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- Comments from the reviewers and editors (email to author requesting revisions)
- Response from the author (cover letter submitted with revised manuscript)*

Personal or nonessential information may be redacted at the editor's discretion.

Questions about these materials may be directed to the *Obstetrics & Gynecology* editorial office: obgyn@greenjournal.org.

^{*}The corresponding author has opted to make this information publicly available.

Date: Mar 19, 2021

To: "Andrea D. Shields"

From: "The Green Journal" em@greenjournal.org

Subject: Your Submission ONG-21-259

RE: Manuscript Number ONG-21-259

Top 10 Clinical Pearls When Managing Maternal Sepsis

Dear Dr. Shields:

Your manuscript has been reviewed by the Editorial Board and by special expert referees. Although it is judged not acceptable for publication in Obstetrics & Gynecology in its present form, we would be willing to give further consideration to a revised version.

If you wish to consider revising your manuscript, you will first need to study carefully the enclosed reports submitted by the referees and editors. Each point raised requires a response, by either revising your manuscript or making a clear and convincing argument as to why no revision is needed. To facilitate our review, we prefer that the cover letter include the comments made by the reviewers and the editor followed by your response. The revised manuscript should indicate the position of all changes made. We suggest that you use the "track changes" feature in your word processing software to do so (rather than strikethrough or underline formatting).

Your paper will be maintained in active status for 21 days from the date of this letter. If we have not heard from you by Apr 09, 2021, we will assume you wish to withdraw the manuscript from further consideration.

REVIEWER COMMENTS:

Reviewer #1:

This is an overall well written review of sepsis in pregnancy and management, with 128 references. It appears to be an effort to provide clinicians with a focus based on "10 Pearls" to help the clinician. However, it seems quite broad and could be a better paper if the authors focus specifically on Pearls that are based on recognition, evaluation and management. In the current draft, the discussion on terminology and prevention could be omitted. The authors have included a large amount of information, but a more concise approach highlighting the key components of sepsis would be better.

Although suggesting adherence to the 10 pearls presented here is a catchy idea, I don't think of them as pearls. Perhaps renaming them as "rules" or "directives" may be more appropriate. In my opinion, "A high suspicion for sepsis is key", or "Normal pregnancy physiology can mask sepsis" are more like "pearls" than "Labs and rads are keys to search for etiology and early source control".

A better way, in my opinion, might be to develop a mnemonic, e.g. S.E.P.S.I.S, that residents and attendings first on the scene, can more easily remember. The pearls presented here are good, but some are redundant (e.g. anticoagulation in Pearl 8 could be presented along with treatment, MAP in Pearl 7 can be included with other management, and prevention in Pearl 10 could be highlighted in other Pearls such as management; or removed entirely since "prevention" is too late when sepsis is being evaluated.

The Pearls listed here do not flow well and could be rearranged in a more logical manner from evaluation, diagnosis, and treatment.

Shouldn't the first Pearl be to examine the patient very carefully? Physicians are beginning to forget this critical step.

Specific comments:

- Pearl 1: Please state very clearly what does the common language include and what should no longer be used.
- Pearl 2: Please state very clearly what are the most common and recommended parameters that should be recognized in order to diagnose the presence of sepsis. Wouldn't that be the first requirement the need to recognize possible sepsis so the evaluation and management can be initiated? The author cites different criteria in the literature, but what is the author recommending? If time is of the essence, then let the reader know the most practical summary.
- Pearl 3: Table 5 lists common laboratory studies for evaluation, but some are not immediately required. Please separate

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out immediate (e.g. CBC,cultures) from additional studies (e.g. peripheral blood smear, arterial blood gas) which can be obtained later as evaluation progresses. Please highlight the most common findings of sepsis in pregnancy, perhaps in Table 5 and distinguish them from other less useful findings. Consider removing the paragraph on molecular diagnosis since those take time and are not immediately helpful in management of sepsis.

- Pearl 4: Emphasize the need for a good and thorough physical exam as that could likely identify the source of the sepsis.
- Pearl 5: Please state the most common antibiotics that may be immediately initiated while awaiting culture results. Again, the physical exam should be emphasized as the first step to give some clues as to the source of the sepsis.

Don't forget to highlight consultation with other specialties - I.D., Intensivists/critical care physicians, etc. early on in evaluation.

