

A failure to assess cervical length could be judged as negligent

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## Preterm labour - definitions and populations for screening

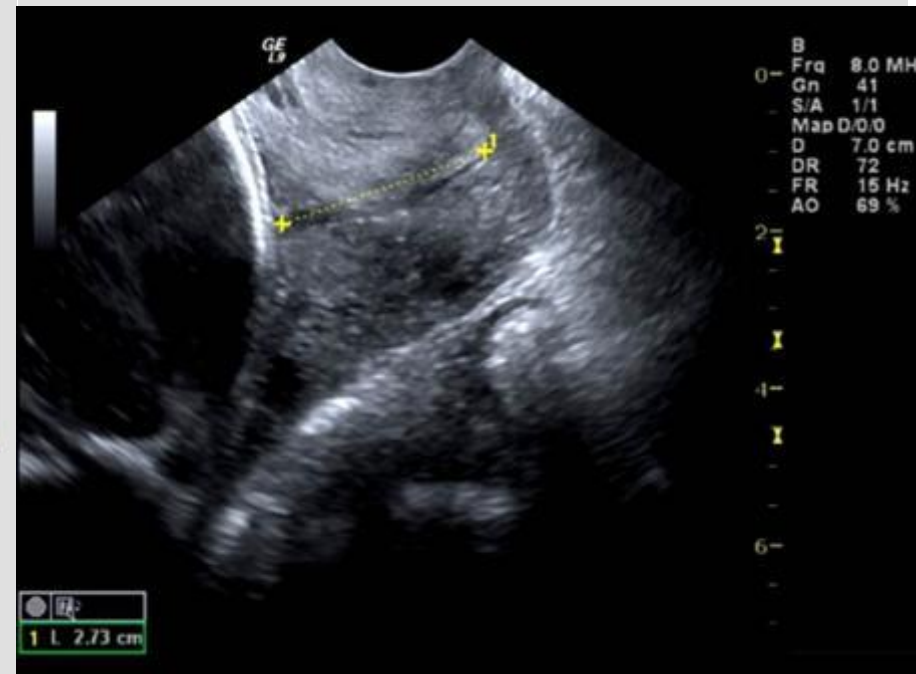
Define preterm labour: • delivery before 34 wks

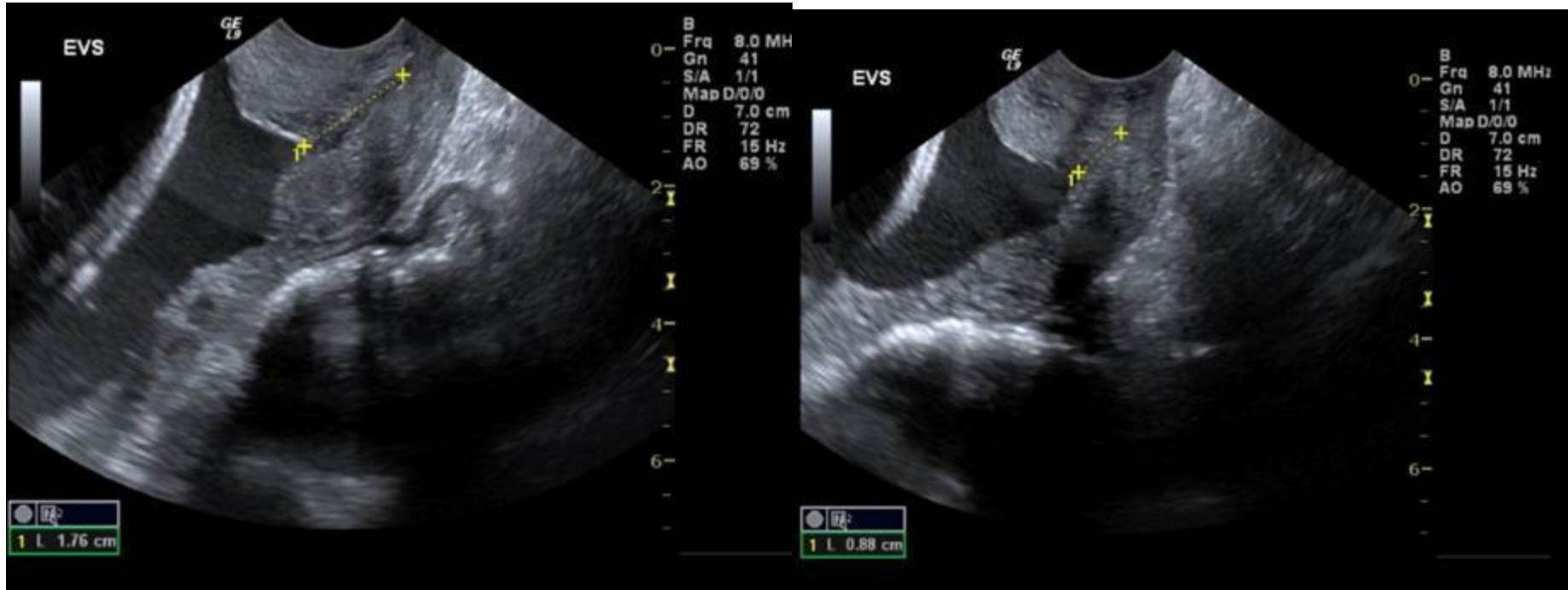
Aetiology: • 40% idiopathic  
• 35% follows PPRoM  
• 25% iatrogenic

