Ha arribat el moment de realitzar el cribratge universal de Preeclàmpsia en el primer trimestre?

CONTRA

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Screening tests for preeclampsia identified in the li rature

1. Placental perfusion and vascular resistance dysfunctionrelated tests
Mean blood pressure in second trimester
Roll over test
Isometric exercise test
Intravenous infusion of angiotensin II
Platelet angiotensin II binding
Platelet calcium response to arginine vasopressin
Renin
24-hour ambulatory blood pressure monitoring
Doppler ultrasound

2. Fetoplacental unit endocrinology dysfunction-related tests
Human chorionic gonadotropin
Alpha fetoprotein
Estriol
Inhibin A
Pregnancy-associated plasma protein A
Activin A
Corticotropin release hormone

3. Renal dysfunction-rela
Serum uric acid
Microalbuminuria
Urinary calcium ex
Urinary kallikrei
Microtransfs
N-acetyl--gl

4. Endothelial and oxidant str tests
Platelet count
Fibronectin
Platelet activation and e lecules
Endothelin
Prostacyclin
Thromboxane
Cytokines
Homoc
Isop
S
bodies
vator inhibitor
h factor
crit
proteins
ntithrombin III
Magnesium
Calcium
Ferritin
Transferrin
Haptoglobin
Atrial natriuretic peptide
2-microglobulin
Genetic markers

There is no clinically useful screening test to predict the development of preeclampsia

World Health C n Systematic Review of Screening Tests for Preeclampsia Conde-Agudelo A, Villar J, Lindheimer M, (Obstet Gynecol ;104:1367–91.

Draft Recommendation Statement: Preeclampsia: Screening - US Preventive Services Task Force 28 10 2016

- The USPST ith blood pressure r
- The USPST ion in identifying
- The USPST
- The USPST ntive medicatio reeclampsia
- Research e e needed

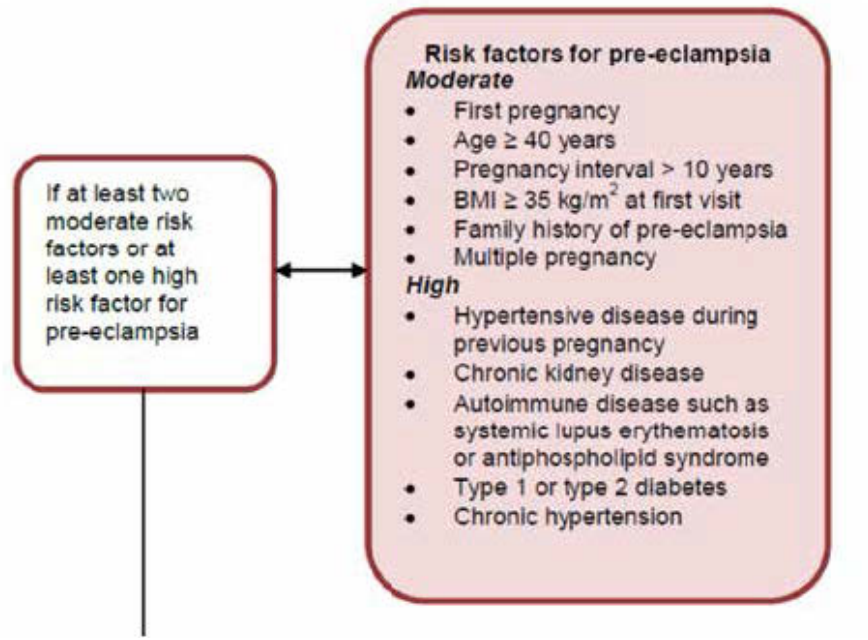
The American College of Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

COMMITTEE OPINION

Royal College of OBSTETRICIANS and GYNAECOLOGISTS

The Royal College of Midwives

Primiparity
Previous PE
Chr Hypertension, Chr renal disease or both
History of thrombophilia
Multiffetal pregnancy
IVF
Family history of PE
Type I or II Diabetes mellitus
Obesity
SLE
Advanced maternal age (>40 years)



ACOG (2015). "Committee Opinion No. 638: First-Trimester Risk Assessment for Early-Onset Preeclampsia." Obstet Gynecol 126(3): e25-27.

Low-dose aspirin use for the prevention : U.S. Preventive Services Task Force

Risk Level	Risk Factors	Recommendation
High	History of preeclampsia Chronic hypertension Type 1 or 2 diabetes Renal disease Autoimmune disease (ie, SLE, APs) Multifetal gestation	Aspirin if has ≥ 1
Moderate	Nulliparity Obesity (body mass index 30 kg/m2) Family history of preeclampsia (mother or sister) Sociodemographic characteristics (African American, low socioeconomic status) Age > 35 y Personal history factors (e.g., low birthweight or small for gestational age, previous adverse pregnancy outcome, 10-y pregnancy interval)	Aspirin if several
Low	Previous uncomplicated full-term delivery	No Aspirin

LeFevre ML; U.S. Preventive Services Task Force.. Low-dose aspirin use for the prevention of morbidity and mortality from preeclampsia: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2014 Dec 2;161(11):819-26.

Early Prediction of Preeclampsia

Estimated detection rates of (PE) requiring delivery before 34, 37, and 42 weeks' gestation, at false positive rates (FPR) of 5% and 10%.

Screening test		Detection rate (%)		
	FPR (%)	PE < 34 weeks	PE < 37 weeks	PE < 42 weeks
Maternal characteristics	5.0	36	33	29
	10.0	51	43	40
Ut-PI	5.0	59	40	31
	10.0	75	55	42
MAP	5.0	58	44	37
	10.0	73	59	54
PAPP-A	5.0	44	37	32
	10.0	55	48	42
PlGF	5.0	59	41	29
	10.0	72	54	40
MAP and Ut-PI	5.0	80	55	35
	10.0	90	72	57
PAPP-A and PlGF	5.0	60	43	30
	10.0	74	56	41
Ut-PI, MAP, and PAPP-A	5.0	82	53	36
	10.0	93	75	60
Ut-PI, MAP, and PlGF	5.0	87	61	38
	10.0	96	77	53
Ut-PI, MAP, PAPP-A, and PlGF	5.0	93	61	38
	10.0	96	77	54

Poon LC. Nicolaides K. Early Prediction of Preeclampsia. Obstetrics and Gynecology International. 2014

Quality of first trimester risk prediction models for pre-eclampsia: a systematic review. BJOG 2015

Articles 80.- Eligible for review 24, Predictive models 38.