- Pearl 6: Is redundant.
- Pearl 7: Is redundant since it should be included in the initial examination which, I believe, should be the first Pearl.
- Pearl 8: Please state clearly whether prophylactic anticoagulation should be initiated in ALL patients with suspected sepsis?
- Pearly 9: Please highlight the need to consider the fetus, if still pregnant. Emphasize need for early consultation with Neonatologists.
- Pearl 10: Consider removing.
- Table 4: Interesting to know about published scoring systems, but a table listing the most common early warning signs would be more valuable, and then reference the published scoring systems. Highlight guidelines from the Surviving Sepsis Campaign, which is commonly used.
- Table 5: Separate into immediate versus additional.
- Table 6: Why is transesophageal echocardiogram listed as "preferred" since common findings such as cardiomegaly and vegetations can be identified on a transthoracic study?
- Table 7, 8 & 9: Helpful and useful. Authors should carefully double check dosages and frequency.
- Table 10: Suggest removing since prevention should be common sense and the other steps are already stated in the Pearls and other Tables.
- Figures 4: Although I understand the empathy that goes out to these patients in the ICU and the need for them to bond, I would suggest removing it as it does not add significant information and the stuffed teddy bear seems out of place.

References: Authors should carefully double check the information as some seem incomplete and in some the links do not work, e.g. reference #112. It also appears that some references were copied and pasted into this manuscript as the formatting changes.

Pagenation should be done.

Reviewer #2:

This is a comprehensive, organized and well-written review of an important topic that will be of high interest to the readers of this publication. This will be a wonderful teaching tool for trainees, providers, nurses and institutional multidisciplinary teams.

The three bedside scoring tools are nicely summarized and compared (Table 4 is a nice quick reference) but actual use is limited by the lack of recommendation on which to use. The authors state many times that studies are needed-this would be a good area to highlight as a potential area of research in pregnancy.

Pearl 4-Suggest "Know your bugs, their origin, and that GAS kills quickly!" Genitourinary tract infections and pyelonephritis are separated out initially in the first paragraph and in Figure 3 but practically they are the same source (since endometritis and chorioamnionitis are separate as well)-I am not sure if the authors have a reason for separating them out. After that, urosepsis and genital tract infections are separated out in terms of timing of infection in pregnancy but not pyelonephritis. In Table 7, pyelonephritis/renal abscess is really the only urologic category. Some consistency in what is included in GU infections that are a source of sepsis would be helpful (to me UTI, pyelonephritis and renal abscess would

all go together in one category). For the sentence "All pregnant women with established chickenpox"-consider substituting with "All pregnant women diagnosed with chickenpox" for clarification of the timing of the infection.

Although it is briefly mentioned in the conventional microbiology section, it might be a good idea to add a short piece about the use of amniocentesis for diagnosis of chorioamnionitis in the setting of maternal sepsis without other obvious sources. Some more emphasis on chorioamnionitis would be useful to obstetricians specifically, as it would be one of the infections that would prompt delivery as a means of treatment and source control, unlike the other infections that delivery would not be necessary if treated and sepsis resolves with reassuring fetal status.

Table 3-consider adding the numeric values for normal laboratory values in pregnancy for anemia, leukocytosis, HR, blood pressure etc.

Pearl 10: Most of this article is about early recognition and treatment of sepsis to improve outcomes and reduce complications, not really about prevention of sepsis. I would consider substituting "prevention of maternal sepsis" in the first sentence in this section as well as the first sentence of the conclusion "prevention of maternal sepsis and its complications." Most of the strategies, toolkits and screening tools are for once the patient already has sepsis. Most of Pearl 10 could really fit into Pearl 9 and Pearl 10 could focus on the very important recommendations from the CDC about preventing sepsis.

Table 5-consider "Comprehensive metabolic panel" that includes hepatic and renal function (serum creatinine should usually be incorporated into a CMP anyway, and the important point is that whatever the local lab includes in that panel, liver and kidney function are a priority. For "microbiology cultures," consider listing them out in the table as well as in the text so that those who might use the table as a quick reference will have it available (conventional=blood, urine, sputum with additional cultures as clinically appropriate=wound, surgical site and/or body fluids such as amniotic fluid or cerebral spinal fluid).

