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Using Frailty Measurement to Assist With Patient Assessment and Discharge Planning in Patients Undergoing Transcatheter Aortic Valve Implant – Results of a Pilot Project

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Alignment

SFH Strategy

- Organizational support
- Processes of care
- Unique needs of patients / families / caregivers

RNOC Direction

- Collaboration, consensus building
- Client-centred care model
- Integration of rehab services

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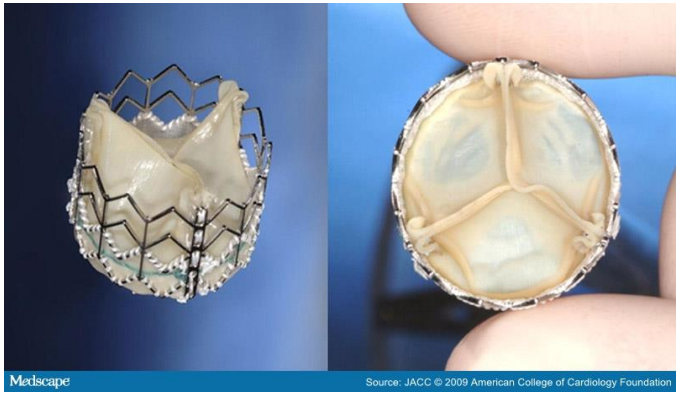
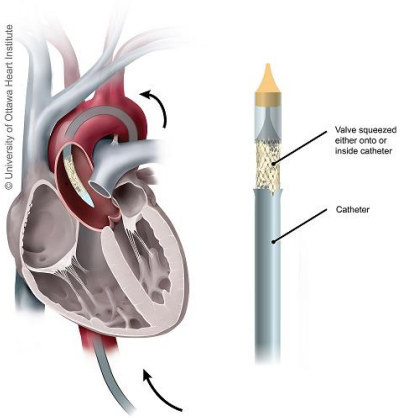
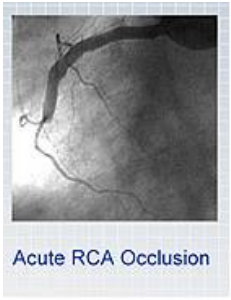
TAVI

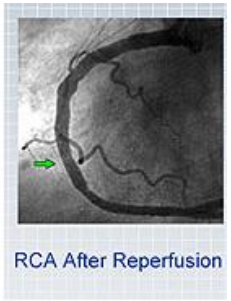
What is a TAVI?



How does it work?







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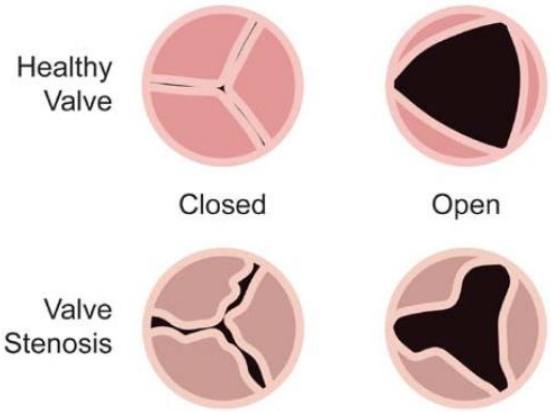
Our TAVI Patients



- Aortic stenosis is the most frequent acquired valvular heart disease in the industrialized world
- Incidence increases with age
- Once symptoms appear, untreated AS is usually fatal within 18 mths – 3 yrs

- Age: 84.6 (range 66 - 95)
- Evaluated as too high risk for conventional surgery
- Multiple co-morbidities
- Complex health history
- Symptomatic
  - Dyspnea, pre-syncope, fatigue
- +/- some cognitive impairment

Most TAVI patients have some degree of frailty…

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Frailty: A Multidimensional Syndrome

- Nutrition (↓Protein)
  - Poor dentition
  - Illness
  - Depression
- Declining metabolism
  - Loss of lean body mass

- Molecular and cellular damage
  - Immune dysregulation
    - ↓ability to respond to stressors
  - Neuro-Endocrine dysregulation
    - ↓regulation of critical homeostatic functions

- Low Energy/Physical Activity
  - ↓Physical activity
  - ↓strength
  - ↓balance
- Immobilization

- Illness
  - Chronic Inflammation
    - Loss of ability to modulate inflammatory proteins
  - Catabolic state
  - ↓Insulin sensitivity

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What does frailty look like?

- Unintentional weight loss
  - 10 pounds or more in past year
- Muscle loss and weakness
  - Fatigue, decreased activity
- Decreased ADL's; IADL's

How is frailty assessed?

