EVOLVING VALVE MANAGEMENT STRATEGIES ROUNDTABLE

Future Directions in MR Care

Primary / Secondary…Degenerative / Functional / Ischemic

How Do We Simplify MR Care?

Robert O. Bonow, MD, MS, MACC

Northwestern University Feinberg School of Medicine
Bluhm Cardiovascular Institute
Northwestern Memorial Hospital

No Relationships to Disclose

Northwestern Medicine

Mitral regurgitation

Degenerative MR: primary valve disease

Functional MR: primary myocardial disease

Mitral regurgitation

Primary mitral regurgitation

Secondary mitral regurgitation

Mitral regurgitation

- **Primary mitral regurgitation**
- **Secondary mitral regurgitation**

AMERICAN SOCIETY OF ECHOCARDIOGRAPHY REPORT

Recommendations for Evaluation of the Severity of Native Valvular Regurgitation with Two-dimensional and Doppler Echocardiography

William A. Zoghbi, MD, Maurice Enriquez-Sarano, MD, Elyse Foster, MD, Paul A. Grayburn, MD, Carol D. Kraft, RDMS, Robert A. Levine, MD, Petros Nihoyannopoulos, MD, Catherine M. Otto, MD, Miguel A. Quinones, MD, Harry Rakowski, MD, William J. Stewart, MD, Alan Waggoner, MHS, RDMS, and Neil J. Weissman, MD

J Am Soc Echocardiogr 2003;16:777-802

There is wide variability in quality of echo laboratories in assessing mitral valvular pathology and severity of mitral regurgitation

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J Am Soc Echocardiogr 2003;16:777-802

Inadequate referral of appropriate patients with mitral regurgitation for mitral valve repair

Mitral regurgitation

AMERICAN COLLEGE of CARDIOLOGY

American Heart Association.

Indications for mitral valve surgery for severe primary MR?

- **Symptomatic patients** — **class I**
- **Asymptomatic patients** — **class I**
  - LV systolic dysfunction — **class IIa**
  - Pulmonary hypertension — **class IIa**
  - Atrial fibrillation

Mitral regurgitation

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  - ***Normal LV function, repair feasible?*** — **?**

Mitral regurgitation

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?

MV repair to improve survival?

Northwestern Medicine

Mitral regurgitation

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  - ***Normal LV function, repair feasible?*** — **?**

MV repair to improve survival?
What is the natural history?

Northwestern Medicine

Mitral regurgitation

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- **Asymptomatic patients**
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Asymptomatic severe degenerative MR:

- **50% come to surgery in 5 years because of symptoms, LV dysfunction, pulmonary hypertension or AF**

Northwestern Medicine

Mitral regurgitation

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  - ***Normal LV function, repair feasible?*** — **?**

Asymptomatic severe degenerative MR:

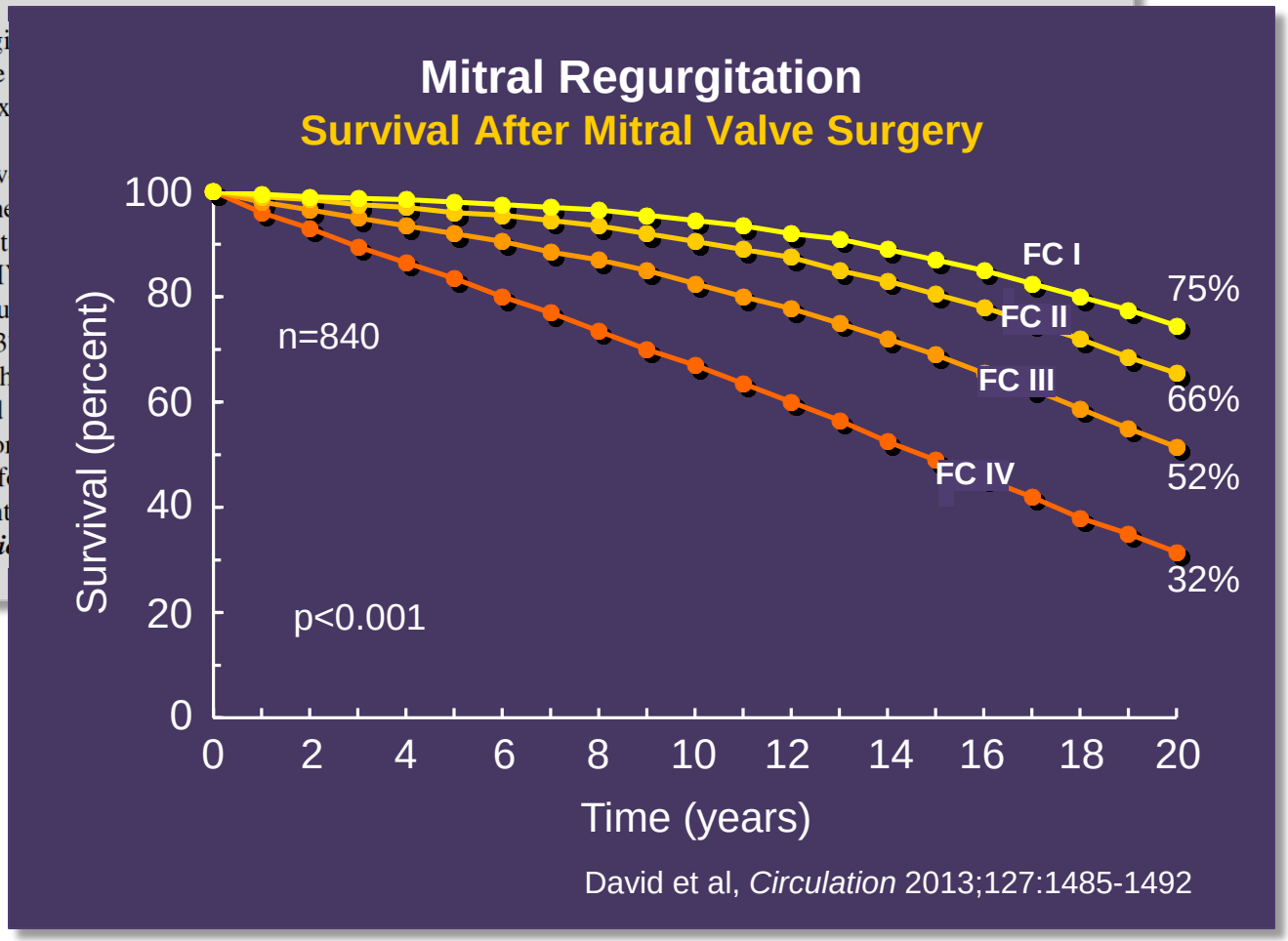
- **50% come to surgery in 5 years because of symptoms, LV dysfunction, pulmonary hypertension or AF**
- **Long-term postoperative survival is worse if surgery is performed after patients become symptomatic**

Northwestern Medicine

Late Outcomes of Mitral Valve Repair for Mitral Regurgitation Due to Degenerative Disease

Tirone E. David, MD; Susan Armstrong, MSc; Brian W. McCrindle MD; Cedric Manlhiot, BSc

Background—The pathologi
(MR) is broad, and there
pathologies. This study ex
Methods and Results—All
were prospectively follow
of 10.4 years. Clinical, he
Age, left ventricular eject
multivariable analysis. M
patients had repeat MV su
severe MR developed in 3
degree of myxomatous ch
associated with increased
freedom from moderate or
Conclusions—MV repair f
rest and impaired left vent
recurrent MR. (*Circulati*



David et al, *Circulation* 2013;127:1485-1492

Northwestern Medicine

Mitral regurgitation

Indications for MV repair for asymptomatic primary MR:

- Chronic severe MR
- Preserved LV function
- Experienced surgical center
- Likelihood of durable repair without residual MR > 95%

class IIa

Mitral regurgitation

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AMERICAN COLLEGE of CARDIOLOGY

American Heart Association

- Chronic severe MR
- Preserved LV function
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- Likelihood of durable repair without residual MR > 95%.

class IIa

!

- Repair better than mitral valve replacement
- Patients should be referred to centers experienced in repair

class I

CLINICAL STUDIES

Mitral regurgitation: Determinants of referral for cardiac surgery by Canadian cardiologists

Karine Toledano MD, Lawrence G Rudski MD, Thao Huynh MD, François Béïque MD, John Sampalis MD, Jean-François Morin MD

K Toledano, LG Rudski, T Huynh, F Béïque, J Sampalis, J-F Morin. Mitral regurgitation: Determinants of referral for cardiac surgery by Canadian cardiologists. Can J Cardiol 2007;23(3):209-214.

La régurgitation mitrale : Les déterminants d'aiguillage en chirurgie cardiaque par les cardiologues canadiens

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2007;23(3):209-214.