Finally, consider adding a figure with an algorithm of the evaluation, recognition, initial treatment and decision tree of maternal sepsis. Some readers may use the detailed tables but having an all in one graphic representation of an algorithm may appeal to many readers.

Reviewer #3:

Overall Comments: The authors present evidence-based pearls to be considered in the setting of an evolving sepsis or evident maternal sepsis clinical situation. The timely diagnosis and management of maternal sepsis will impact on rates of morbidity and mortality. I am wondering if the authors have instituted a "code sepsis" call team at their institution as has been initiated elsewhere as these data would be helpful in establishing thresholds for an institutional approach for this rapidly escalating clinical condition. The paper is overall well written-specific comments below. Specific Comments:

Title: Good

Running Title: Good

Précis: perhaps consider adding, "appropriate "timely" management

Abstract: Good

Introduction: Provides rational and perspective for the importance of developing an evidence-based and clinically helpful approach to management.

Pearl 1: Recognizes importance of a uniform definition

Pearl 2: Although the best tool for identifying infection or predicting mortality in pregnant/post-partum patient is not clearly defined, can the authors recommend what scoring system to use?

Can the authors recommend a "code sepsis" team?

Pearl 4: Nice that both viral and fungal pathogens are noted along with traditional bacterial.

Conclusion: Can the authors make a stronger recommendation for code sepsis teams as the standard of care? Tables/Figures: Table 1 and 2-good; could consider eliminating Table 3 and incorporating into text; Table 4-important table, but would benefit from an absolute recommendation of which to use; not sure Table 5 needed as the authors state what tests are needed under Pearl 3

EDITOR COMMENTS:

Thank you for submitting this work to Obstetrics and Gynecology. In the revision, please do pay attention to the comments of reviewer #1 related to organization, and try to convert the main "pearls" to something actionable, rather than catchy phrases.

EDITORIAL OFFICE COMMENTS:

- 1. The Editors of Obstetrics & Gynecology are seeking to increase transparency around its peer-review process, in line with efforts to do so in international biomedical peer review publishing. If your article is accepted, we will be posting this revision letter as supplemental digital content to the published article online. Additionally, unless you choose to opt out, we will also be including your point-by-point response to the revision letter. If you opt out of including your response, only the revision letter will be posted. Please reply to this letter with one of two responses:
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- B. OPT-OUT: No, please do not publish my point-by-point response letter.
- 2. Obstetrics & Gynecology uses an "electronic Copyright Transfer Agreement" (eCTA). When you are ready to revise your manuscript, you will be prompted in Editorial Manager (EM) to click on "Revise Submission." Doing so will launch the resubmission process, and you will be walked through the various questions that comprise the eCTA. Each of your coauthors will receive an email from the system requesting that they review and electronically sign the eCTA.

Please check with your coauthors to confirm that the disclosures listed in their eCTA forms are correctly disclosed on the manuscript's title page.

- 3. Standard obstetric and gynecology data definitions have been developed through the reVITALize initiative, which was convened by the American College of Obstetricians and Gynecologists and the members of the Women's Health Registry Alliance. Obstetrics & Gynecology has adopted the use of the reVITALize definitions. Please access the obstetric data definitions at https://www.acog.org/practice-management/health-it-and-clinical-informatics/revitalize-obstetrics-data-definitions and the gynecology data definitions at https://www.acog.org/practice-management/health-it-and-clinical-informatics/revitalize-gynecology-data-definitions. If use of the reVITALize definitions is problematic, please discuss this in your point-by-point response to this letter.
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- * If all or part of the paper was presented at the Annual Clinical and Scientific Meeting of the American College of Obstetricians and Gynecologists or at any other organizational meeting, that presentation should be noted (include the exact dates and location of the meeting).
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the Abstract and the manuscript, and that the Abstract has a clear conclusion statement based on the results found in the paper. Make sure that the abstract does not contain information that does not appear in the body text. If you submit a revision, please check the abstract carefully.

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If the figures were created using a statistical program (eg, STATA, SPSS, SAS), please submit PDF or EPS files generated directly from the statistical program.

Figures should be saved as high-resolution TIFF files. The minimum requirements for resolution are 300 dpi for color or black and white photographs, and 600 dpi for images containing a photograph with text labeling or thin lines.

