23RD INTERNATIONAL EXPERTS SYMPOSIUM

CRITICAL ISSUES in aortic endografting 2019

LIVERPOOL UNITED KINGDOM MAY 23-24

PERSONALISED SURVEILLANCE

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LIVERPOOL

www.critical-issues-congress.com

Disclosure

Speaker name:

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- ☐ **I have the following potential conflicts of interest to report:**
- ☐ ~~Consulting~~
- ☐ ~~Employment in industry~~
- ☐ ~~Shareholder in a healthcare company~~
- ☐ ~~Owner of a healthcare company~~
- ☐ **Other(s) : Almost certainly influenced by the support & training industry have provided for me.**

Need for Surveillance

vs

The problem(s)

Look at the proposed solutions

Personalisation

The Problem(s)

Surveillance = Screening

W.H.O screening criteria

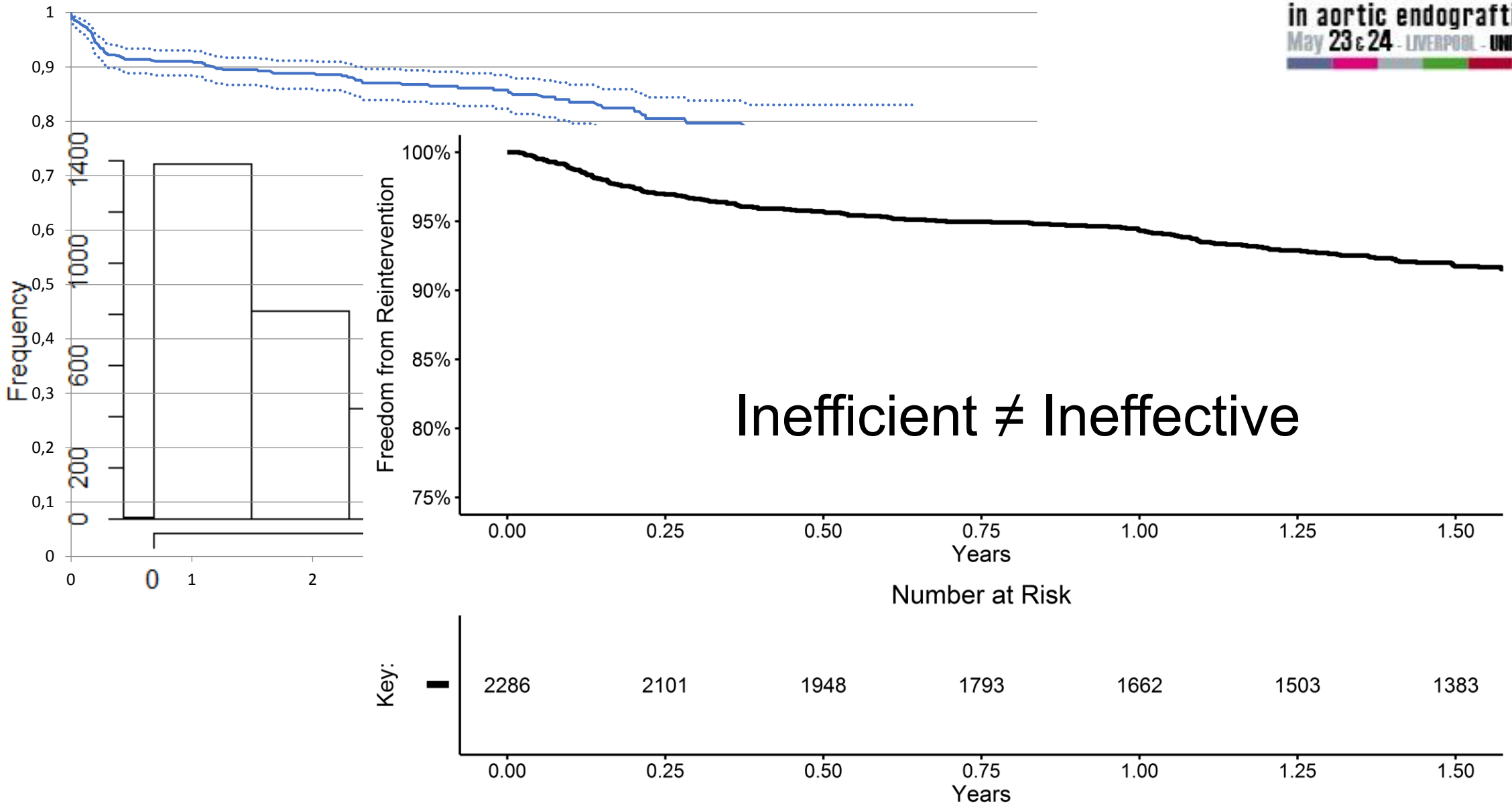
1. The condition sought should be an important health problem.
2. There should be an accepted treatment for patients with recognised disease.
3. Facilities for diagnosis and treatment should be available.
4. There should be a recognisable latent or early symptomatic stage.
5. There should be a suitable test or examination.
6. **The test should be acceptable to the population.**
7. The natural history of the condition, including development from latent to declared disease, should be adequately understood.
8. There should be an agreed policy on whom to treat as patients.
9. **The cost of case-finding (including diagnosis and treatment of patients diagnosed) should be economically balanced in relation to possible expenditure on medical care as a whole.**
10. Case-finding should be a continuing process and not a 'once and for all' project.

