Is this pregnancy viable? *J Fam Pract*. 2013;62:305-306,319.

Potential PURL Review Form: Meta-analysis

SECTION 1: IDENTIFYING INFORMATION

1. Citation	Verhaegen J, Gallos ID, van Mello NM, et al. Accuracy of single progesterone test to predict early pregnancy outcome in women with pain or bleeding: meta-analysis of cohort studies. *BMJ*. 2012;345:e6077.
2. Hypertext link to PDF of full article	http://www.ncbi.nlm.nih.gov/pubmed/23045257
3. First date published study available to readers	September 27, 2012
4. PubMed ID	23045257
5. Nominated By	Kate Kirley
6. Institutional Affiliation of Nominator	University of Chicago
7. Date Nominated	September 28, 2012
8. Identified Through	TOC
9. PURLS Editor Reviewing Nominated Potential PURL	Kate Rowland
10. Nomination Decision Date	October 19, 2012
11. Potential PURL Review Form (PPRF) Type	Meta-analysis
12. Other comments, materials or discussion	
13. Assigned Potential PURL Reviewer	Sonia Oyola
14. Reviewer Affiliation	University of Chicago
15. Date Review Due	November 15, 2012
16. Abstract	**OBJECTIVE:**

OBJECTIVE:

To determine the accuracy with which a single progesterone measurement in early pregnancy discriminates between viable and non-viable pregnancy.

DESIGN:

Systematic review and meta-analysis of diagnostic accuracy studies.

DATA SOURCES:

Medline, Embase, CINAHL, Web of Science, ProQuest, Conference Proceedings Citation Index, and the Cochrane Library from inception until April 2012, plus reference lists of relevant studies.

STUDY SELECTION:

Studies were selected on the basis of participants (women with spontaneous pregnancy of less than 14 weeks of gestation); test (single serum progesterone measurement); outcome (viable intrauterine pregnancy, miscarriage, or ectopic pregnancy) diagnosed on the basis of combinations of pregnancy test, ultrasound scan, laparoscopy, and histological examination; design (cohort studies of test accuracy); and sufficient data being reported.

RESULTS:

26 cohort studies, including 9436 pregnant women, were included, consisting of 7 studies in women with symptoms and inconclusive ultrasound assessment and 19 studies in women with symptoms alone. Among women with symptoms and inconclusive ultrasound assessments, the progesterone test (5 studies with 1998 participants and cut-off values from 3.2 to 6 ng/mL) predicted a non-viable pregnancy with pooled sensitivity of 74.6% (95% confidence interval 50.6% to 89.4%), specificity of 98.4% (90.9% to 99.7%), positive likelihood ratio of 45 (7.1 to 289), and negative likelihood ratio of 0.26 (0.12 to 0.57). The median prevalence of a non-viable pregnancy was 73.2%, and the probability of a non-viable pregnancy was raised to 99.2% if the progesterone was low. For women with symptoms alone, the progesterone test had a higher specificity when a threshold of 10 ng/mL was used (9 studies with 4689 participants) and predicted a non-viable pregnancy with pooled sensitivity of 66.5% (53.6% to 77.4%), specificity of 96.3% (91.1% to 98.5%), positive likelihood ratio of 18 (7.2 to 45), and negative likelihood ratio of 0.35 (0.24 to 0.50). The probability of a non-viable pregnancy was raised from 62.9% to 96.8%.

CONCLUSION:

A single progesterone measurement for women in early pregnancy presenting with bleeding or pain and inconclusive ultrasound assessments can rule out a viable pregnancy.

SECTION 2: CRITICAL APPRAISAL OF VALIDITY

1. What types of studies are included in this review?	RCT, cohort
2. What is the key question addressed by this review? Summarize the main conclusions and any strengths or weaknesses.	Can a single progesterone test performed in early pregnancy predict pregnancy viability?
3. Study addresses an appropriate and clearly focused question - *select one*	Well covered
4. A description of the methodology used is included.	Well covered
5. The literature search is sufficiently rigorous to identify all	Well covered

the relevant studies.

6. Study quality is assessed and taken into account.	Well covered
7. There are enough similarities between selected studies to make combining them reasonable.	Well covered
8. Are patient-oriented outcomes included? If yes, what are they?	Yes, viable pregnancy vs nonviable pregnancy.
9. Are adverse effects addressed? If so, how would they affect recommendations?	Adverse effects were not addressed.
10. Is funding a potential source of bias? If yes, what measures (if any) were taken to ensure scientific integrity?	No
11. To which patients might the findings apply? Include patients in the meta-analysis and other patients to whom the findings may be generalized.	Any woman with a pregnancy less than 14 weeks presenting with symptoms and an inconclusive ultrasound scan.
12. In what care settings might the findings apply, or not apply?	Primary care, hospital settings, specialist care.
13. To which clinicians or policy makers might the findings be relevant?	As above

SECTION 3: REVIEW OF SECONDARY LITERATURE

1. DynaMed excerpts	
2. DynaMed citation/access date	First trimester bleedingr. In: DynaMed [database online]. Available at: www.DynamicMedical.com. Last updated May 17, 2012. Accessed November 2012.
3. Bottom line recommendation or summary of evidence from DynaMed	A single progesterone test may rule out ectopic pregnancy.