- Clinical phenotype
  - Slow gait speed, weak hand grip
- Deficit accumulation
  - Incremental effect of co-morbidities
- Clinical judgement
  - Hx and Px filtered through practitioner experience/insight

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Evidence Review: Frailty as an Outcome Predictor

Cardiac surgery

Afilalo et al (2012)

- Prior to cardiac surgery, patients ≥ 70 yrs completed a variety of frailty assessments
- Major outcome: composite of postoperative mortality or major morbidity
- The mean frailty measurements were higher in patients who experienced a major morbidity or mortality

Non-ST-Segment Elevation Myocardial Infarction

Ekerstat et al (2011)

- Patients ≥ 75 yrs diagnosed with NSTEMI had prospective frailty measurement
- Major outcome: composite of death, re-infarction, re-hospitalization, bleeding, stroke/TIA, dialysis
- Frailty score was found to be independently associated with risk for major composite outcome

TAVI

Stortecky et al (2012)

- Patients ≥ 70 yrs with severe AS referred for TAVI were prospectively administered a multi-dimensional geriatric assessment and assigned a frailty index score
- Major outcome: all cause mortality or major adverse cardiovascular and cerebral events post-TAVI
- Frailty index showed an association with major outcome at 30 days and 1 year post-TAVI

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Frailty Pilot Project

If frailty predicts outcomes,

1. Is it feasible to include a frailty measurement scale in patients booked for elective TAVI?
2. Does the integration of a frailty measurement scale help to identify those who may require targeted, early interventions?

Pilot Quality Improvement Project

- Elective TAVI patients
- Frailty assessment scale
- Identify frail patients pre-TAVI and target interventions
- Follow post-TAVI outcomes

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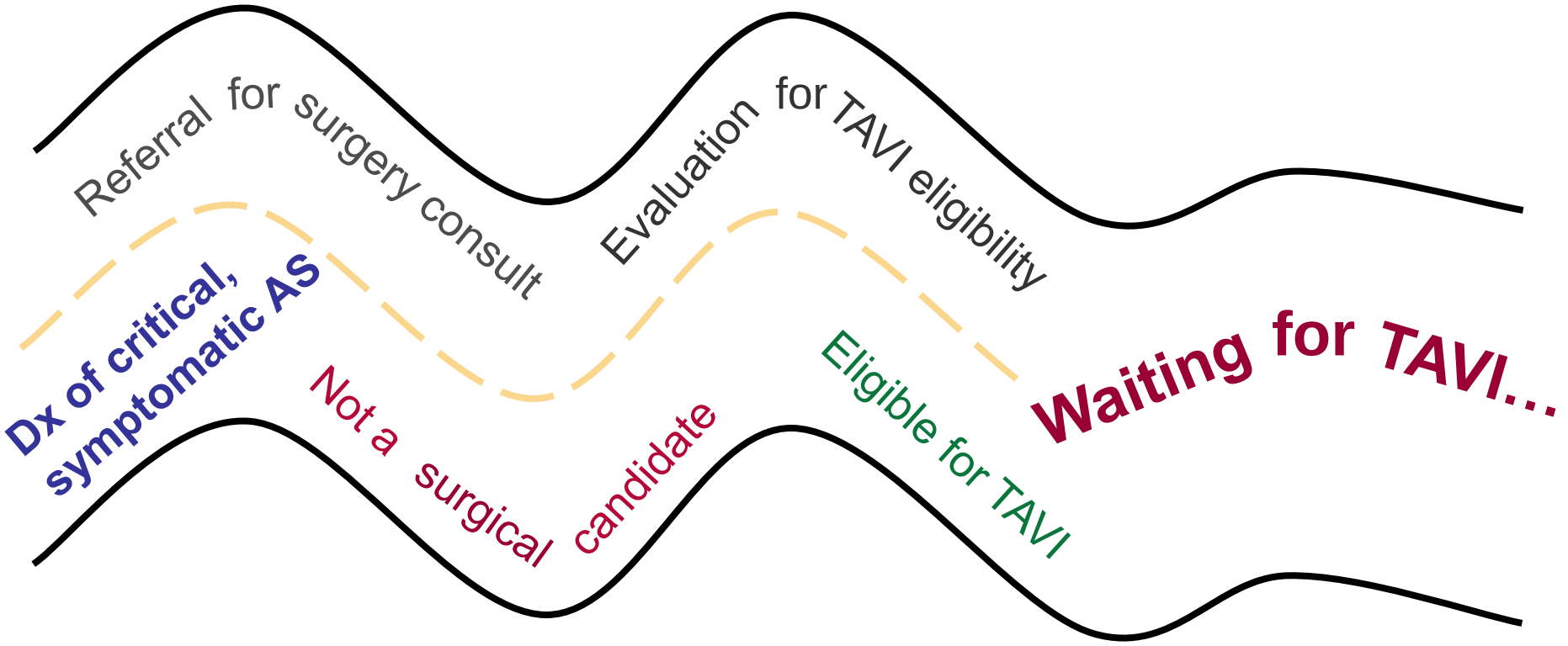
The TAVI Patient Experience