Table 2. Compliance and re-intervention in EVAR-SCREEN centres

Centre	Compliant (%)	No. of complications	Mean Follow up Index (FUI), compliant	Mean FUI, non-compliant	Compliant without complication (%)	Compliant with complications (%)	Fisher's exact test
1	88 ($n = 222/253$)	36	0.97	0.66	89	78	0.06
2	81 ($n = 94/116$)	31	0.95	0.45	80	84	0.79
3	79 ($n = 41/52$)	8	0.94	0.44	80	75	1.00
4	81 ($n = 52/64$)	15	0.94	0.53	78	93	0.27
5	76 ($n = 260/342$)	88	0.95	0.24	72	88	0.004
6	62 ($n = 31/50$)	16	0.89	0.59	59	69	0.55
7	62 ($n = 129/209$)	15	0.83	0.49	62	60	1.00
8	63 ($n = 115/184$)	53	0.95	0.45	65	57	0.32
9	26 ($n = 12/46$)	10	0.67	0.39	14	70	0.001
10	7 ($n = 7/98$)	31	0.91	0.32	4	13	0.20

EVAR = endovascular aneurysm repair.

https://doi.org/10.1016/j.ejvs.2018.10.032

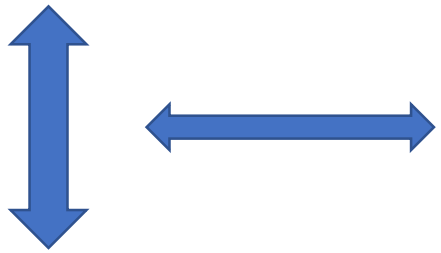

1
0,9
0,8
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0
Frequency
1400
1000
600
200
0
0
1
2
100%
95%
90%
85%
80%
75%
Freedom from Reintervention
0.00
0.25
0.50
0.75
1.00
1.25
1.50
Years
Inefficient ≠ Ineffective
Number at Risk
Key:
2286
2101
1948
1793
1662
1503
1383
0.00
0.25
0.50
0.75
1.00
1.25
1.50
Years

Surveillance Is Inefficient

inefficient

failure to make the best use of time or resources

Blanket surveillance regimen for all patients despite huge variations in risk between patients and over time.



