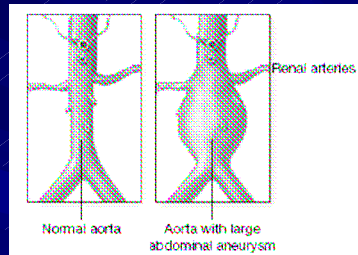


Abdominal Aortic Aneurysm



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A Case

- Ms. Ima Bolgin, age 54, \$1.2 million, sent to you for review. Smoker, ½ pack per day
- 2011 - Incidental 3.8 cm abdominal aortic aneurysm per CT in emergency department (abdominal pain), one year follow-up is 4.0 cm
- Cholesterol controlled on statin x 5 years
- Mild diabetes, glycohemoglobin of 6.8
- Normal EKG, history & exam
- Assess the risk!

Abdominal Aortic Aneurysm AAA in Context

- Defined as aortic dilation 1.5x the diameter of the adjacent normal aorta, at the level of the renal arteries, translating to >3.0 cm
- Related to, but likely not caused by atherosclerosis
- Inflammatory component
- 13th leading cause of death in USA

Abdominal Aortic Aneurysm AAA in Context

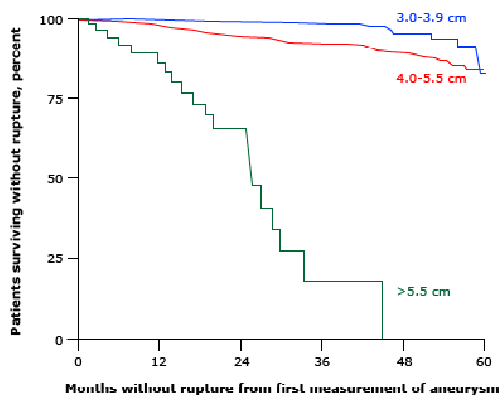
- Now treated with surgical resection or endovascular sleeve
- Rupture based on size, rate of enlargement
- Rupture = Death in ~80%
- All cause mortality related to aneurysmal rupture, perioperative death and personal comorbidities
- Interestingly, diabetes does not seem to contribute to rupture

Rupture Risk Based on Size

- < 4.0 cm – 0% per year
- 4.0-4.9 cm – 0.5-5% per year
- *5.0-5.9 cm - 3-15% per year
- 6.0-6.9 cm – 10-20% per year
- 7.0-7.9 cm – 20-40% per year
- >8 cm – 30-50% per year
- * cutoff for intervention

Joint Council of the American Association for Vascular Surgery and Society for Vascular Surgery

AAA rupture primarily occurs in larger aneurysms



Risk of rupture of an abdominal aortic aneurysm (AAA) over time according to the first measurement of aneurysm diameter in 1792 men and 465 women. The risk of rupture increased markedly in aneurysms larger than 5.5 cm in diameter.





Data from: Powell, JT, Greenhalgh, RM, *N Engl J Med* 2003; 348:1895.

UpToDate

Aneurysm Growth

- Rate of expansion is usually about 0.5 cm per year, and an increase of 0.5 cm over 6 months is considered important
- Rapid expansion is an indication for repair

Risk Factors for AAA

- Smoking 
- Gender  (men 4x more likely to have AAA)
- Age >65 
- Uncontrolled hypertension 

More AAA cases - Screening Recommendations for AAA

- The US Preventive Services Task Force (USPSTF) recommends a one-time ultrasound screening for AAA in men between 65 and 74 years of age who have ever smoked. The USPSTF advises against routine screening in women and concludes that insufficient evidence exists to advocate for or against routine screening in men 65 to 74 years who have never smoked.

More AAA cases

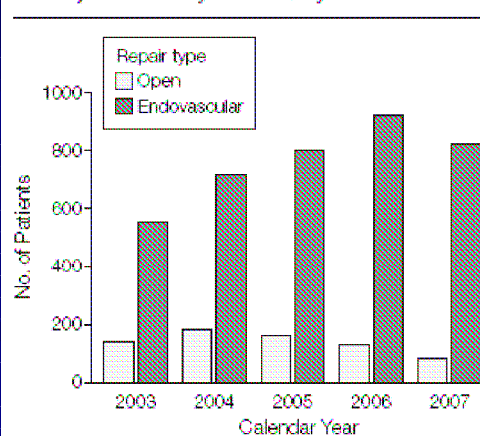
- Most emergency departments in the US have a CT scanner within the department, resulting in many more AAAs being found incidentally
- Number of CT scans completed has tripled within the past 15 years