Patient groups: • asymptomatic, high risk  
• symptomatic  
• asymptomatic, low risk

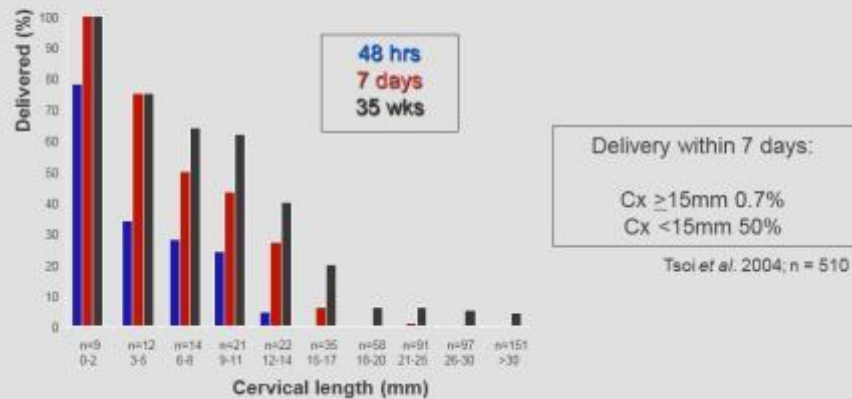
## Standardised Cervical Assessment

- Empty bladder
- TV transducer 5MHz
- Probe in anterior fornix
- Identify endocervical canal
- Avoid pressure on cervix
- Magnify the picture (Cx >75%)
- Measure internal to external os
- 3 measurements over 3 mins
- Note funnelling at the internal os