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If you choose to revise your manuscript, please submit your revision through Editorial Manager at http://ong.editorialmanager.com. Your manuscript should be uploaded in a word processing format such as Microsoft Word. Your revision's cover letter should include the following:

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- * A point-by-point response to each of the received comments in this letter. Do not omit your responses to the Editorial Office or Editors' comments.

If you submit a revision, we will assume that it has been developed in consultation with your co-authors and that each author has given approval to the final form of the revision.

Again, your paper will be maintained in active status for 21 days from the date of this letter. If we have not heard from you by Apr 09, 2021, we will assume you wish to withdraw the manuscript from further consideration.

Sincerely,

Torri D. Metz, Associate Editor, Obstetrics

2019 IMPACT FACTOR: 5.524

2019 IMPACT FACTOR RANKING: 6th out of 82 ob/gyn journals

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Date: April 15, 2021

RE: Revision of Clinical Expert Series article "Top 10 Clinical Pearls When Managing Maternal Sepsis"

Dear Editors,

On behalf of my co-authors, I am pleased to submit our revised manuscript, "**Top 10 Rules for the Recognition, Evaluation and Management of Maternal Sepsis**" for consideration for publication as a Clinical Expert Series article in *Obstetrics & Gynecology*. Please note, as the corresponding author I have changed institutions to the University of Connecticut and included my updated email for future correspondance: ashields@uchc.edu. I have updated my information in Editorial ManagerTM.

Below are the list comments made by the reviewers and the editor followed by our response, including the position of all changes made on our manuscript, where indicated.

REVIEWER COMMENTS:

Reviewer #1:

-This is an overall well written review of sepsis in pregnancy and management, with 128 references. It appears to be an effort to provide clinicians with a focus based on "10 Pearls" to help the clinician. However, it seems quite broad and could be a better paper if the authors focus specifically on Pearls that are based on recognition, evaluation and management. In the current draft, the discussion on terminology and prevention could be omitted. The authors have included a large amount of information, but a more concise approach highlighting the key components of sepsis would be better. **Pearl 1 and 10 removed.**

-Although suggesting adherence to the 10 pearls presented here is a catchy idea, I don't think of them as pearls. Perhaps renaming them as "rules" or "directives" may be more appropriate. In my opinion, "A high suspicion for sepsis is key", or "Normal pregnancy physiology can mask sepsis" are more like "pearls" than "Labs and rads are keys to search for etiology and early source control". The authors prefer "pearls" as we think some may be reluctant to be told what "rules or directives" to follow; we believe "pearls" will offer something "shiny and valuable" and be better received by the readers.

-A better way, in my opinion, might be to develop a mnemonic, e.g. S.E.P.S.I.S, that residents and attendings first on the scene, can more easily remember. The pearls presented here are good, but some are redundant (e.g. anticoagulation in Pearl 8 could be presented along with treatment, MAP in Pearl 7 can be included with other management, and prevention in Pearl 10 could be highlighted in other Pearls such as management; or removed entirely since "prevention" is too late when sepsis



is being evaluated. Consolidated redundant Pearls.

The Pearls listed here do not flow well and could be rearranged in a more logical manner from evaluation, diagnosis, and treatment. **Done. See Table 1, Line 415.**

Shouldn't the first Pearl be to examine the patient very carefully? Physicians are beginning to forget this critical step. **Great point** – **added to Pearl 3**, **with pearls 1 and 2 focusing on initial recognition.** Lines 159-172.

Specific comments:

Pearl 1: Please state very clearly what does the common language include and what should no longer be used. **Pearl removed.**

Pearl 2: Please state very clearly what are the most common and recommended parameters that should be recognized in order to diagnose the presence of sepsis. Wouldn't that be the first requirement - the need to recognize possible sepsis so the evaluation and management can be initiated? The author cites different criteria in the literature, but what is the author recommending? If time is of the essence, then let the reader know the most practical summary. **Done in Pearl 1-3, Lines 71-172.**

Pearl 3: Table 5 lists common laboratory studies for evaluation, but some are not immediately required. Please separate out immediate (e.g. CBC,cultures) from additional studies (e.g. peripheral blood smear, arterial blood gas) which can be obtained later as evaluation progresses. Please highlight the most common findings of sepsis in pregnancy, perhaps in Table 5 and distinguish them from other less useful findings. Consider removing the paragraph on molecular diagnosis since those take time and are not immediately helpful in management of sepsis. **Done, Table 4, Line 433.**

Pearl 4: Emphasize the need for a good and thorough physical exam as that could likely identify the source of the sepsis. Added to Pearl 3, Lines 159-172, Figure 1.

