

Improving Quality of Care for Patients with Heart Valve Disease

**The Heart Team
The Heart Valve Clinic**

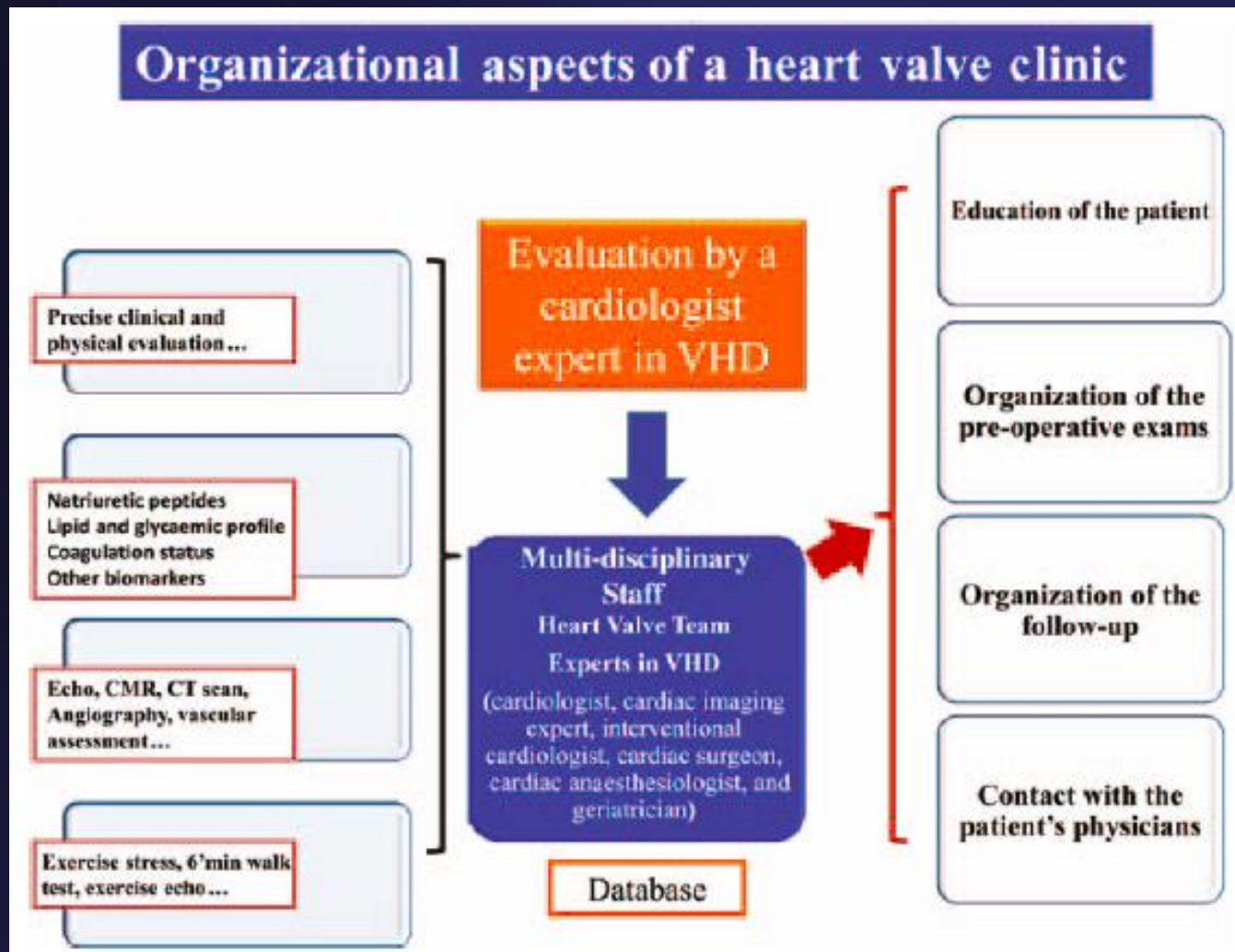
Raphael Rosenhek

Department of Cardiology
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Eurovalve 2016
Brussels, March 10th, 2016

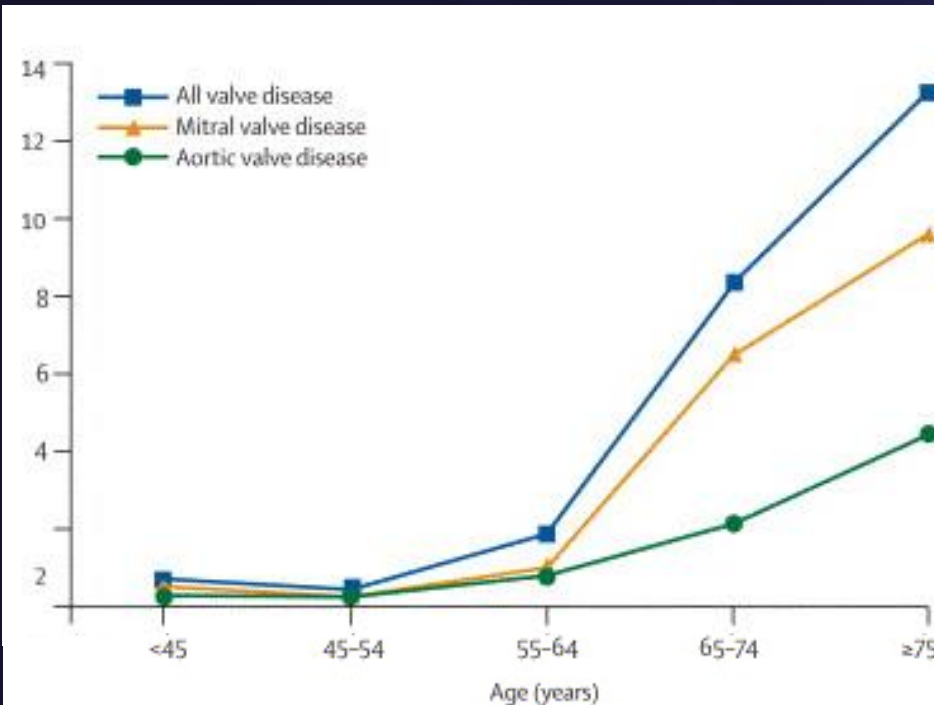
Heart Valve Clinic

Functioning of the Advanced Valve Clinic



Valvular Heart Disease Prevalence

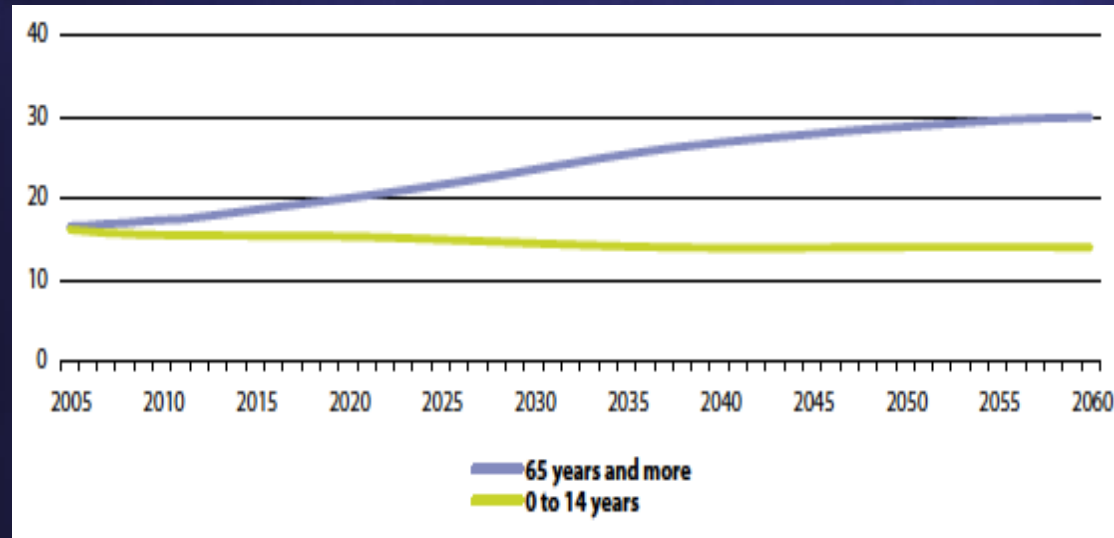
Prevalence of moderate or severe AS (%)



Population based studies

Nkomo V et al.
Lancet 2006;368:1005-1011

Proportion of the population aged 0-14 and ≥65 years
EU-27 (% of total population)