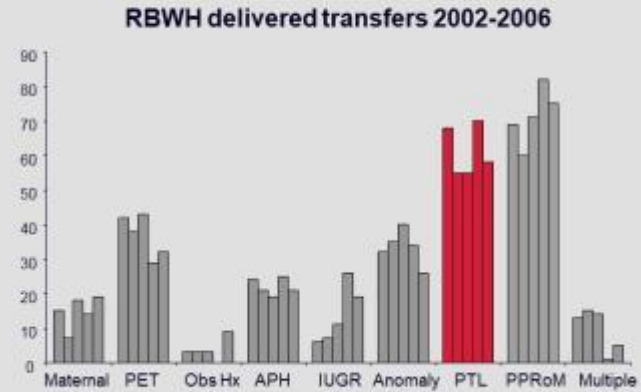




### Cervical sonography: Threatened PTL at 24-34 wks



### Threatened preterm labour in Queensland

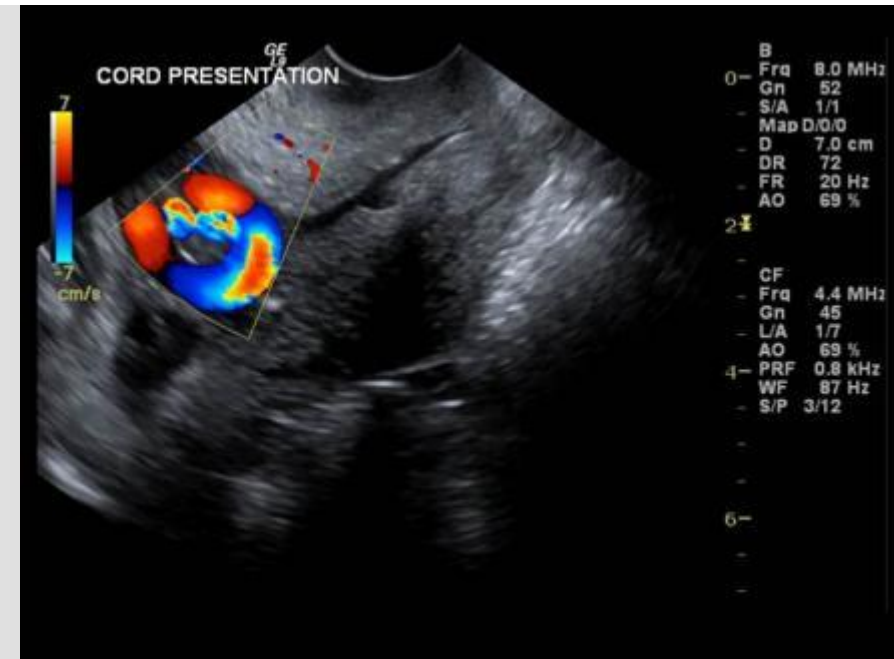


## Cervical sonography: Threatened PTL at 24-34 wks

	Sensitivity	Specificity	NPV
Del $\leq$ 48hrs	100%	89.2%	100%
Del $\leq$ 7days	71.4%	90.6%	96.0%

n = 73

Butler et al. 2007 (in preparation)



## Managing patients at high risk of PTL

Author	Design	N	PTL rates	Exp → Cerc
Althuisius '00	RCT	67	<34wks: 13% vs. 14%	41%*
To '01	Pros cohort	84	<34wks: 15% vs. 21%	60%
Berghalla '02	Retro cohort	177	<35wks: 23% vs. 30%	36%
Groom '04	Case control	78	<32wks: 23% vs. 28%	36%
Higgins '04	Pros cohort	135	<30wks: 19% vs. 3%	32%