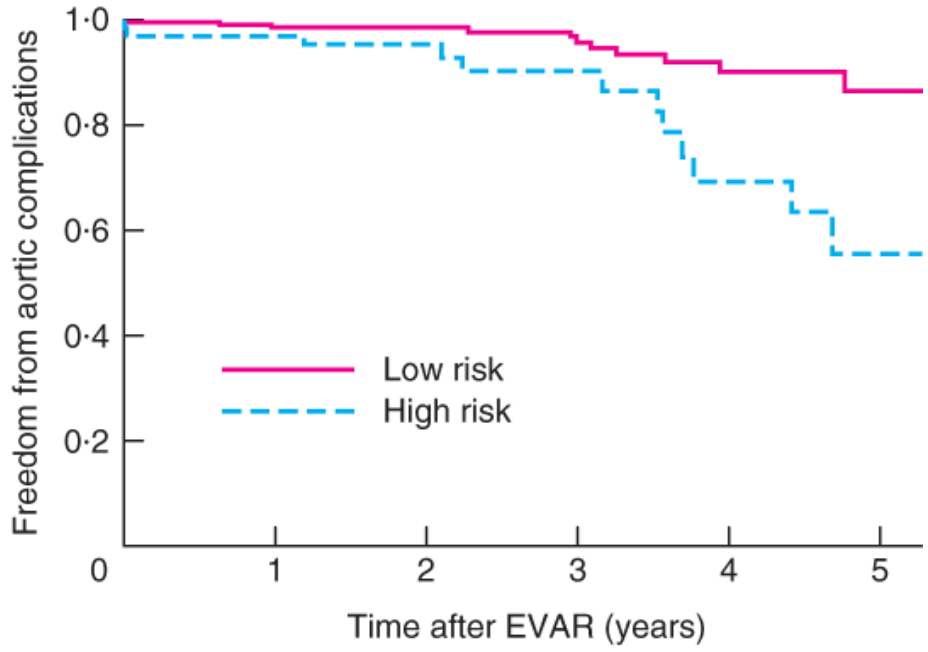
Clinicians

Patient compliance is variable but generally poor

Look at the proposed solutions

SGVI

(0·03675×maximum sac diameter) +
(0·05009×largest common iliac diameter)



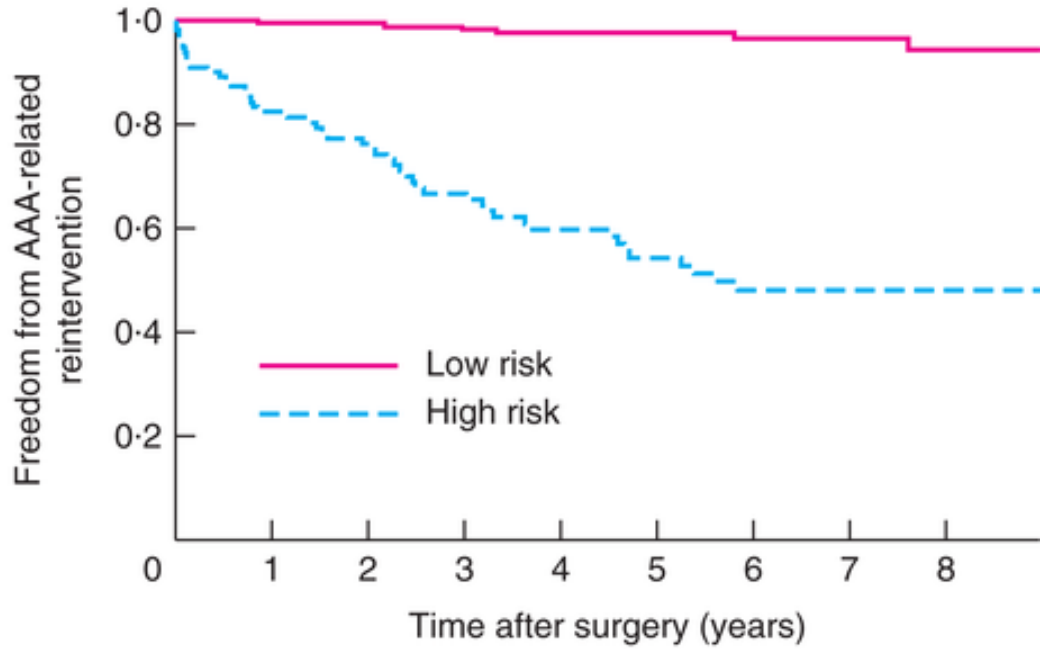
No. at risk						
Low risk	220	191	141	91	49	21
High risk	66	57	43	28	13	4