Definitions of PE.- 4

Study characteristics.- Parity 2 studies only nulliparous, Single (9 no statement)

Predictive models.- 38, (overall PE 10, EOPE 18, LOPE 9, Severe PE 1).

Number of patients and events.- Median of cases of PE / model 37, (IQR 19–97)
Median of controls / model 569 (IQR 289–5041).
Median of cases to predict EOPE 26

Brunelli VB, Prefumo F. Quality of first trimester risk prediction models for pre-eclampsia: a systematic review. BJOG 2015; 122:904–914.

Quality of first trimester risk prediction models for pre-eclampsia: a systematic review. BJOG 2015

Model-building.- Selection of risk predictors was based on Statistical 34, Literature 4.
Selection of candidate Univariable 3, Multivariate 21, All predictors 8
Survival time model 3
Considered adjustment for confounders 33

Risk predictors.- 5 (IQR 3.75–7), the main Ut IP (expressed as mean, lowest or highest PI.)

Number of events per variable.- Median 6.5 (IQR 5–16.75). 8/36 was calculable, it was <10
To predict EOPE 5 (IQR 4–6). <10 in 15 models/16 (94%)

Overfitting.- 3 where the authors keep the number of predictors low to reduce the risk of overfitting

Validation.- Only two studies* (* Herraiz, Parks, Oliveira, Scazzocchio)

Brunelli VB, Prefumo F. Quality of first trimester risk prediction models for pre-eclampsia: a systematic review. BJOG 2015; 122:904–914.

Principles of Early Disease Detection

1. The condition being sought should be a significant health problem.
2. The natural history of the condition should be understood.
3. There should be a recognizable latent or early symptomatic stage.
4. There should be a screening test or examination capable of detecting the disease in its latent or early symptomatic stage, and the test should be acceptable to the population.
5. There should be an acceptable treatment for people identified as having the disease.
6. Treatment in the latent or early symptomatic stages of the disease should favorably influence its course and prognosis.
7. The facilities to diagnose and treat patients identified in the screening program should be available.
8. There should be an agreed policy on whom to treat as patients.
9. The cost of case-finding, including the cost of diagnosis and treatment, should be reasonable in terms of its relationship to the cost of medical care as a whole.
10. Case-finding should be a continuing process, not a “one-shot” project.

Wilson, J.M.G., and Jungner, G. Principles and Practice of Screening for Disease. WHO Public Paper 34. Geneva: World Health Bibliography Organization, 1968.
Whitby, L.G. Screening for disease: Definitions and criteria. Lancet 2:819–822, 1974.

1. The condition being sought should be a significant health problem.

Health

Mother.- Pulmonary edema, cerebral hemorrhage, hepatic failure, renal failure, seizures (eclampsia), disseminated intravascular coagulation (primarily with abruption), and maternal death.

Fetus /neonate .- Preterm birth, stillbirth, growth restriction, admission to a neonatal intensive care unit, neurological sequelae, death

Incidence

Varies between countries, believed that worldwide, 3–5 % of pregnant women are affected

Spain 2.23% for pregnancy hypertension status (PHS), of which 1.1% corresponded to PE

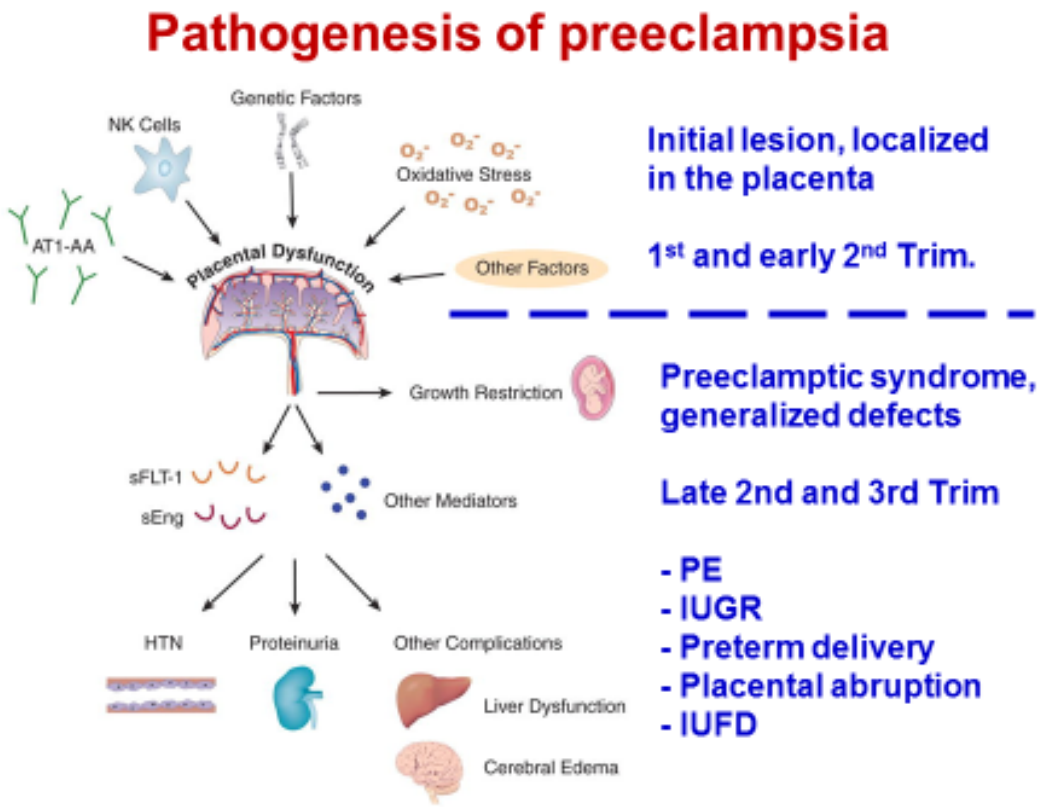
(Comino-Delgado, Clin Exp Hypertens B 1986;5:217–30)

2.- The natural history of the condition should be understood.

The pathogenesis of pre-eclampsia is not well Understood.

