
بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

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In partnership with:

جمعية القلب السعودية
Saudi Heart Association

INTEGRATING FRAILTY ASSESSMENT INTO DECISION MAKING- COULD REHABILITATION HELP??

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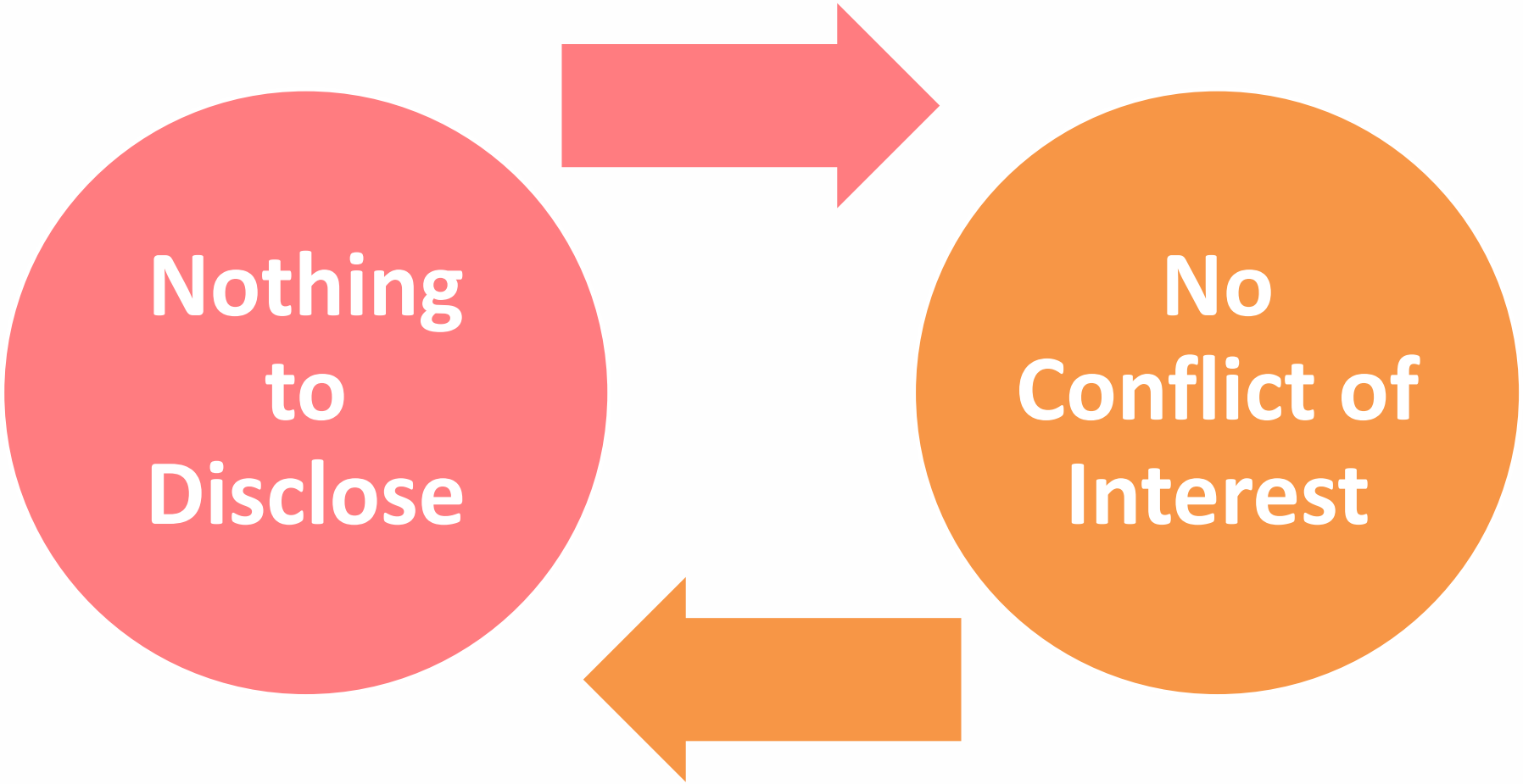
Disclosure



Outline

- Case Presentation
- Frailty Definition
- Prevalence/ Epidemiology
- Assessment of Frailty
- Frailty Scores and Scales
- Integrating Frailty in Decision-Making in CVD
- Role Rehabilitation. Can it Help ?
- Conclusion / Take Home Message

Case History

- Mr. A is a 71 years old Gentleman.
- He is diabetic and hypertensive for last 15 years
- Presented to emergency department with chest pain for two hours.
- Chest pain was severe, central, crushing in character, radiating to both arms associated with sweating and shortness of breath.