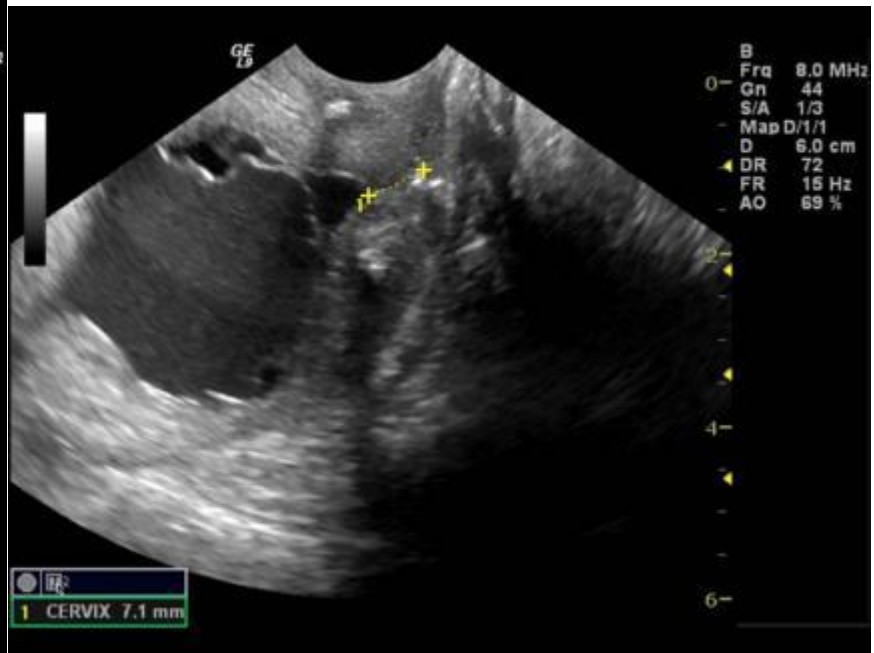
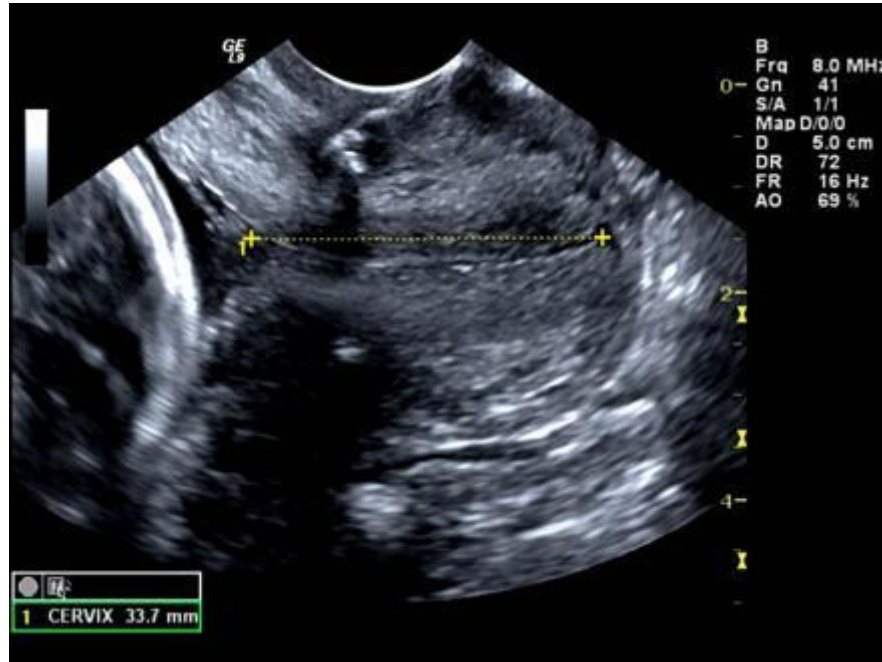
## Managing patients at high risk of PTL

### Protocol:

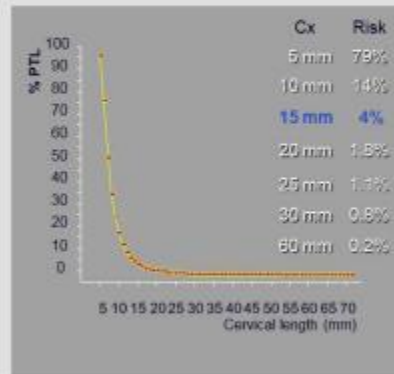
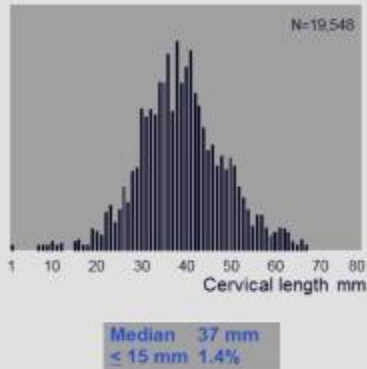
Scan at 16wks: <25mm - cerclage  
>25mm - serial scans (2wks)

