Abdominal Aortic Aneurysms
Current State and Future Prospects

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Current Jobs

Clinical Work

Cheltenham General Hospital

Research

UNIVERSITY OF OXFORD

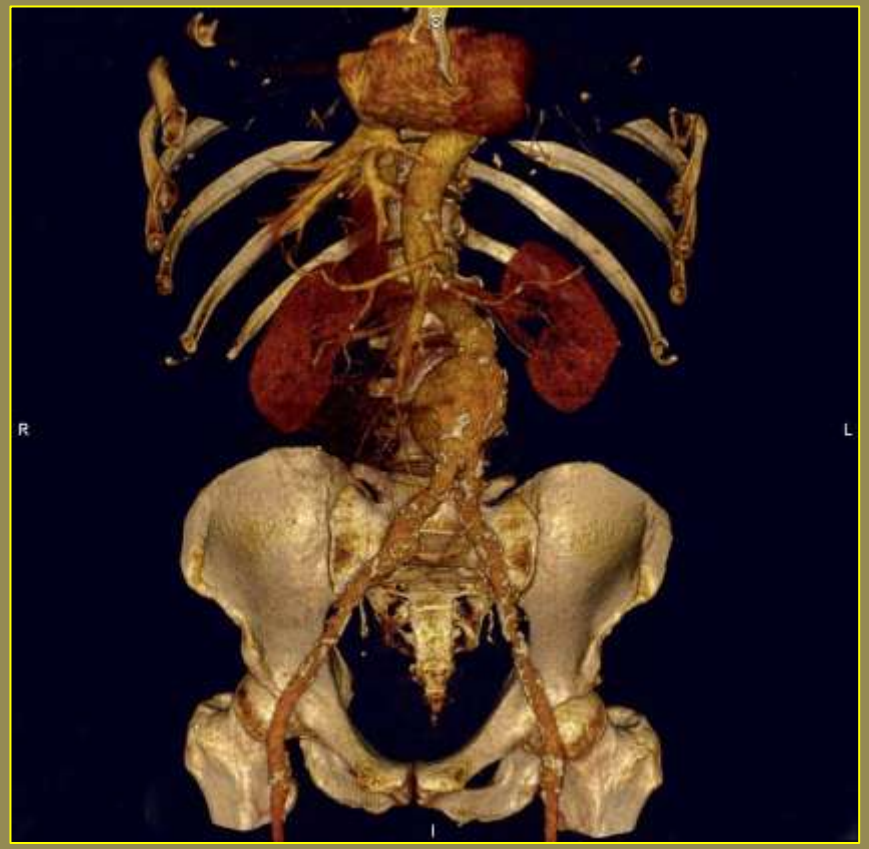
Talk Outline

- Risk factors for AAA
- Natural History
- Treatment options
- Trends in incidence
- Screening programs for AAA

Abdominal Aortic Aneurysm (AAA)

- A preventable cause of death

- Risk Factors
  - Male gender
  - Age
  - Family history
  - Smoking
  - Hypertension
  - High cholesterol



Ruptured AAA commonly fatal

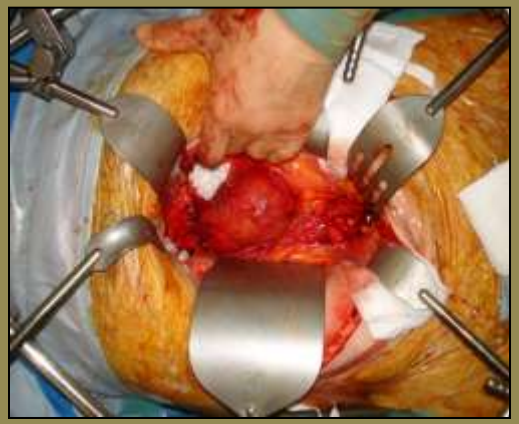
- Ruptured AAA
  - Community mortality rate of around 85%
  - Hospital mortality rate of around 40-50%

  In contrast.....