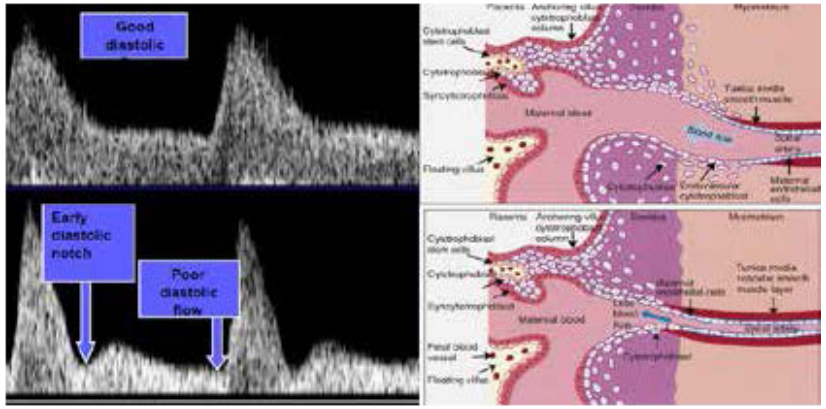
Preeclampsia, yet it remains a ‘disease of theories’.

Many aetiological (genetic, nutritional, immunological and infectious) and pathophysiological (abnormal placentation, oxidative stress and endothelial dysfunction) pathways have been proposed as causal hypotheses for pre-eclampsia.

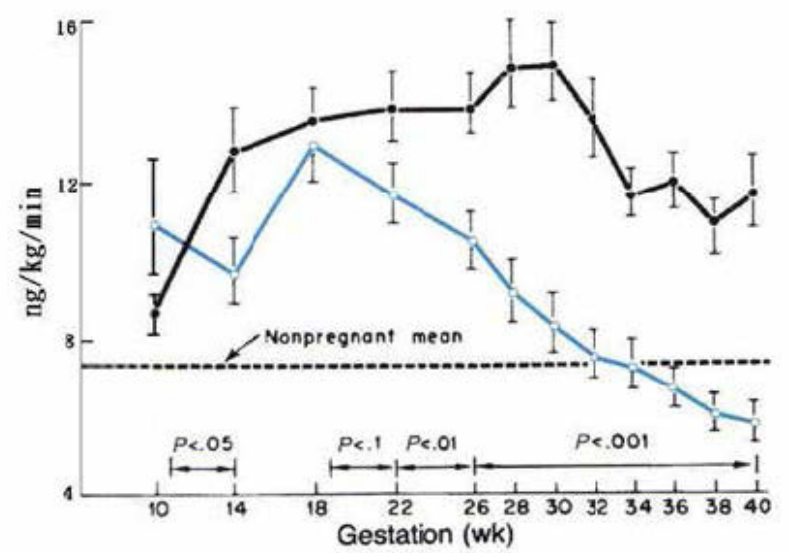


3.- There should be a recognizable latent or early symptomatic stage.

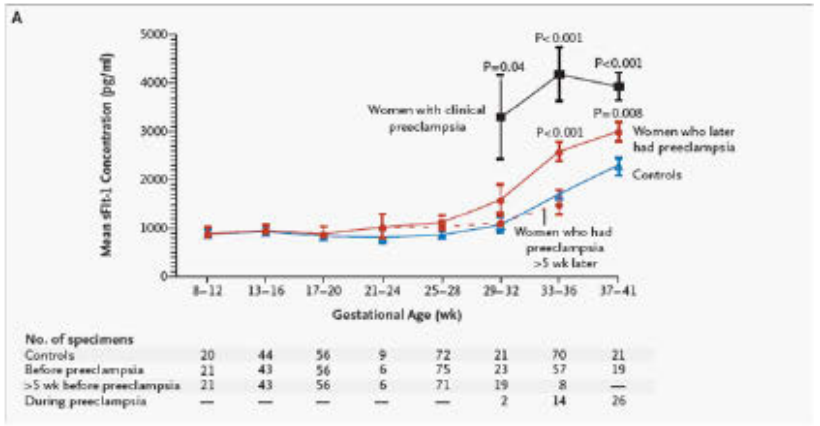
The initial pathological changes begin in the late first trimester and consist of abnormal remodeling of the spiral arteries



Brosens IA, Robertson WB, Dixon HG. The role of the spiral arteries in the pathogenesis of preeclampsia. Obstet Gynecol Annu. 1972;1:177-91



Gant NF, Daley GL, Chand S, Whalley PJ, MacDonald PC. A study of angiotensin II pressor response throughout primigravid pregnancy. J Clin Invest. 1973 Nov;52(11):2682-9



Levine RJ, Maynard SE, Qian C, et al Circulating angiogenic factors and the risk of preeclampsia. N Engl J Med. 2004 12;350(7):672-83

4.- There should be a screening test or examination capable of detecting the disease in its latent or early symptomatic stage, and the test should be acceptable to the population.

A good test for predicting women who will develop preeclampsia should be **simple, rapid, noninvasive, inexpensive, easy to perform, and should not expose the patient to discomfort or risk**

The technology should be widely available and the results **reproducible** and reliable, with a high likelihood ratio for a positive test (>15) and a low likelihood ratio for a negative result (<0.1) and good sensitivity and specificity.

Ideally, it should provide an **opportunity for intervention to prevent development of the disease, or at least result in better maternal and/or fetal outcomes**.

Currently, there are no clinically available tests that perform well according to these guidelines in distinguishing women who will develop preeclampsia from those who will not

Norwitz ER. Prediction of preecclampsia UpToDate 2016
Peter Wein Universal screening for pre-eclampsia and treatment with aspirin – the negative. Australasian Diabetes in Pregnancy Society Annual Scientific Meeting 27 – 28 august 2016

Detection rate (DR) of early pre-eclampsia at a 10% false positive rate using various multiparametric predictive models

Predictive model	Parameters	DR%
Parra-Cordero et al.[36]	BMI, smoking, lowest UtA-PI, PlGF	47
Odibo et al.[37]	HTN, mean UtA-PI, PAPP-A, PP-13	68
Poon et al.[38]	Maternal history, UtA-PI, PAPP-A	71.9
Scazzocchio et al.[39]	Ethnicity, BMI, parity, previous PE, age, HTN, renal disease, MAP, mean UtA-PI	81
Poon et al.[40]	Ethnicity, BMI, parity, previous PE, age, HTN, DM, thrombophilia, smoking, MAP, lowest UtA-PI	89
Crovetto et al.[41]	Maternal characteristics, MAP, UtA-PI, sFlt-1	91.2
Poon et al.[42]	Maternal characteristics, lowest UtA-PI, MAP, PlGF	92.3
Poon et al.[35]	Maternal factors, UtA PI, MAP, PAPP-A, PlGF	93.1*
Poon et al.[43]	Ethnicity, BMI, parity, previous PE, age, HTN, DM, thrombophilia, smoking, MAP, lowest UtA-PI, PAPP-A	95
Akolekar et al.[44]	Maternal factors, MAP, UtA-PI, PAPP-A, PlGF, PP13, sEng, Inhibin-A, Activin-A, PTX3, P-selectin	95.2
Akolekar et al.[45]	UtA-PI, MAP, PAPP-A, PlGF	96.3

PlGF: placental growth factor; PAPP-A: pregnancy-associated plasma protein A; MAP: mean arterial pressure.
*FPR of 5% in this study.