Pearl 5: Please state the most common antibiotics that may be immediately initiated while awaiting culture results. Lines 260-261. Again, the physical exam should be emphasized as the first step to give some clues as to the source of the sepsis. Added physical exam to Pearl 3, Lines 159-172.

Don't forget to highlight consultation with other specialties - I.D., Intensivists/critical care physicians, etc. early on in evaluation. **Done in Pearl 8, Lines 296-299.**

Pearl 6: Is redundant. **Removed and consolidated.**

Pearl 7: Is redundant since it should be included in the initial examination which, I believe, should be the first Pearl. **Done.**

Pearl 8: Please state clearly whether prophylactic anticoagulation should be initiated in ALL patients with suspected sepsis? **Done, Lines 343-346.**

Pearly 9: Please highlight the need to consider the fetus, if still pregnant. Emphasize need for early consultation with Neonatologists. **Done - Pearls 8, 10. Lines 297-299, 385-387.**





Pearl 10: Consider removing. Done.

Table 4: Interesting to know about published scoring systems, but a table listing the most common early warning signs would be more valuable, and then reference the published scoring systems. Highlight guidelines from the Surviving Sepsis Campaign, which is commonly used. **Due to space limitations, unable to include all the early warning signs. However, a column with the parameters to be evaluated was added to table 3, Line 423.**

Table 5: Separate into immediate versus additional. Done, Table 4, Line 433.

Table 6: Why is transesophageal echocardiogram listed as "preferred" since common findings such as cardiomegaly and vegetations can be identified on a transthoracic study? **Table removed due to space limitations.**

Table 7, 8 & 9: Helpful and useful. Authors should carefully double check dosages and frequency. Table 7 removed due to space limitations. Dosages doubled checked for table 8&9 (now Tables 5& 6). We are happy to re-insert tables 7 if an exception is made to max pages/words.

Table 10: Suggest removing since prevention should be common sense and the other steps are already stated in the Pearls and other Tables. **Removed.**

Figures 4: Although I understand the empathy that goes out to these patients in the ICU and the need for them to bond, I would suggest removing it as it does not add significant information and the stuffed teddy bear seems out of place. **Removed.**

References: Authors should carefully double check the information as some seem incomplete and in some the links do not work, e.g. reference #112. It also appears that some references were copied and pasted into this manuscript as the formatting changes. **Done.**

Pagenation should be done. **Done.**

Reviewer #2:

This is a comprehensive, organized and well-written review of an important topic that will be of high interest to the readers of this publication. This will be a wonderful teaching tool for trainees, providers, nurses and institutional multidisciplinary teams.

The three bedside scoring tools are nicely summarized and compared (Table 4 is a nice quick reference) but actual use is limited by the lack of recommendation on which to use. The authors state many times that studies are needed-this would be a good area to highlight as a potential area of research in pregnancy. **Done. Highlighted as research area of interest in Pearl 2, Lines 130-132.**



Pearl 4-Suggest "Know your bugs, their origin, and that GAS kills quickly!" **Done; see Pearl 5 in Table 1, Line 415.** Genitourinary tract infections and pyelonephritis are separated out initially in the first paragraph and in Figure 3 but practically they are the same source (since endometritis and chorioamnionitis are separate as well)-I am not sure if the authors have a reason for separating them out. **Figure 1 replaced this and based on more recent data.** After that, urosepsis and genital tract infections are separated out in terms of timing of infection in pregnancy but not pyelonephritis. In Table 7, pyelonephritis/renal abscess is really the only urologic category. Some consistency in what is included in GU infections that are a source of sepsis would be helpful (to me UTI, pyelonephritis and renal abscess would all go together in one category). **Made more consistent in manuscript and tables.** For the sentence "All pregnant women with established chickenpox"-consider substituting with "All pregnant women diagnosed with chickenpox" for clarification of the timing of the infection. **Done, Lines 239-240.**

Although it is briefly mentioned in the conventional microbiology section, it might be a good idea to add a short piece about the use of amniocentesis for diagnosis of chorioamnionitis in the setting of maternal sepsis without other obvious sources. Some more emphasis on chorioamnionitis would be useful to obstetricians specifically, as it would be one of the infections that would prompt delivery as a means of treatment and source control, unlike the other infections that delivery would not be necessary if treated and sepsis resolves with reassuring fetal status. **Done, Lines 368-371.**