Case History Cont:-

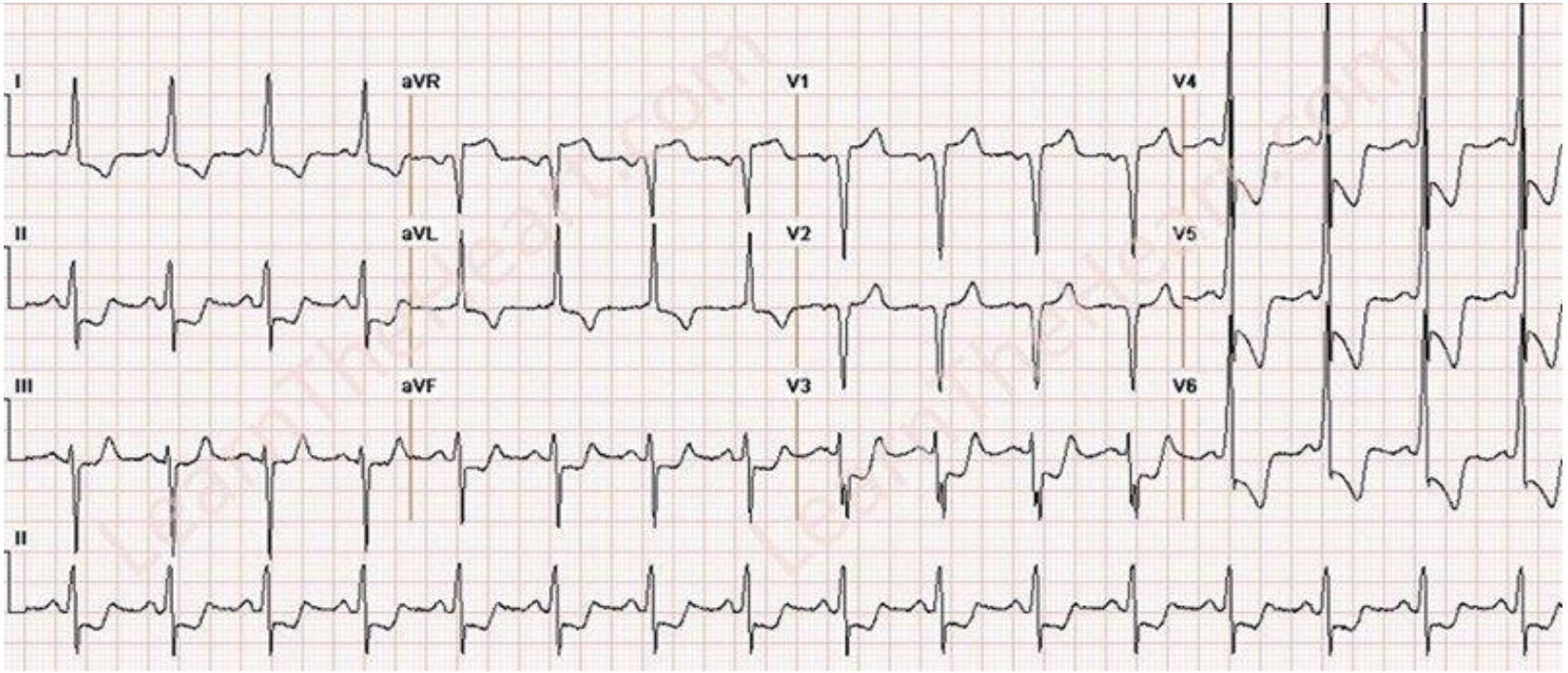
- His medical history includes marked shortness of breath while bathing and dressing, and family members provide assistance

  His HOPI also includes chronic lung disease, chronic kidney disease, and spinal stenosis.
- He has been using a walker at home and a wheelchair outside for the past 5 years.

Case History Cont:-

- On examination he was vitally stable with HR 100/min and BP 100/80 mm Hg
- There was Ejection systolic murmur at Aortic Area radiating to neck
- A/O chest revealed bil basal crapts with ronchi
- Rest of the examination was unremarkable.