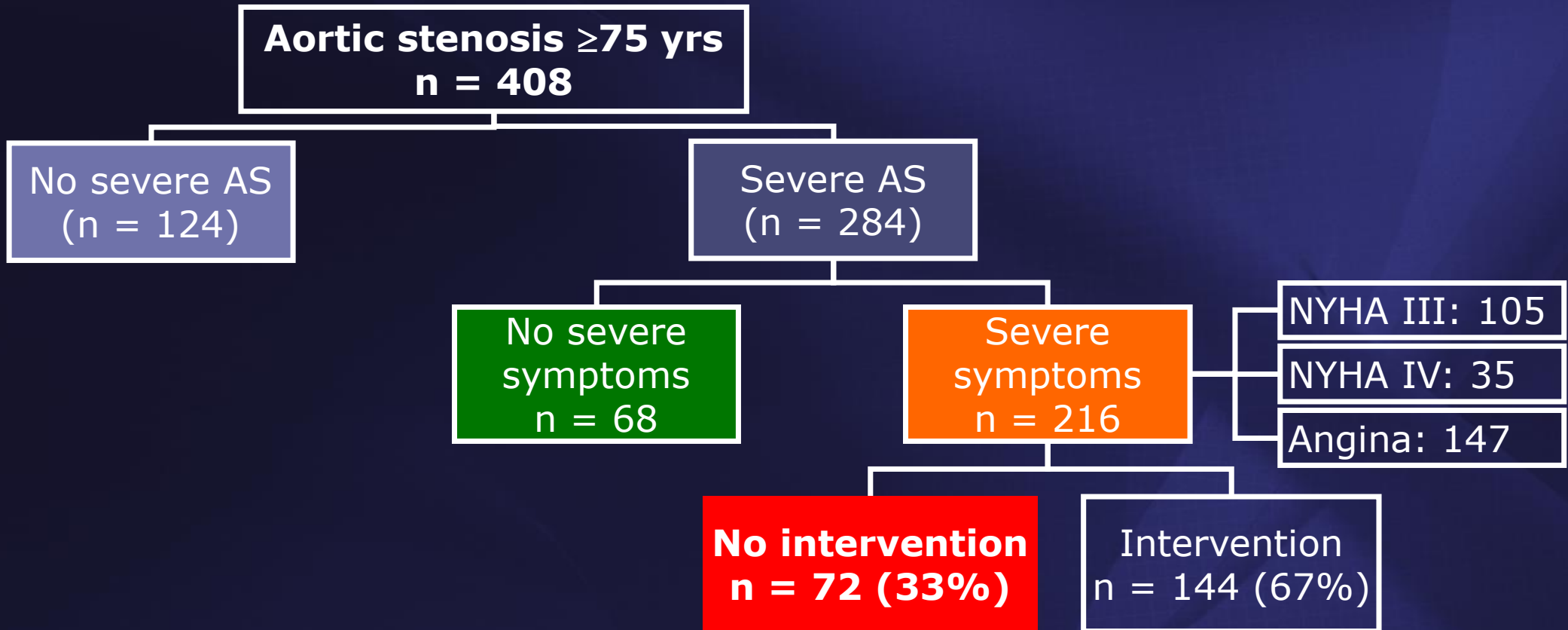


Projection

Eurostat 2010

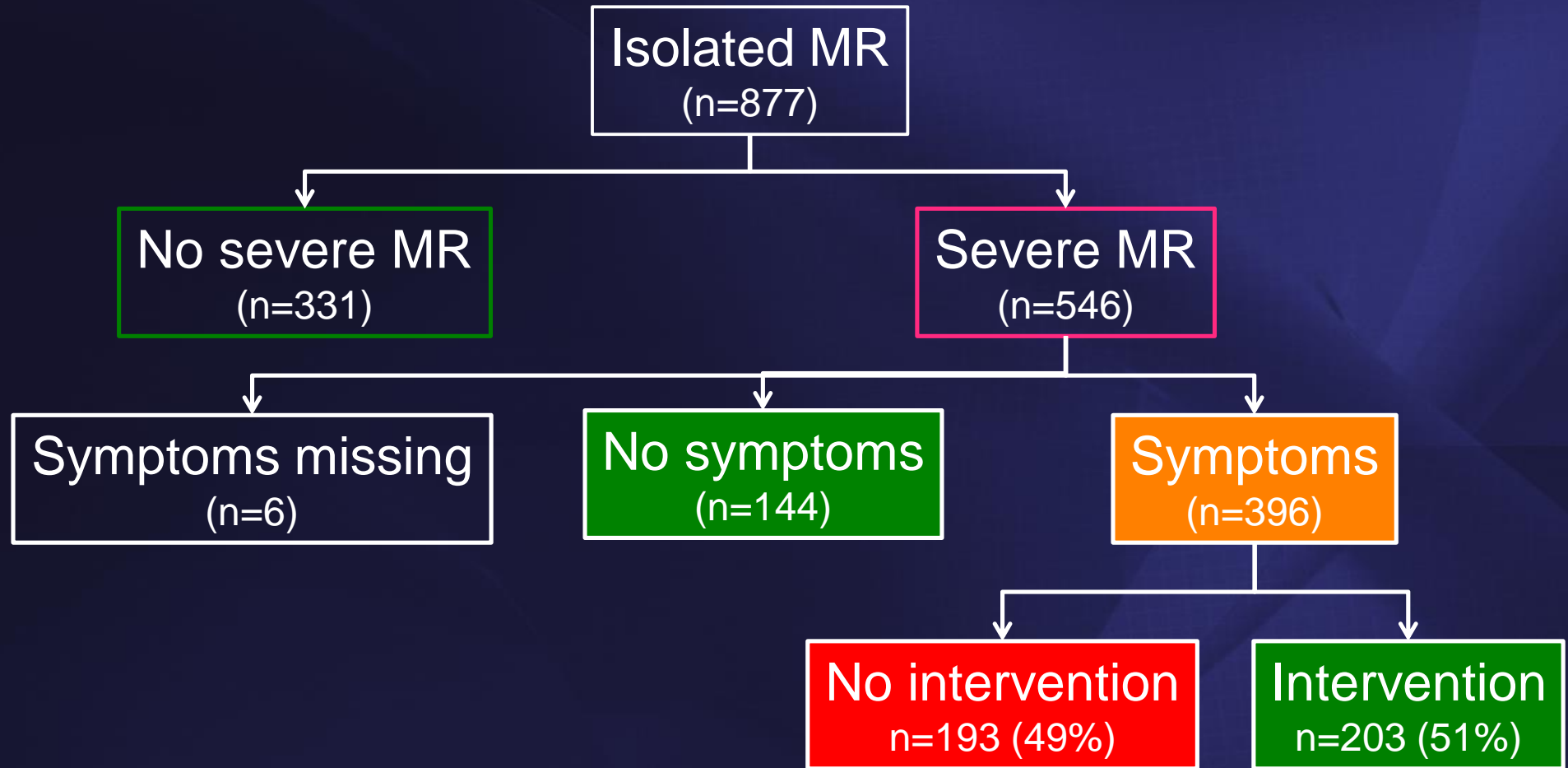
EuroHeart Survey

Undertreatment of Aortic Stenosis



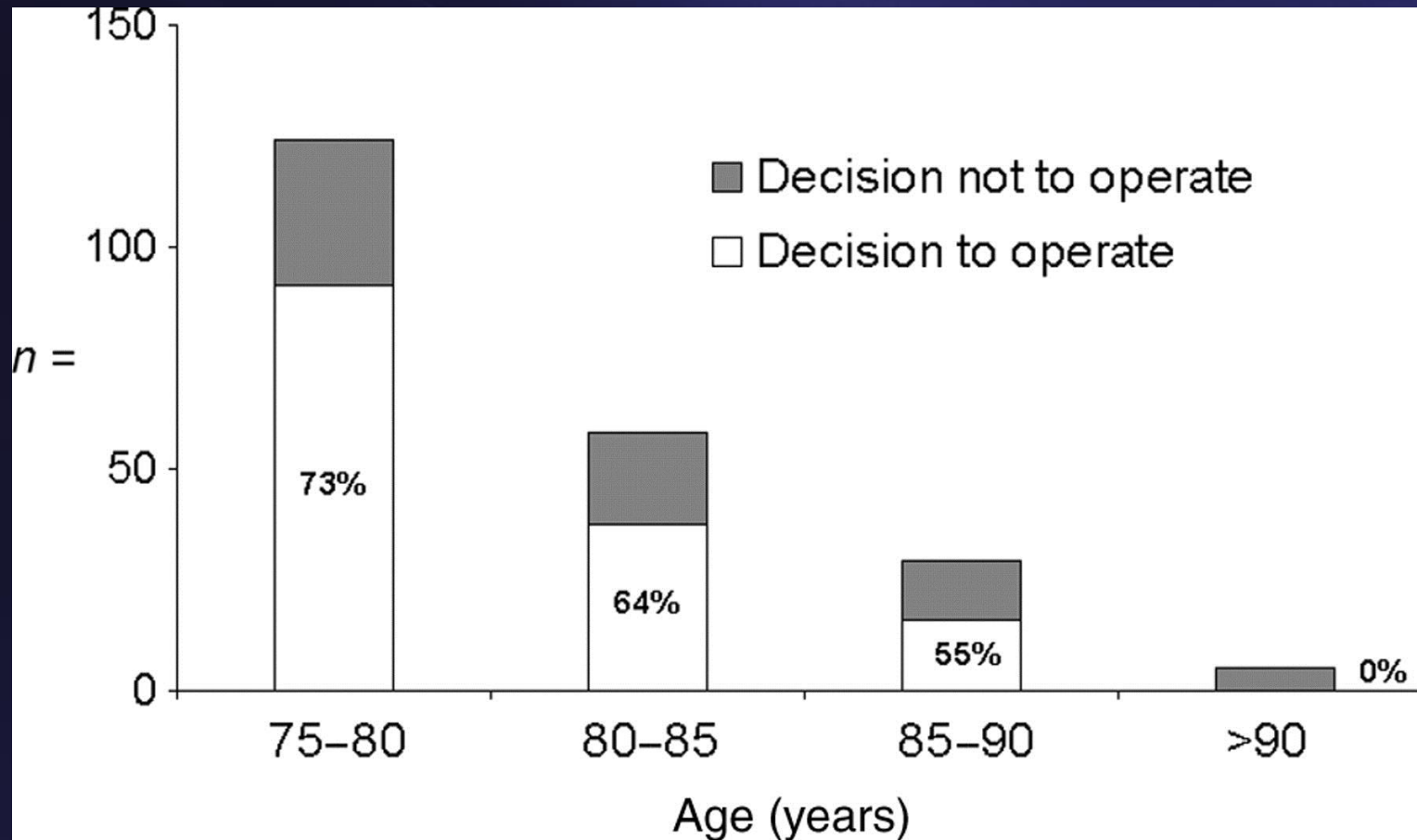
Timing of Intervention in Mitral Regurgitation

