables. J Clin Epidemiol 2011;64:383–94.

4. Clark SL, Christmas JT, Frye DR, Meyers JA, Perlin JB. Maternal mortality in the United States: predictability and the impact of protocols on fatal postcesarean pulmonary embolism and hypertension-related intracranial hemorrhage. Am J Obstet Gynecol 2014;211:32.e1–9.
5. Guyatt GH, Schünemann HJ, Djulbegovic B, Akl EA. Guideline panels should not GRADE good practice statements. J Clin Epidemiol 2015;68:597–600.
6. Guyatt GH, Oxman AD, Vist GE, et al. GRADE: an emerging consensus on rating quality of evidence and strength of recommendations. BMJ 2008;336:924–6.

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SMFM has adopted the use of the word "woman" (and the pronouns "she" and "her") to apply to individuals who are assigned female sex at birth, including individuals who identify as men and nonbinary individuals who identify as both genders or neither gender. As gender-neutral language continues to evolve in the scientific and medical communities, the SMFM will reassess this usage and make appropriate adjustments as necessary.

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