Khong SL, Kane SC, Brennecke SP, et al. First-trimester uterine artery Doppler analysis in the prediction of later pregnancy complications. Dis Mark 2015; 2015: 679730.

Clinical evaluation of a first trimester algorithm predicting the risk of hypertensive disease of pregnancy

3066 women, EOPE 12 (0,4%), LOPE 71 (2,4%), A priori risk, UtA-PI, MAP, PAPP-A

EOPE

	False positive rate	
Test performance	5%	10%
Sensitivity (95%CI)	41.7% (15.3–72.2) 83	91.7% (61.6–98.6) **95**
Specificity	95.2% (93.5–95.2)	90.3% (89.7–91.8)
PPV	3.4% (1.3–8.6)	3.6% (2.0–7.0)
NPV	99.8% (99.4–99.9)	99.9% (99.7–99.9)

Park, F. J., L. C. Y. Leung Ch Fau - Poon, et al. (2013). "Clinical evaluation of a first trimester algorithm predicting the risk of hypertensive disease of pregnancy." Aust N Z J Obstet Gynaecol. 53(6): 532-539.

Validation of a first-trimester screening model for pre-eclampsia

4621 women EOPE 28 (0,7%, LOPE 141 (3,4%), EOPE A priori risk, UtA-PI, MAP LOPE A priori risk, PAPP-A

Construction cohort

	FPR %	DR % (95% CI)	PPV % (95% CI)	NPV % (95% CI)	Prev
Late PE	5	39.7 (28.2-53.8)	11.3 (8.3-14.7)	99 (98.8-99.2)	2,1
	10	52.6 (42.3-62.9)	7.8 (6.4-9.2)	99.2 (99-99.3)	
Early PE	5	62.5 (45-80)	4.9 (3.6-6.2)	99.8 (99.8-99.9)	0,5
	10	75 (59.8-85.3)	3 (2.4-3.4)	99.9 (99.8-99.9)	

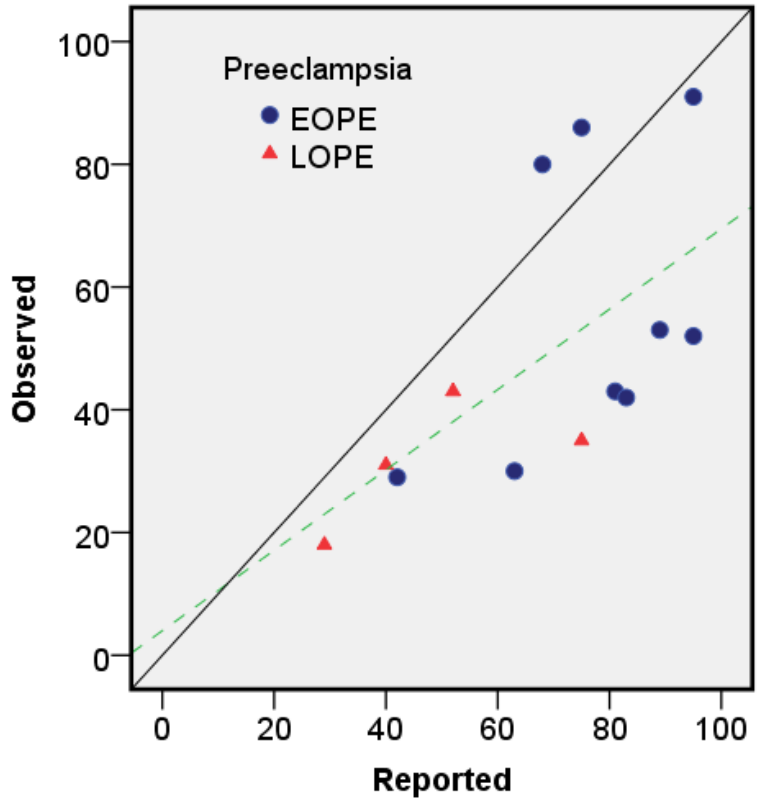
Validation cohort

	FPR %	DR % (95% CI)	PPV % (95% CI)	NPV % (95% CI)	Prev
Late PE	5	31.2 (22.7-36.9)	17.9 (13.7-20.5)	97.5 (97.2-97.7)	3,4
	10	43.3 (37.6-51.1)	13.1 (11.6-15.2)	97.8 (97.6-98.1)	
Early PE	5	78.6 (64.1-89.5)	9.8 (8.2-11)	99.8 (99.7-99.9)	0,7
	10	85.7 (71.3-96.4)	5.6 (4.7-6.3)	99.9 (99.8-100)	

Scazzocchio, E., F. Crovetto, et al. (2016). "Validation of a first-trimester screening model for pre-eclampsia in an unselected population." Ultrasound Obstet Gynecol. In press

External validation of multiparametric models for the prediction of EOPE and LOPE

Reference	Sensitivity (%) at fixed 10% FPR		PPV (95% CI) (%)	NPV (95%CI) (%)
	Reported	Observed		
Early pre-eclampsia				
Parra-Cordero[7]	47	29	2.6 (1.4–4.6)	99.5 (99–100)
Scazzocchio[10]	81	43	3.2 (2.0–5.0)	99.6 (99–100)
Poon[8]	89	53	4.6 (2.8–7.3)	99.6 (99–100)
Poon[13]	95	52	4.2 (2.6–6.5)	99.6 (99–100)
Odibo[12]	68	80	11.3 (5.3–21.5)	99.8 (99–100)
Caradeux[15]	63	30	5.6 (3.1–9.9)	99.0 (99–100)
Late pre-eclampsia				
Parra-Cordero[7]	29	18	6.4 (5.0–8.1)	97.5 (96–99)
Scazzocchio[10]	40	31	8.1 (6.5–10)	98.0 (97–99)



Oliveira N, Magder LS, Blitzer MG, et al. First-trimester prediction of pre-eclampsia: external validity of algorithms in a prospectively enrolled cohort. Ultrasound Obstet Gynecol 2014; 279–285.

