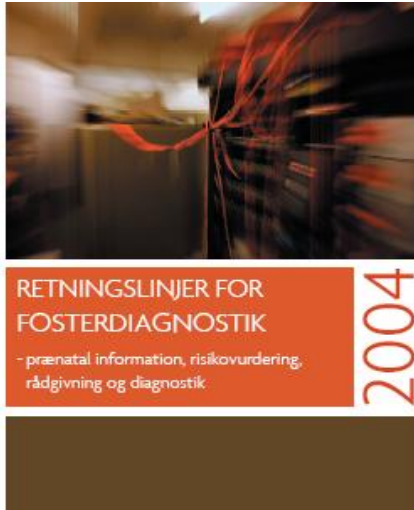


Cell-free fetal DNA in the future (Denmark)

Ann Tabor

Copenhagen University Hospital
Rigshospitalet

National guideline 2004

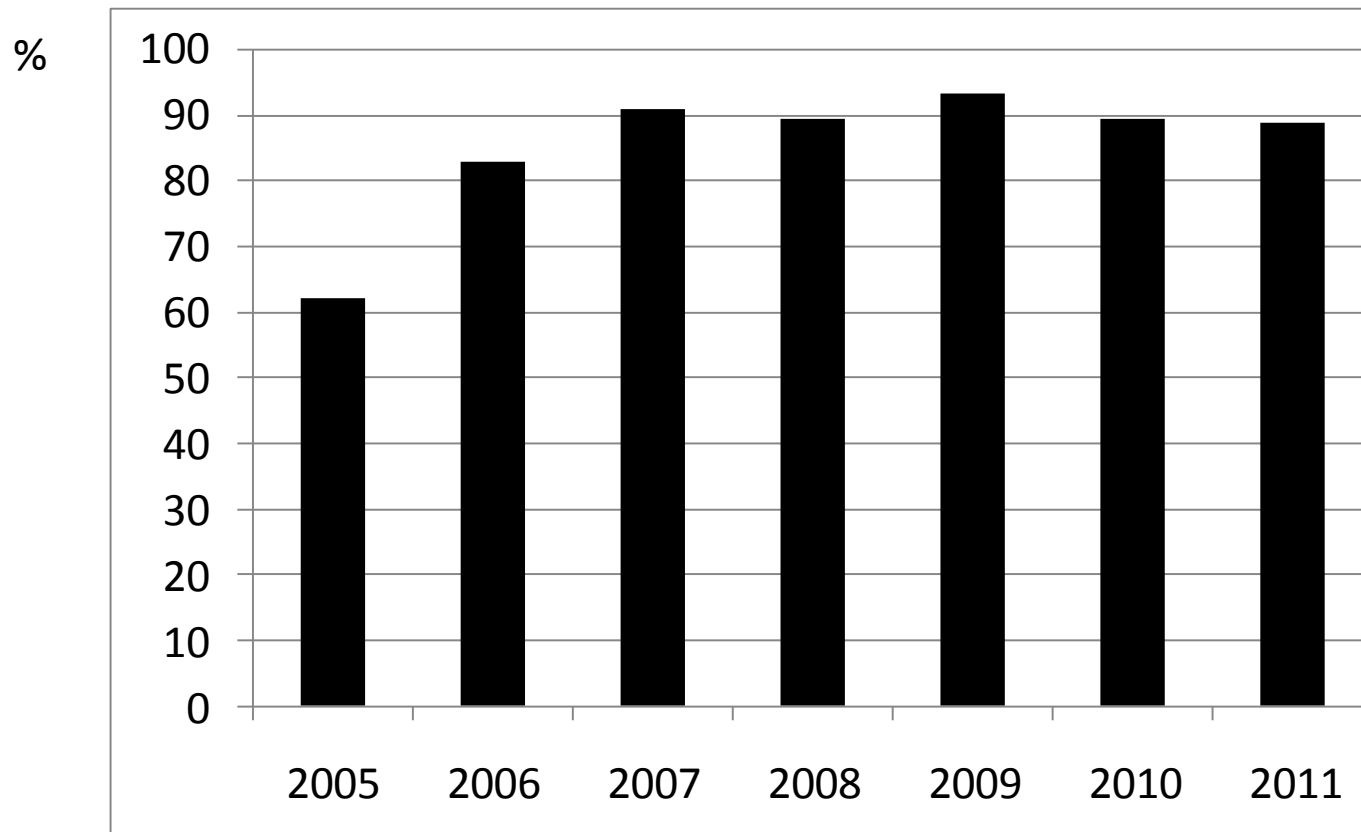


Aims

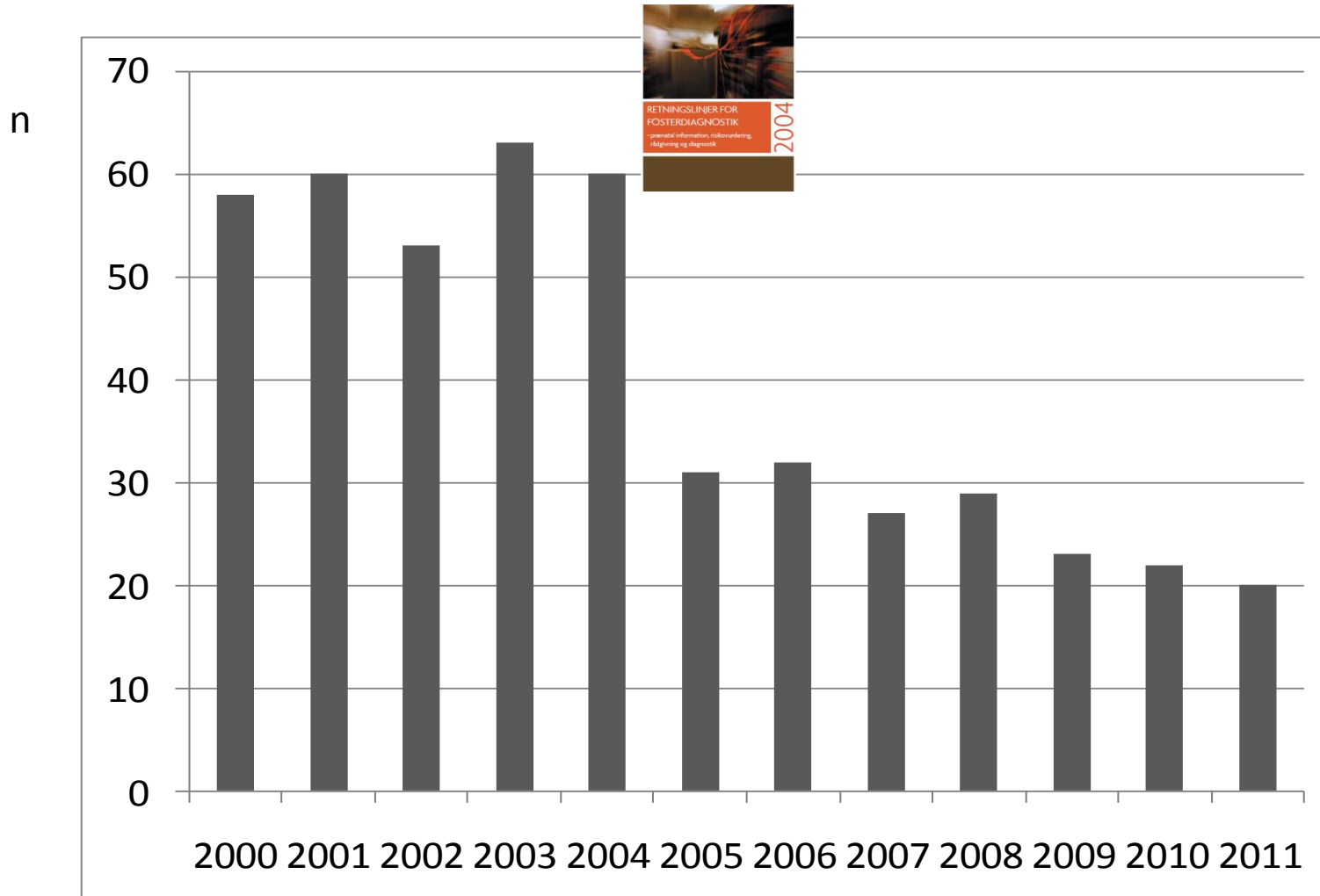
- Informed choice
- 1st Trimester risk assessment
 - Double test
 - NT scan
- Reduce invasive testing

