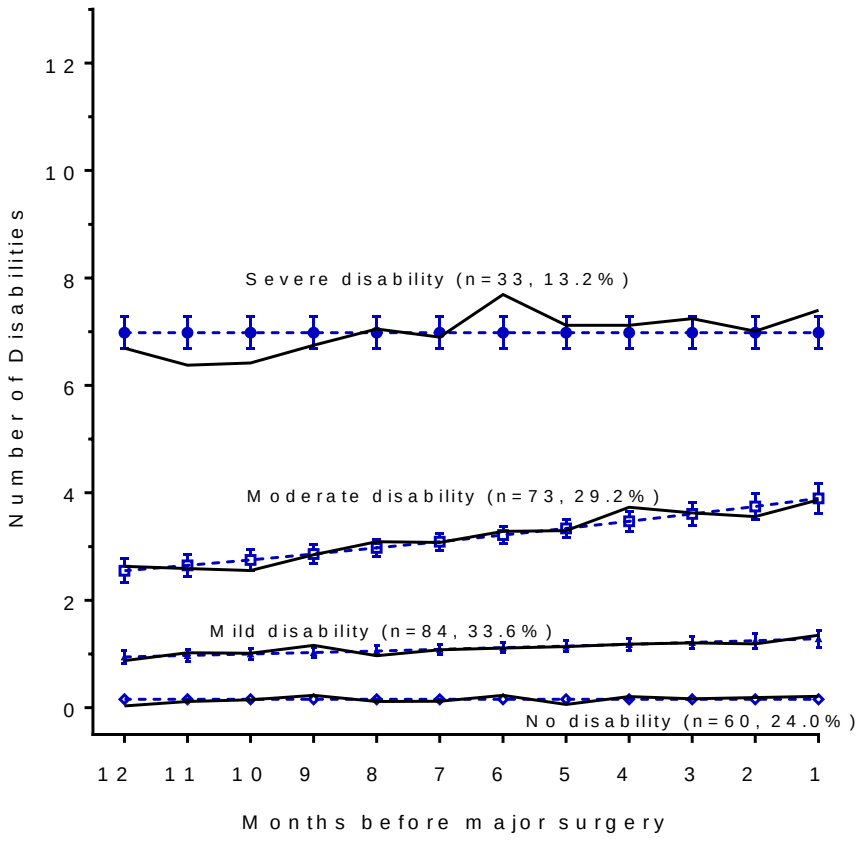
Mobilizing Older Adults Facing a Surgical Procedure

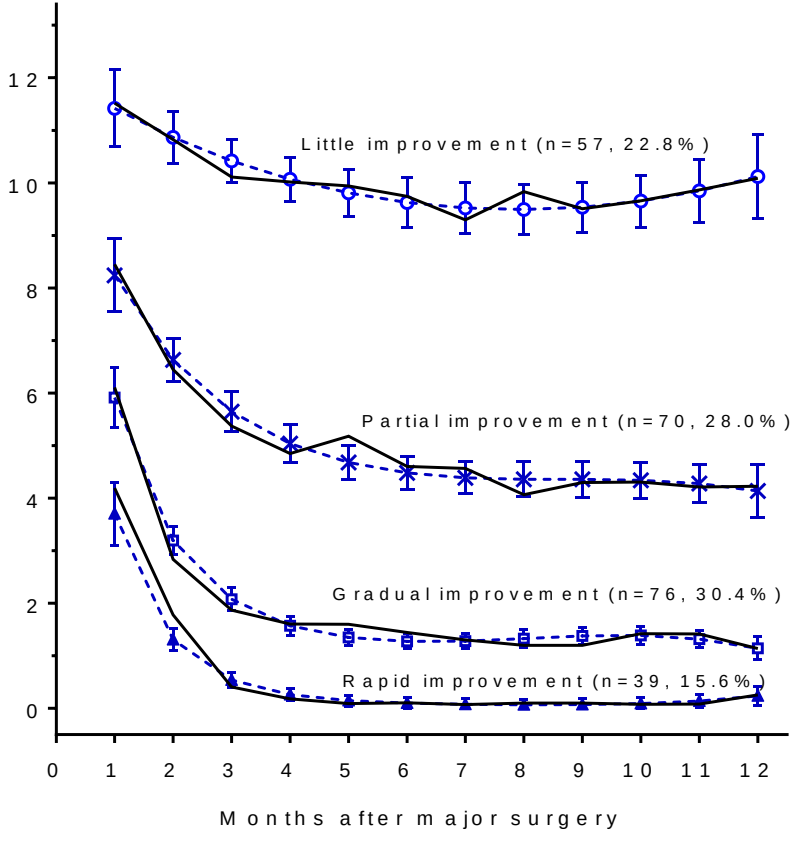
Thomas M. Gill, M.D.
Yale School of Medicine