5.- There should be an acceptable treatment for people identified as having the disease.

Treatment for patients who have developed preeclampsia or eclampsia mainly consists of intensified management, magnesium sulphate for prevention of eclampsia and convulsions, and, at a certain point, induction of labour

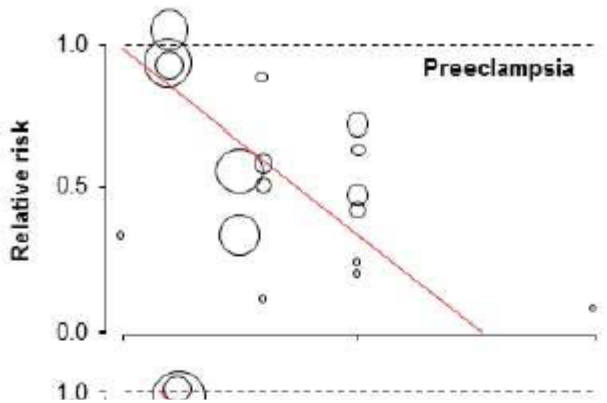
Induction of labour necessitates hospital admission, and in some cases intensified management may also require inpatient monitoring.

The accurate identification of women at risk, early diagnosis, and prompt and appropriate management (eg, antenatal corticosteroids for fetal lung maturation, treatment of severe hypertension, early delivery) may improve maternal outcome, and possibly perinatal outcome, as well.

The only treatment proven to be effective is delivery.

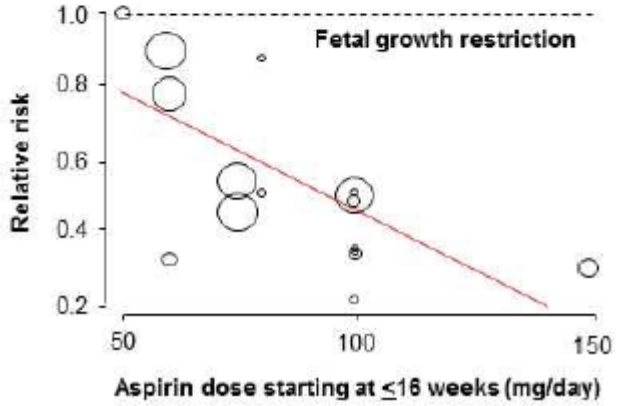
6.- Treatment in the latent or early symptomatic stages of the disease should favorably influence its course and prognosis.

45 RCTs including a total of 20,909 pregnant women randomized to between 50 mg and 150 mg of aspirin daily



No studies directly compared the effectiveness of screening for preeclampsia on health outcomes in a screened versus unscreened population (USPSTF 2016)

Prevention of PE and FGR using aspirin in early pregnancy is associated with a dose-response effect



Roberge, S., K. Nicolaides, et al. (2016). "The role of aspirin dose on the prevention of preeclampsia and fetal growth restriction: systematic review and meta-analysis. LID - S0002-9378(16)30783-9 [pii] LID - 10.1016/j.ajog.2016.09.076 [doi]." Am J Obstet Gynecol 15(16): 30783-30789.

Preventions modalities for pre-eclampsia by CPGs

Prevention modalities for pre-eclampsia	ESC	ACOG	SOMANZ	NICE	QLD	SOGC
Aspirin	+	+	+	+	–	+
Calcium	+	–	+			+
Vitamin C and E	X	X	X	X		X
LMWH			–	X		
Fish oil	X	X	X			
Folic acid		+	–	X		–
Nitric acid donors		X				
progesterone		X				
Magnesium		X				X
Zinc						X
Salt restriction	X	X		X		X
Caloric restriction	X					X
Thiazide diuretics						X

+ represents recommendation for, X represents recommendation against, – represents neither recommendation for nor against, a blank cell indicates that no recommendation was present.
CPGs, clinical practice guidelines; ESC, European Society of Cardiology; LMWH, low molecular weight heparin; NICE, National Institute of Health and Care Excellence; QLD, Queensland (Australia); SOMANZ, Society of Obstetric Medicine of Australia and New Zealand.

Bazzano, A. N., E. Green, et al., "Assessment of the quality and content of national and international guidelines on hypertensive disorders of pregnancy using the AGREE II instrument." BMJ Open. 2016 6(1): e009189.

7.- The facilities to diagnose and treat patients identified in the screening program should be available.

Multivariate models used serum markers and Doppler ultrasonography, which are not always available in primary care and are not generally used in the first trimester of routine prenatal care

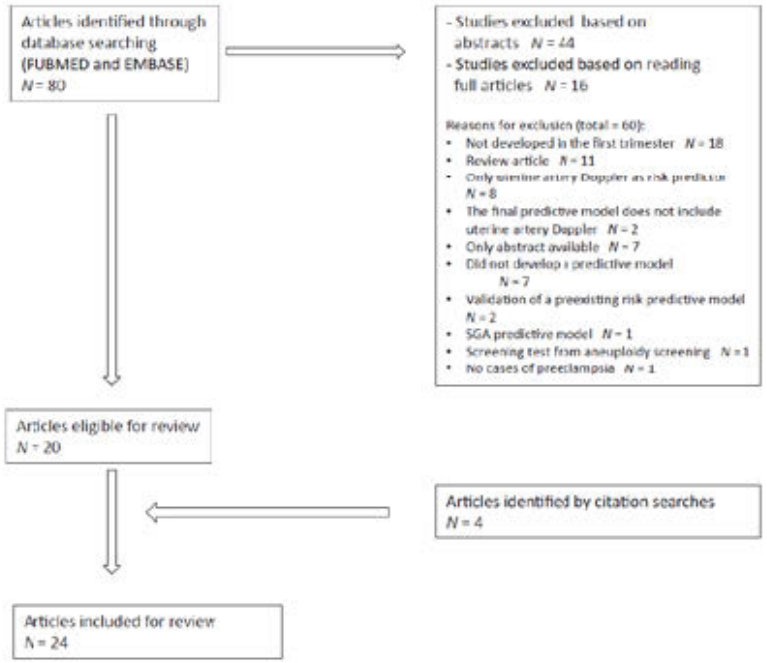
Ultrasound measurement of Ut-PI needs adequate training and adherence to a standard ultrasound technique in order to achieve uniformity of results among different operators.