Future scans: Rapid shortening - cerclage

Stop surveillance: 24 weeks



### Cervical assessment for low risk women



Heath et al. 1998

### Cervical length and risk assessment

Hassan				Heath				Hibbard				Iams			Taipale			
US, Single centre				UK, Single centre				US, Single centre				US, Multi centre			Finland, Single centre			
6877				2567				760				2915			3694			
19 (14-24) wks				23 (22-24) wks				20 (16-22) wks				24 wks			(18-22)			
32 wks (2.9%)				33 wks (4.0%)				32 wks (3.6%)				35 wks (4.3%)			35 wks (0.8%)			
Cx	Prev	OR	Sens	Cx	Prev	LR	Sens	Cx	Prev	RR	Sens	Cx	RR	Sens	Cx	Prev	RR	Sens
				5		51.5												
10	0.3%	29.3		10														
15	0.6%	24.3	8.2%	15	1.7%	2.7	58%					13	13.9					
20	0.9%	18.3	10.6%	20	3.4%			22	2.5%	8.4	18.5%	22	9.46	23%				
25	1.7%	13.4	14.7%	25	8.0%	0.71		27	5.0%	9.7	29.6%	26	6.19	37%	25	0.3%	20	100%
30	9.1%	3.2		30	18.0%			30	10.0%	5.2	44.4%	30	3.79	54%	29	3.0%	8	97%
40	71.6%			40		0.45		38.5	50.0%			35	2.35		35	27.0%	2.2	73%
				50		0.24		40		1.98		40	1.98		40	52.0%	1.7	38%

## Cervical length at 18-20 weeks

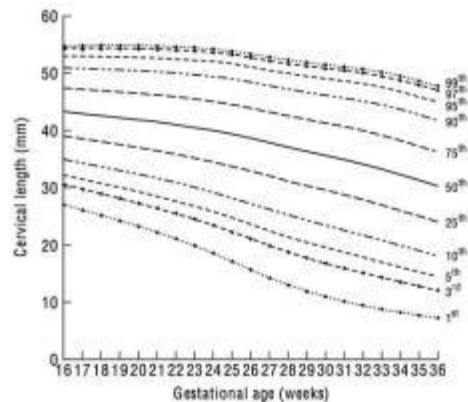


Figure 1 Reference ranges for cervical length across gestation. First to 99<sup>th</sup> percentiles are indicated.

Salomon et al. 2009

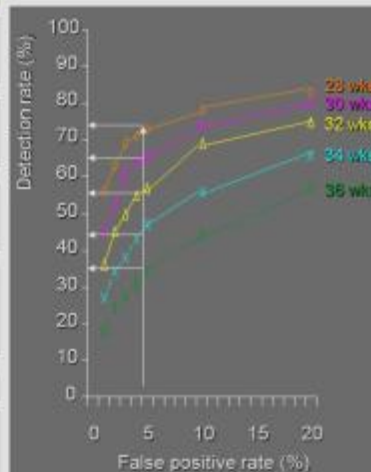
## Revision of likelihood ratios: what's high risk?

Parameter	Likelihood ratio for delivery at:			
	< 28 weeks	28-30 weeks	31-33 weeks	34-36 weeks
Cervical length (mm)				
< 2	745.29	74.29	44.22	99.36
2	409.86	56.10	34.78	58.12
3	258.41	48.75	30.84	35.82
4	172.11	42.36	27.36	24.60
5	119.19	36.81	24.26	18.10
6	85.02	31.99	21.51	13.96
7	62.08	27.80	19.08	11.15
8	46.20	24.16	16.92	9.15
9	34.94	20.99	15.01	7.66
10	26.79	18.24	13.31	6.53
11	20.78	15.85	11.80	5.64
12	16.29	13.77	10.47	4.93
13	12.89	11.97	9.28	4.35
14	10.28	10.40	8.23	3.87
15	8.26	9.04	7.30	3.47
16	6.68	7.85	6.48	3.14
17	5.44	6.82	5.74	2.85
18	4.45	5.93	5.09	2.60
19	3.66	5.15	4.52	2.39
20	3.03	4.48	4.01	2.20
21	2.52	3.89	3.55	2.03
22	2.10	3.38	3.15	1.89
23	1.76	2.94	2.79	1.76
24	1.48	2.55	2.48	1.64
25	1.25	2.22	2.20	1.53
26	1.05	1.93	1.95	1.44
27	0.89	1.68	1.73	1.35
28	0.76	1.46	1.53	1.28
29	0.65	1.27	1.36	1.21
30	0.56	1.10	1.21	1.14
31	0.48	0.96	1.07	1.08