Referral criteria evaluated	Overall, n (%)	Community, n (%)	University, n (%)
Asymptomatic (referral threshold)			
EF > 60%	2 (0.9)	1 (1.6)	1 (0.8)
EF 50%–60%	123 (57.2)	37 (57.8)	64 (55.2)
EF 40%–49%	68 (31.6)	20 (31.2)	40 (34.5)
EF < 40%	6 (2.8)	3 (4.7)	3 (2.6)
Symptoms regardless of EF	16 (7.4)	3 (4.7)	8 (6.9)
NYHA II (referral threshold)			
EF > 60%	32 (15.5)	12 (20.0)	15 (13.6)
EF 50%–60%	11.5 (55.8)	33 (55.0)	64 (58.2)
EF 40%–49%	43 (20.9)	11 (18.3)	25 (22.7)
EF < 40%	3 (1.5)	1 (1.7)	1 (0.9)
Further symptoms	13 (6.3)	3 (5.0)	5 (4.5)
New-onset AF	94 (32.9)	24 (30.8)	54 (34.4)

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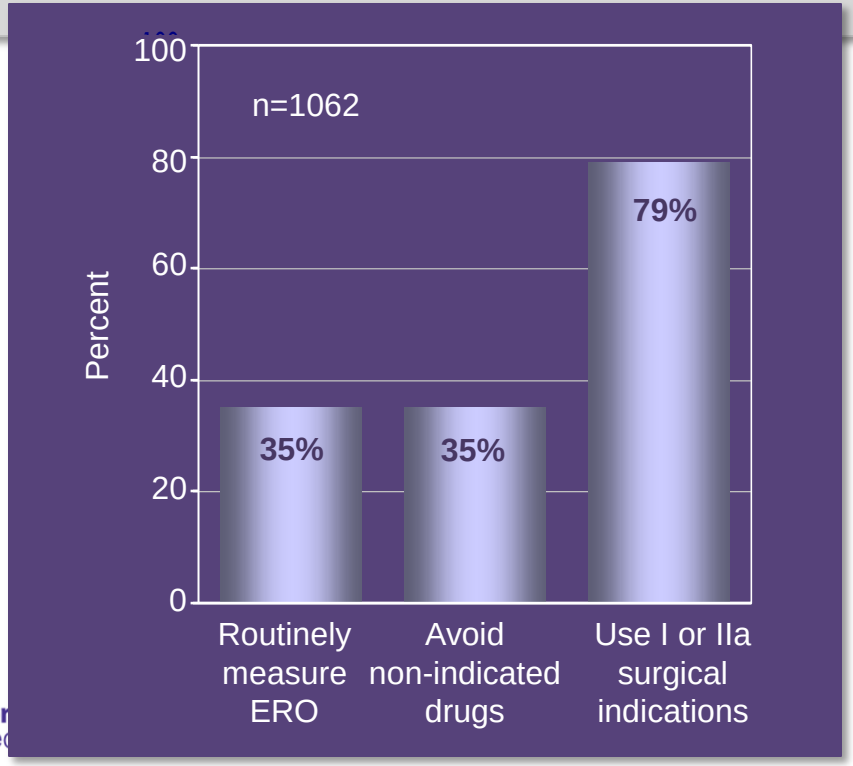
Practice Variation Among Cardiovascular Physicians in Management of Patients With Mitral Regurgitation

Kevin M. Harris, MD[a,*], Catherine A. Pastorius, BA[a], Sue Duval, PhD[a,b], Eileen Harwood, PhD[b], Timothy D. Henry, MD[a], Blasé A. Carabello, MD[c], and Alan T. Hirsch, MD[a,b]

Am J Cardiol 2009;103:255–261



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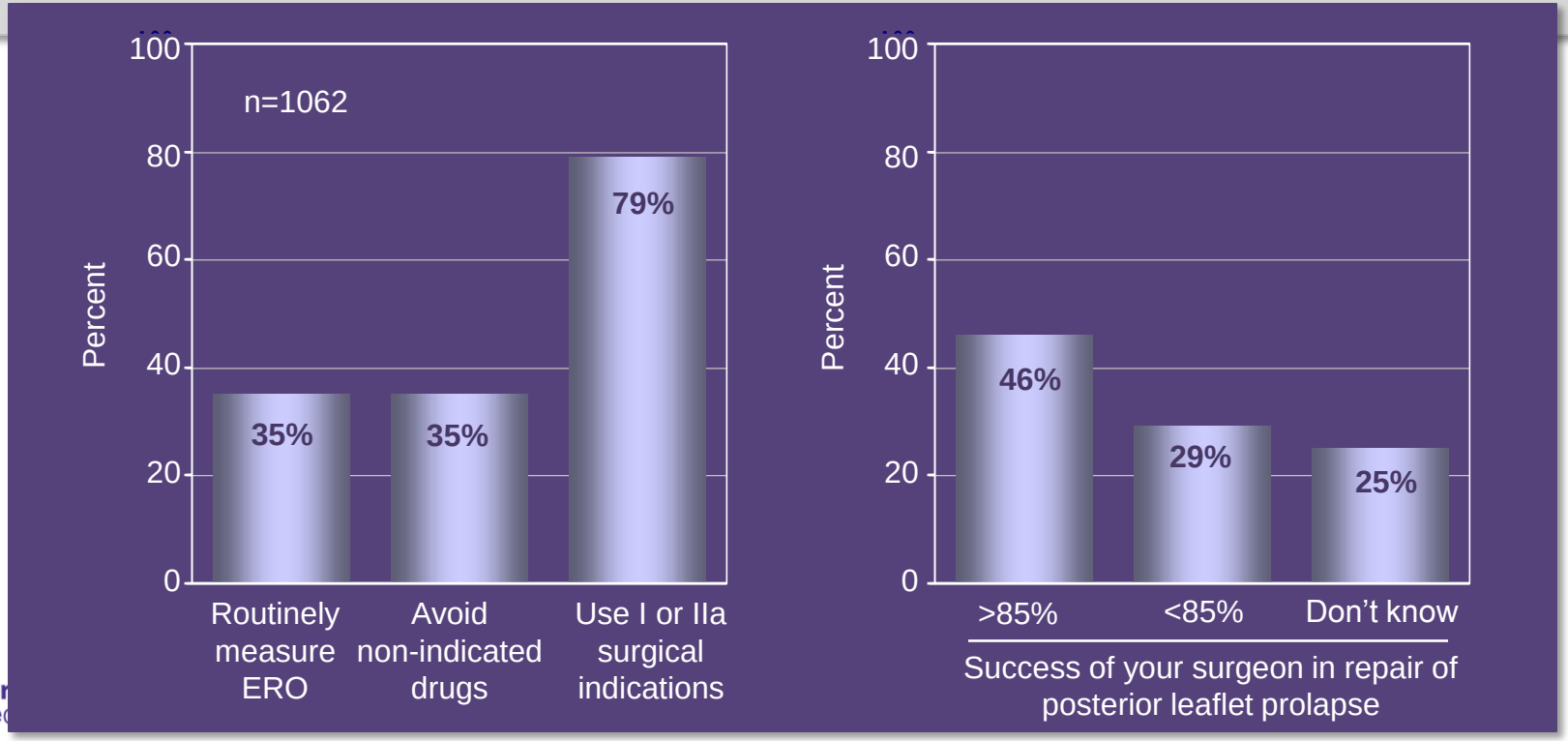

Journal of the American College of Cardiology
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Published by Elsevier Inc.

Vol. 54, No. 9, 2009
ISSN 0735-1097/09/$36.00
doi:10.1016/j.jacc.2009.03.079

VALVULAR HEART DISEASE

Failure of Guideline Adherence for Intervention in Patients With Severe Mitral Regurgitation

David S. Bach, MD, Mazen Awais, MD, Hitinder S. Gurm, MD, Sarah Kohnstamm, MD

J Am Coll Cardiol 2009;54:860–5

	All Patients	Unoperated	
n	112	53	
Symptoms	53	24	45%
LVIDS ≥45 mm	11	6	55%
LVEF ≤60%	50	24	48%
Atrial fibrillation	26	12	46%
RVSP >50 mm Hg	25	16	64%

Mitral regurgitation

Primary mitral regurgitation

Secondary mitral regurgitation

- Diagnostic dilemmas
- Therapeutic dilemmas

Imprecision in grading severity of secondary MR

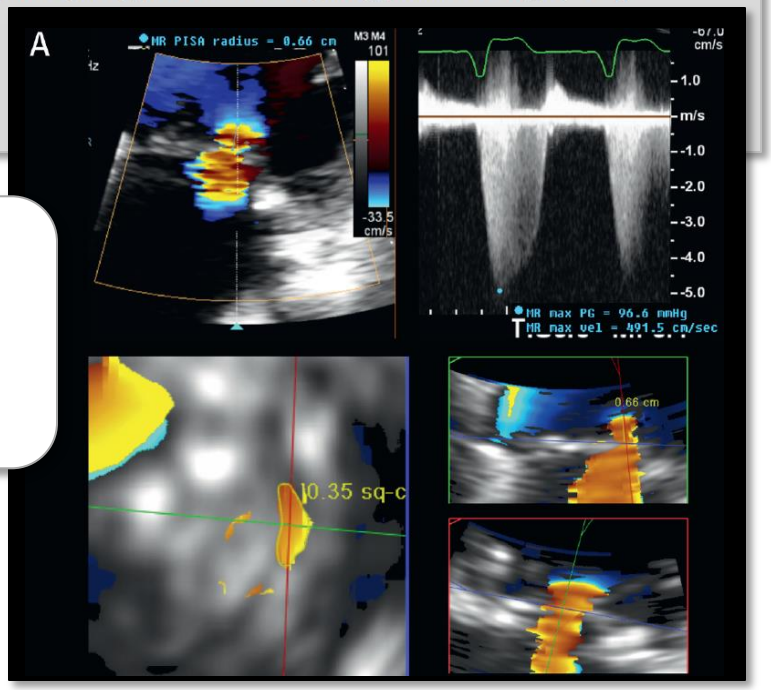
REVIEW TOPIC OF THE WEEK

Defining "Severe" Secondary Mitral Regurgitation

Emphasizing an Integrated Approach

Paul A. Grayburn, MD,*† Blasé Carabello, MD,‡ Judy Hung, MD,§ Linda D. Gillam, MD,‖ David Liang, MD,¶
Michael J. Mack, MD,# Patrick M. McCarthy, MD,** D. Craig Miller, MD,†† Alfredo Trento, MD,‡‡ Robert J. Siegel, MD‡‡

J Am Coll Cardiol 2014;54:2792-2801



What is "severe" secondary MR?