ECG

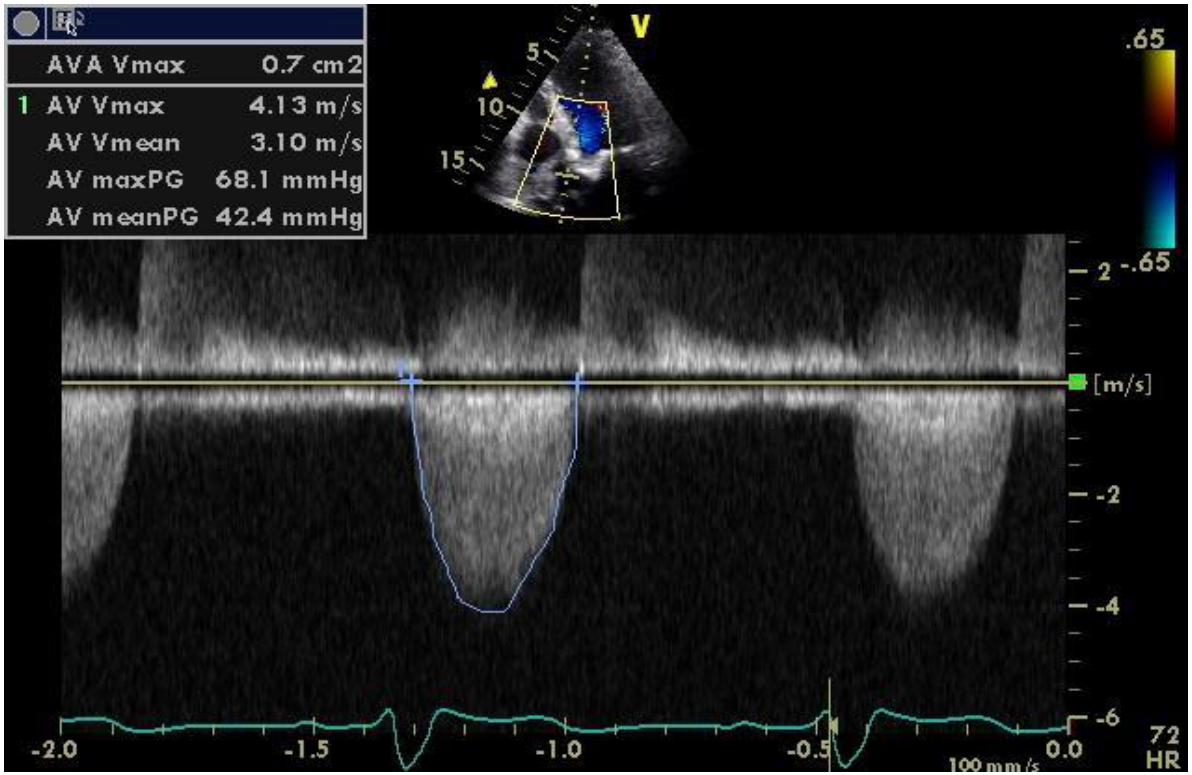


Laboratory Examination

- Normochromic normocytic picture with Hb 14.1 G/dl and TLC 13100/cu.mm
- RBS 138 mg/dl
- B.Urea 86 mg/dl
- S.Creatinine 1.9 mg/dl
- S.Potasium 4.5 meq/L
- CPK 190 U/L
- CK-MB 27 U/L
- Trop I Negative

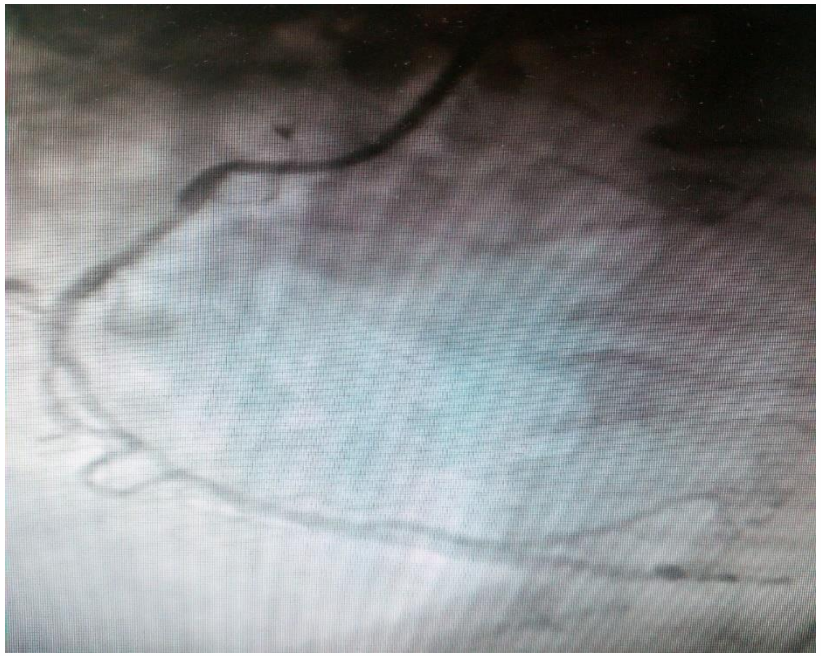
Echocardiography

- His echo showed moderate LVH, Ejection fraction of 50 % with severe aortic stenosis.



Coronary Angiography

- His coronary angiogram showed severe diffuse three vessel coronary artery disease with tight left main stem distal stenosis.



Management Plan and Risk

- Initially managed conservatively in ER.
- Plan:- Medical vs SAVR + CABG

  Risk for in-Hospital death after SAVR + CABG was calculated.

  STS Risk score for this procedure was 12.4%
- Euro 11 Score 12%
- Risk of surgery explained to family.
- Patient and his family opted for CABG + SAVR

Decision to replace valve based on:

1. Symptoms
2. AS grade/severity
3. Individual patient's surgical risk
4. Other

Management

- He was operated on 12th October 2018 for CABG + AVR & following grafts were done.
- LMS Tapering tight distal stenosis
- SVG to LAD: 1.5mm vessel with severe mid disease .
- SVG to OM1: 1.5mm Vessel with tight osteal & moderate distal disease.
- SVG to OM2: 1.5mm Vessel with tight osteal & moderate distal disease.
- RCA: severe diffuse disease with small PDA ,non graft able vessel.
- Aortic valve replacement was done with tissue valve.
- Patient came off bypass on moderate dose of inotropes and shifted to ICU in stable condition.