- Elective AAA repair
  - Mortality rate of less than 5%
  - Operate when AP diameter > 5.5 cm

Treatment options for AAA > 5.5 cm

Open



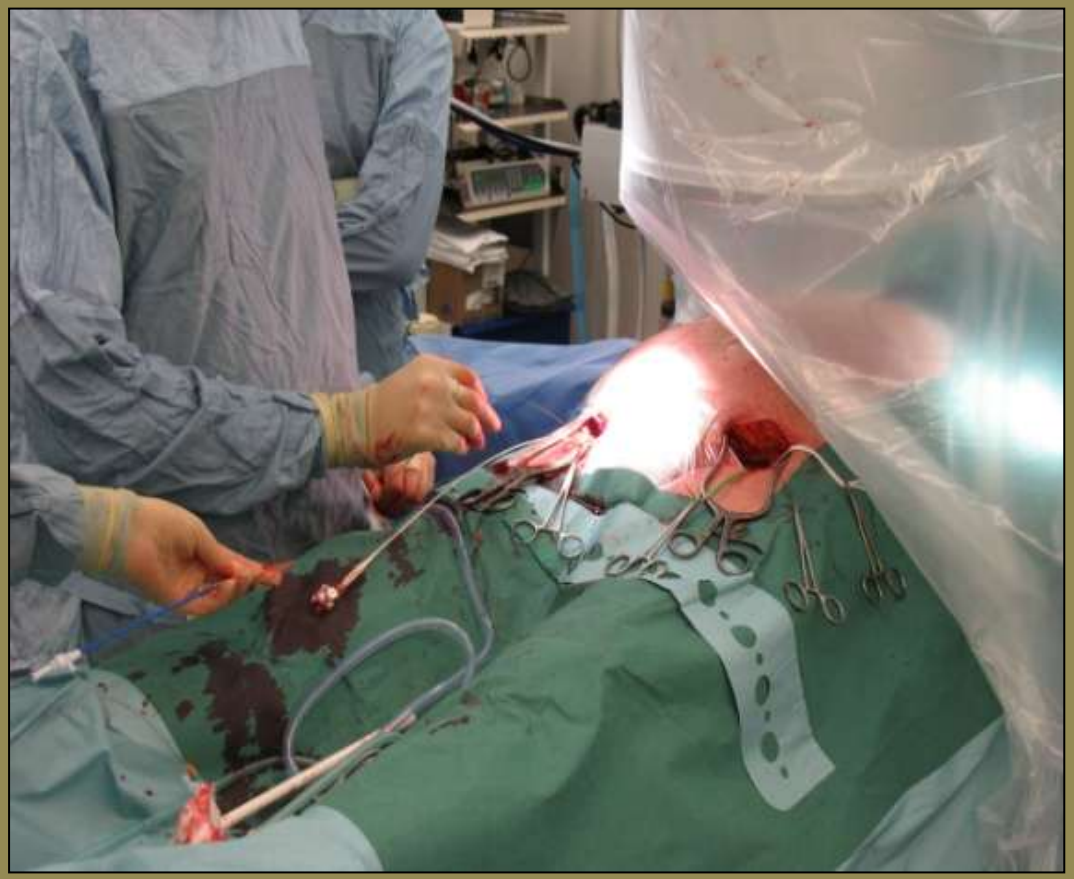
EVAR

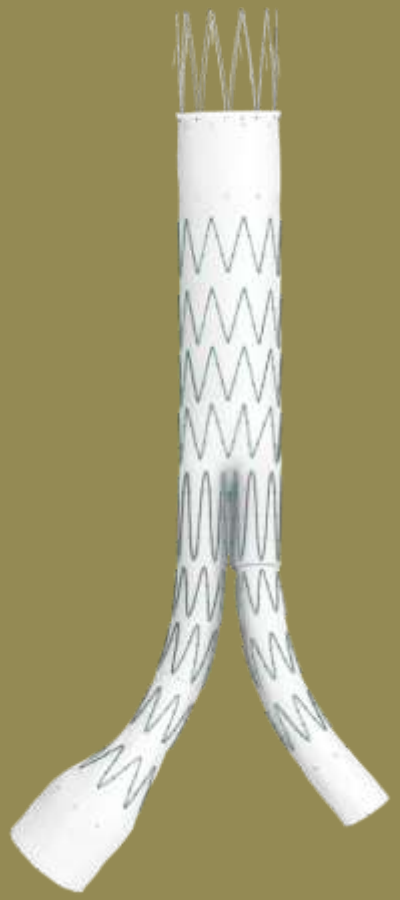
Laparoscopic

“Surgical” AAA repair

Using Dacron Graft

Endovascular Repair (EVAR)