Background

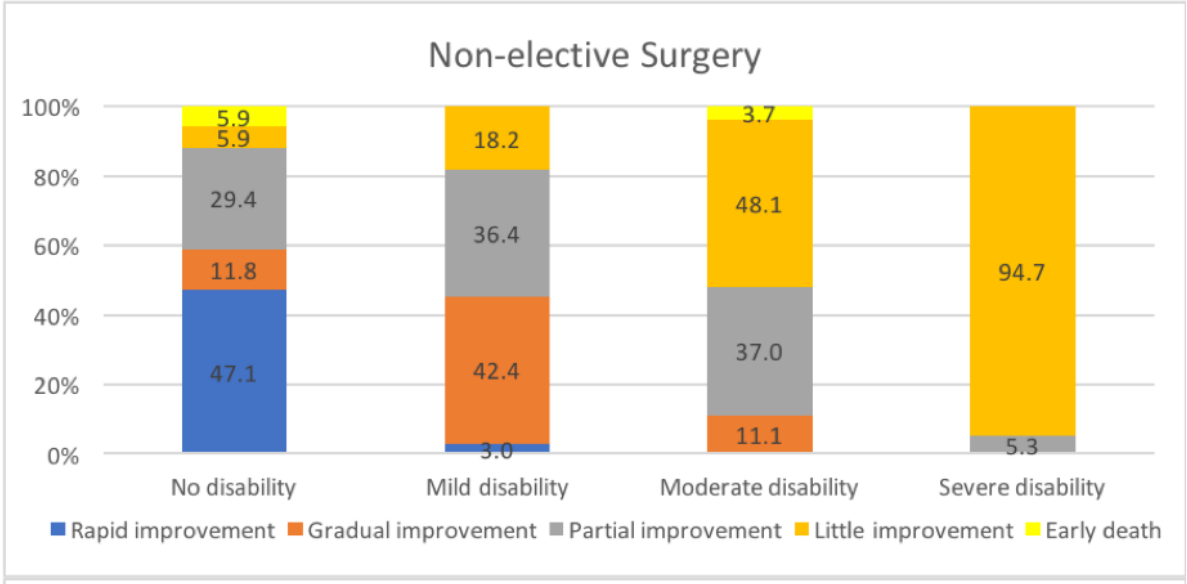
- More than 4 million major surgical operations are performed annually in US on older patients
- Relatively little is known about course of disability before and after major elective and non-elective surgery
- Few interventions have focused on improving functional outcomes after major surgery