Implemented 2004-2006

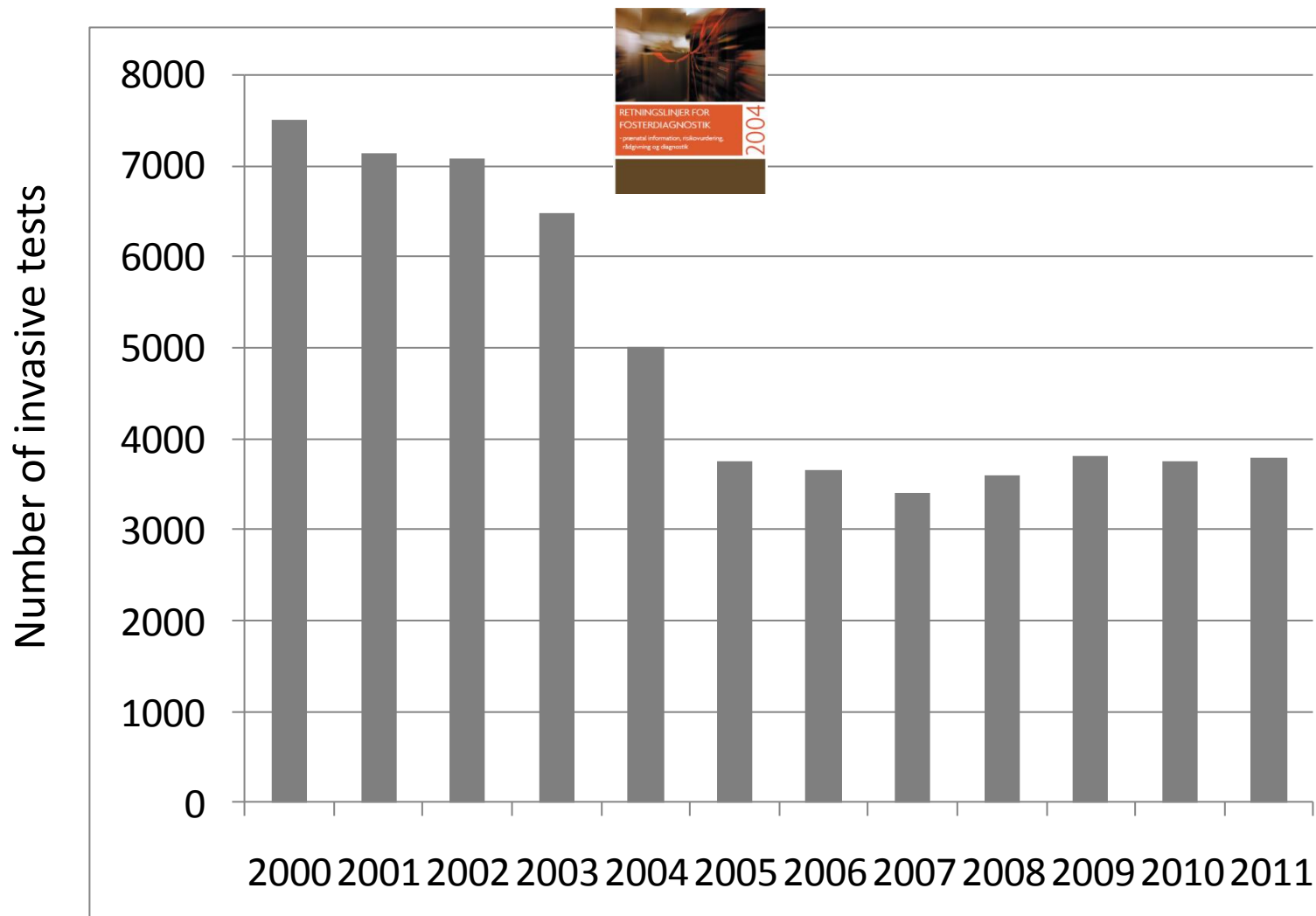
Uptake of first trimester risk assessment