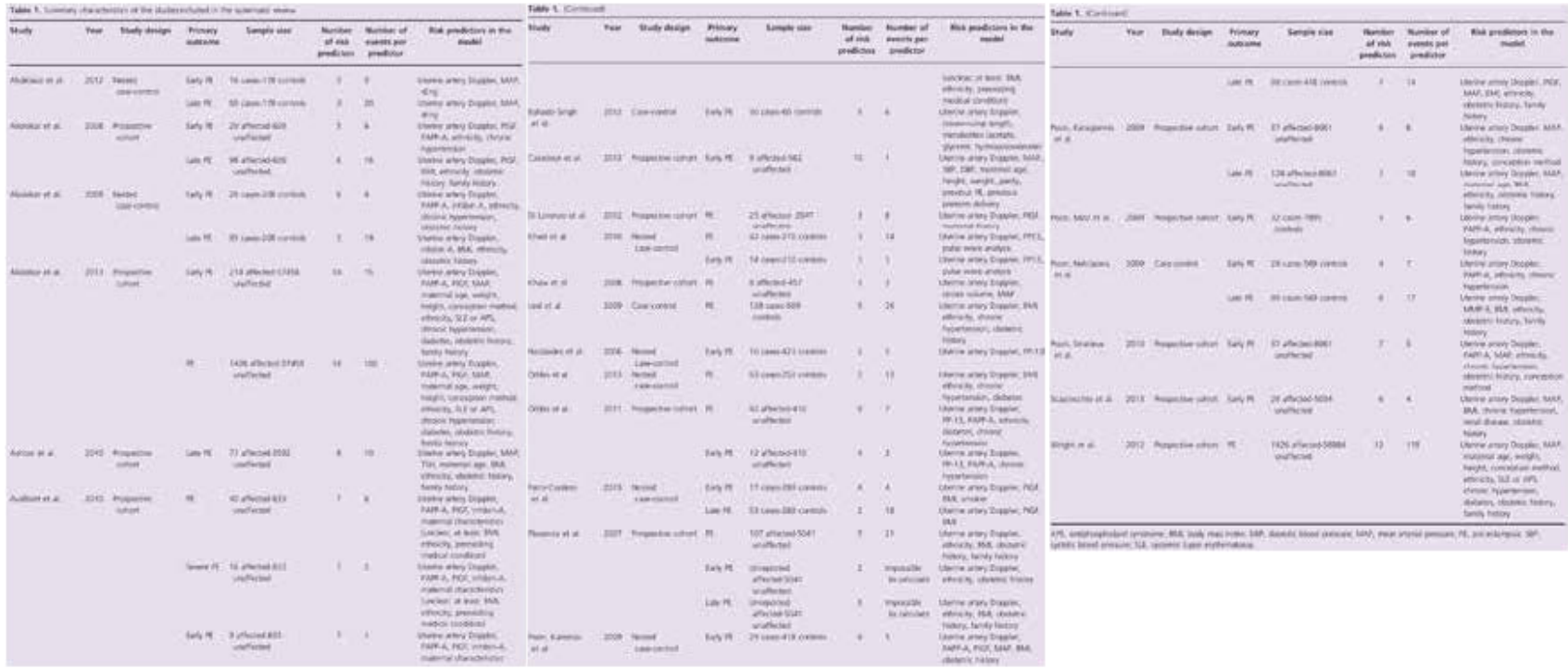
Affected by gestational age at screening, maternal weight, racial origin, and history of preexisting diabetes mellitus, and consequently it should be expressed as multiple of median (MoM) after adjustment for these factors

8.-There should be an agreed policy on whom to treat as patients.

Pregnant at risk

Test?





Brunelli VB, Prefumo F. Quality of first trimester risk prediction models for pre-eclampsia: a systematic review. BJOG 2015; 122:904–914

9.- The cost of case-finding, including the cost of diagnosis and treatment, should be reasonable in terms of its relationship to the cost of medical care as a whole.

Shmueli

Testing strategy costing US $112 with a false-positive rate of 10% and a false-negative rate of 23%.
This achieved an 18% reduction in pre-eclampsia cases in a population where the prevalence of pre-eclampsia was 1.7%.
The cost per case of pre-eclampsia averted was US $67,000, which was calculated to be equivalent to US $19,000/quality-adjusted life-years, which is generally considered cost-effective.
The cost-effectiveness improved markedly when the prevalence of pre-eclampsia increased to 3%.

Meads

- From a decision maker viewpoint, giving calcium supplementation to all pregnant women (‘no test/calcium all)’ without any initial testing is the most effective ‘test/treatment’ combination

Shmueli A, Meiri H, Gonen R. Economic assessment of screening for pre-eclampsia. Prenat Diagn. 2012;32(1):29–38
Meads CA, Cnossen JS, Meher S, Juarez-Garcia A, ter Riet G, Duley L, et al. Methods of prediction and prevention of preeclampsia: systematic reviews of accuracy and effectiveness literatura with economic modelling. Health Technol Assess. 2008;12(6):iii-iv, 1–270.

Modelled outcomes and costs of all possible test/treat strategies per 1000 low-risk women

Hypothetical test with good accuracy and modest cost; treatment strategy based on preventive Aspirin

Strategy (ranked by outcome and then cost)	Cases of PE	Women without PE	Costs (000s £)
1. No test/treat all	20.25	980	185.12
2. Test/treat all	20.25	980	215.12
3. Test/treat if positive	21.11	979	220.32
4. No test/no treat	25	975	225.23
5. Test/no treat	25	975	255.23

Hypothetical screening test: sensitivity 0.82 (false-negative rate 18%); specificity 0.95 (false-positive rate 5%); cost £30.
Aspirin; relative risk 0.81, 19% reduction in risk of PE; cost £2.69.

Hyde C, Thornton S. Does screening for pre-eclampsia make sense? BJOG 2013;120:1168–1170.

10.-Case-finding should be a continuing process, not a “one-shot” project.

PE will not be eradicated, by any single remedy, therefore screening and prevention of PE is indeed a continuous process.