Open vs Endovascular Repair

Risks of “Endo-leak” with continued sac expansion and rupture

Life-long surveillance (annual CT or Duplex scans)

No difference in long-term mortality

Around 50-75% of all AAA repairs are now endovascular (EVAR)

Incidence of AAA

AAA Deaths in UK 2001 vs 2009

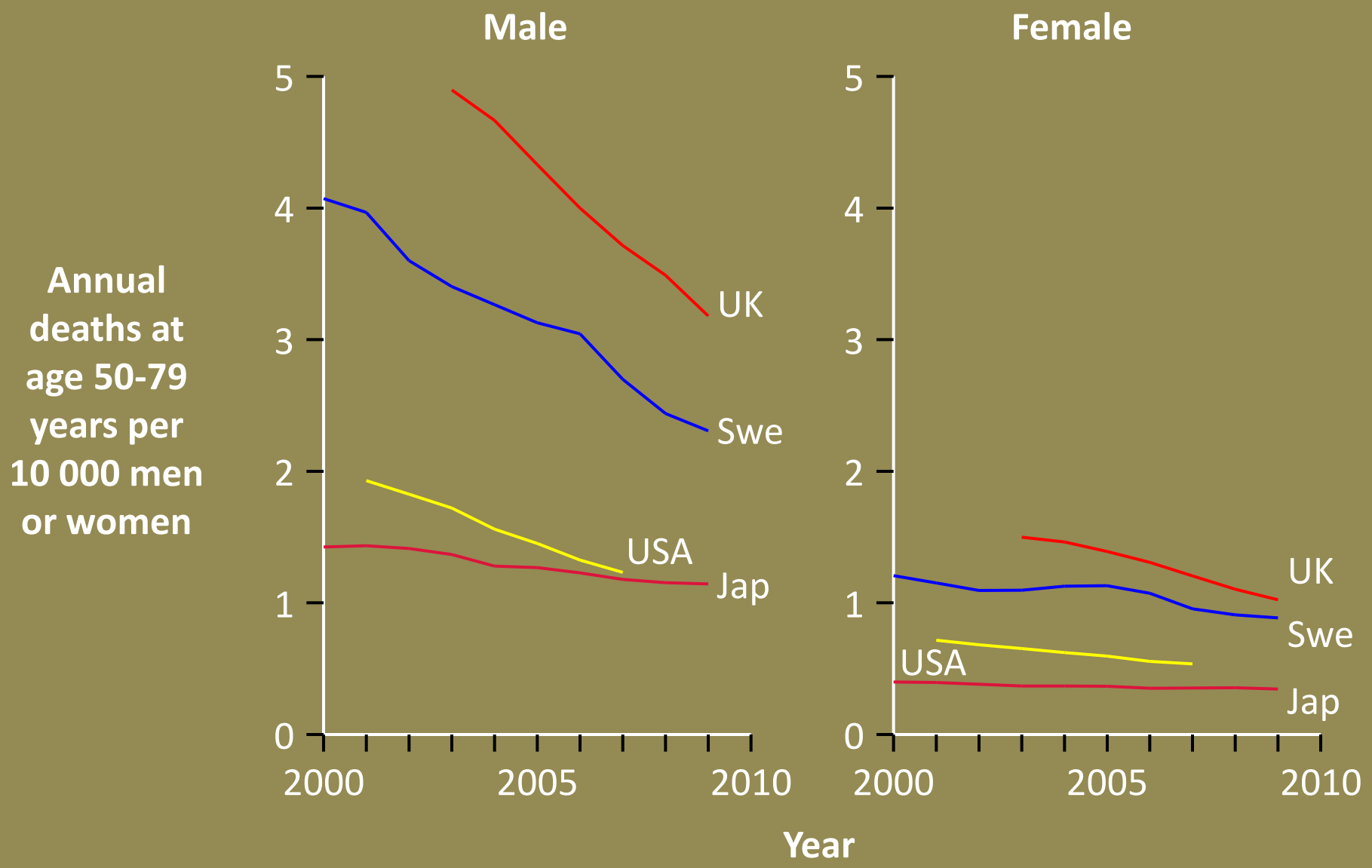
2001

Age (years)	Male	Female
0-29	14 (0.2%)	0 (0%)
30-39	16 (0.3%)	12 (0.4%)
40-49	46 (0.5%)	14 (0.2%)
50-59	201 (0.9%)	48 (0.3%)
60-69	935 (2.0%)	304 (1.0%)
70-79	2482 (2.8%)	1371 (1.8%)
80-89	1934 (2.3%)	1747 (1.5%)
90+	285 (1.3%)	456 (0.7%)
Total	**5913 (2.1%)**	**3952 (1.2%)**

2009

Age (years)	Male	Female
0-29	13 (0.2%)	1 (0%)
30-39	23 (0.5%)	8 (0.3%)
40-49	66 (0.6%)	15 (0.2%)
50-59	130 (0.6%)	52 (0.4%)
60-69	615 (1.5%)	211 (0.8%)
70-79	1595 (2.2%)	807 (1.4%)
80-89	1741 (1.9%)	1611 (1.4%)
90+	304 (1.2%)	446 (0.7%)
Total	**4487 (1.7%)**	**3151 (1.1%)**