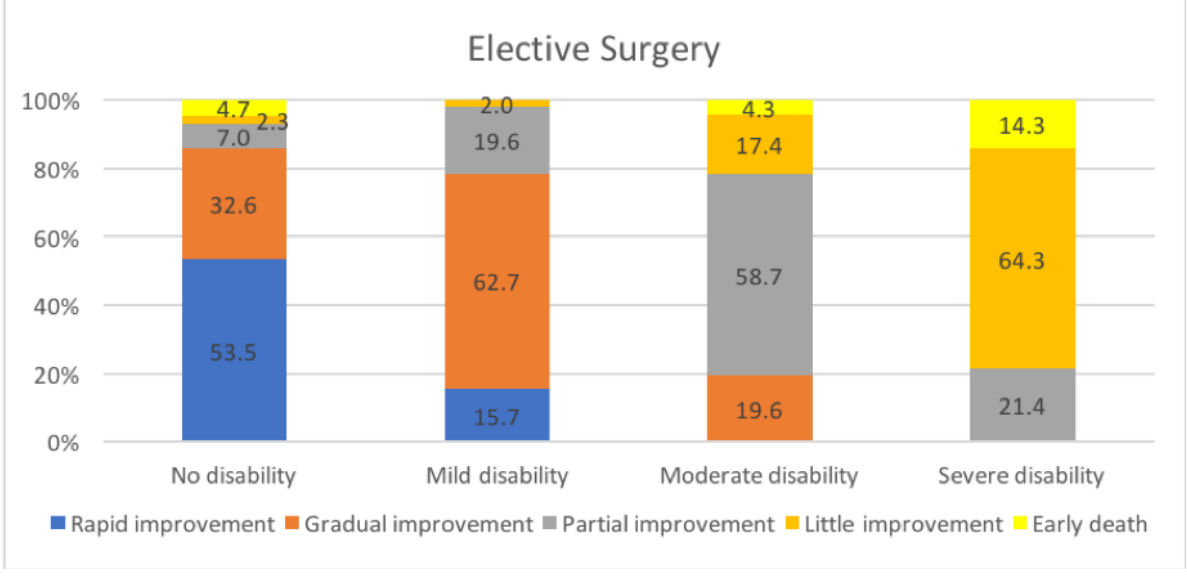
Functional Trajectories before and after Major Surgery