Celik et al. 2008

## Prediction of Preterm Delivery

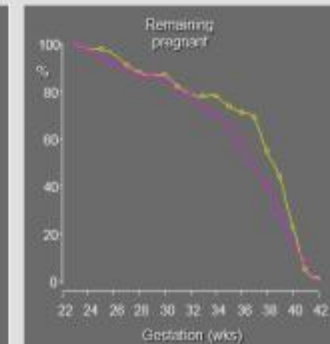
Characteristic		Odds Ratio
Age (yrs)	20-35	1.0
	<20	1.1
	>35	1.1
Body Mass Index (kg/m <sup>2</sup> )	20-30	1.0
	<20	1.2
	>30	1.1
Ethnicity	White	1.0
	Afro-Caribbean	1.2
	Asian/Oriental	1.2
Obstetric history	Nullipara	1.0
	>37 wks	0.7
	24-32 wks	3.7
	33-36 wks	2.7
Cervical surgery		1.3
Cervical length (mm)	>25	1.0
	15-25	2.4
	<15	9.5



## Multicentre RCT: Cervical cerclage for cervix $\leq 15$ mm at 23 wks

	Randomised management	
	Suture (n=101)	Expectant (n=98)
Afro-Caribbean	49	57
Nulliparous	53	50
Previous Delivery 16-32 wks	19	17
Age median (range)	30 (16-43) yrs	30 (16-41) yrs
Smoking	9	12
Cervical length median (range)	10 (2-18) mm	10 (2-18) mm
Delivered $\geq 33$ wks	23	26
Delivery	38.3	36.7
Perinatal death	4	9

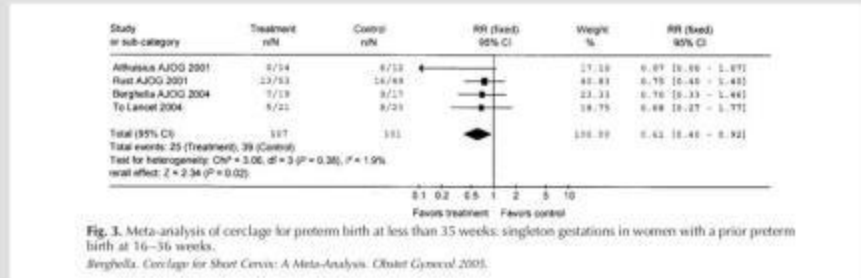
To prove significance (80% level):  
 For preterm delivery need to scan 575,000 and randomise 4,300  
 For perinatal death need to scan 87,000 and randomise 720