Treatment Available for AAA

- The UK EndoVascular Aneurysm Repair (EVAR) trials: randomised trials of EVAR versus standard therapy.
 - Health Technology Assessment 2012, <http://www.hta.ac.uk/fullmono/mon1609.pdf>
- Open Repair – 30 day mortality ~4%
- EVAR – 30 day mortality ~2%
- Smoking cessation, blood pressure control reduces risk of rupture

EVAR vs. Open Repair

Figure 1. Numbers of Open and Endovascular Repairs of Abdominal Aortic Aneurysm in Study Cohort, by Calendar Year

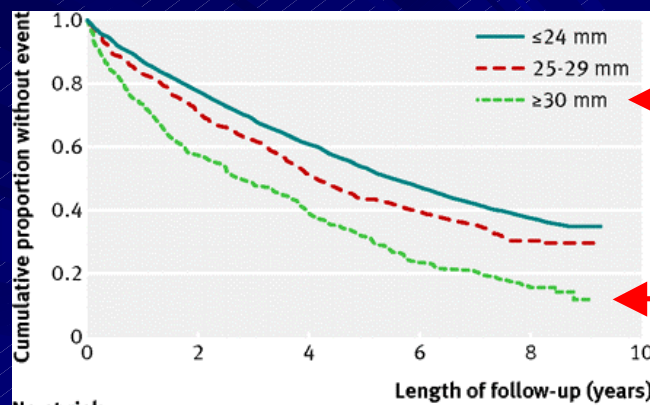


JAMA April 18, 2012

Morbidity and Mortality by Aortic Size

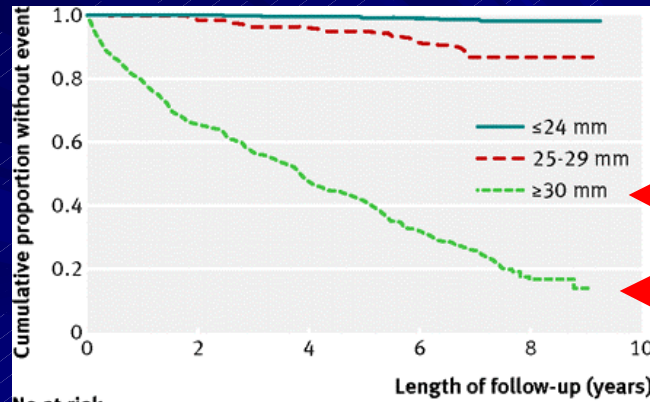
- Long term outcomes in men screened for abdominal aortic aneurysm: prospective cohort study
 - BJM, May 2012
- Scottish men screened for AAA 2001-2004, followed into 2010

Hospitalized for a Circulatory Event



No at risk						
	0	2	4	6	8	10
≤24 mm	6252	4831	3780	2951	775	
25-29 mm	604	427	307	239	46	
≥30 mm	398	226	156	93	20	

Hospitalized for the Aneurysm



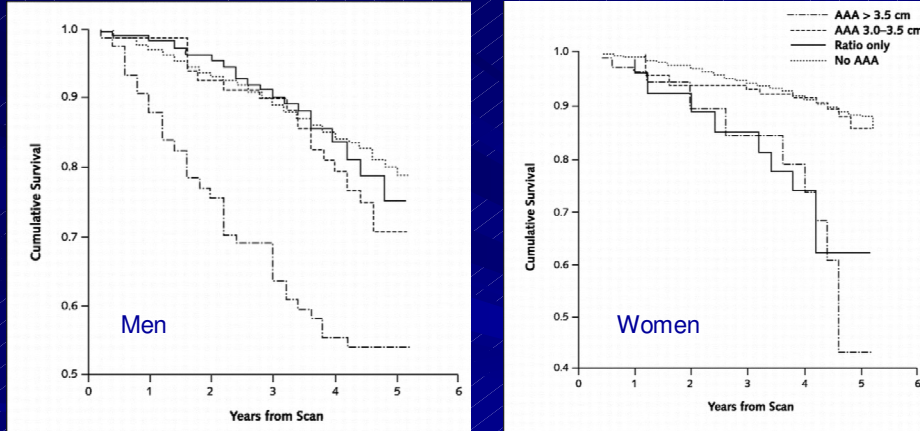
No at risk	0	2	4	6	8	10
≤24 mm	2503	2498	2486	2470	739	
25-29 mm	228	224	218	208	45	
≥30 mm	332	216	156	106	19	