Denial of Surgery in Symptomatic Pts



Aortic Valve Disease - Undertreatment

Why are patients denied Surgery? Age



Life Expectancy in Years

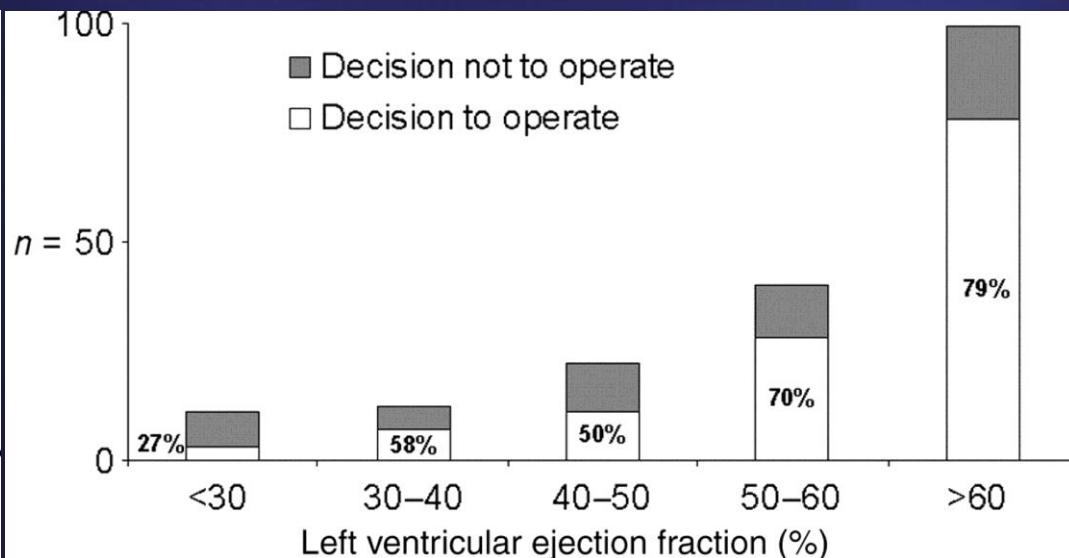
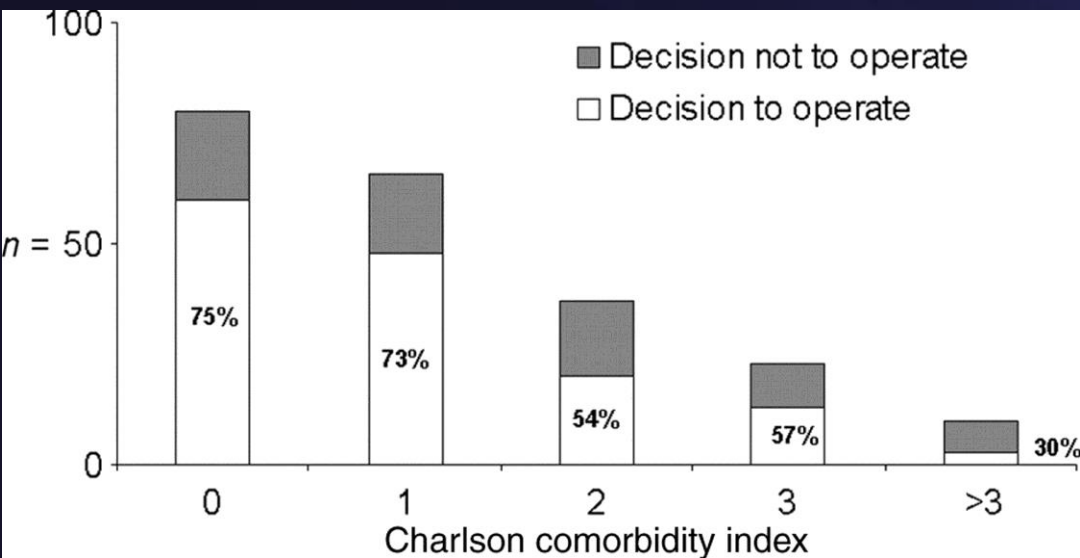
Europe and US

	EU			US		
Age	Overall	Men	Women	Overall	Men	Women
65	18.9	17.0	20.5	18.5	17.0	19.7
70	15.2	13.5	16.5	14.9	13.6	15.9
75	11.8	10.5	12.7	11.6	10.5	12.3
80	8.8	7.9	9.4	8.7	7.8	9.3
85	6.5	5.9	6.8	6.4	5.7	6.8
90				4.6	4.1	4.8
95				3.2	2.9	3.3
100				2.3	2.0	2.3

ESC Working Group on Valvular Heart Disease Position Paper.
 Assessing the Risk of Interventions in Patients with Valvular Heart Disease
Rosenhek R et al. Eur Heart J 2012;33:822-828

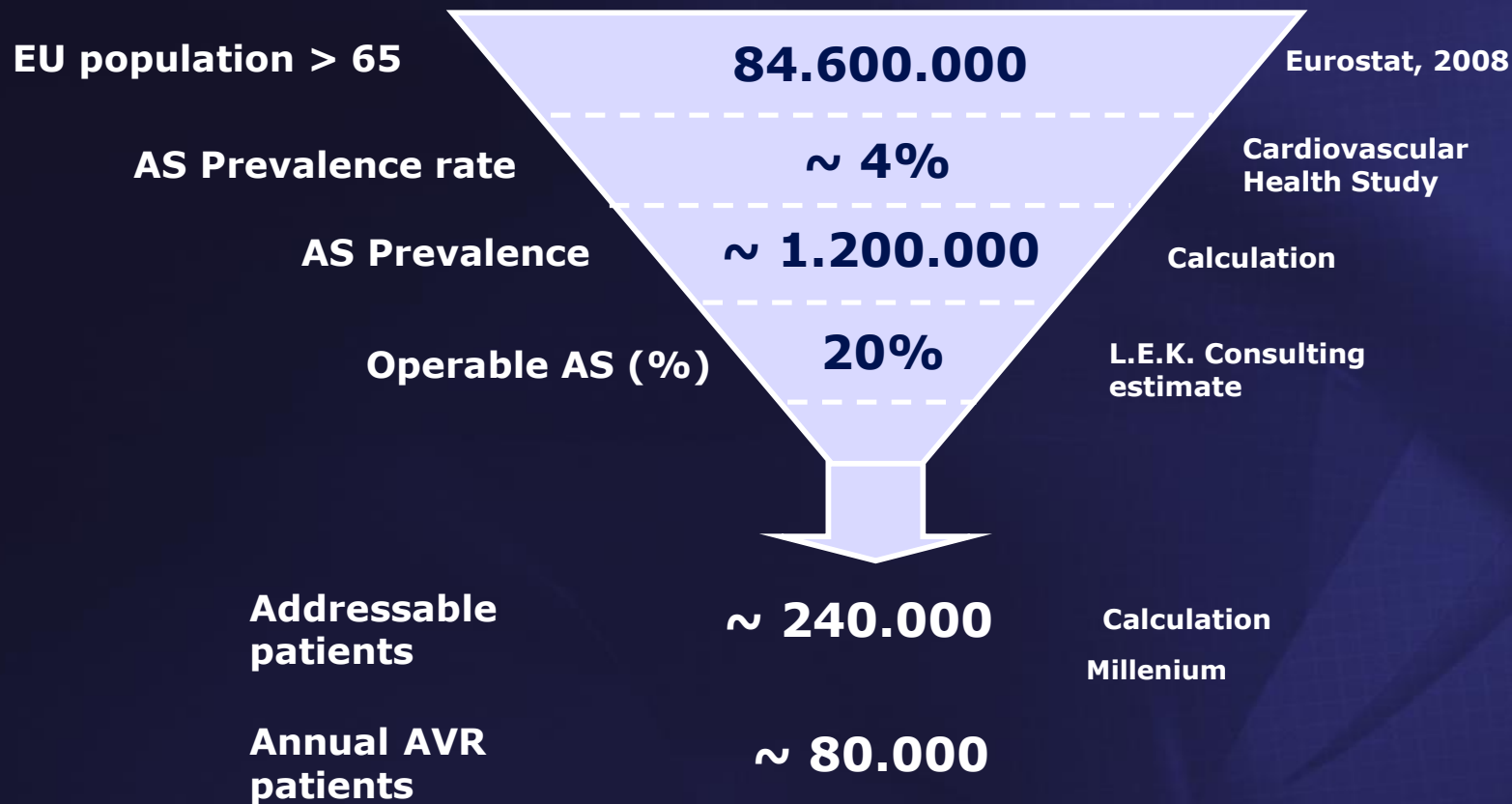
Aortic Valve Disease - Euroheart Survey

Why are patients denied Surgery?