Opportunity for patient assessment and tailored pre-TAVI interventions

2 – 6 weeks | **3 – 4 weeks** | **1 – 4 months**

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Methodology

Full functional assessment

↓

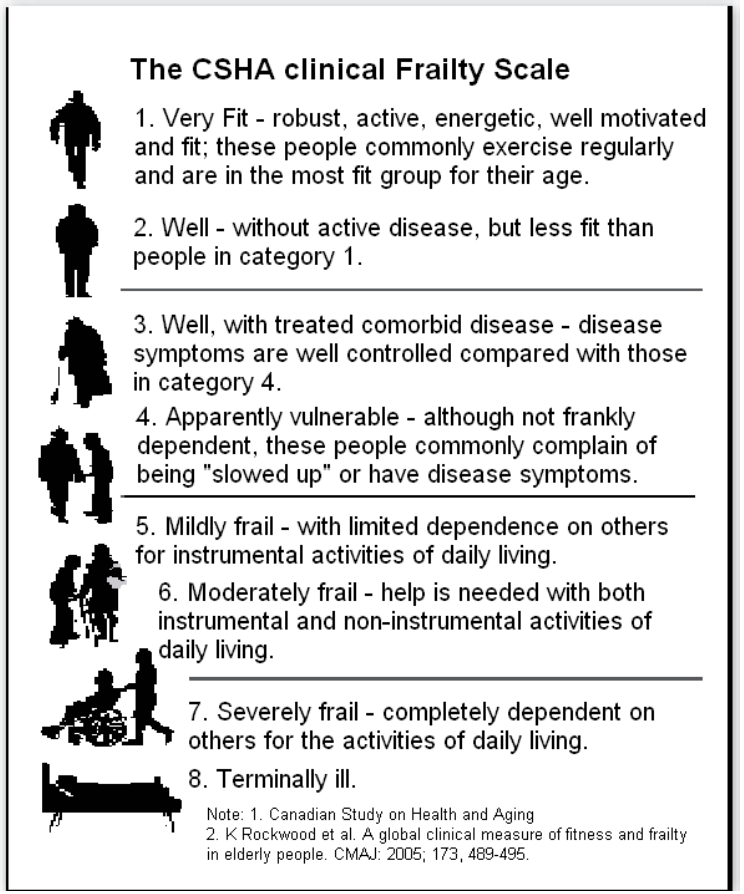
CSHA Clinical Frailty Score

↓

CSHA ≥ 4: Tailored Education/Support
- Family/ Caregiver assessment
- Pre-admission discharge planning
- Early referrals initiated
- Fluid balance ; daily weights
- Falls risk, other symptom review

CSHA<4 Standard Waitlist Mgnt/Care*
- Communication with patient and family
- Discharge options discussed
- Accessible as needed for questions concerns

The CSHA Frailty Scale



*Regional Cardiac Care Coordinator Role (www.ccn.on.ca)

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Frail Patients Pre-TAVI: Targeted Interventions

Family engagement and collaboration

- Assistance in exploring appropriate convalescent/ geriatric care options; geriatric referral
- Education, managing expectations (LOS, delirium, potential outcomes/complications)
- Optimized scheduling to family availability; caregiver strain

Early community referrals

- Social work
- Tele-home monitoring for fluid balance/optimization
- Community pharmacist for problems related to medication

Associated symptom management

- Symptom progression, early admission for HF management

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Post TAVI Outcomes

Outcomes	Score < 4 n = 10	Score ≥ 4 n = 19
Intra-operative complication*	2	5
Mean ICU LOS (Days)	2	4
Mean hours of ventilation	3	36
Number requiring CRRT (Acute kidney injury)	0	3
Number requiring re-intubation (Resp. failure)	1	3
Number requiring enteral nutrition (N/G feeds)	0	6
Overall LOS (Days)	9	18
30-day mortality	0	3
Overall mortality (median f/u 22.2 months)	0	5

* Cardiac arrest; conversion to SAVR; embolism; LV wall perforation; cardiac tamponade

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What did we learn; What did we do about it

Vulnerable/Frail patients experience higher degree of morbidity and mortality.

There are significant opportunities *pre-admission* to engage with frail patients and their families to manage expectations and tailor care and support

Family/caregivers assume the bulk of pre-TAVI planning and post-discharge management – need to have access *and* be involved throughout the process

Heart Team

- Geriatrician at TAVI meetings
- International Frailty Study

Pre-TAVI

- Frailty assessment, cognitive screen
- Discussion of options with patients and family members
- Access/ education/ support

In-hospital

- TAVI Pathway; social work, physio (early mobilization), dietitian
- Firm discharge plan/support

Post-Discharge

- A number to call

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Questions

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