To et al. 2002

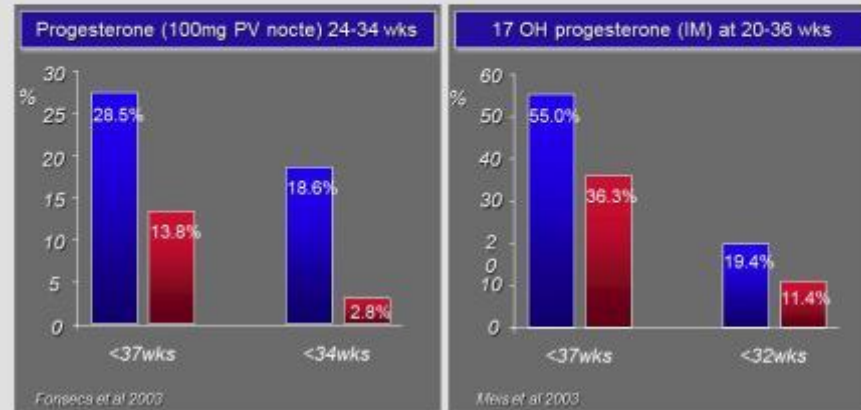
# Meta-analysis: cerclage

Preterm birth < 35 weeks



Berghala et al. *Obstet Gynecol* 2006

# Prophylactic progesterone - high risk pregnancies



# Meta-analysis: progestogen therapies

Preterm birth < 37 weeks



Sanchez-Ramos et al. 2006

# Progesterone vs placebo in women with short cervix

Cervical length at 22-24 wks  
 Pessary 200mg/night at 24-34 wks

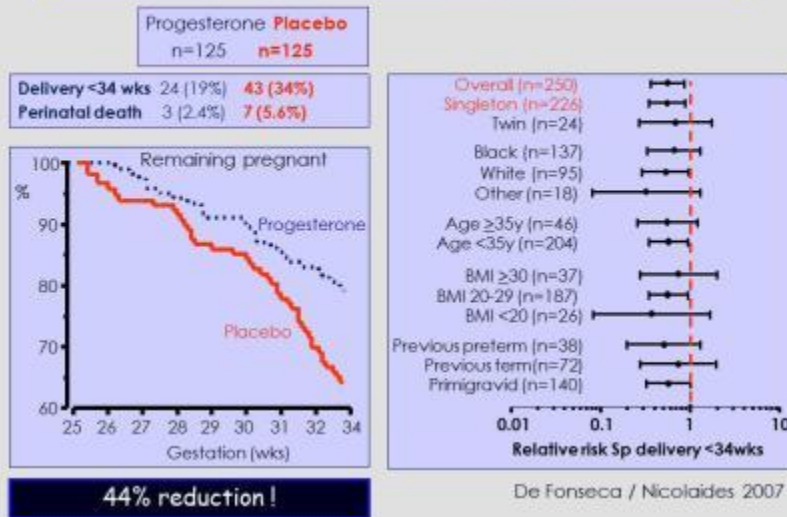


\* Twins, n=456 (1.8%)



De Fonseca / Nicolaides 2007

## Randomized study: Progesterone vs placebo for women with short cervix



## Progesterone vs placebo in women with short cervix

Effectiveness of progesterone depends on cervical length

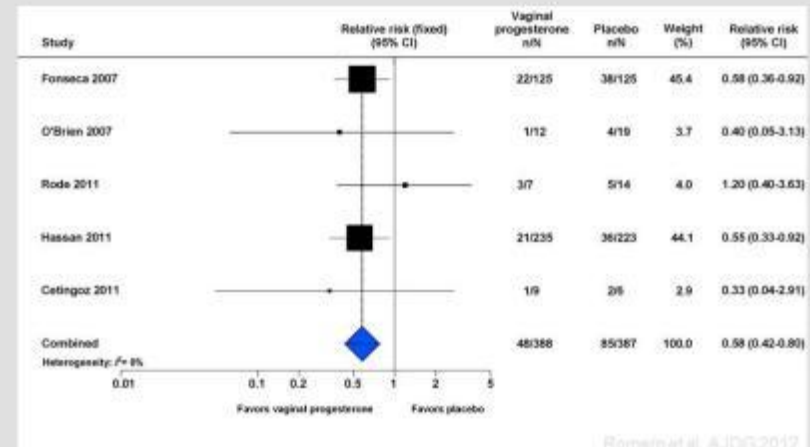


## Progesterone vs placebo in asymptomatic women with short cervix



N = 459  
Hassn et al. UOG 2011

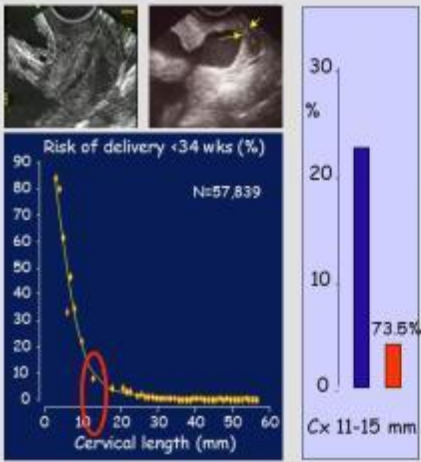
## Managing risk of preterm delivery



## Progesterone vs placebo in women with short cervix

Doing nothing is no longer an option

Stuart Campbell UOG 2011



What now:

- Screening is valuable and all women should be screened
- Cx 11-15 / 20 / 25 mm (1.2% / 4% / 7%)- treat with progesterone from 23-36 wks

## Prevention of preterm birth in twins