Overall Mortality with AAA

- Mortality most significant in men > 65 years
- Aneurysmal Death 20x (repair mitigates this)
- Cancer 3x
- Other vascular disease 2x
- All cause 2x

BMJ, May 4, 2012

Similar Death Rates in US study



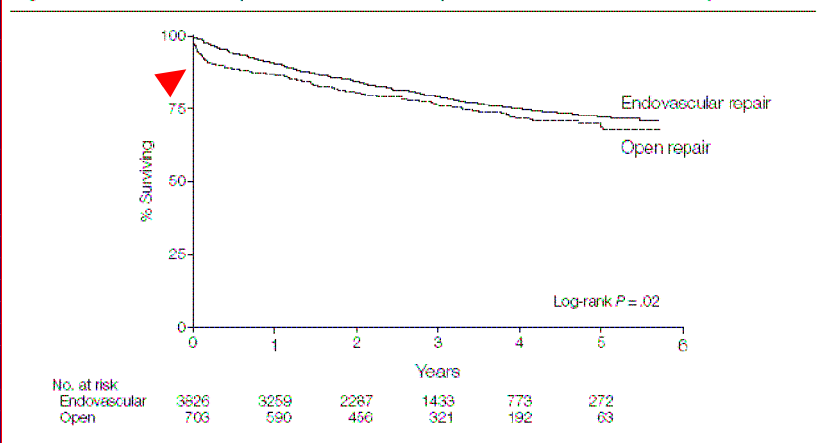
Cardiovascular Disease and Mortality in Older Adults with Small Abdominal Aortic Aneurysms Detected by Ultrasonography: The Cardiovascular Health Study. *Annals of Int Med* 6 February 2001

Mortality After Repair

- Comparison of Long-term Survival After Open vs Endovascular Repair of Intact Abdominal Aortic Aneurysm Among Medicare Beneficiaries - JAMA

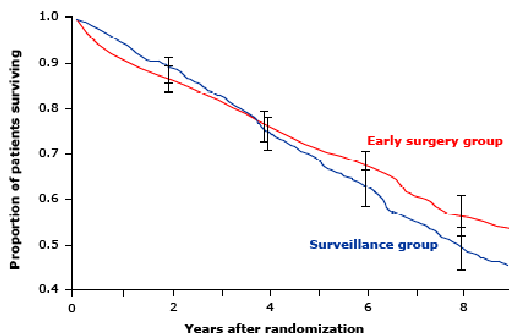
Similar Mortality After Recovery

Figure 2. Survival After Open vs Endovascular Repair of Abdominal Aortic Aneurysm



Median follow-up time was 2.8 years (interquartile range, 2.7 years) for open repair and 2.4 years (interquartile range, 1.3 years) for endovascular repair.

Patients undergoing elective repair of an abdominal aortic aneurysm do better at eight years



In the UK Small Aneurysm trial of 1090 patients with a medium-sized abdominal aortic aneurysm, there is no difference in survival with early elective surgery compared with initial surveillance. However, by eight years patients undergoing early surgery have a significantly better outcome than those in the surveillance group ($P=0.05$). I bars represent the 95 percent confidence intervals for the point estimates.

Data from: *The United Kingdom Small Aneurysm Trial Participants. N Engl J Med 2002; 346:1445.*



AAA Underwriter's Pain Scale



As aortic size increases, the underwriter must consider rate of progression, considerations and risks for intervention. The larger the aneurysm, the more discomfort the underwriter feels.

Underwriting Considerations

- Use the Underwriter's Pain Scale! (just kidding)
- High risk of intervention
- Review other cardiovascular risk factors
- Check for COPD

Our Case

- For Ima Bolgin:
 - AAA: when could you expect her to need intervention?
 - Tobacco affects rate of expansion
 - Diabetes control as part of overall risk
 - Base risk is about 2x

- Thank You!