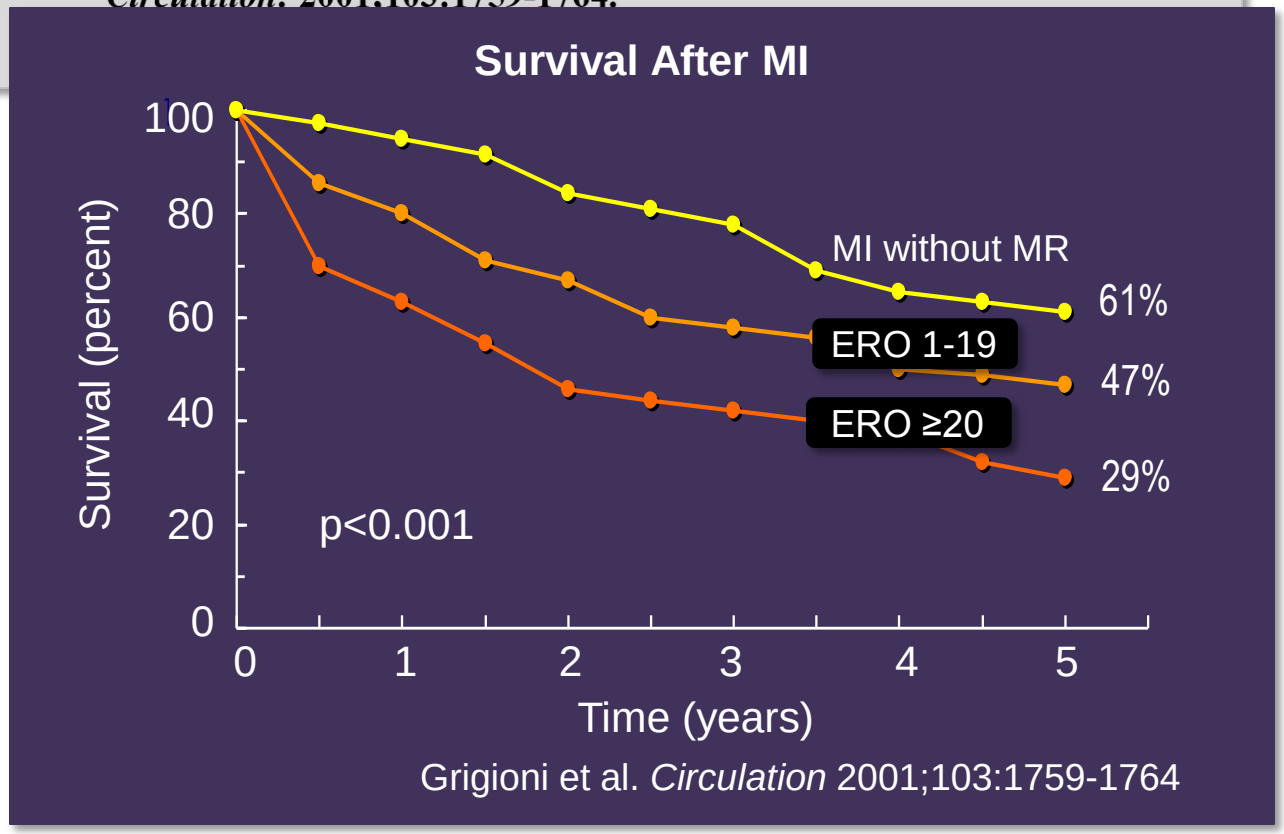
Northwestern Medicine

Ischemic Mitral Regurgitation

Long-Term Outcome and Prognostic Implications With Quantitative Doppler Assessment

Francesco Grigioni, MD; Maurice Enriquez-Sarano, MD; Kenton J. Zehr, MD; Kent R. Bailey, PhD; A. Jamil Tajik, MD

Circulation. 2001;103:1759-1764.



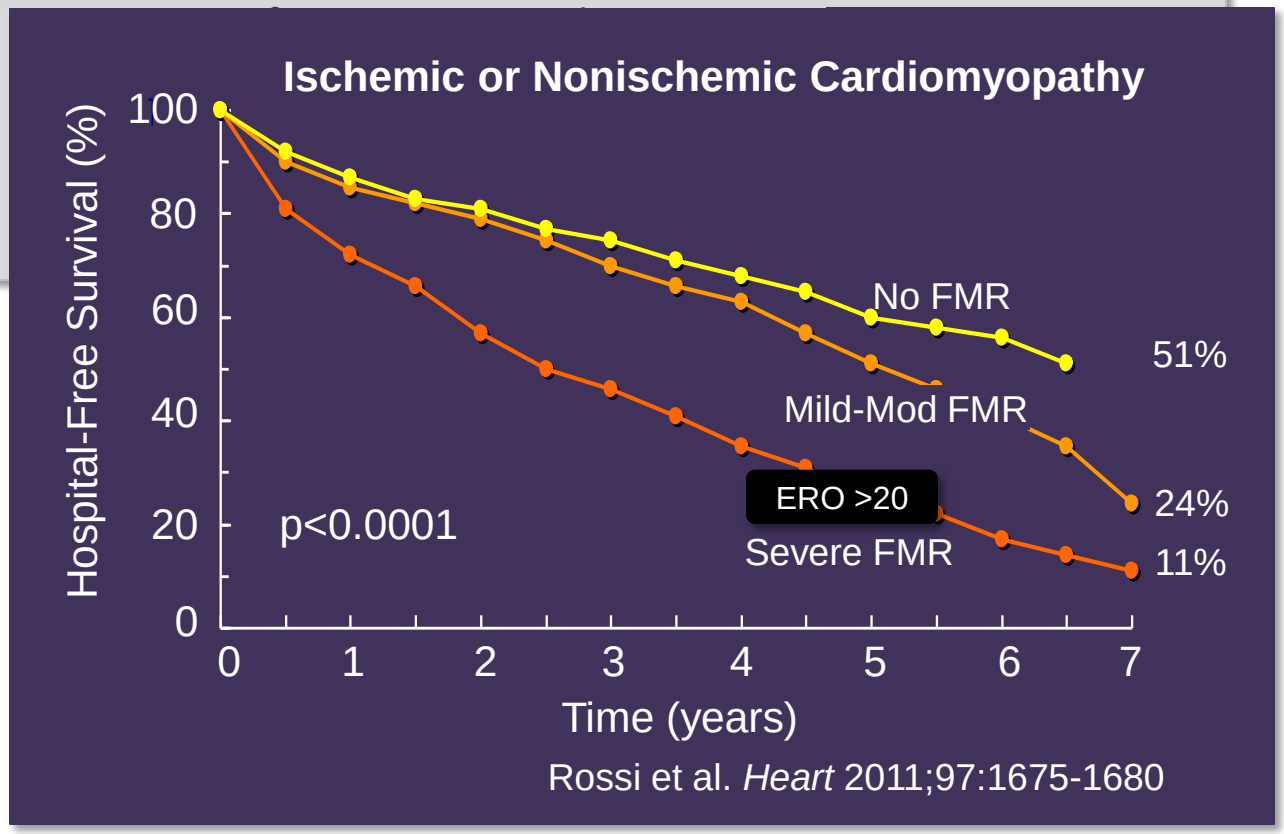
Northwestern Medicine

ORIGINAL ARTICLE

Independent prognostic value of functional mitral regurgitation in patients with heart failure. A quantitative analysis of 1256 patients with ischaemic and non-ischaemic dilated cardiomyopathy

Andrea Rossi,[1] Frank L Dini,[2] Mariantonietta Cicoira,[1] Silvia Stefano Ghio,[5] Maurice Enriqu

Heart 2011;**97**:1675–1680



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Mitral regurgitation

What is *severe* MR?

	RV (ml)	ERO (cm^2)
Primary (degenerative) MR	>60	>0.4
Secondary (functional) MR	>30	>0.2

Does this help?