Case Summery

- The patient's risk probably was underestimated, because frailty was not included in these risk calculators.
- Given his severe mobility impairment, frailty, and chronic lung disease, his risk for death or functional decline after surgery is greater than 40% to 50% at 6 months
- These risks should be presented to the patient against the potential benefit of surgery in an unbiased fashion.
- If the likelihood of benefit is unclear and the risk for harms is high, the decision should be guided by his personal values and preferences.

FRAILITY

It is a geriatric syndrome characterized by “an excess vulnerability to stressors, with reduced ability to maintain or regain homeostasis after a destabilizing event.”

Frailty is a risk factor for the development and progression of CVD, while CVD can lead to frailty.

It is a predictor of mortality in patients with CVD independent of age, underlying disease severity, co morbidities and disability.

Frailty in Cardiac Surgery has been strongly associated with high postoperative mortality , morbidity and disability.

Eur J Heart Fail 2016;18:869–75

Prevalence of Frailty

- **Frailty in patients with CVD-** 10-60%)

  (depending upon criteria used)

  Cardiac Surgery- 20-50%
- **The prevalence increases with-**
  - Age,
  - greater in females
  - in residents of long-term care facilities
- **≥65 years under-going PCI,** 20%
- **≥70 years with significant CAD** 27%
- **3 times more prevalent in cardiac patients.**
- **High prevalence in Patients undergoing TAVR & in CCF.**
- Anesth Analg. 2017 April ; 124(4): 1053–1060

Frailty Risk Assessment Scores

Table 1 Frailty risk assessment scores

	FFS	MSSA	MFS	CAF	FORECAST
Number of indicators	5	4	5	6	5
Weight loss >5 kg in preceding year	Y		Y		
Grip strength >16 kg	Y	Y	Y	Y	
Low levels of physical activity	Y	Y			
6 min walk <210 m	Y	Y		Y	
SF-36 <40% for energy and vitality	Y				
MMSE <24		Y	Y		
Get-up-and-go >17 s			Y		
FEV_1 <30%			Y		
Put on and remove jacket				Y	
Pick up a pen from floor				Y	
Balance				Y	
Get up and down from a chair—performed three times				Y	Y
Feeling weak over the past 2 weeks					Y
Serum creatinine					Y
Stair climb assessment					Y
CSHA Clinical Frailty Scale					Y

CAF, comprehensive assessment of frailty; CSHA, Canadian study of health and ageing; FEV_1, forced expiratory volume in 1 s; FFS, Fried frailty score; FORECAST, Frailty predicts death 1 year after Elective Cardiac Surgery Test; MFS, motor fitness scale; MMSE, Mini-Mental State Examination; MSSA, McArthur study of successful ageing.

Rowe R, Iqbal J, Murali-krishnan R, *et al. Open Heart* 2014;**1**:e000033. doi:10.1136/openhrt-2013-000033