Aortic aneurysm mortality rate at age 50-79 years: 2000s



Rates are 3-year rolling averages, standardised for age

Q: Why is AAA mortality falling?

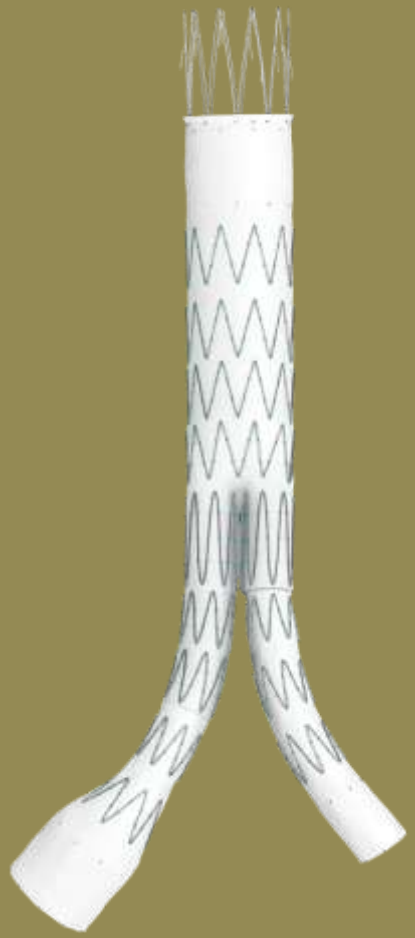
A: Operative results are improving

- Elective AAA mortality has fallen from 7.5% in 2008 to 2.4%

Q: Why is AAA mortality falling?

A: Operative results are improving

- 20% of cases treated with EVAR in 2005, rising to 59% in 2009



Q: Why is AAA mortality falling?

A: Operative results are improving

- Mortality from ruptured AAA repair has fallen from 42.5% in 2005 to 28.5% in 2009

AAA Screening Programs

- Randomized trials of screening have demonstrated a reduction in AAA-related deaths of almost 50% within 10 years*
- UK National AAA Screening Program (2009)
- Gloucestershire AAA Screening Program has been running for 20 years

Cosford P, Leng G. Screening for abdominal aortic aneurysm. Cochrane Database Syst Rev 2007; 2: CD002945