Prevalence of MR in Patients with LV Dysfunction

		N	Prevalence MR
Yiu et al	*Circulation* 2000	128	63%
Grigioni et al	*Circulation* 2001	303	64%
Koelling et al	*Am Heart J* 2002	1436	49% *
Trichon et al	*Am J Cardiol* 2003	2057	56%
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Acker et al	*J Thorac CV Surg* 2006	300	66%
Di Mauro et al	*Ann Thorac Surg* 2006	239	75%
Rossi et al	*Heart* 2011	1300	74%
Deja et al	*Circulation* 2012	599	63%
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*Patients with moderate to severe MR

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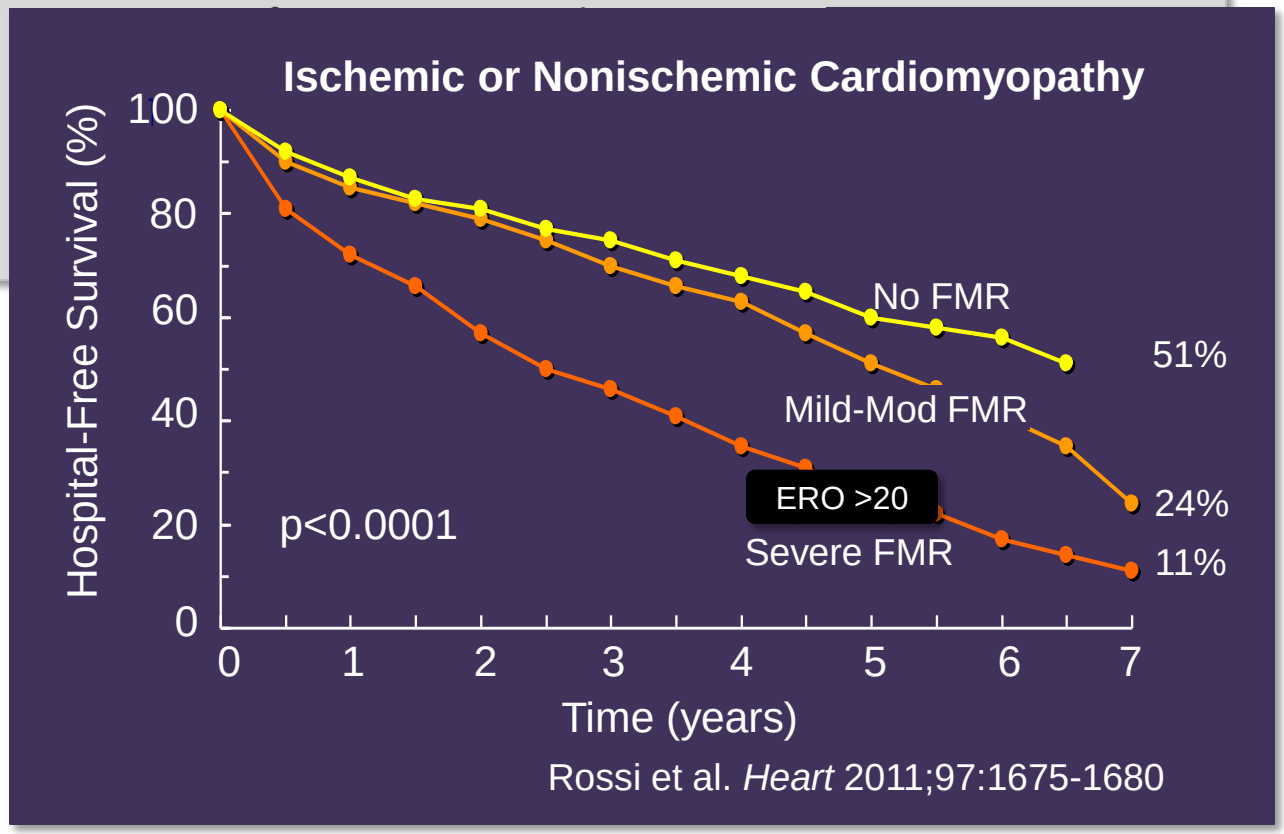

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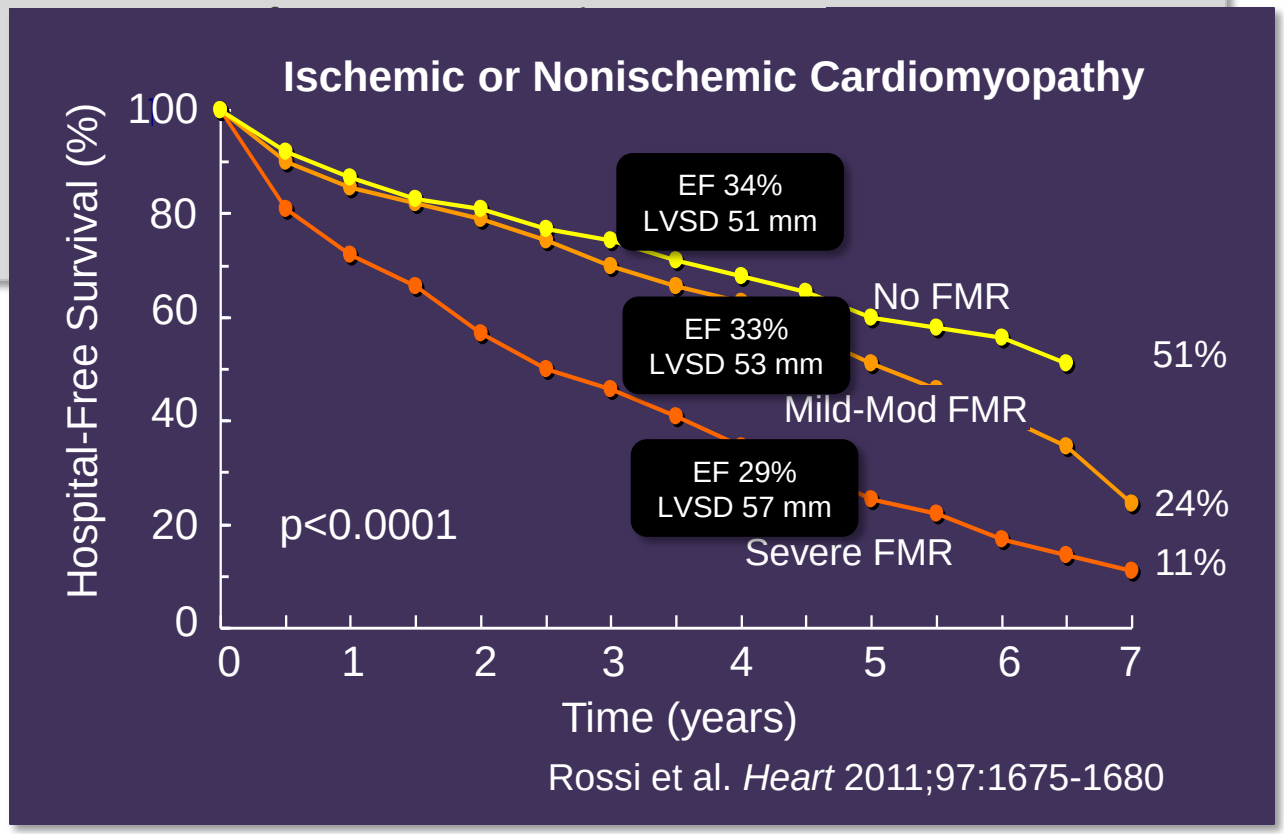