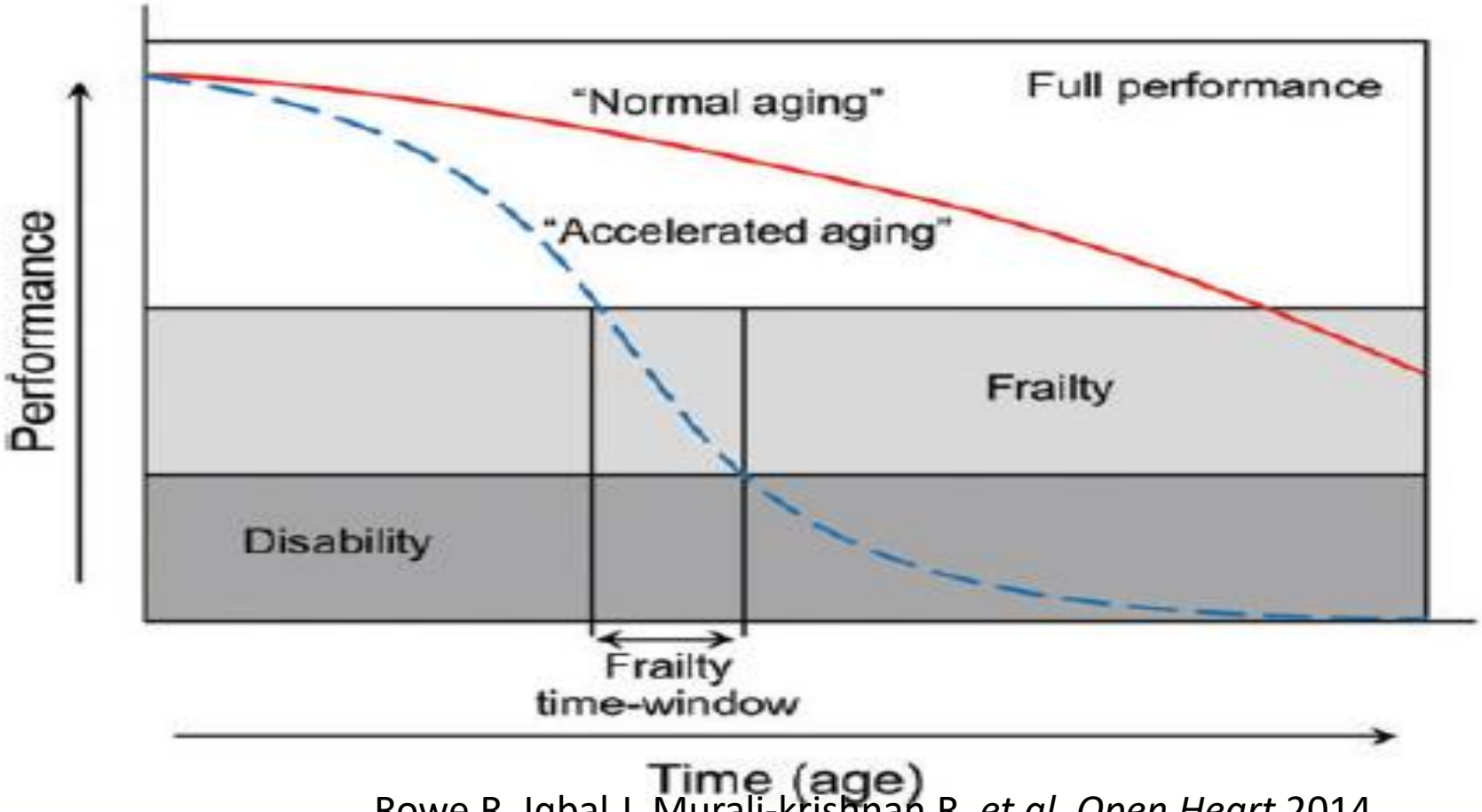
Frailty Assessment

Table 3 The simple 'FRAIL' Questionnaire Screening Tool[101]

3 or greater = frailty; 1 or 2 = pre-frail
Fatigue: are you fatigued?
Resistance: cannot walk up one flight of stairs?
Aerobic: cannot walk one block
Illness: do you have more than five illnesses?
Loss of weight: have you lost >5% of your weight in the past 6 months?

European Heart Journal (2014) 35, 1726–1731

FRAILTY vs DISABILITY



Rowe R, Iqbal J, Murali-krishnan R, *et al*. *Open Heart* 2014

Table 5 Reasons for evaluating whether frailty is present in patients with cardiovascular diseases

1	Population ageing is increasing the number of frail patients with CVD
2	Eye ball or end of the bed assessments of frailty may not be reliable
3	Frailty increases the risks of cardiac surgery and other cardiovascular interventions
4	Frailty increases the risk of cardiovascular and non-cardiovascular mortality and the need for future institutional care
5	Frail patients may have more complications from medical treatments
6	The benefits of some cardiac interventions may be less in frail elderly patients because of competing risks. Non-cardiac deaths dominate following TAVR, PCI, and CABG

Surgical Risk Assessment- AVR

STS Risk Score

Patient, cardiac and surgery-related risk factors (50 variables)

% 30 day mortality*

Performance in older patients undergoing AVR

- In ≥ 80 y, AUC 0.81 (Vanhuyse et al, 2013)
- Superior to EuroSCORE for high risk patients (Kuwaki et al, 2015)