> 3·76571 High Risk

BJS, Volume: 100, Issue: 10, Pages: 1302-1311, First published: 25 June 2013, DOI: (10.1002/bjs.9177)

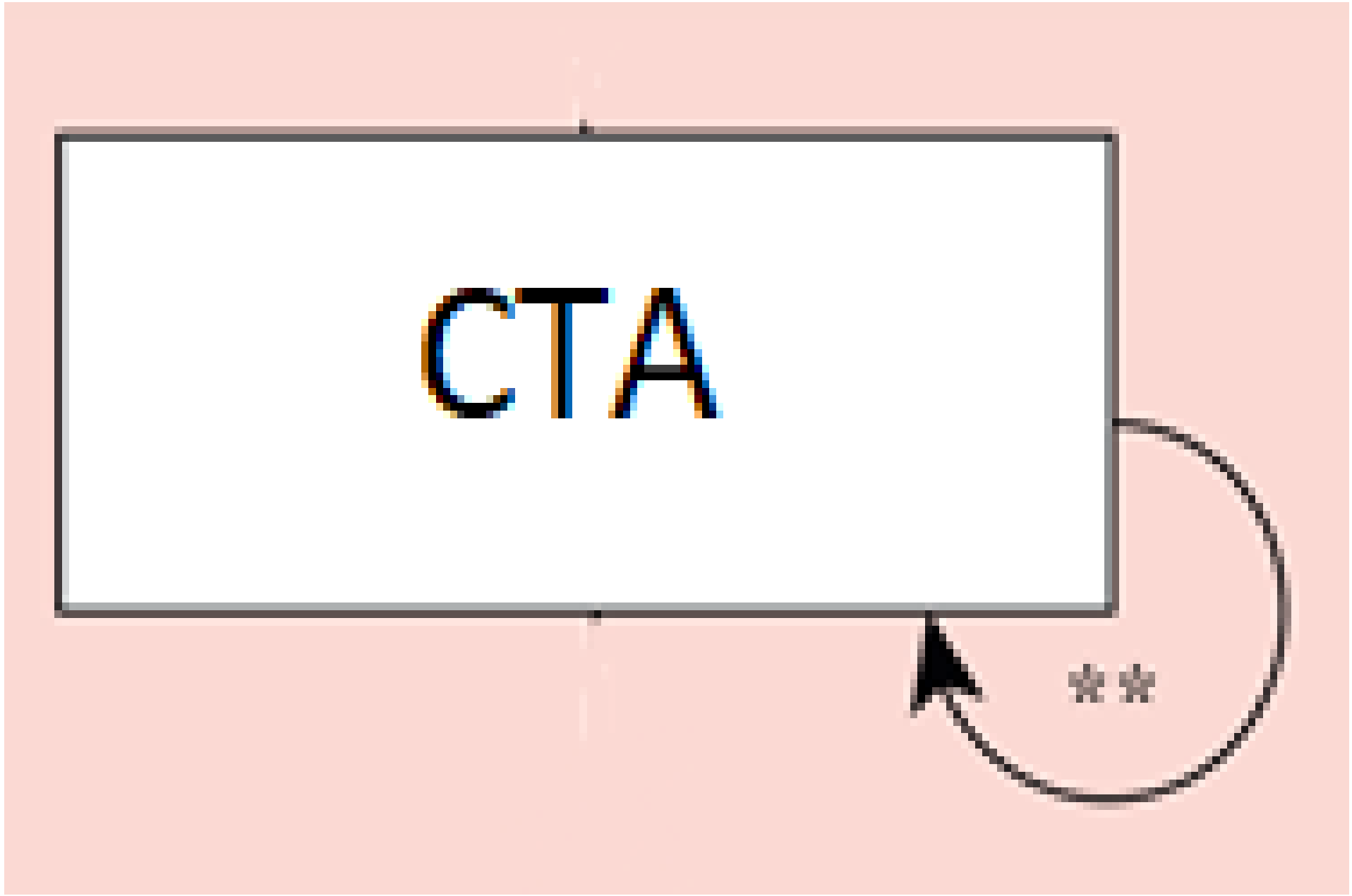
"Swe-dam" VI

All sealing zones at least 10 mm and no endoleak on first post-op CTA



No. at risk					
Low risk	212	190	138	98	44
High risk	114	83	61	38	18

BJS, Volume: 105, Issue: 6, Pages: 709-718, First published: 26 March 2018, DOI: (10.1002/bjs.10766)


CTA
**

Personalisation

Personalised Surveillance

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personalise

design or produce something to meet someone's individual requirements

personalised medicine