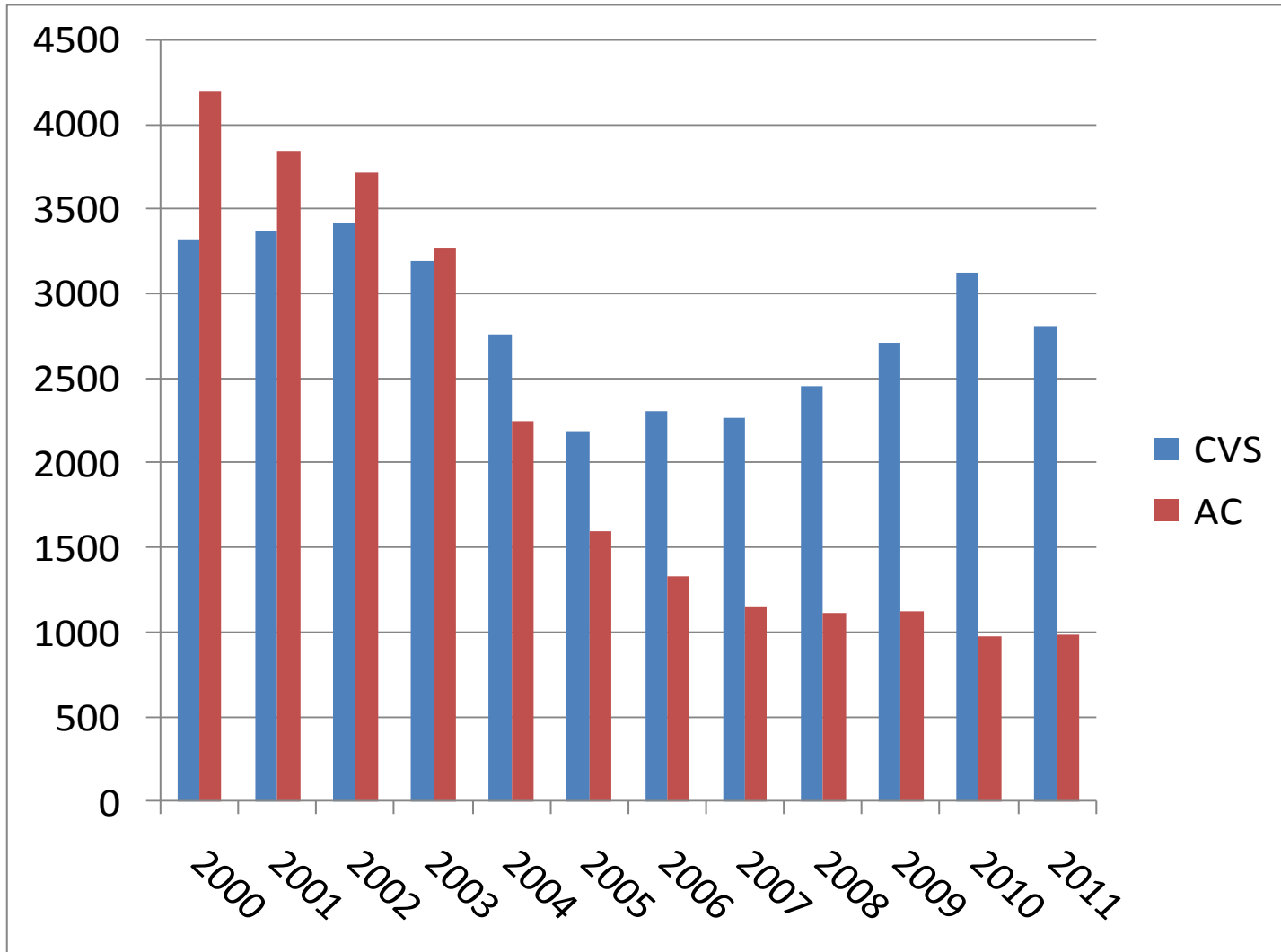
Newborns with Trisomy 21



Total number of invasive tests



Invasive tests



Two scenarios

- Offer cff-DNA to women at *high-risk* after 1st trimester risk assessment
- Offer cff-DNA to *all women* in combination with nuchal translucency scan double test

Uptake?

Genetic counselling

Pros and cons

	Detection rate	False-positive rate	Gestational age @ result	Method of termination	Chromosome anomalies detected
1st trimester risk assessment + karyotype in screen-positive	90 %	5 %	12-14	surgical	all
1st trimester risk assessment + cff-DNA in screen-positive	90 %	1 %	13-15	medical	Trisomy 21, 18,13 Sex chromosome aneuploidies
Cff-DNA for all	99 %	1 %	11-12	surgical	Trisomy 21, 18,13 Sex chromosome aneuploidies

	T21	T18/T13	45,X	CVS n	Fetuses lost n
Today	20	1	10	2700	13-27
ffDNA for all	4-6	0	1	1000	5-10

Consequences for invasive procedures

- Further decrease in number
if only 1-2% of all pregnancies: 600-1200 /year
- Need for centralization

The future of NIPT in Denmark

2014 Option for 1st trimester screen positive women

2020 Option for all women (national policy)

	T21	T18/T13	45,X	CVS n	Fetuses lost n
Today	20	1	10	2700	13-27
ffDNA for all	4-6	0	1	1000	5-10

Commercial tests available

– free fetal DNA

Firm	Country	Name	Method of sequencing	Analysis of	Screen-failure rate	Collaboration	Price (USD)
Ariosa Diagnostics	USA	Harmony prenatal test	Targeted	21, 13, 18	5 %	Nicolaides	800
BGI/Gennet	China/ Czech R	Prenascan	Whole genome	21, 13, 18	?	Lo	1000
Life-Codexx	Germany	Prena test	Whole genome	21, 13, 18	1 %	-	2-3000
Sequenom	USA	MaterniT2 1 Plus	Whole genome	21, 13, 18	1 %	Palomaki	2700
Verinata Health (Illumina)	USA	Verify prenatal test	Whole genome	21, 13, 18, X, Y	0.3 %	Bianchi	1500
Natera	USA	Panorama	Targeted	21, 13, 18, X, Y	Validation study not published	-	?