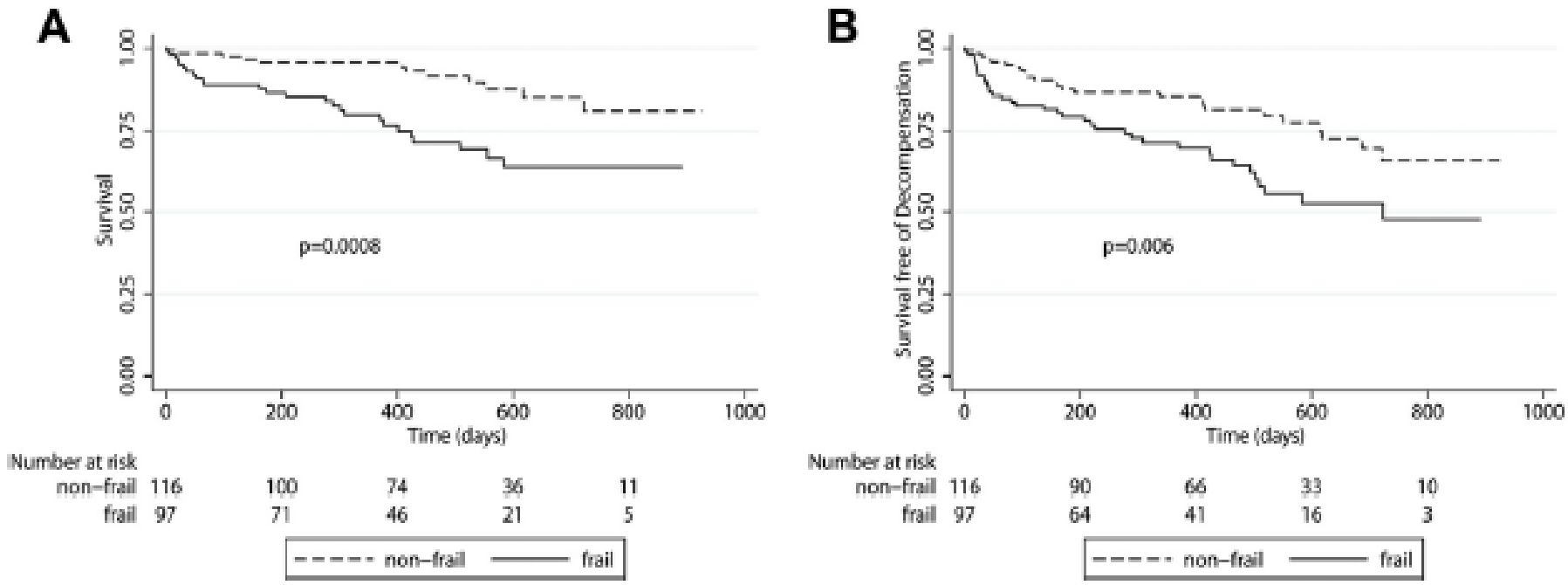
VS

Logistic EuroSCORE II

- Patient, cardiac and surgery-related risk factors (17 variables)
- % 30 day mortality*
- Performance in older patients undergoing AVR
  - In ≥ 70y, AUC <0.7 (Pullis et al, 2015)
  - In ≥ 80 y, same poor AUC, worse in high risk category (Provenchere et al, 2017)

Impact of Frailty on Outcomes in Patients Undergoing Percutaneous Mitral Valve Repair

FIGURE 4 Kaplan-Meier Survival Plots for Mortality and Mortality or Heart Failure Hospitalization by Baseline Frailty Status



(A) Survival and (B) heart failure hospitalization free survival in frail and nonfrail patients, P value by log-rank test. P value by log-rank test.

Integrating Frailty in Decision-Making

- **Goals of CV interventions for frail older adults are to**
  - improve quality of life,
  - prevent worsening chronic disease,
  - reduce the risk of catastrophic outcomes, and
  - provide risk assessment to guide therapeutic decisions.51
  - Unfortunately, these goals are not always met.

  It is important to consider functional status, disability, and cognitive impairment in guiding peri operative decisions for frail older adults.

- Frail patients have an increased risk of complications from procedures,[67,]
- A less invasive strategy may be preferred, for example, trans cutaneous rather than open surgical procedures.

Role of Cardiac Rehabilitation

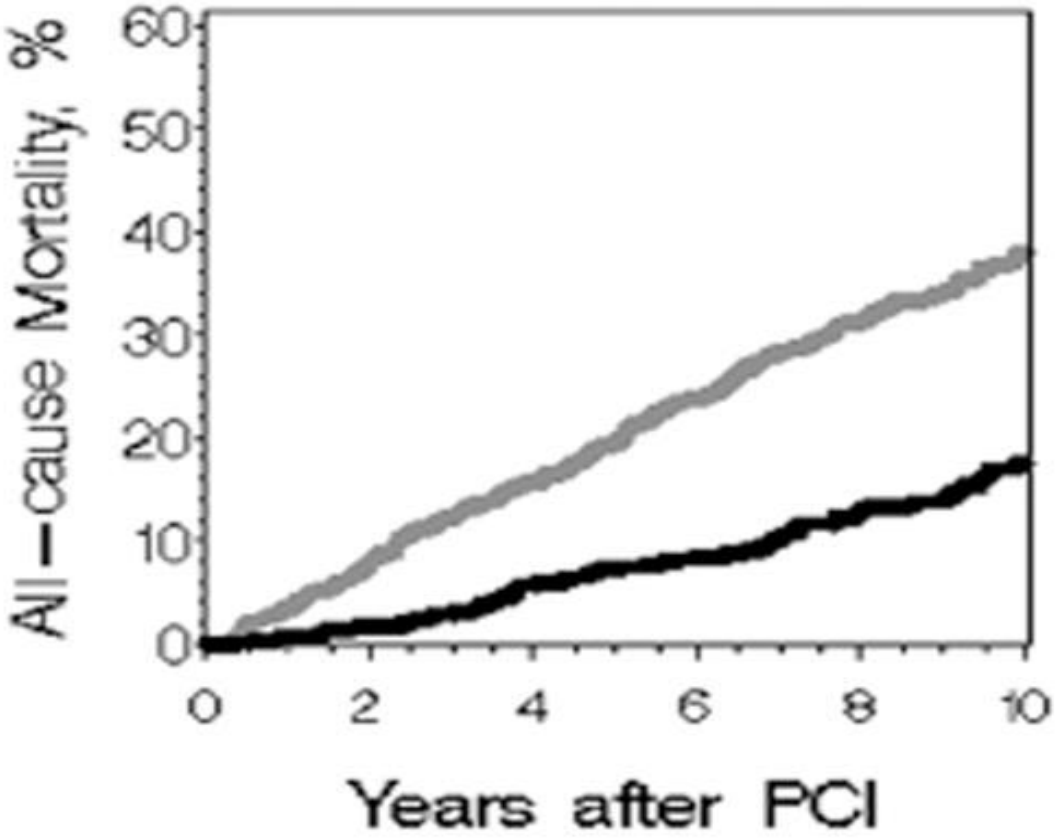
- **Enrolment in Cardiac Rehabilitation improves outcomes of frail patients with CVD**
  - As Patients with acute MI, ACS , Stable Angina, Heart Failure, Cardiac Transplant, OR
  - Following major procedures such as PCI, CABG, Valve surgery or TAVR are eligible for CR.
- **Specific deficits can be identified and prescription targeted to prevent and treat frailty**.
- This facility, however still remains under utilized.
- AHA and ACC consider CR a Class I indication for these conditions. Trends Cardiovasc Med. 2017 August ; 27(6): 420–425