Gloucestershire AAA Screening Program 1990-2009

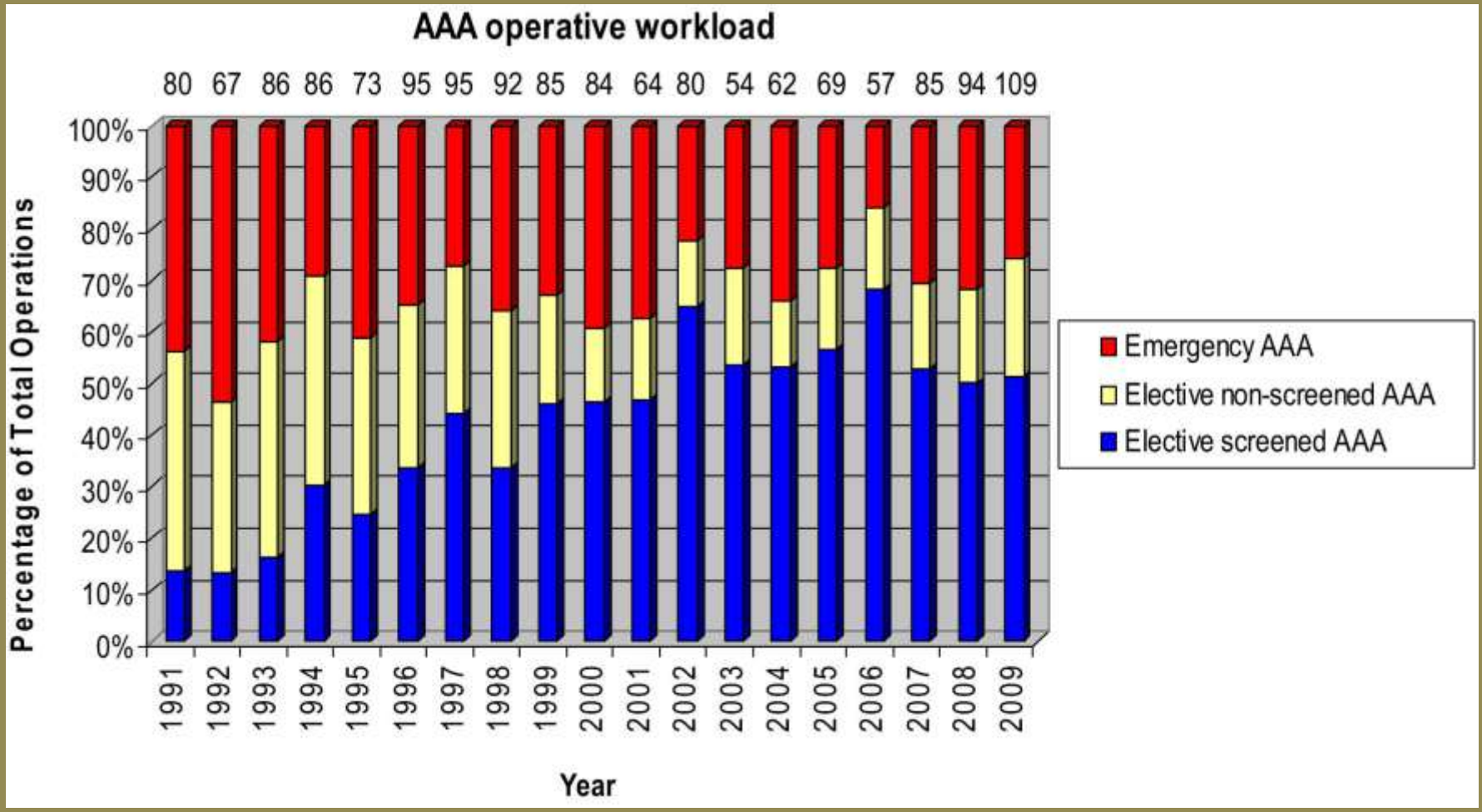
65 yrs Males invited for USS

Attendance rate = 85%

AAA <2.5 cm: Discharged

AAA >2.5 cm: Surveillance

Gloucestershire AAA Screening Program 1990-2009

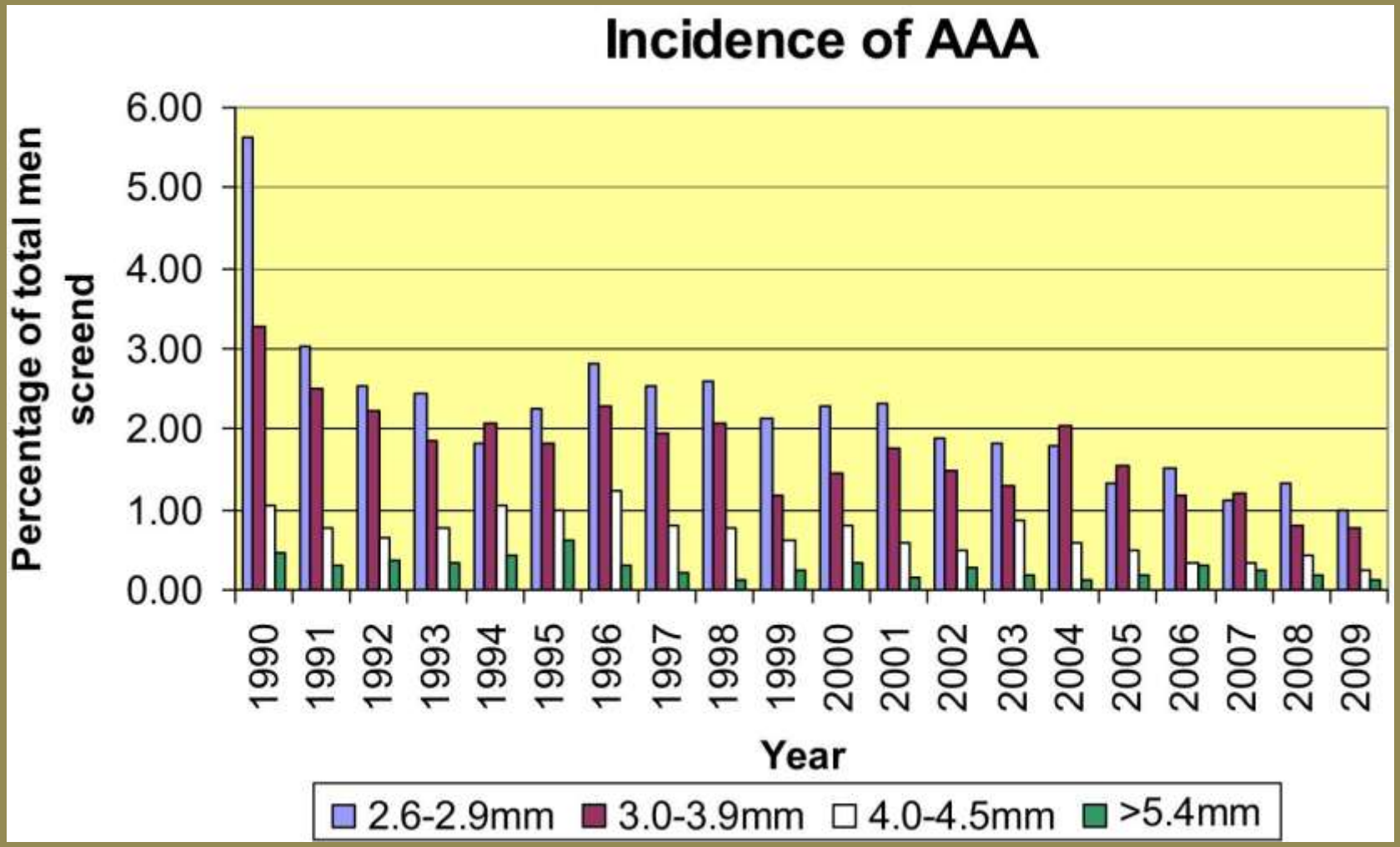


Gloucestershire AAA Screening Program 1990-2009

Mortality rate post elective AAA repair

	Number	30-day Mortality
Screened	631	3.9%*
Non-screened	381	6.7%
Total	1012	4.3%

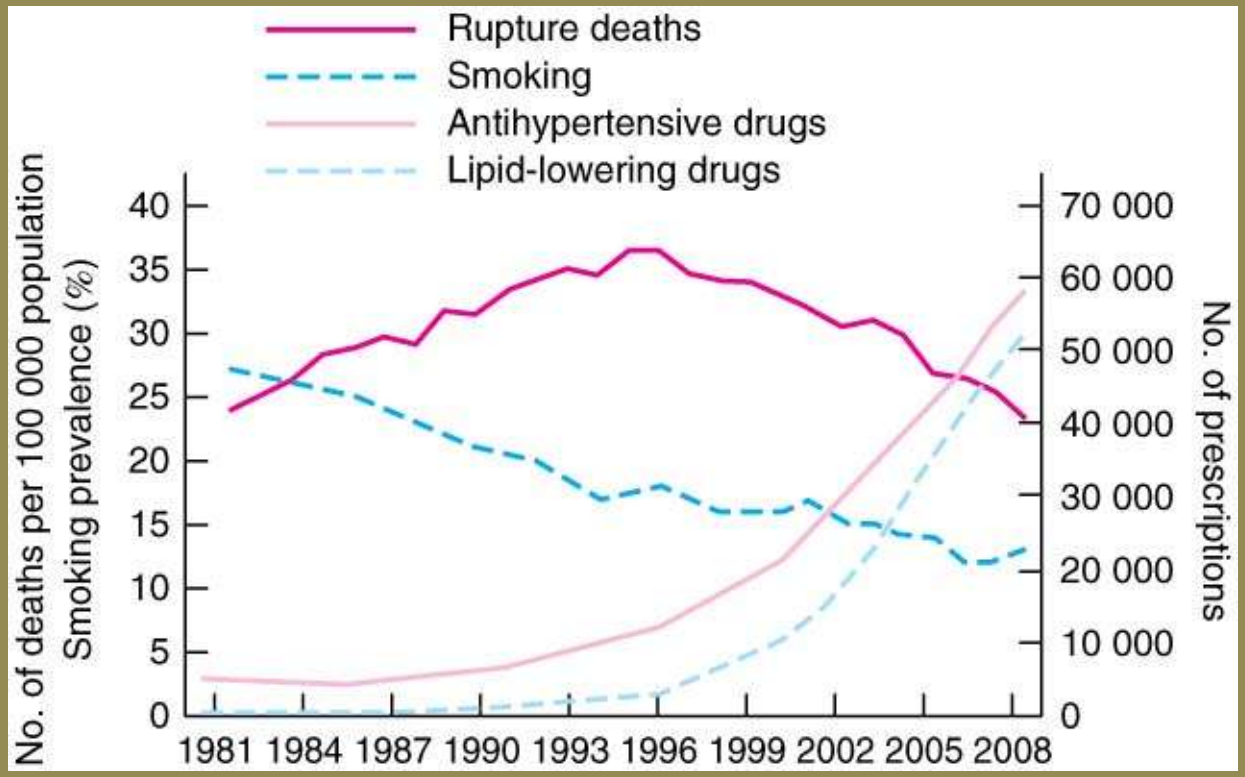
Gloucestershire AAA Screening Program 1990-2009



Aorta >2.9 cm 1990: 4.8% 2009: 1.1%

Q: Why is aortic diameter reducing?

Q: Why is aortic diameter reducing?
A: Improved “medical management”?



Anjum et al. *British Journal of Surgery* 2012; 99: 637-645

Smoking and AAA

AAA around 7 times more likely in current smokers than age-matched non-smokers

AAA three times more likely in ex-smokers

Strahan DP, *BJS* 1991; 78: 401-404

Sir Richard Doll and Sir Richard Peto

Aortic aneurysm mortality rate at age 50-79 years: 2000s

Rates are 3-year rolling averages, standardised for age

Lung cancer mortality rate at age 50-79 years: 1950s-2000s

Rates are 3-year rolling averages, standardised for age

AAA: Summary

- A decreasingly important cause of death in men
- Female deaths unchanged
- Associated with classical cardiovascular risk factors
- Incidence is falling for various reasons
  - Smoking cessation, improved medical care, screening, incidental diagnoses