the process by which people with long-term illnesses or conditions receive support / treatment that is tailored to their individual needs and wishes

Group stratification of risk - improves overall efficiency but does not take into account individual wishes

Intuitively it is unlikely to have an effect on compliance

Personalised Surveillance

To personalise surveillance:

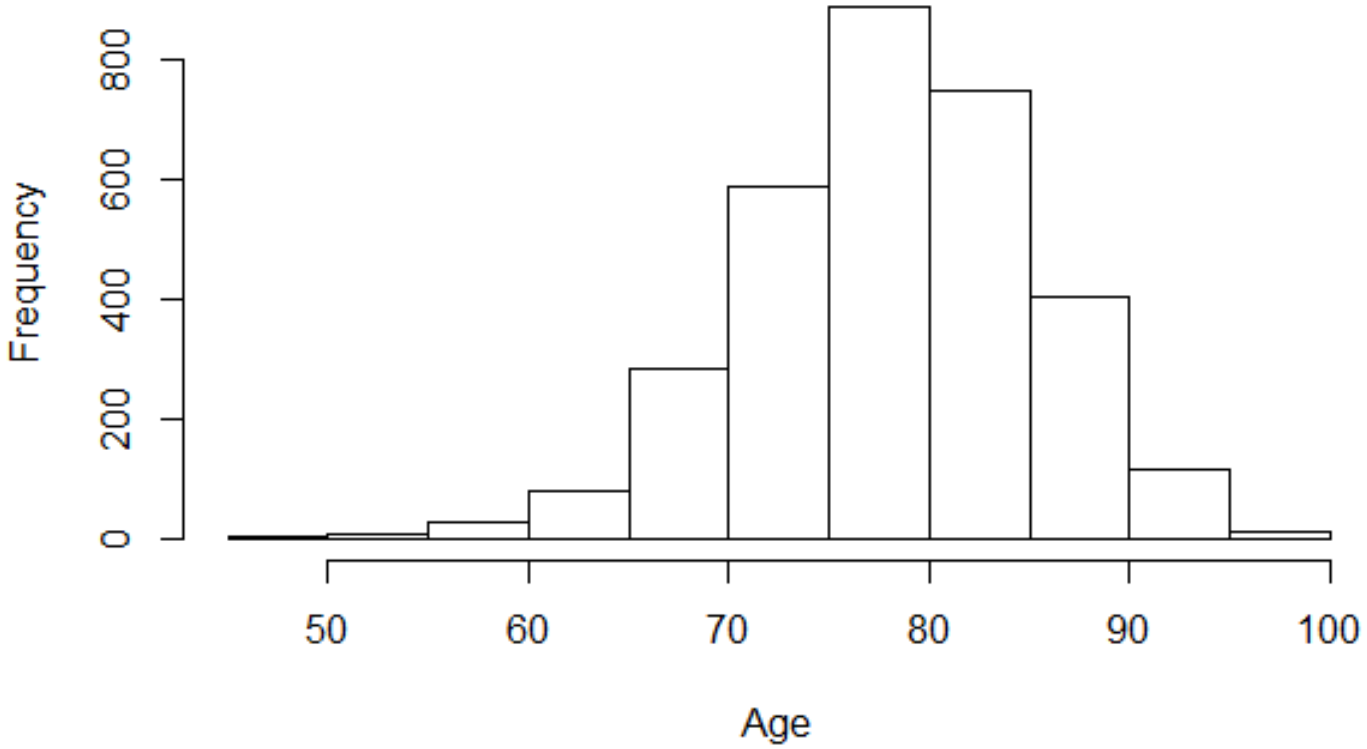
1. Need to predict future individual risk at different points in surveillance (not just at operation)
2. Find a way to accurately convey that risk to the patients
3. Adopt a personalised approach to surveillance with patients involved in their decisions