Northwestern Medicine

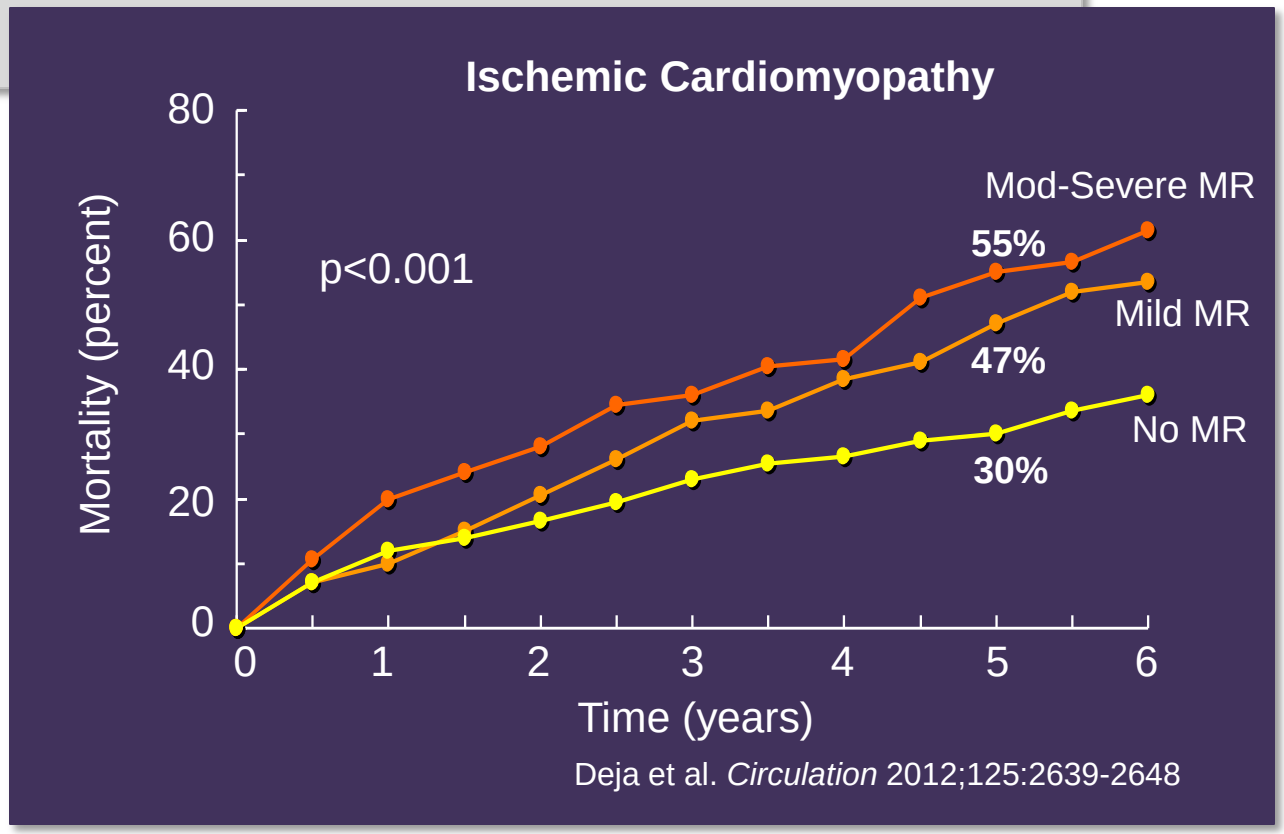
Valvular Heart Disease

Influence of Mitral Regurgitation Repair on Survival in the Surgical Treatment for Ischemic Heart Failure Trial

Marek A. Deja, Paul A. Grayburn, Benjamin Sun, Vivek Rao, Lilin She, Michal Krejca, Anil R. Jain, Yeow Leng Chua, Richard Daly, Michele Senni, Krzysztof Mokrzycki, Lorenzo Menicanti, Jae K. Oh, Robert Michler, Krzysztof Wróbel, Andre Lamy, Eric J. Velazquez, Kerry L. Lee and Robert H. Jones

STICH
FUNDED BY A GRANT FROM THE NATIONAL INSTITUTES OF HEALTH

Circulation. 2012;125:2639-2648



Northwestern Medicine

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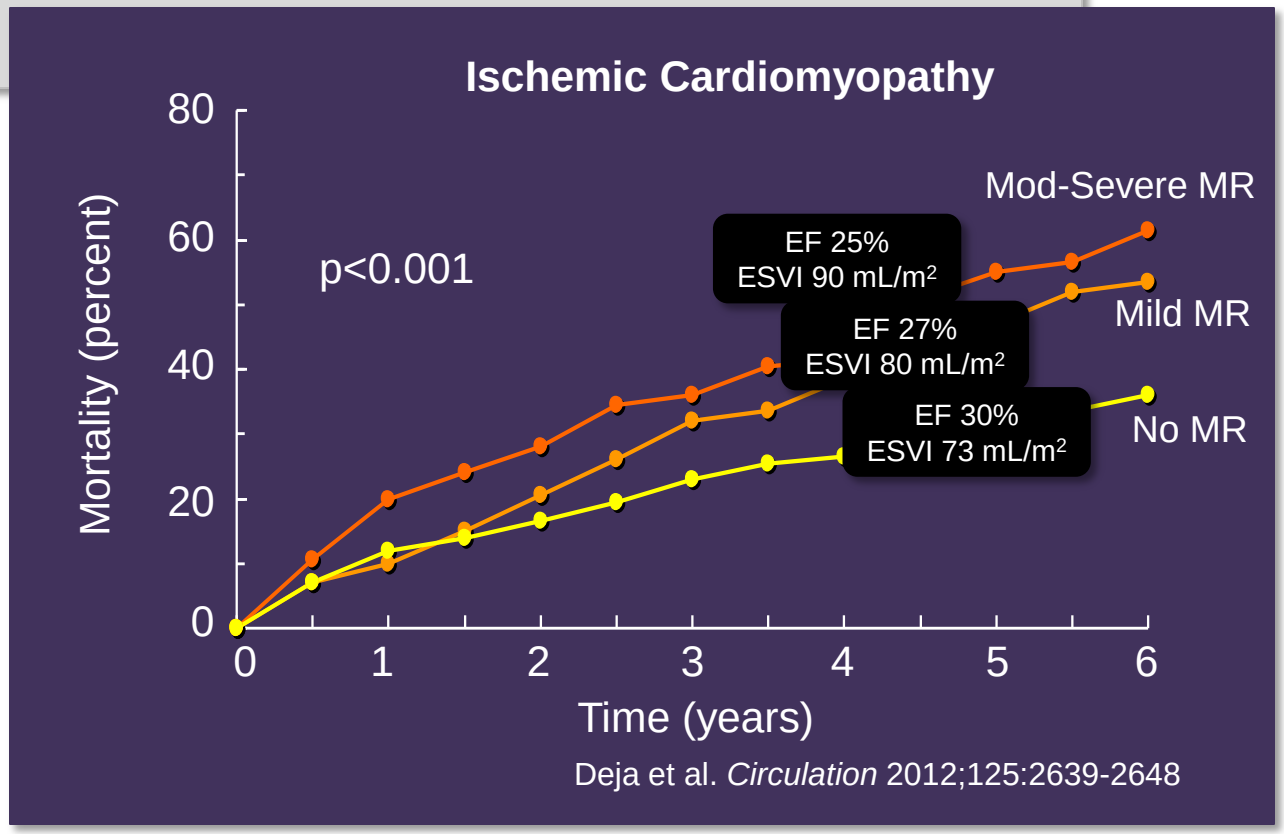


Secondary mitral regurgitation:

…a marker of a sicker LV

- or -

…a contributor to a sicker LV?

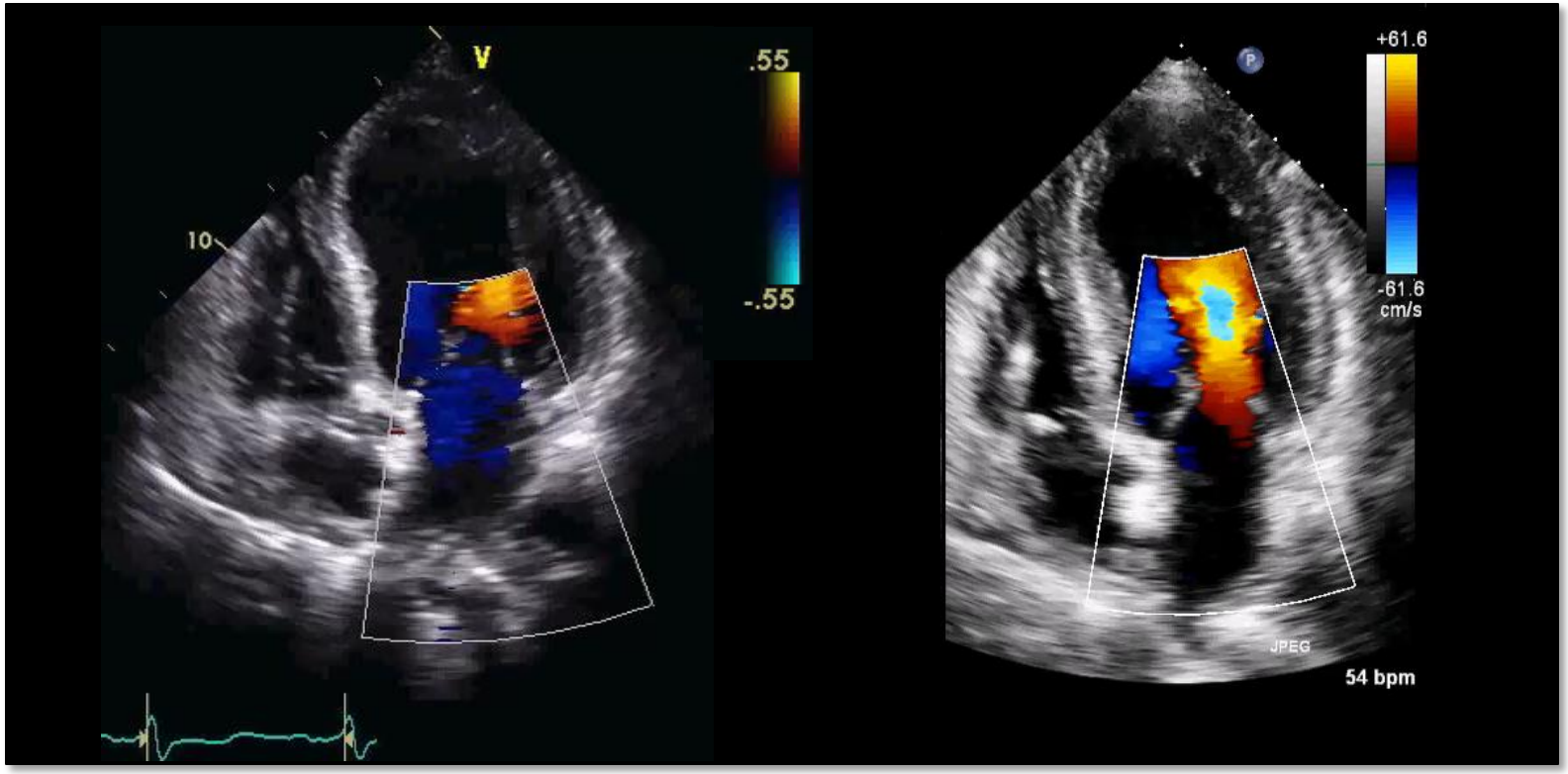
Secondary mitral regurgitation:

…a marker of a sicker LV

- or -

…a therapeutic target?