Estimation of Undertreated Pts (>65yrs)

Aortic Stenosis



Severe Aortic Stenosis

Inappropriate Delay in Referral and Symptom Reporting

- 422 patients for aortic valve surgery
- 48% in NYHA class III and IV
- Mean time from referral to AVR 112 days

Waiting Times for Aortic Stenosis Surgery

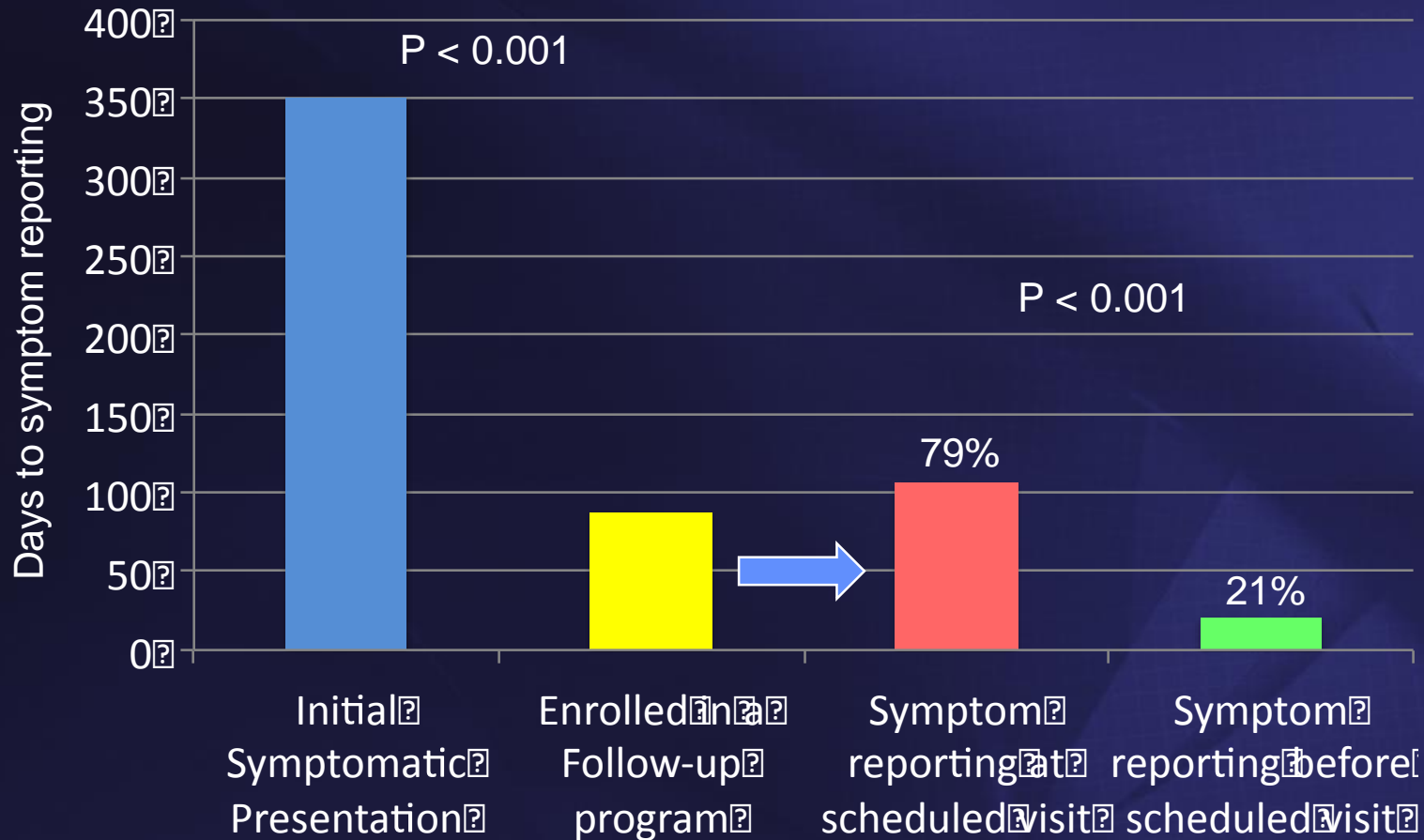
Assessing Practice

All residents of British Columbia on a Waiting List Between 1991 and 2000

Interval	Status	n	Median	25th percentile	75th percentile
Booking to surgery ^{*†}	Total	2187	75	42	127
	Urgent	1709	67	37	114
	Elective	478	107	63	170
Procedure to booking	Total	2087	62	20	134
	Urgent	1632	62	20	129
	Elective	455	63	21	150
Internist to testing [‡]	Total	1736	24	8	67
	Urgent	1349	23	8	67
	Elective	387	26	8	65
Primary care physician to internist	Total	1619	22	0	48
	Urgent	1259	22	10	48
	Elective	360	23	10	47.5
Primary care physician to surgery ^{*†}	Total	1581	243	148	397
	Urgent	1229	228	139	371
	Elective	352	278	189	468