Table 3-consider adding the numeric values for normal laboratory values in pregnancy for anemia, leukocytosis, HR, blood pressure etc. **Table 3 deleted per other referee.**

Pearl 10: Most of this article is about early recognition and treatment of sepsis to improve outcomes and reduce complications, not really about prevention of sepsis. I would consider substituting "prevention of maternal sepsis" in the first sentence in this section as well as the first sentence of the conclusion "prevention of maternal sepsis and its complications." Most of the strategies, toolkits and screening tools are for once the patient already has sepsis. Most of Pearl 10 could really fit into Pearl 9 and Pearl 10 could focus on the very important recommendations from the CDC about preventing sepsis. **Removed and changed focus as per referee 1.**

Table 5-consider "Comprehensive metabolic panel" that includes hepatic and renal function (serum creatinine should usually be incorporated into a CMP anyway, and the important point is that whatever the local lab includes in that panel, liver and kidney function are a priority. For "microbiology cultures," consider listing them out in the table as well as in the text so that those who might use the table as a quick reference will have it available (conventional=blood, urine, sputum with additional cultures as clinically appropriate=wound, surgical site and/or body fluids such as amniotic fluid or cerebral spinal fluid). **Done, see Table 4, Line 433.**

Finally, consider adding a figure with an algorithm of the evaluation, recognition, initial treatment and decision tree of maternal sepsis. Some readers may use the detailed tables but having an all in one graphic representation of an algorithm may appeal to many readers. We have created a flowchart; however, not all the authors were in agreement to present a new approach without further validation first, so we have decided to endorse the CMQCC flowchart, as we could not locate any validated flowcharts for pregnancy in the literature. We believe that more work must be done in this area to endorse a specific process utilizing the available bedside tools, but we do endorse a step-wise approach. Lines 127-130.





Reviewer #3:

Overall Comments: The authors present evidence-based pearls to be considered in the setting of an evolving sepsis or evident maternal sepsis clinical situation. The timely diagnosis and management of maternal sepsis will impact on rates of morbidity and mortality. I am wondering if the authors have instituted a "code sepsis" call team at their institution as has been initiated elsewhere as these data would be helpful in establishing thresholds for an institutional approach for this rapidly escalating clinical condition. The paper is overall well written-specific comments below.

Specific Comments:

Title: Good

Running Title: Good

Précis: perhaps consider adding, "appropriate "timely" management **Done**, **Lines 26-27**.

Abstract: Good

Introduction: Provides rational and perspective for the importance of developing an evidence-based and clinically helpful approach to management.

Pearl 1: Recognizes importance of a uniform definition

Pearl 2: Although the best tool for identifying infection or predicting mortality in pregnant/post-partum patient is not clearly defined, can the authors recommend what scoring system to use? **Done.** Lines 124-127.

Can the authors recommend a "code sepsis" team? We have endorse a rapid response. Line 155-157.

Pearl 4: Nice that both viral and fungal pathogens are noted along with traditional bacterial. Conclusion: Can the authors make a stronger recommendation for code sepsis teams as the standard of care? Authors believe we cannot do this due to a lack of evidence as the standard of care and need for further validation within the context of a clinical pathway; however, the manuscript does emphasize the need for rapid response team for standardization in generaal, Lines 155-157.

Tables/Figures: Table 1 and 2-good; could consider eliminating Table 3 and incorporating into text **done**; Table 4-important table, but would benefit from an absolute recommendation of which to use **- done in manuscript Lines 259-263**; not sure Table 5 needed as the authors state what tests are needed under Pearl 3 **- kept and revised per other referees.**

EDITOR COMMENTS:

Thank you for submitting this work to Obstetrics and Gynecology. In the revision, please do pay



attention to the comments of reviewer #1 related to organization, and try to convert the main "pearls" to something actionable, rather than catchy phrases.

EDITORIAL OFFICE COMMENTS:

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Sincerely,

ANDREA D. SHIELDS, MD, MS, F.A.C.O.G.

Andrea D. Elulis

Associate Professor, University of Connecticut

Maternal Fetal Medicine Specialist, Department of Obstetrics and Gynecology