Therapies that produce beneficial reverse remodeling also reduce severity of functional MR



Baseline

Optimized Medical Therapy and Biventricular Pacing

Prevalence of MR in Patients with LV Dysfunction

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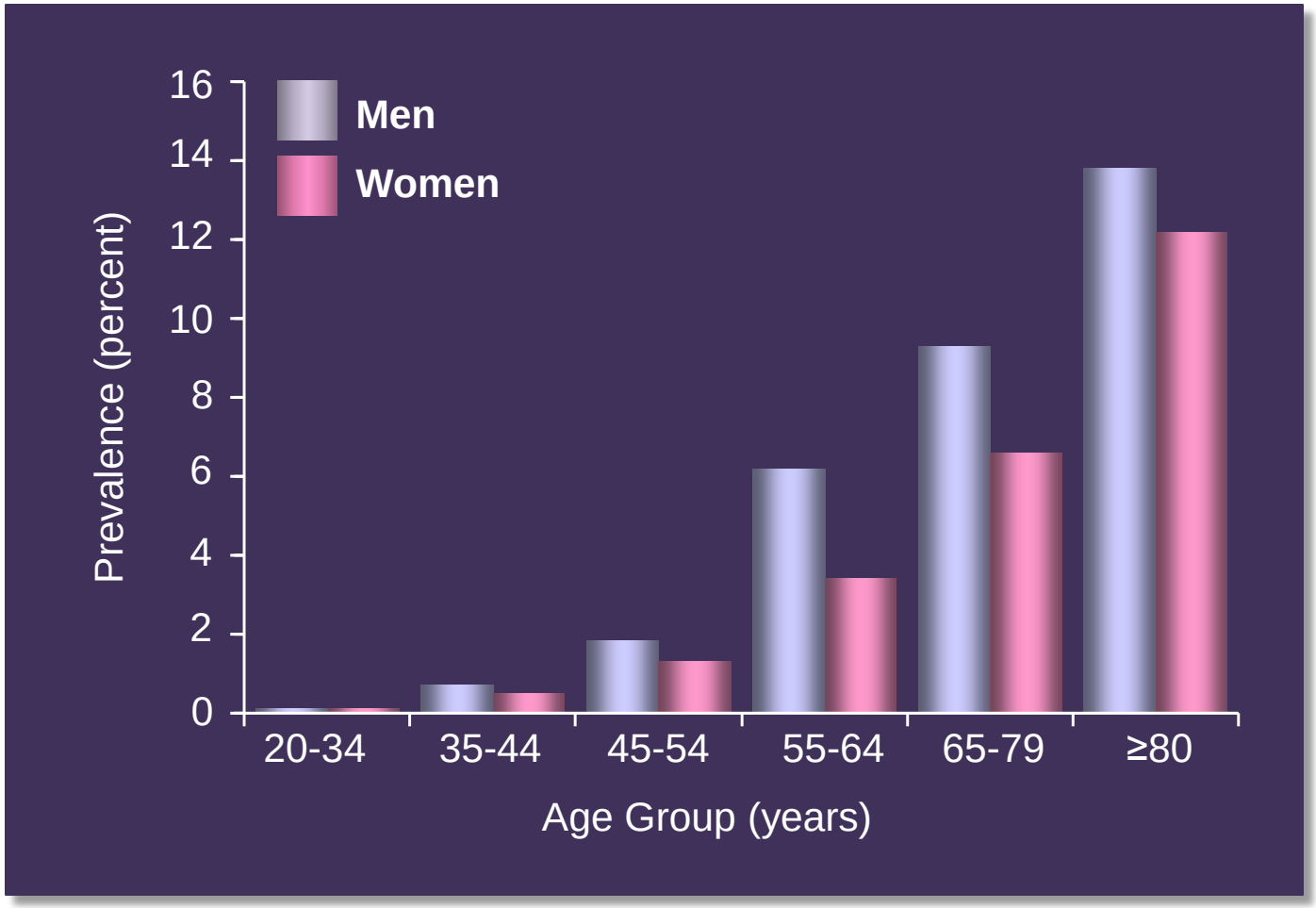
*Patients with moderate to severe MR