Personalised Surveillance

All infra-renal EVAR surveillance visits in our institution between 2008-2015 reviewed.

Complete data on 3,160 Visits

In 797 individual patients (Mean= 3.9 visits/patient)



Male: 2766

Female: 394

Poisson Model Creation

Manually extracted variables from Colour Duplex & Plain Film x-ray reports

CDU

Diagnostic Scan (True/False)

Non-diagnostic (Factor)

Max AAA Size (mm)

Max Iliac Size (mm)

Heterogenous ‘sac’ Thrombus (True/False)

Endoleak Present (True/False)

Endoleak Type Ia/Ib/II/III/Unknown (True/False)

AXR

Abnormality(True/False)

Migration (True/False)

Migration (Factor)

Endoleak Flow direction (Free Text)*

Limb Issue (True/False)

Effected Limb (Left / Right)*

Limb (Occlusion/Stenosis/Normal)*

Limb Min PSV (m/s)*

Limb Max PSV (m/s)*

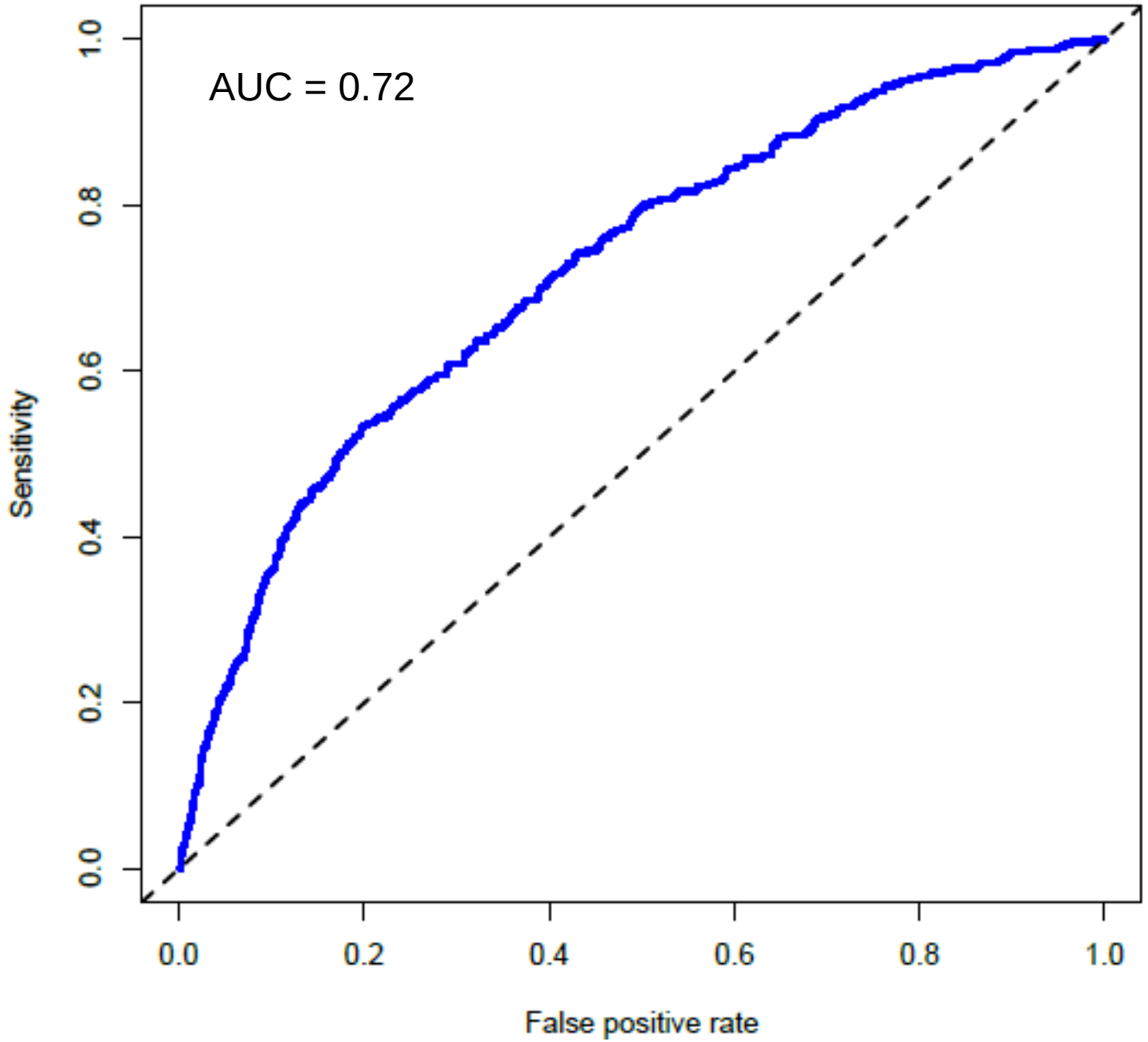
Thrombus in Lumen (True/False)

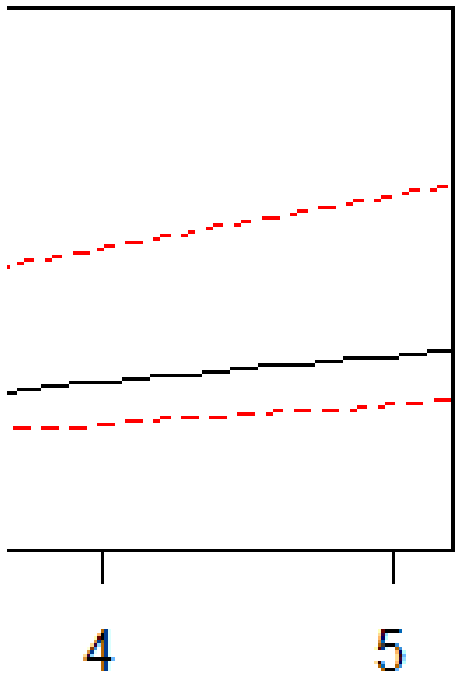
Proximal Dilation (True/False)

Structural Failure (Factor)

Limb Kink (True/False)

Patient age (at operation) – Pre-op Diameter – Time since operation – Previous Secondary Intervention


AUC = 0.72
Sensitivity
False positive rate
0.0
0.2
0.4
0.6
0.8
1.0


4
5

Conclusions

- It is possible to accurately predict individual risk of requiring secondary intervention over time
- Reproducible on each surveillance visit
- Need to reconsider the methodology and system we use to perform surveillance with much more patient involvement
- Interval to next surveillance visit based on patients tolerance of risk

  This could render each visit equally likely to trigger a Secondary intervention.