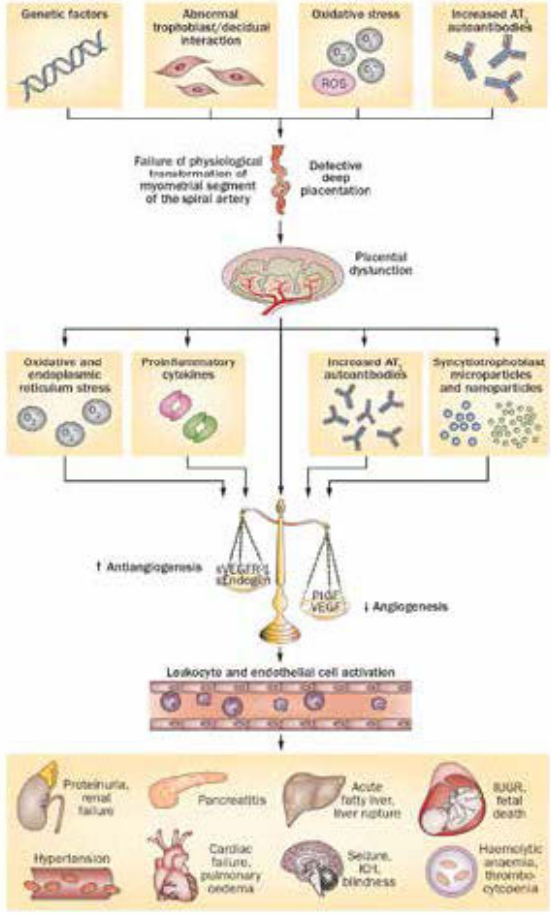
PE share different risk factors and mechanism

Risk factors that can be assessed at booking

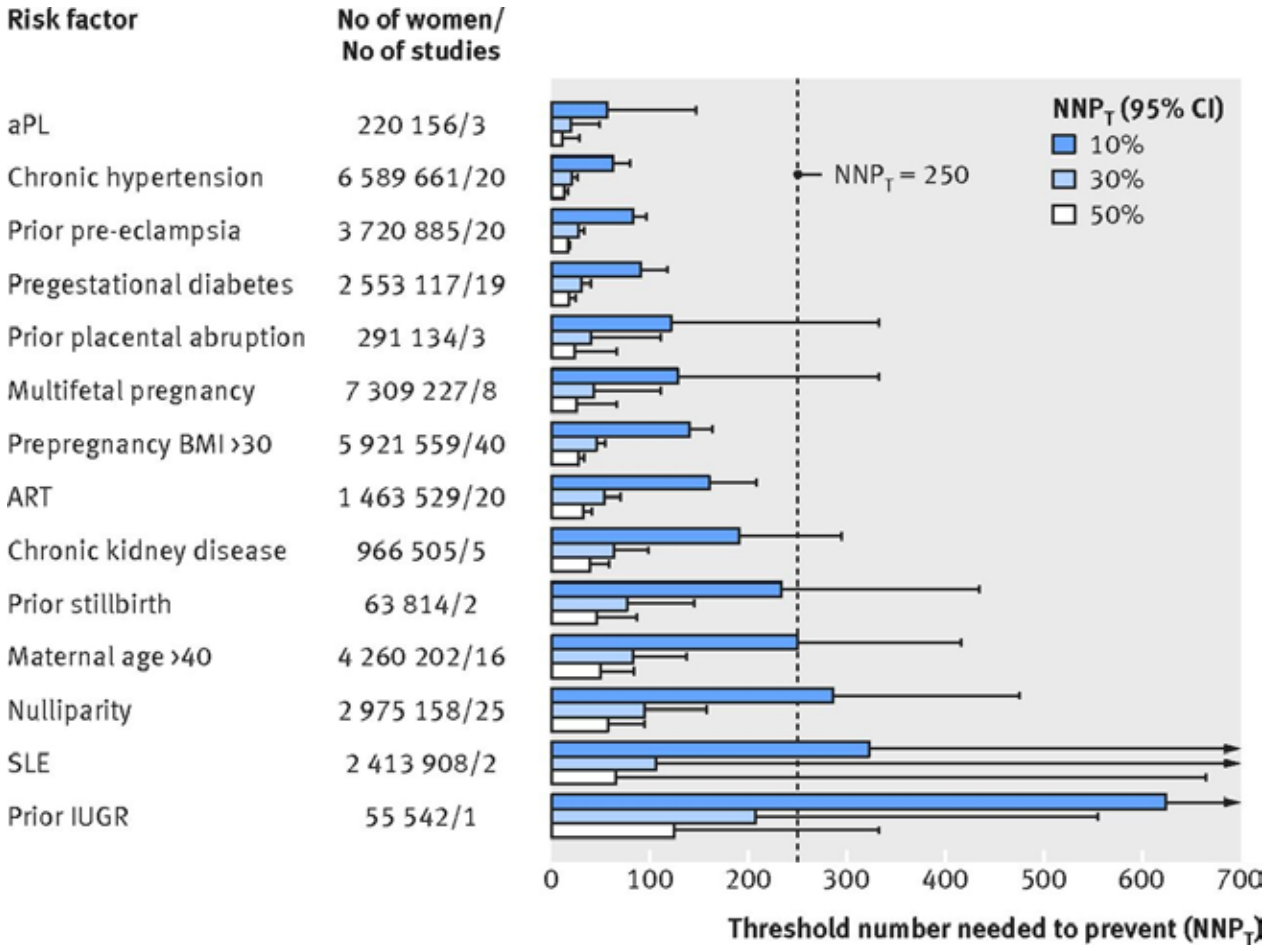
History	
Age (> 40 multipapuos)	RR 1.96, 95% CI 1.34 to 2.87
Parity (nulliparity)	RR 2.91, 95% CI 1.28 to 6.61
Previous pre-eclampsia	RR 7.19, 95% CI 5.85 to 8.83
Family history of pre-eclampsia	RR 2.90, 95% CI 1.70 to 4.93
Multiple pregnancy	RR 2.93, 95% CI 2.04 to 4.21
Pre-existing medical conditions:	
Insulin dependent diabetes (IDDM)	RR 3.56, 95% CI 2.54 to 4.99
Chronic hypertension	
Renal disease	
Autoimmune disease	
Antiphospholipid syndrome	RR 9.72, 95% CI 4.34 to 21.75
Time between pregnancies	> 10 years
Examination	
Body mass index (BMI)	RR 2.47, 95% CI 1.66 to 3.67
Blood pressure	RR 1.38, 95% CI 1.01 to 1.87
Proteinuria	

Duckitt K, Harrington D. Risk factors for pre-eclampsia at antenatal booking: systematic review of controlled studies BMJ 2005

these risk factors are not highly predictive, nor are they modifiable



Threshold number of women needed to receive aspirin prophylaxis to prevent one case of pre-eclampsia, based on individual clinical risk factors determined by 16 weeks' gestation



If a risk factor on its own was shown to have a NNPT* under 250, especially at a small relative risk reduction of 10%, then it might influence the decision to start aspirin prophylaxis.