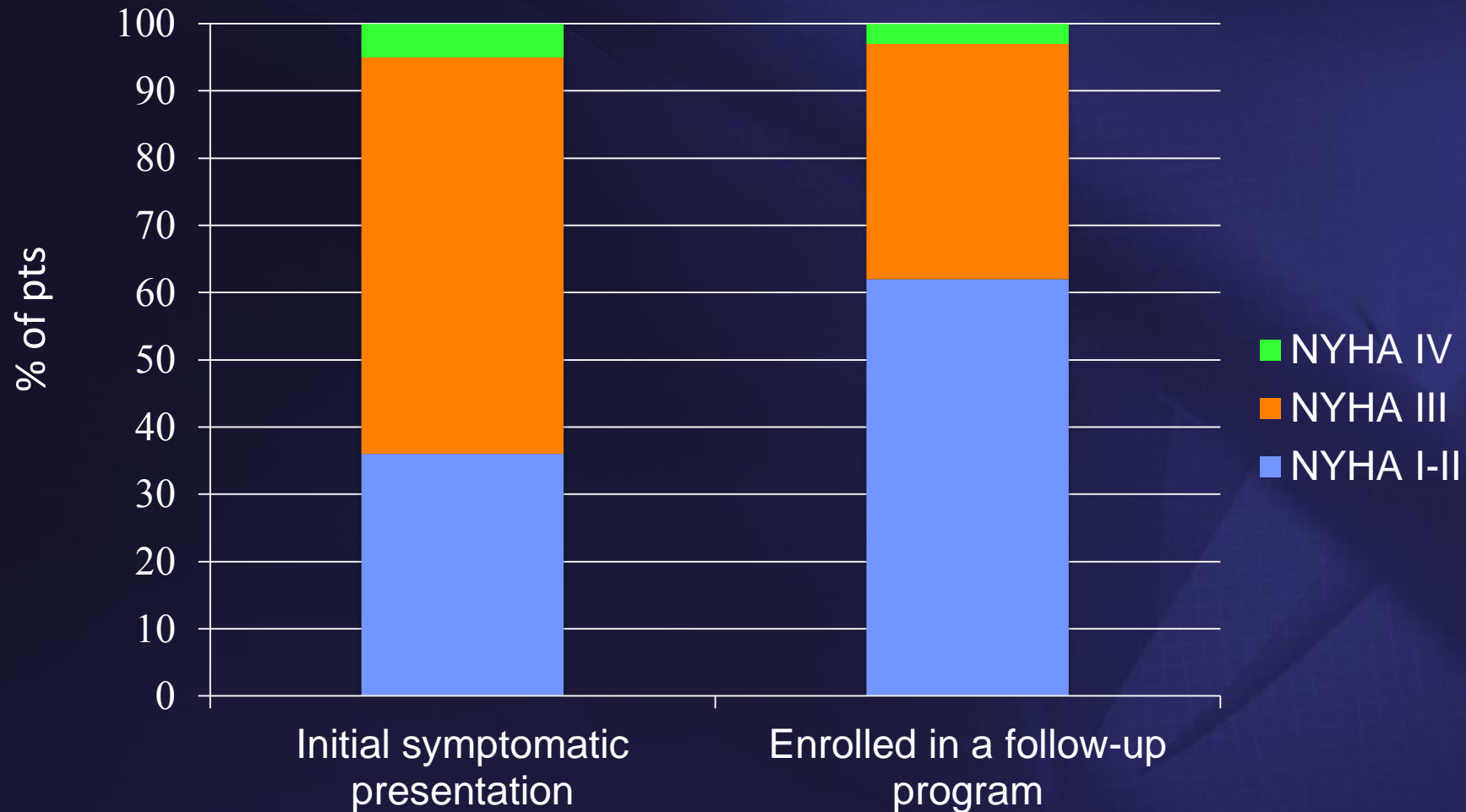
Heart Valve Clinic - Evidence

Aortic Stenosis: Delayed Symptom Reporting



Symptom Reporting in Aortic Stenosis

Severity of Symptom Onset



Multivalvular Disease

Combinations

	Aortic	Mitral	Tricuspid	Pulmonic
Stenosis	AS	MS	TS	PS
Regurgitation	AR	MR	TR	PR

Degenerative

Rheumatic

Congenital

Multivalvular Disease

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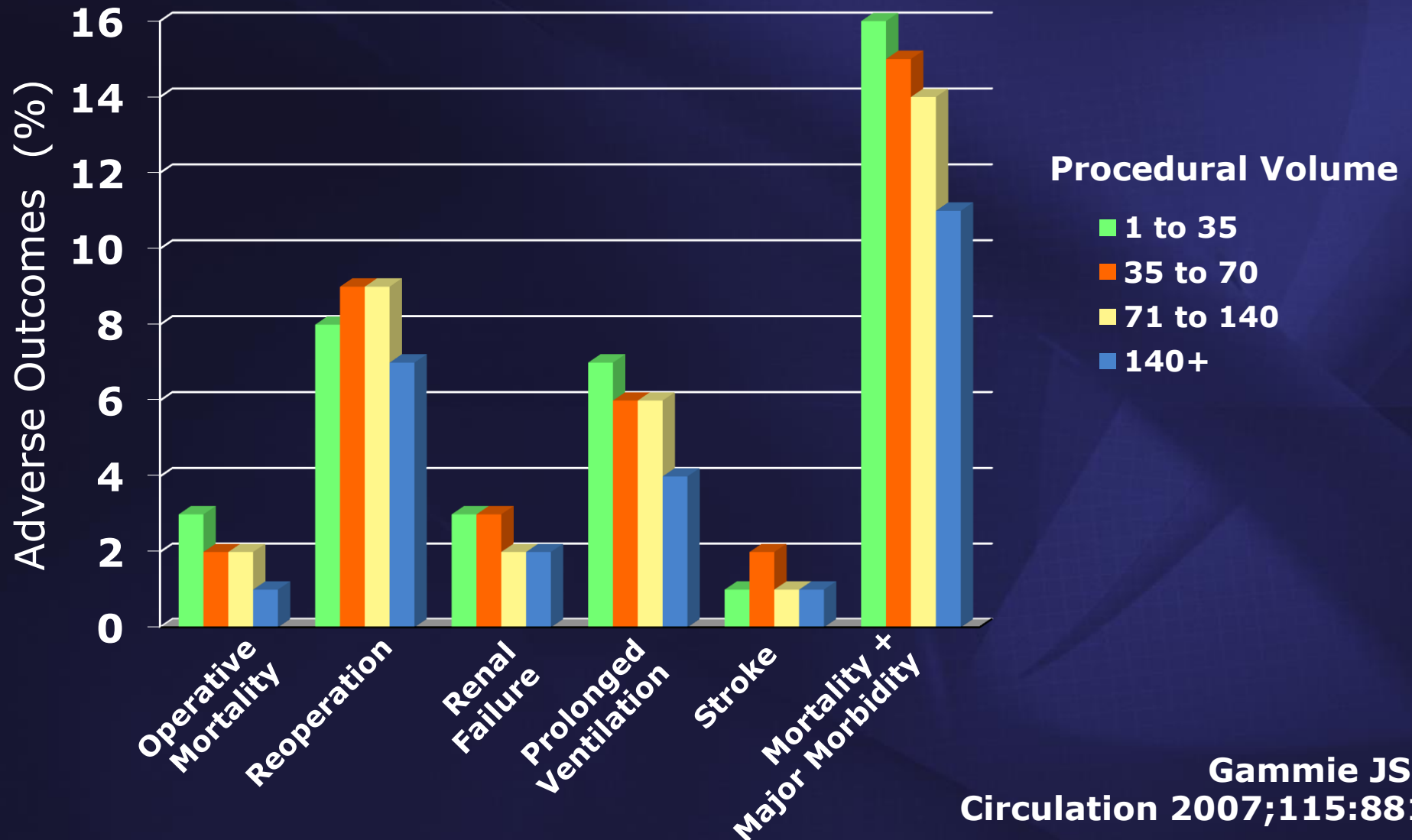
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Rheumatic

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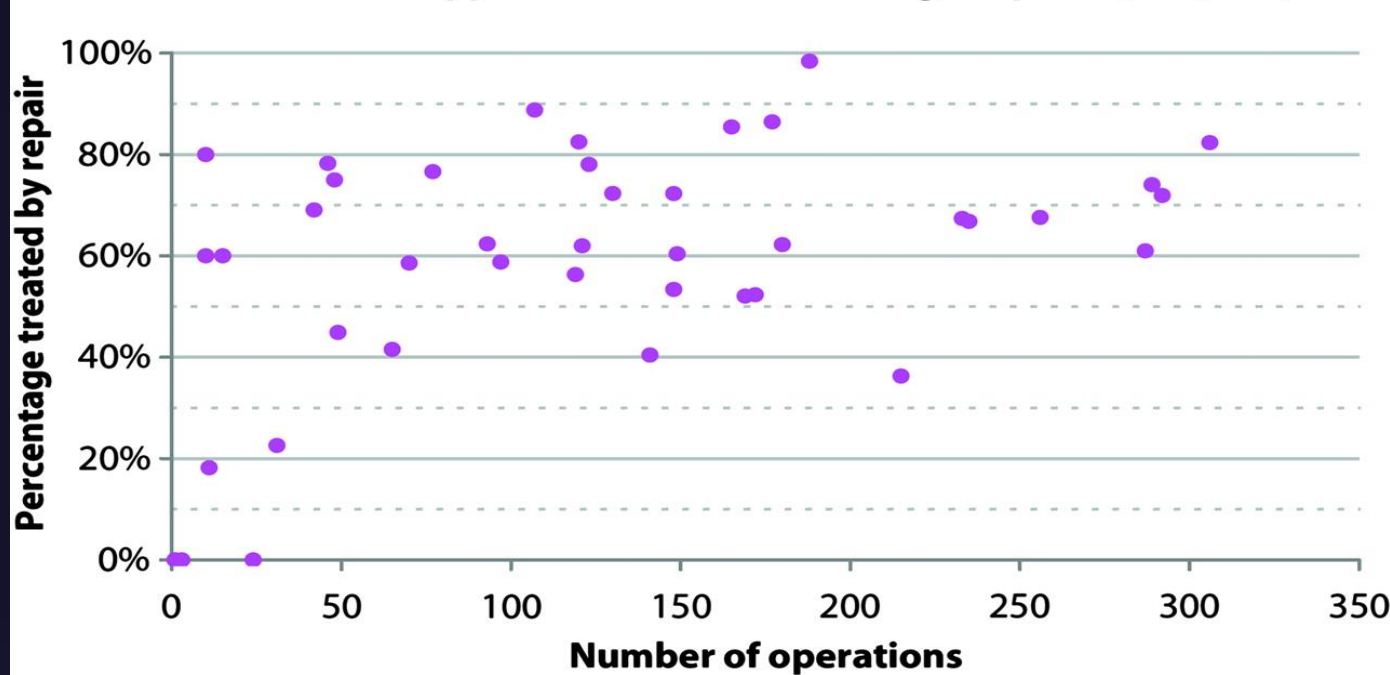
Timing of Intervention in Mitral Regurgitation

Influence of Hospital Procedural Volume



Center-Related Variability of Outcome „The Lottery of Mitral Valve Surgery“

Treatment approach at the contributing hospitals (n=5,163)

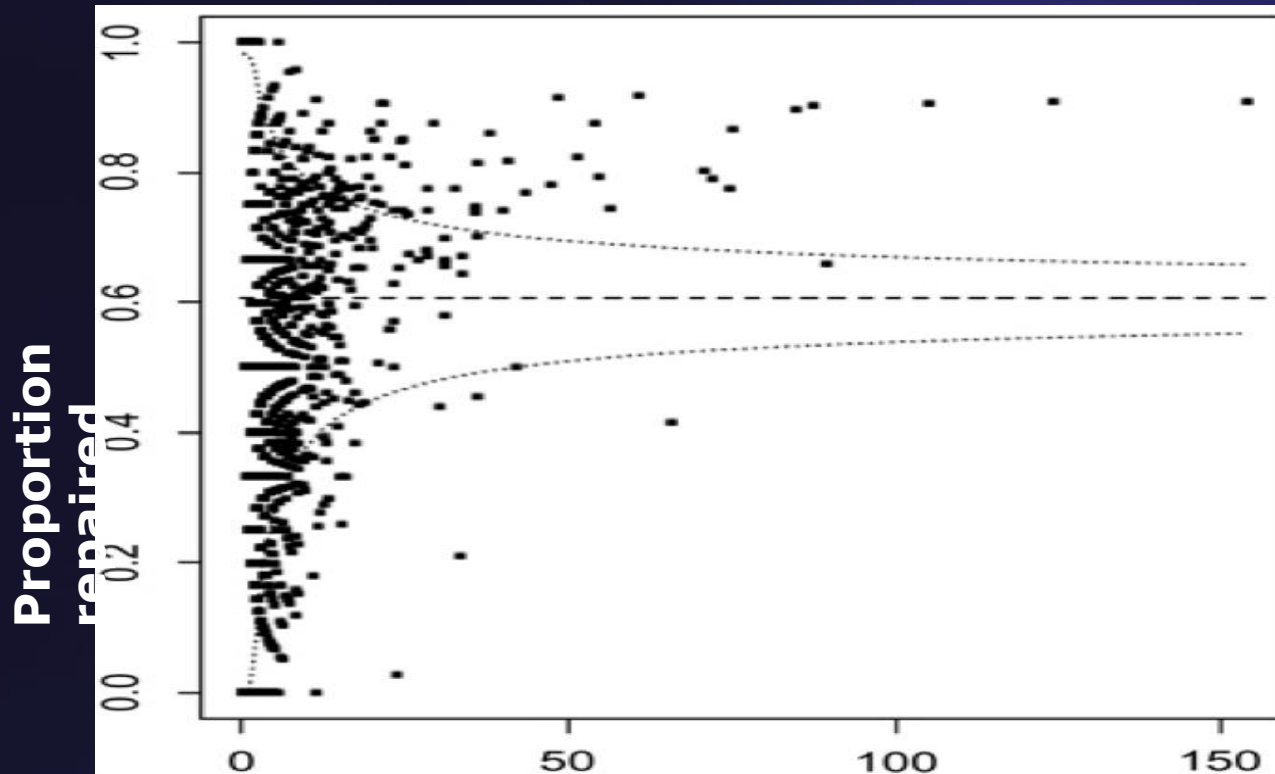


- National repair rate of 51%
- Variability of 20% to 90% among different hospitals