Role of Cardiac Rehabilitation

- **Coronary artery disease (CAD).**
  - Post MI, ACS, Stable Angina
  - Emergent, Urgent or Elective PCI

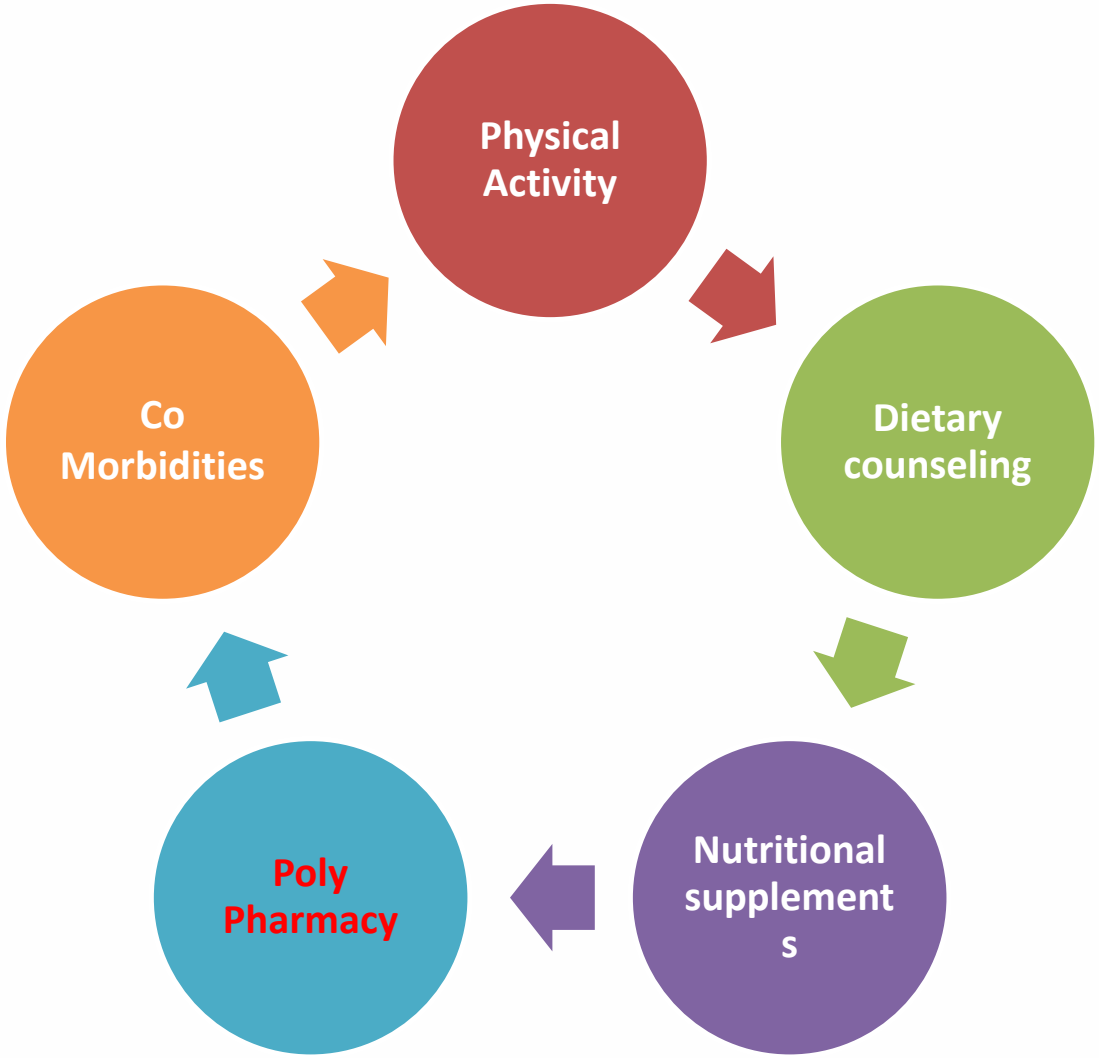
  Valvular Heart Disease.
  TAVR
  Post CABG
  CRT & PPM
  Heart Failure
  Cardiac transplant
- Trends Cardiovasc Med. 2017 August ; 27(6): 420–425