(1-2 sentences)

4. UpToDate excerpts

5. UpToDate citation/access date	Tulandi. Clinical manifestations, diagnosis, and management of ectopic pregnancy. In: Basow DS, ed. UpToDate [database online]. Waltham, Mass: UpToDate; 2012. Available at: http://www.uptodate.com. Last updated October 2012. Accessed November 2012.
6. Bottom line recommendation or summary of evidence from UpToDate (1-2 sentences)	A single progesterone test in patients with abdominal pain and/or bleeding confirm the diagnostic picture established by HCG measurement and ultrasound.
7. PEPID PCP excerpts www.pepidonline.com username: fpinauthor pw: pepidpcp	I could not find any information about this topic on PEPID.

8. PEPID citation/access data

9. PEPID content updating	1. Do you recommend that PEPID get updated on this topic?
	Yes, there is important evidence or recommendations that are missing
	2. Is there an EBM Inquiry (HelpDesk Answers and Clinical Inquiries) as indicated by the EB icon (**E**ᴮ) that should be updated on the basis of the review?
	Yes, there is important evidence or recommendations that are missing
	If yes, which Evidence Based Inquiry (HelpDesk Answer or Clinical Inquiry), Title(s):
	Progesterone Used to Predict Pregnancy Viability

10. Other excerpts (USPSTF; other guidelines; etc.)

11. Citations for other excerpts

12. Bottom line recommendation or summary of evidence from Other Sources (1-2 sentences)

SECTION 4: CONCLUSIONS

1. Validity: How well does the study minimize sources of internal bias and maximize internal validity? Give one number on a scale of 1 to 7 (1=extremely well; 4=neutral; 7=extremely poorly)	1
2. If 4.1 was coded as 4, 5, 6, or 7, please describe the potential bias and how it could affect the study	

results. Specifically, what is the likely direction in which potential sources of internal bias might affect the results?

3. Relevance: Are the results of this study generalizable to and relevant to the health care needs of patients cared for by "full scope" family physicians? Give one number on a scale of 1 to 7 (1=extremely well; 4=neutral; 7=extremely poorly)   1

4. If 4.3 was coded as 4, 5, 6, or 7, please provide an explanation.

5. Practice-changing potential: If the findings of the study are both valid and relevant, does the practice that would be based on these findings represent a change from current practice? Give one number on a scale of 1 to 7 (1=definitely a change from current practice; 4=uncertain; 7=definitely not a change from current practice)   1

6. If 4.5 was coded as 1, 2, 3, or 4, please describe the potential new practice recommendation. Please be specific about what should be done, the target patient population, and the expected benefit.

7. Applicability to a Family Medical Care Setting: 1

Is the change in practice recommendation something that could be done in a medical care setting by a family physician (office, hospital, nursing home, etc), such as a prescribing a medication, vitamin or herbal remedy; performing or ordering a diagnostic test; performing or referring for a procedure; advising, educating or counseling a patient; or creating a system for implementing an intervention? Give one number on a scale of 1 to 7 (1=definitely could be done in a medical care setting; 4=uncertain; 7=definitely could not be done in a medical care setting)

8. If you coded 4.7 as a 4, 5, 6 or 7, please explain.

9. Immediacy of Implementation: Are there major barriers to immediate implementation? Would the cost or the potential for reimbursement prohibit implementation in most family medicine practices? Are there regulatory issues that prohibit implementation? Is the service, device, drug or other essentials available on the market? Give one number on a scale of 1 to 7 (1=definitely could be immediately applied; 4=uncertain; 7=definitely could not be immediately applied)   1

10. If you coded 4.9 as 4, 5, 6, or 7, please explain why.

11. Clinical meaningful outcomes or patient-oriented outcomes: Are the outcomes measured in the study clinically meaningful or patient oriented? Give one number on a scale of 1 to 7 (1=definitely clinically meaningful or patient oriented; 4=uncertain; 7=definitely not clinically meaningful or patient oriented)

1

12. If you coded 4.11 as a 4, 5, 6, or 7, please explain why.

13. In your opinion, is this a Pending PURL? Give one number on a scale of 1 to 7 (1=definitely a Pending PURL; 4=uncertain; 7=definitely not a Pending PURL)

1

Criteria for a Pending PURL:

- Valid: Strong internal scientific validity; the findings appears to be true.

- Relevant: Relevant to the practice of family medicine

- Practice changing: There is a specific identifiable new practice recommendation that is applicable to what family physicians do in medical care settings and seems different than current practice.

- Applicability in medical setting:

- Immediacy of implementation

14. Comments on your response in 4.13