Variations in rates of mitral valve repair for degenerative disease among 46 heart centres in the UK

Mitral Valve Repair in Mitral Regurgitation

Surgeon Volume and Repair Rate



**Median number
of surgeries: 5 !!**

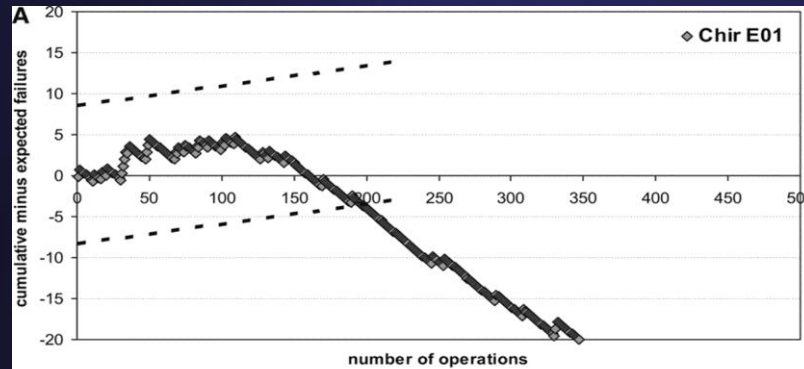
of isolated mitral cases per surgeon and year

Annual Mitral Volume	1	5	10	15	20	30	40	50	60	70	80	90	100
Predicted Probability of Repair, %	49.9	54.6	60.4	65.4	69.6	75.4	78.9	80.8	81.8	82.3	82.4	82.5	82.6

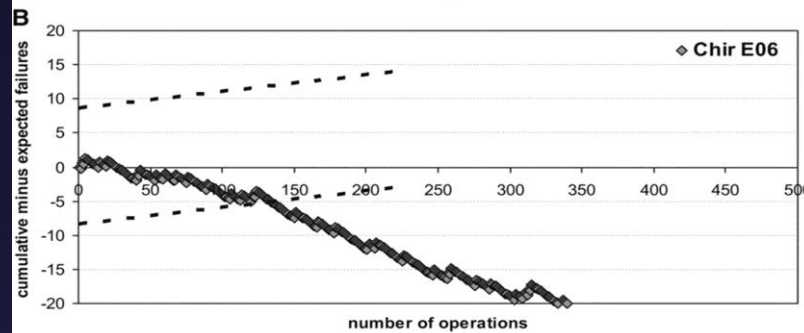
Minimally Invasive Mitral Valve Repair

Individual Learning Curves

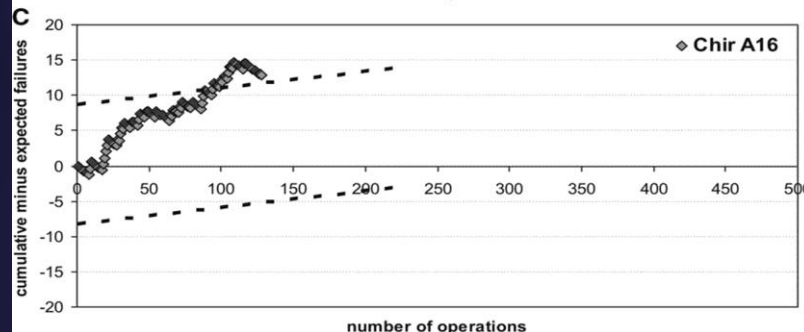
Normal Learning Curve



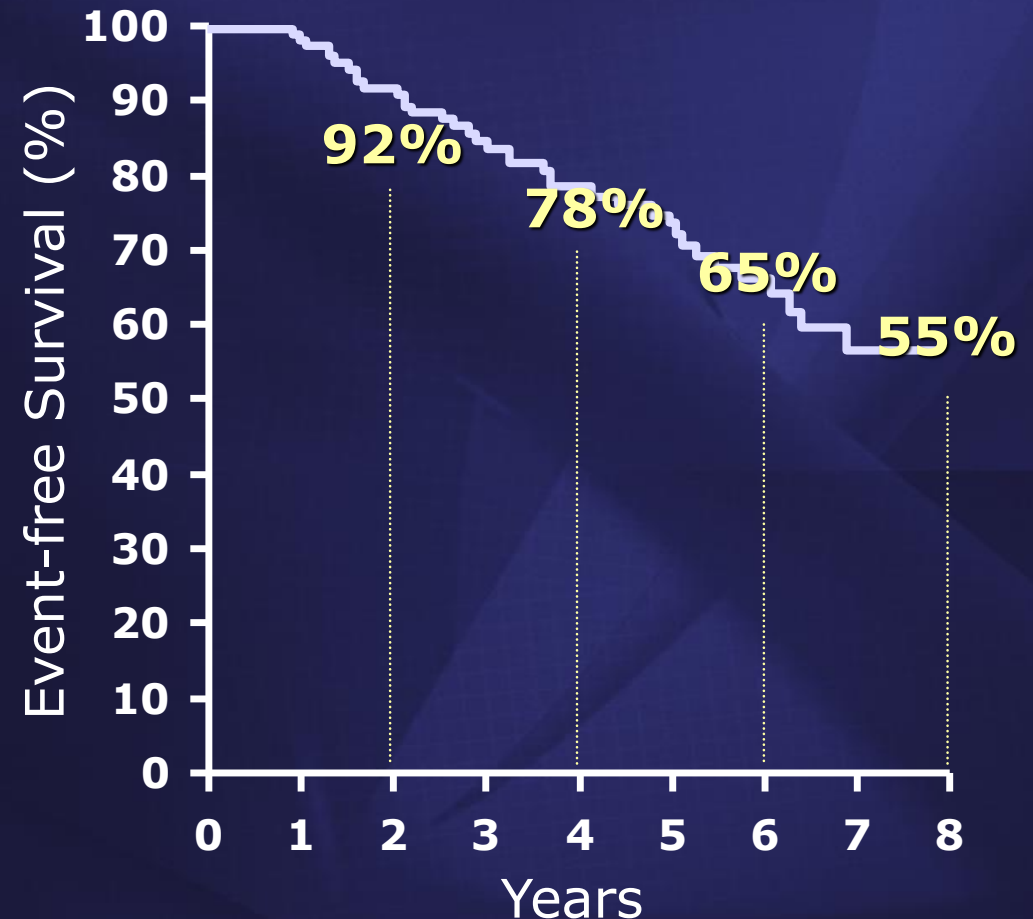
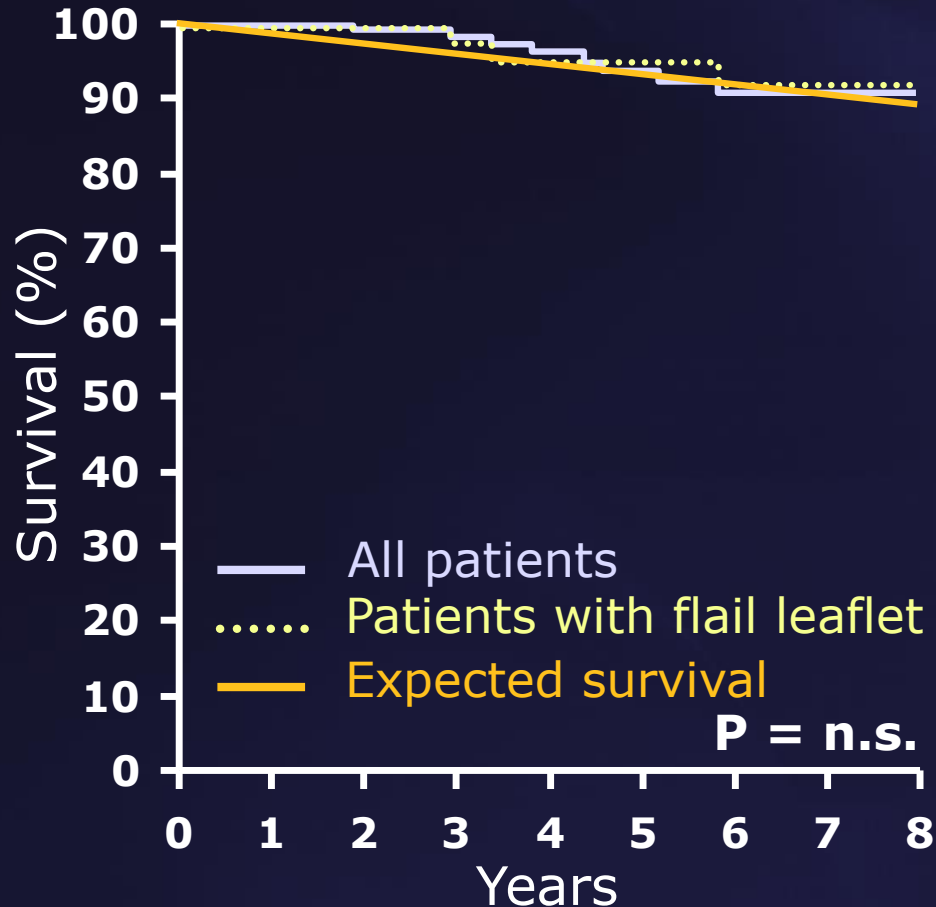
Outperforming Surgeon



Underperforming Surgeon



Asymptomatic Severe Mitral Regurgitation Valve Clinic - Watchful Waiting Strategy



Rosenhek et al. *Circulation* 2006;113:2238-2244.