Role of Cardiac Rehabilitation Post PCI

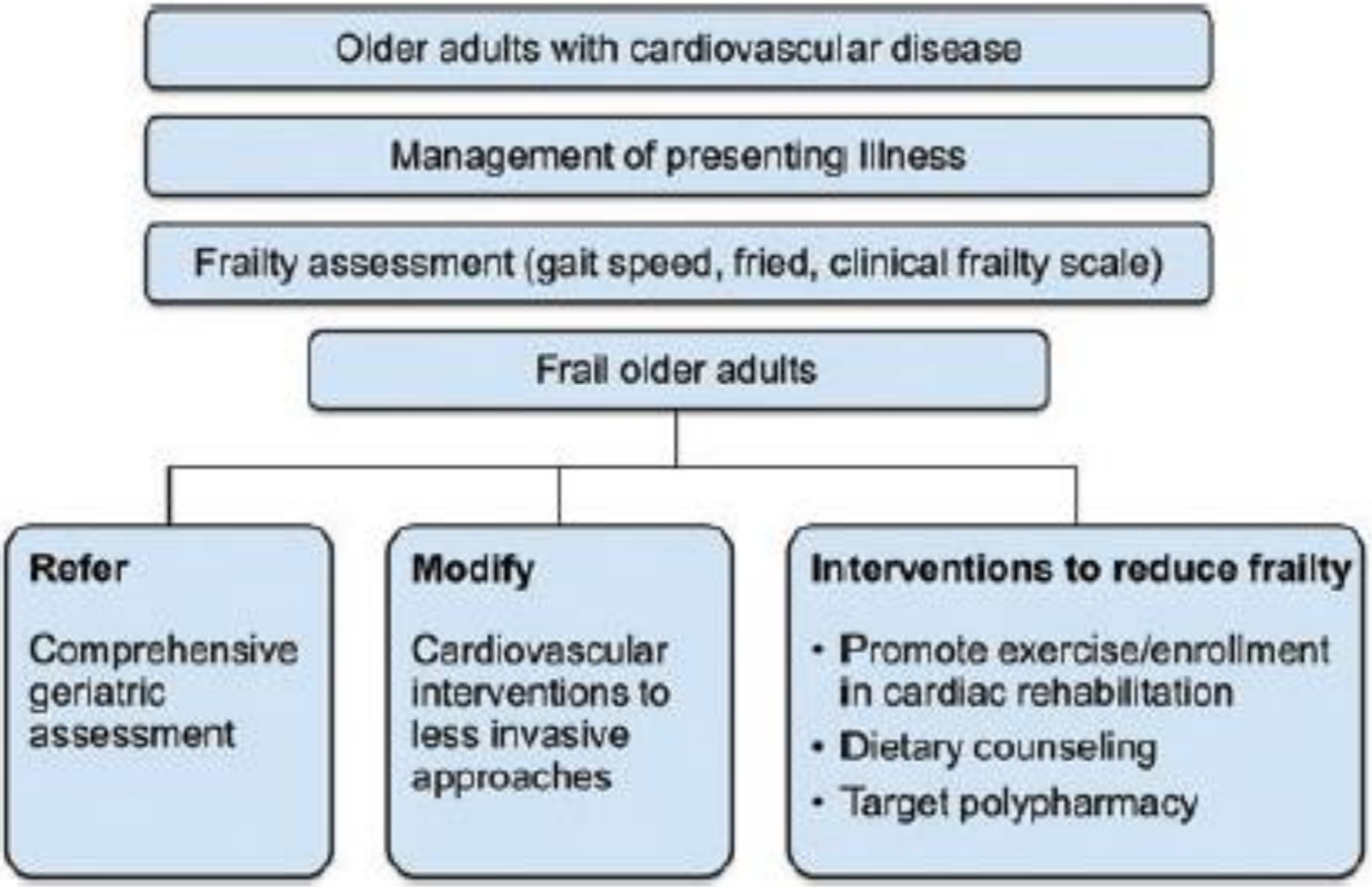


No Rehab	1224	992	701	479	321	202
Cardiac Rehab	765	630	527	377	250	131

Key Steps in Cardiac Rehabilitation



Frailty Assessment Summery



Conclusion

Improved life expectancy and population ageing are increasing the number of frail adults with CVD.

Frailty is an independent risk factor for adverse out- comes in CVD and following cardiac intervention.

Frailty assessment can help in risk stratification and decision-making, thereby improving outcomes and QoL, and preventing unnecessary harm in the most frail. .

Current evidence-based treatment guidelines do not usually account for frailty in risk assessment for CV intervention.

Evidence that interventions designed to improve frailty result in better outcomes in elderly patients with CVD is limited.

Large randomized clinical trials are needed to evaluate the optimal management of these patients.

Questions/Comments

Thank you for your attention