* number needed to prevent

Bartsch E, Medcalf KE, Park AL, Ray JG; High Risk of Pre-eclampsia Identification Group.. Clinical risk factors for pre-eclampsia determined in early pregnancy: systematic review and meta-analysis of large cohort studies. BMJ. 2016 Apr 19;353:i1753.

Screening for pre-eclampsia early in pregnancy: performance of a multivariable model combining clinical characteristics and biochemical markers

	n Cases	*n* Controls	FPR (%)	Sensitivity (%)	PPV (%)	NPV (%)	AUC
All PE							
Full model*	96	227	5	31 (22–42)	10 (7–13)	98.7 (98.4–98.9)	0.766 (0.703–0.822)
			10	42 (32–52)	7 (5–9)	98.8 (98.5–99.0)	
Clinical model (BMI + MAP)	102	244	5	30 (22–40)	10 (7–13)	98.7 (98.4–98.9)	0.747 (0.689–0.806)
			10	34 (25–44)	6 (4–7)	98.7 (98.4–99.0)	
Preterm PE							
Full model*	24	77	5	26 (10–47)	3 (2–5)	99.5 (99.4–99.7)	0.780 (0.678–0.882)
			10	39 (19–59)	2 (1–4)	99.6 (99.4–99.7)	
Clinical model (BMI + MAP)	25	85	5	29 (12–49)	3 (2–5)	99.5 (99.4–99.8)	0.741 (0.616–0.866)
			10	54 (31–72)	3 (2–4)	99.7 (99.5–99.8)	
Severe PE							
Full model*	42	109	5	15 (5–29)	3 (1–5)	99.2 (99.0–99.4)	0.717 (0.609–0.810)
			10	50 (34–66)	4 (3–6)	99.5 (99.3–99.7)	
Clinical model (BMI + MAP)	43	113	5	20 (10–36)	3 (2–6)	99.3 (99.1–99.5)	0.700 (0.604–0.796)
			10	41 (27–58)	3 (2–5)	99.4 (99.2–99.6)	

*Full Model: sFLT-1, PlGF, PAPP-A, Inhibin A, BMI and MAP. 95% confidence intervals.

Giguere, Y., S. Masse J Fau - Theriault, et al. Screening for pre-eclampsia early in pregnancy: performance of a multivariable model combining clinical characteristics and biochemical markers. BJOG. 2015 122: 402-410.

Screening for pre-eclampsia early in pregnancy: performance of a multivariable model combining clinical characteristics and biochemical markers

The combination of two clinical characteristics and four biochemical markers (sFlt-1, PlGF, PAPP-Aand inhibin A) did not out-perform a logistic model using two clinical characteristics alone, namely prepregnancy BMI and MAP at first prenatal visit

Giguere, Y., S. Masse J Fau - Theriault, et al. Screening for pre-eclampsia early in pregnancy: performance of a multivariable model combining clinical characteristics and biochemical markers. BJOG. 2015 122: 402-410.

Table 1 Clinical practice guideline domain scores using the AGREE-II instrument

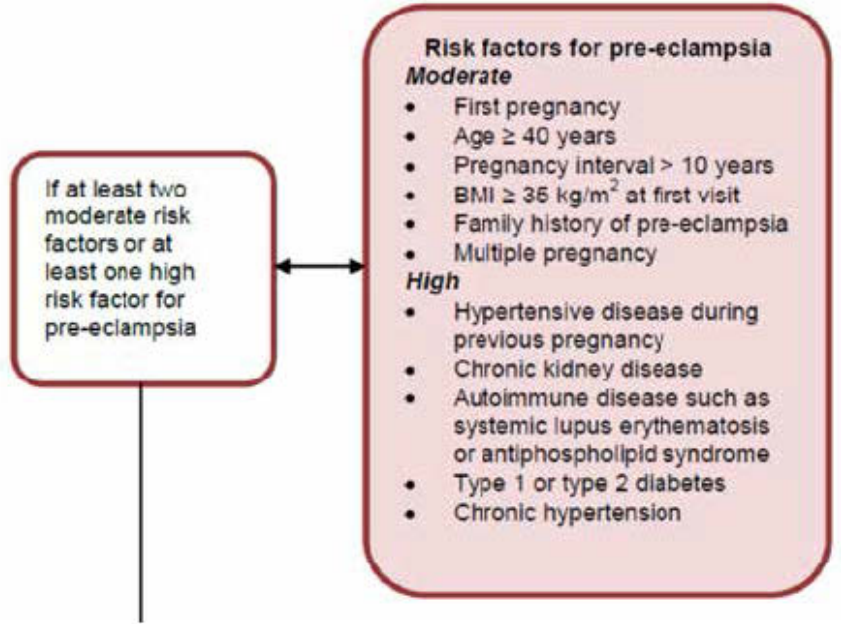
Domain	SOMANZ (%)	ACOG (%)	ESC (%)	QLD (%)	NICE (%)	SOGC (%)
Scope and purpose	46	70	42	74	98	98
Stakeholder involvement	30	61	34	74	93	91
Rigour of development	24	43	55	60	91	74
Clarity of presentation	63	88	91	87	94	93
Applicability	32	51	41	39	73	76
Editorial independence	7	55	65	48	62	70

AGREE-II, Appraisal of Guidelines for Research and Evaluation II; ESC, European Society of Cardiology; NICE, National Institute of Health and Care Excellence; QLD, Queensland (Australia); SOMANZ, Society of Obstetric Medicine of Australia and New Zealand.

Bazzano, A. N., E. Green, et al., "Assessment of the quality and content of national and international guidelines on hypertensive disorders of pregnancy using the AGREE II instrument." BMJ Open. 2016 6(1): e009189.

Royal College of OBSTETRICIANS and GYNAECOLOGISTS

The Royal College of Midwives



Conclussions

- Test predicting PE are heterogeneous
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- Multivariate models have very low PPV and remain to be validated
- The capacity to predict later onset pre-eclampsia, is much more limited
- Multivariate models facilities are not always feasible
- Economically do not appears to be clearly supported
- As per the moment screening by maternal characteristics and blood pressure appears the more logical approach for Universal risk estimation