Timing of Intervention in Mitral Regurgitation

Watchful Waiting Approach

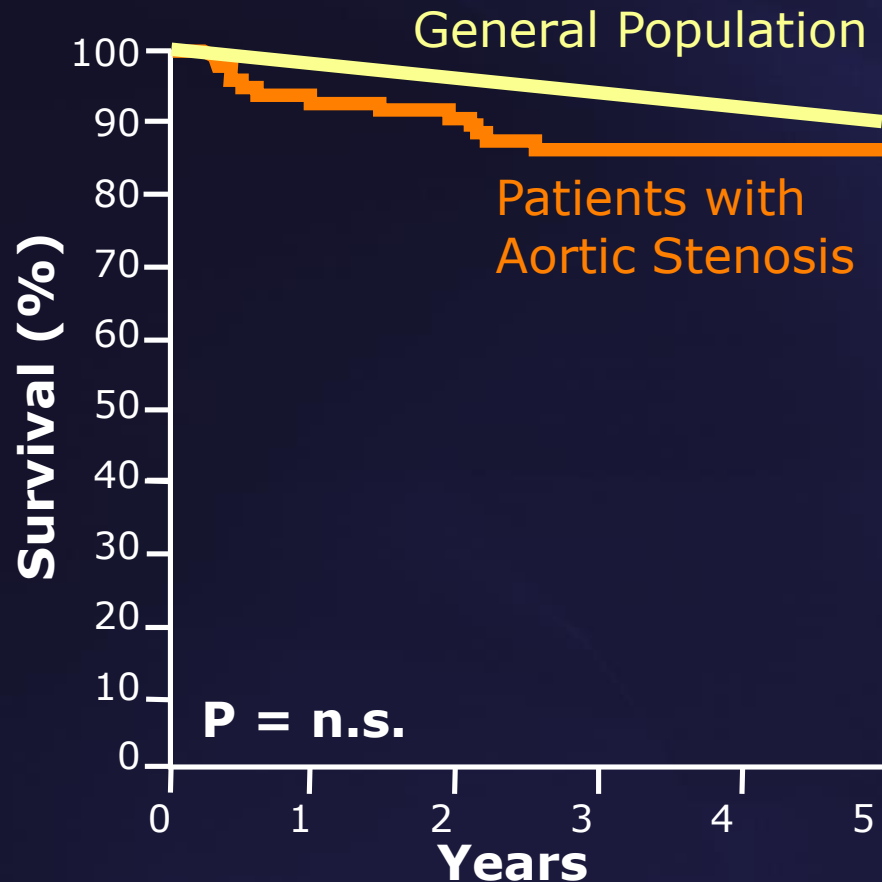
Table 2. Basic Principles of a Watchful Waiting Approach

- Regular clinical follow-up (including ECG)*
- Regular echocardiographic follow-up*
- Instruction of the patient to promptly report the onset of symptoms
- Referral to surgery without delay once criteria for surgery are reached

*Six-month follow-up intervals are recommended for asymptomatic patients with severe valvular mitral regurgitation.

Asymptomatic Severe Aortic Stenosis

Overall Outcome: Wait for Symptoms Strategy



126 Patients
Severe AS (AV-Vel \geq 4m/s)
Asymptomatic

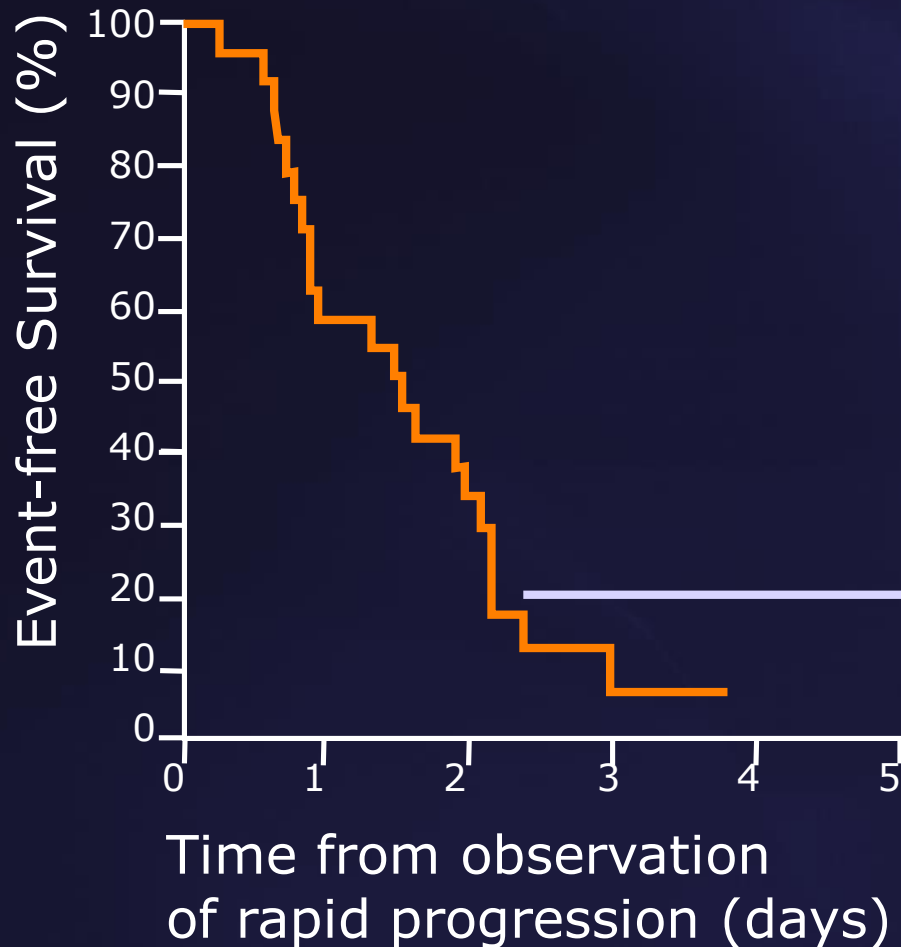
Compared to Age-, Gender-
Matched General Population

Regular Control exams

**Rosenhek, R. et al.
N Engl J Med 2000;343:611-617**

Severe Aortic Stenosis

Valve Calcification and Rapid Progression



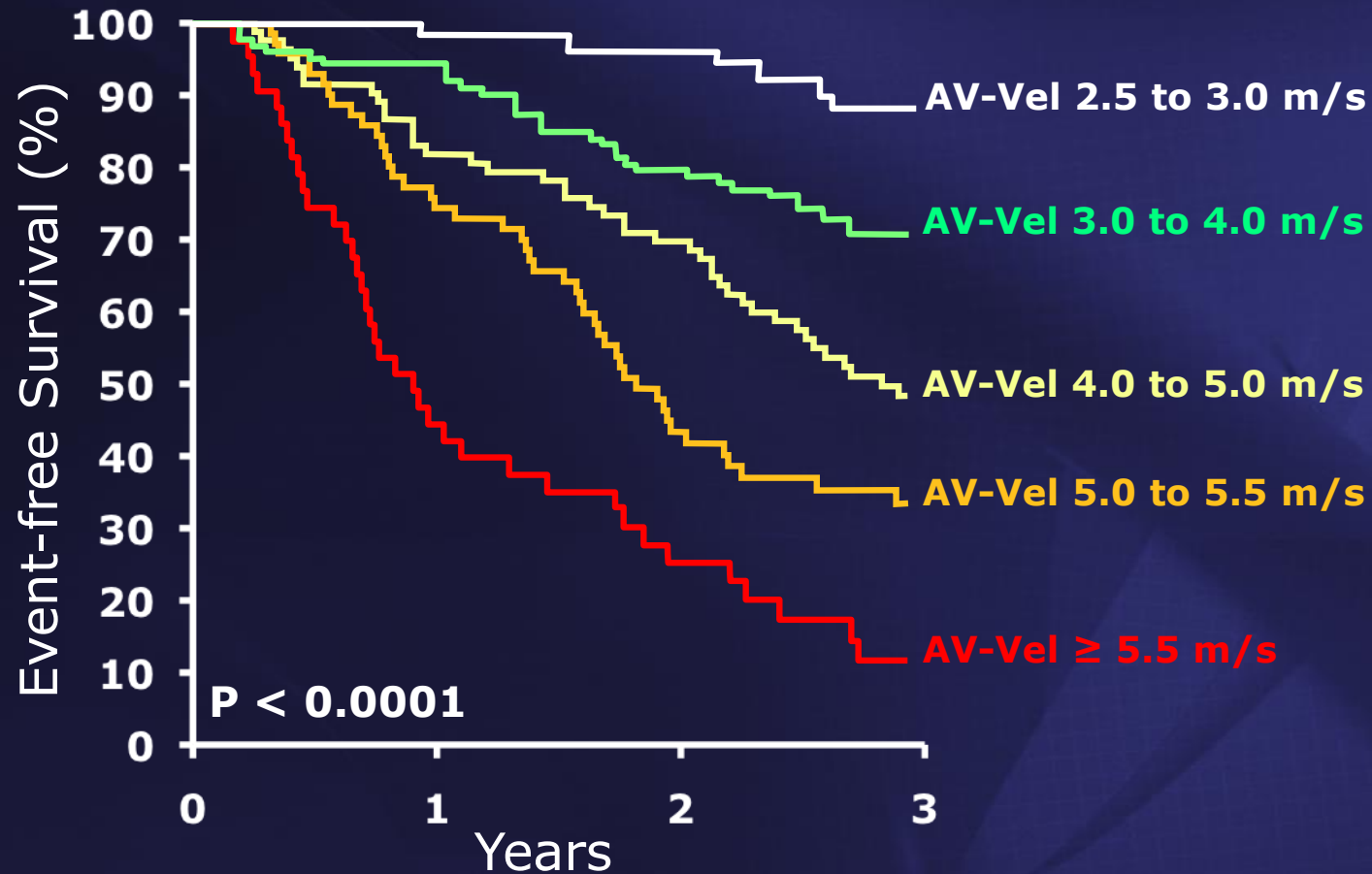
Patients with moderate or severe aortic valve calcification and aortic jet velocity increase > 0.3 m/s within 12 months