Prevalence of Heart Failure

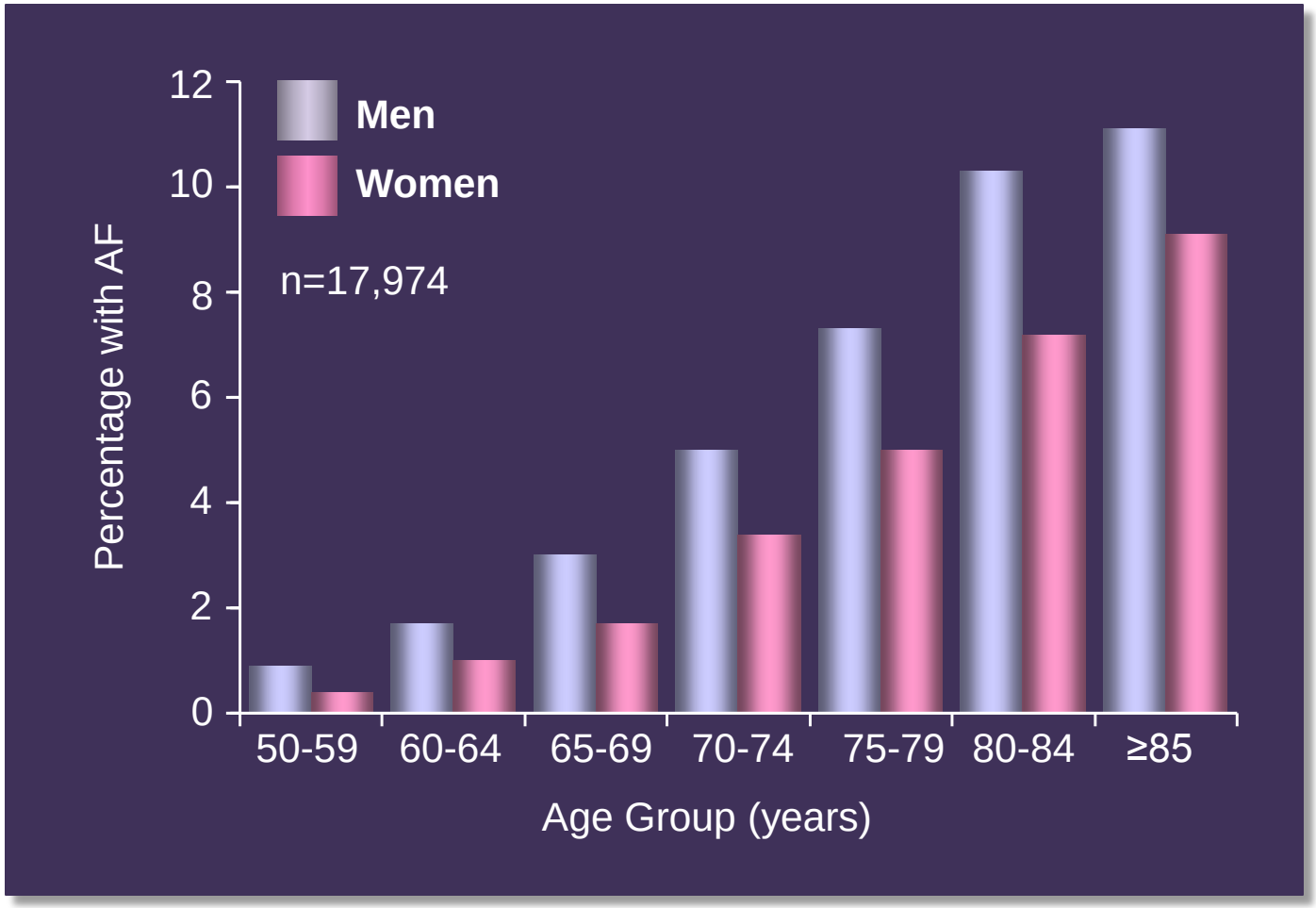
United States



Source: NHANES, CDC, and American Heart Association

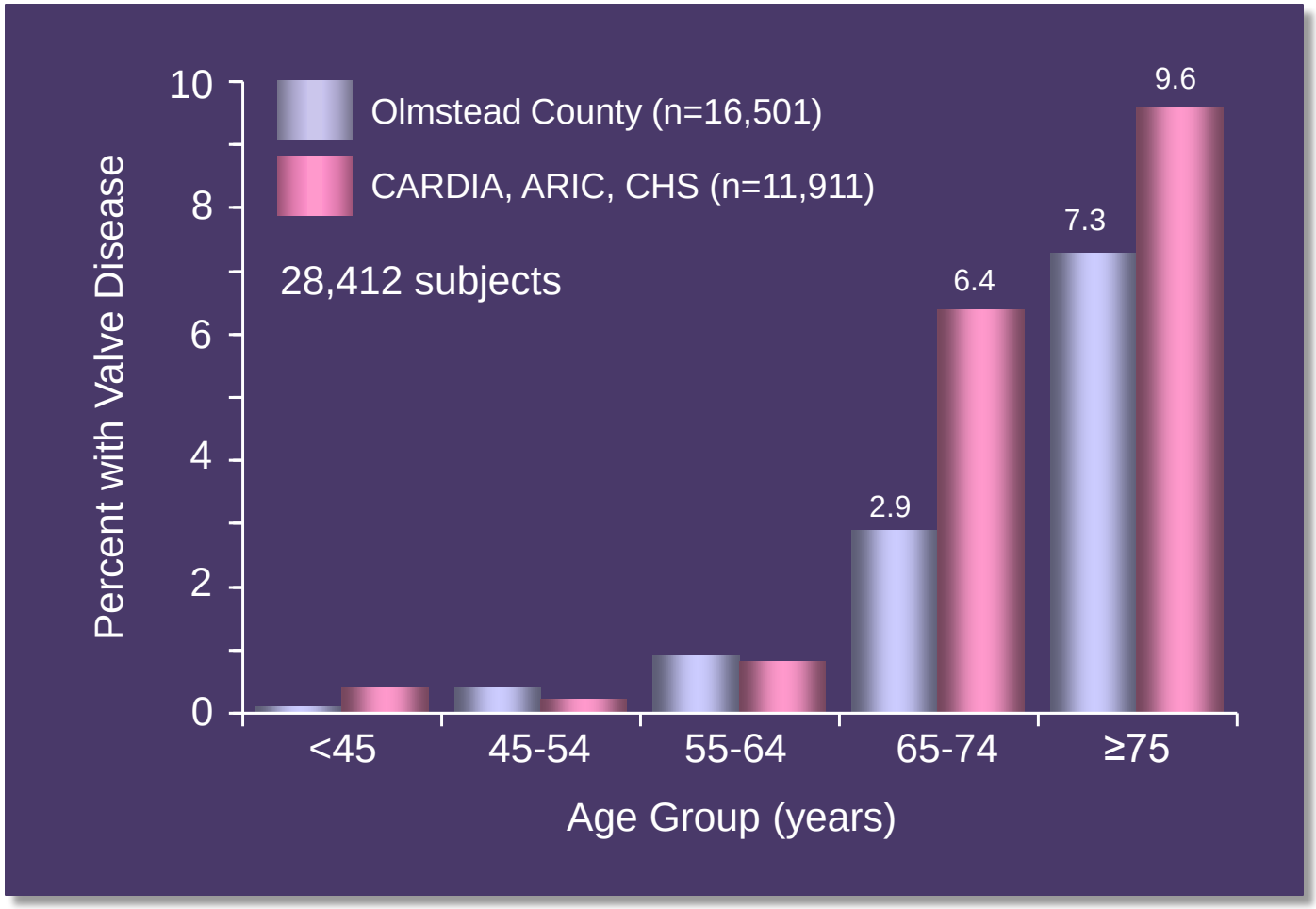
Atrial Fibrillation: Prevalence with Aging

The ATRIA Study



Go et al, *JAMA* 2001;285:2370-2375

Prevalence of Mitral Valve Disease



Nkomo et al, *Lancet* 2006;368:1005-1011

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Vol. 40, No. 11, 2002
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PII S0735-1097(02)02537-8

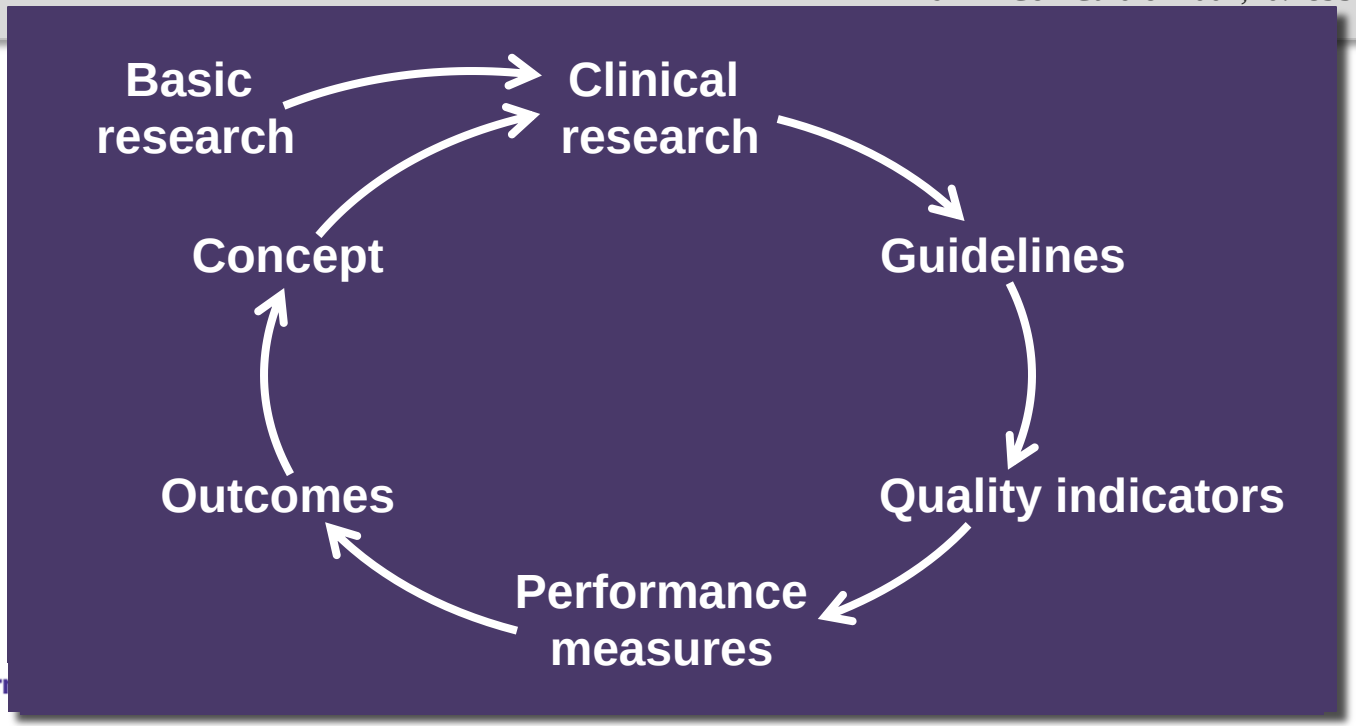
STATE-OF-THE-ART PAPER

Integrating Quality Into the Cycle of Therapeutic Development

Robert M. Califf, MD, FACC,* Eric D. Peterson, MD, MPH, FACC,*
Raymond J. Gibbons, MD, FACC,† Arthur Garson, JR, MD, MPH, FACC,‡
Ralph G. Brindis, MD, MPH, FACC,§ George A. Beller, MD, FACC,‖
Sidney C. Smith, JR, MD, FACC¶

Durham, North Carolina; Rochester, Minnesota; Houston, Texas; San Francisco, California; Charlottesville, Virginia; and Chapel Hill, North Carolina