2 year event-rate: 80%

**Rosenhek, R. et al.
N Engl J Med 2000;343:611-617**

The Spectrum of Aortic Stenosis

Natural History



Rosenhek R et al. Eur Heart J 2004;25:199-205
Rosenhek R et al. N Engl J Med 2000;343:611-617
Rosenhek R et al. Circulation 2010;121:151-156

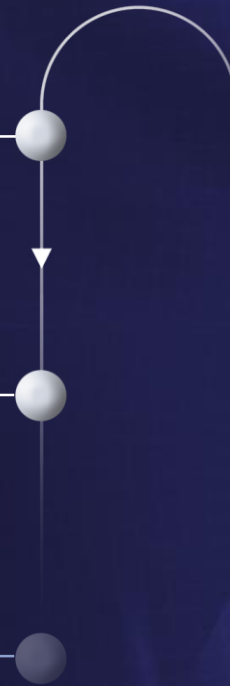
Quality in Valvular Heart Disease

Achieving Excellence

1. Evaluate Quality

2. Identify Gaps

3. Improve Practice



Heart Valve Clinic

British Model – Nurse Based Care

Specialist valve clinics: recommendations from the British Heart Valve Society working group on improving quality in the delivery of care for patients with heart valve disease

John B Chambers,¹ Simon Ray,² Bernard Prendergast,³ David Taggart,⁴ Stephen Westaby,⁵ Lucy Grothier,⁶ Chris Arden,⁷ Jo Wilson,⁸ Brian Campbell,⁹ Jonathan Sandoe,¹⁰ Christa Gohlke-Bärwolf,¹¹ Carlos-A Mestres,¹² Raphael Rosenhek,¹³ Catherine Otto¹⁴

Heart Valve Clinic Tasks

Tasks	Expert in VHD		
	Nurse	Sonographer	Cardiologist
Patient background	+	(+)	+
Blood pressure	+		+
Blood sample	+		
12-lead ECG	+		+
Supervise exercise test			+
Echocardiography		+	+
Stress echocardiography		(+)	+
Referral to a surgeon/ interventional cardiologist			+
Database entry	+		+
Letter to family physician		(+)	+
Fix appointments	+		+
Organize dental surveillance	+		+
Adapt oral anticoagulation therapy			+
Adapt medical treatment			+
Follow-up of complex cases			+

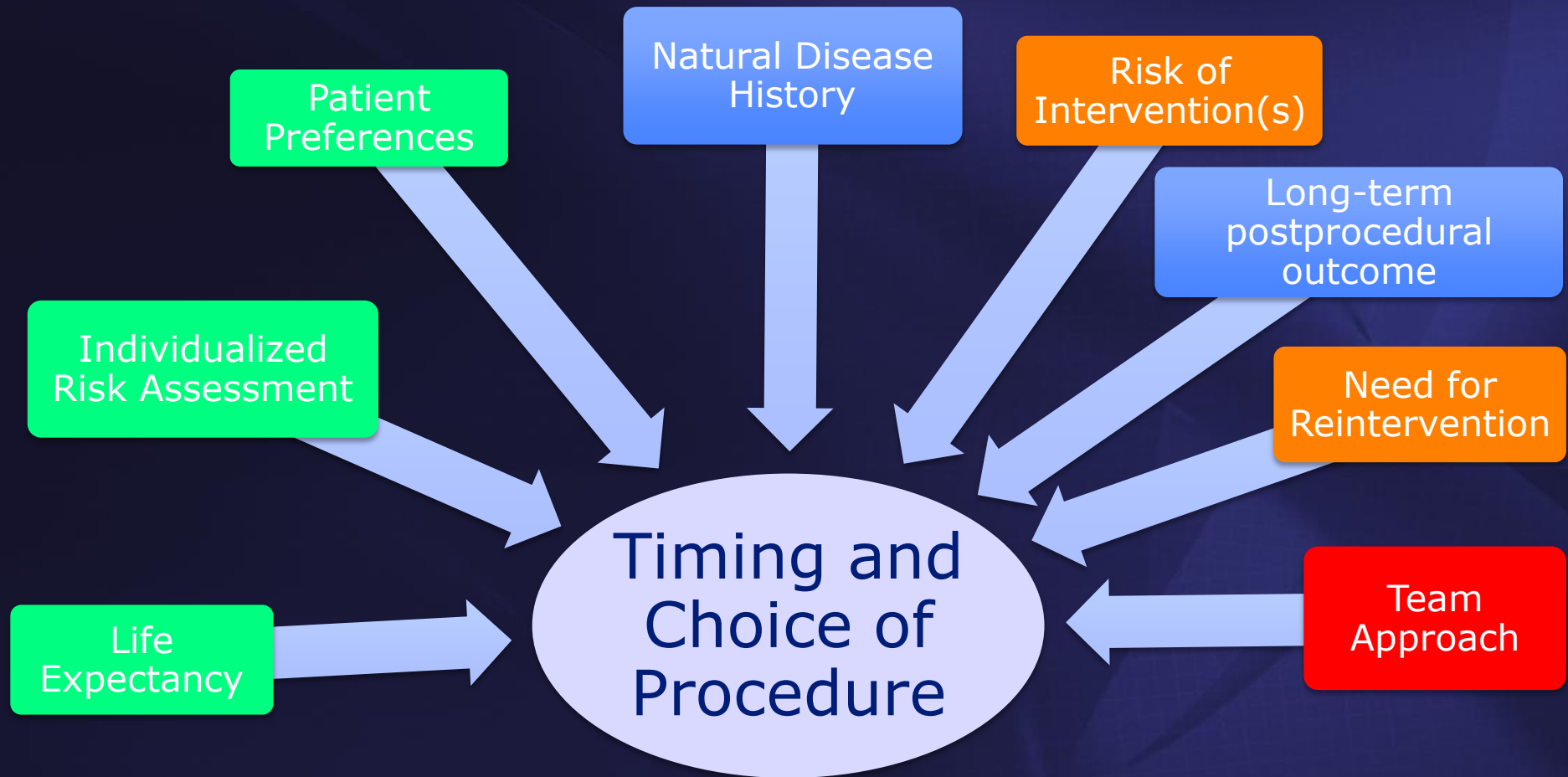
Heart Valve Clinic

Advantages

- Closing the Gap Between Guidelines and Practice
- Assessment of Symptoms
- Availability and Quality of Imaging Techniques
- Understanding Implications of Measured Variables
- Link with the Heart Team

Valvular Heart Disease

Individualized Interdisciplinary Decision Making



Adapted from Rosenhek R et al. Eur Heart J 2012;33:822-828

The Heart Valve Clinic

Summary

Optimized Patient Management

- Patient work-up and referral for intervention
- Patient education and information
- Setting for a watchful waiting approach

Education and Formation

- Increased experience (large patient numbers / complex cases)
- Translation of knowledge
- Training of physicians in valve disease

Research

- Local databases
- Research collaboration

Quality Assessment

Quality Assessment in Valvular Heart Disease

Summary

Essential to Provide Excellent Care

Recognition of Gaps

- On a national / supranational (ESC) level
- At the institutional level

Prerequisites

- Systematic documentation
- Periodic Outcome Assessment

Ideal Setting

- Structured Programs in Heart Valve Disease
 - Cardiology
 - Cardiac Surgery
- Heart Team
- Heart Valve Clinic

Heart Valve Disease

Quality Management

Direct effect

- Standardized quality of care
- Improved outcomes

Regional Effects

- Regional recognition as an expert-center in valve disease
- increased patient referral
- Positive synergy also for interventional and surgical programmes

Impact on Health System

- Potential important role at the level of a national health care environment
- Adequate and cost-effective use of resources

Quality in Valve Disease – Heart Team

A Multidisciplinary Approach: Center of Excellence