J Am Coll Cardiol 2002;40:1895-1901



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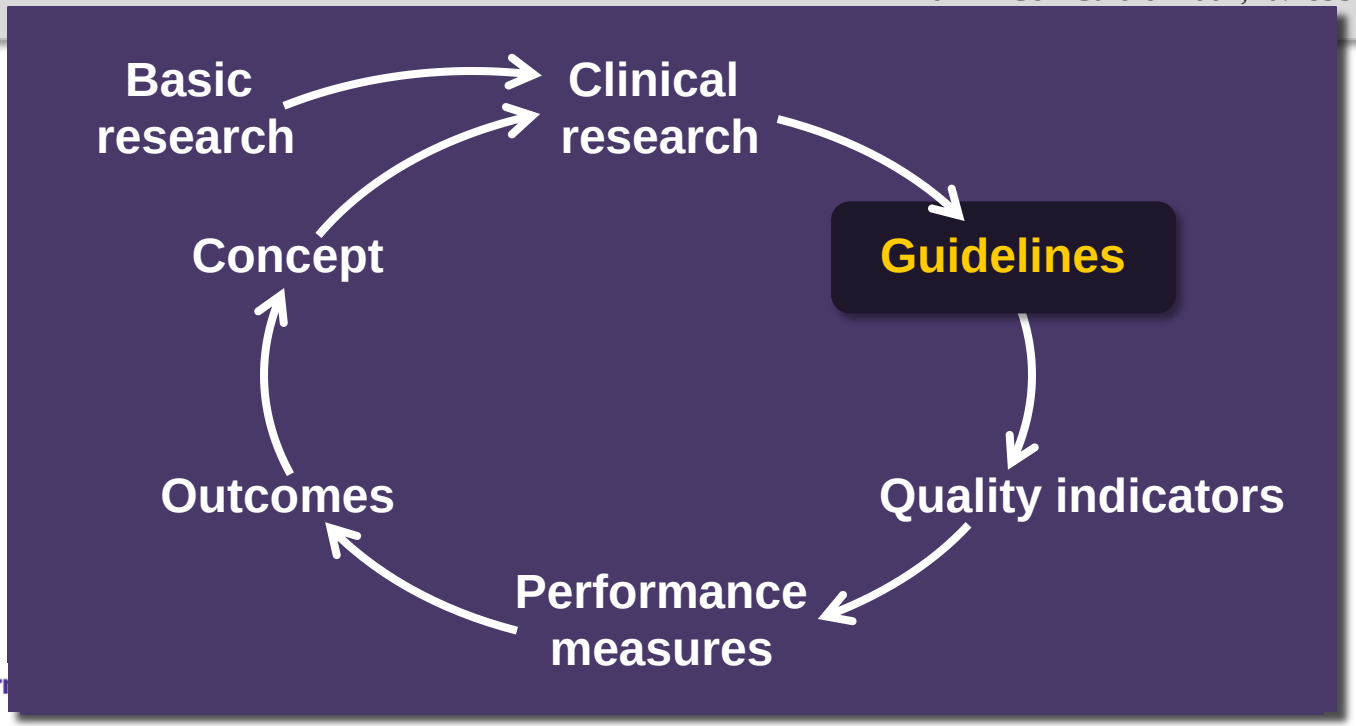

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J Am Coll Cardiol 2002;40:1895-1901

Journal of the American College of Cardiology
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Published by Elsevier Science Inc.

Vol. 40, No. 11, 2002
ISSN 0735-1097/02/$22.00
PII S0735-1097(02)02537-8

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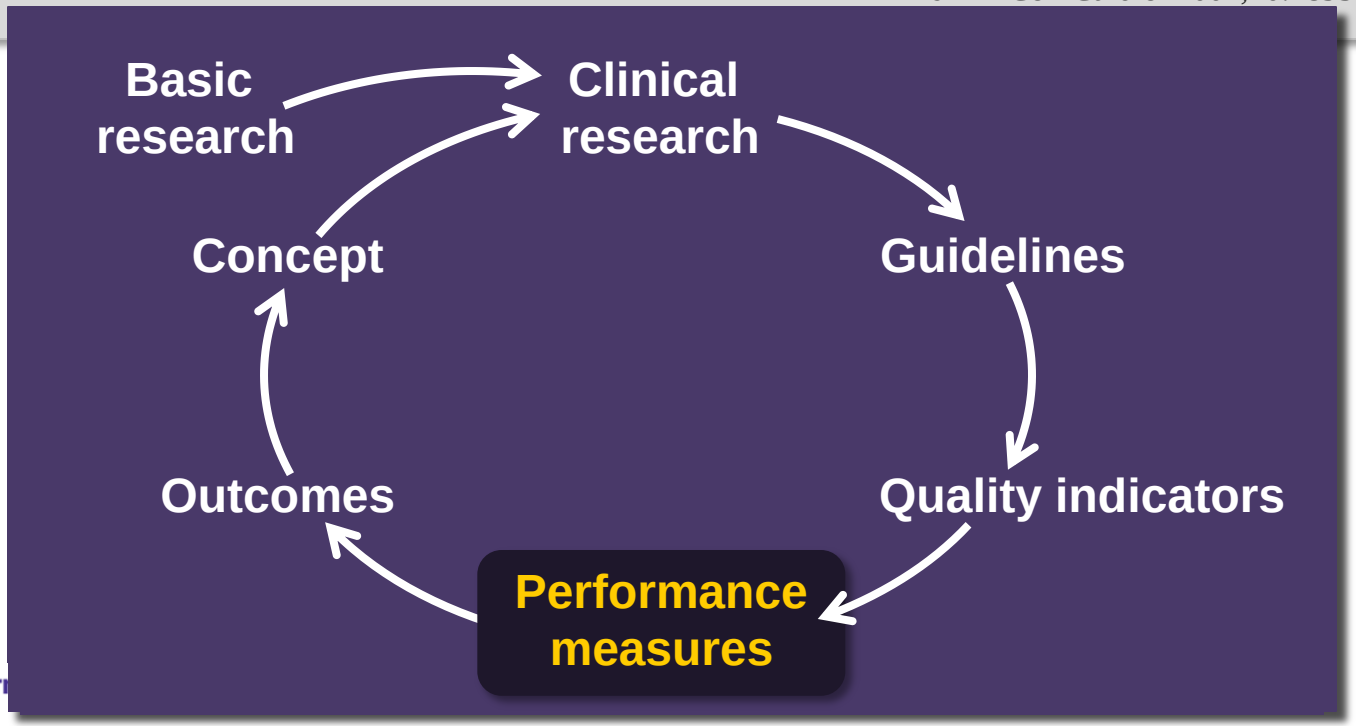

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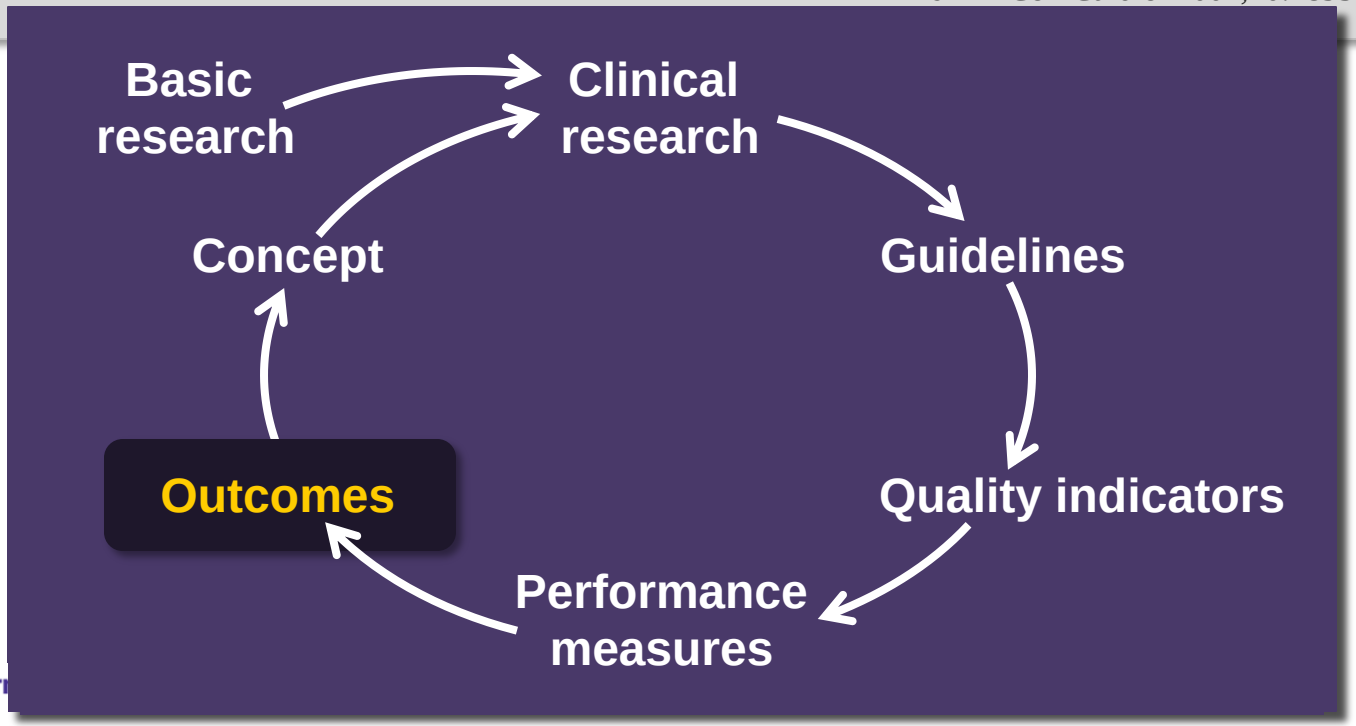

Mitral Regurgitation
Improving Quality of Care

- Clinical research networks to develop prospective randomized trials
- Clinical practice guidelines based on scientific evidence rather than expert consensus
- Establishment of centers of excellence in heart valve disease
- Development of clinical quality performance measures
- Outcomes and comparative effectiveness research