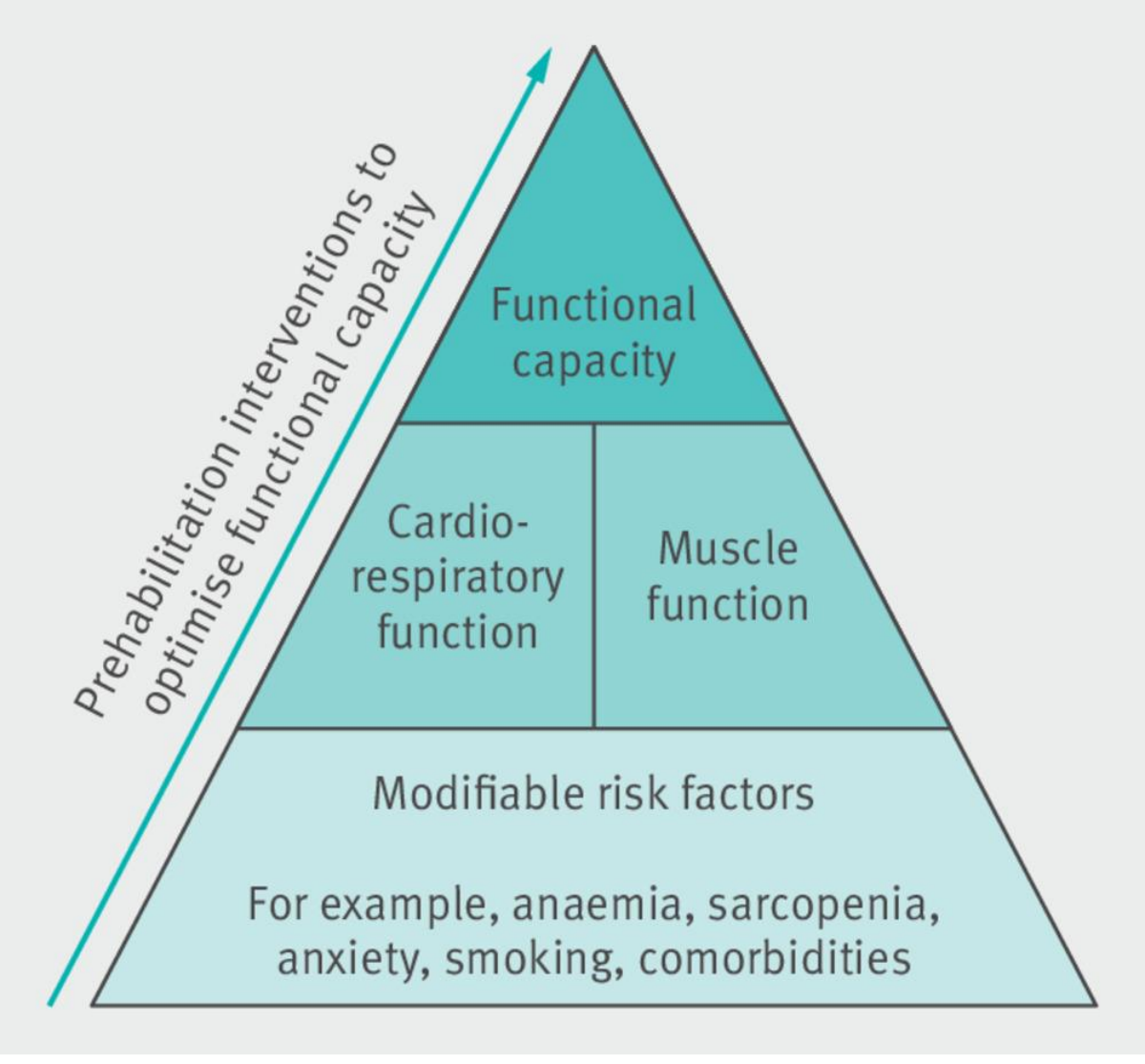
Stabenau et al, Ann Surg, 2018


Non-elective Surgery
100%
80%
60%
40%
20%
0%
5.9
5.9
29.4
11.8
47.1
18.2
36.4
42.4
3.0
3.7
48.1
37.0
11.1
94.7
5.3
No disability
Mild disability
Moderate disability
Severe disability
Rapid improvement
Gradual improvement
Partial improvement
Little improvement
Early death


Elective Surgery
100%
80%
60%
40%
20%
0%
4.7
2.3
7.0
32.6
53.5
2.0
19.6
62.7
15.7
4.3
17.4
58.7
19.6
14.3
64.3
21.4
No disability
Mild disability
Moderate disability
Severe disability
Rapid improvement
Gradual improvement
Partial improvement
Little improvement
Early death

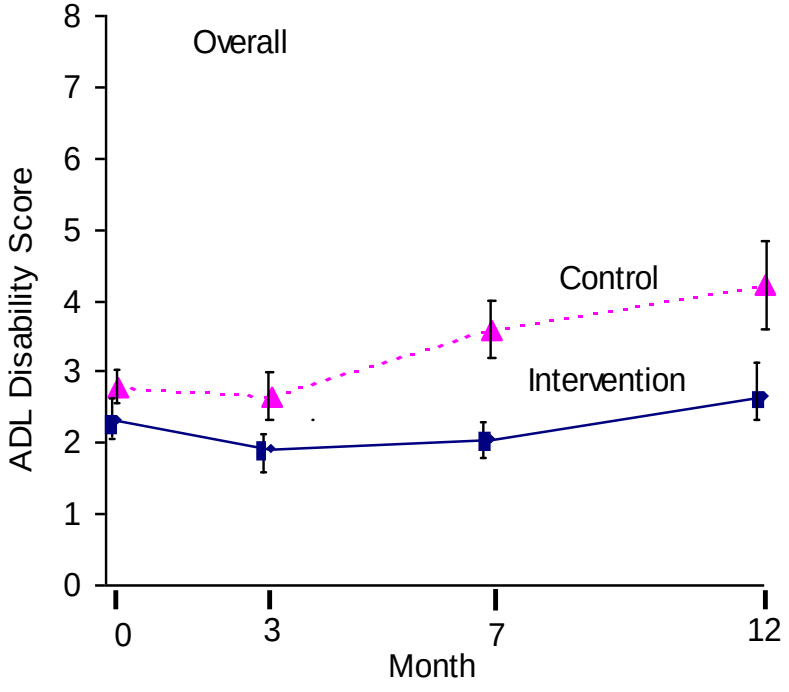
Summary

- Among older persons, long-term function after major surgery is highly dependent on function before surgery
- Older persons undergoing major surgery rarely improve their function and frequently experience functional decline
- Outcomes are worse for non-elective surgery



Venetia et al, BMJ, 2017

Yale PREHAB Study

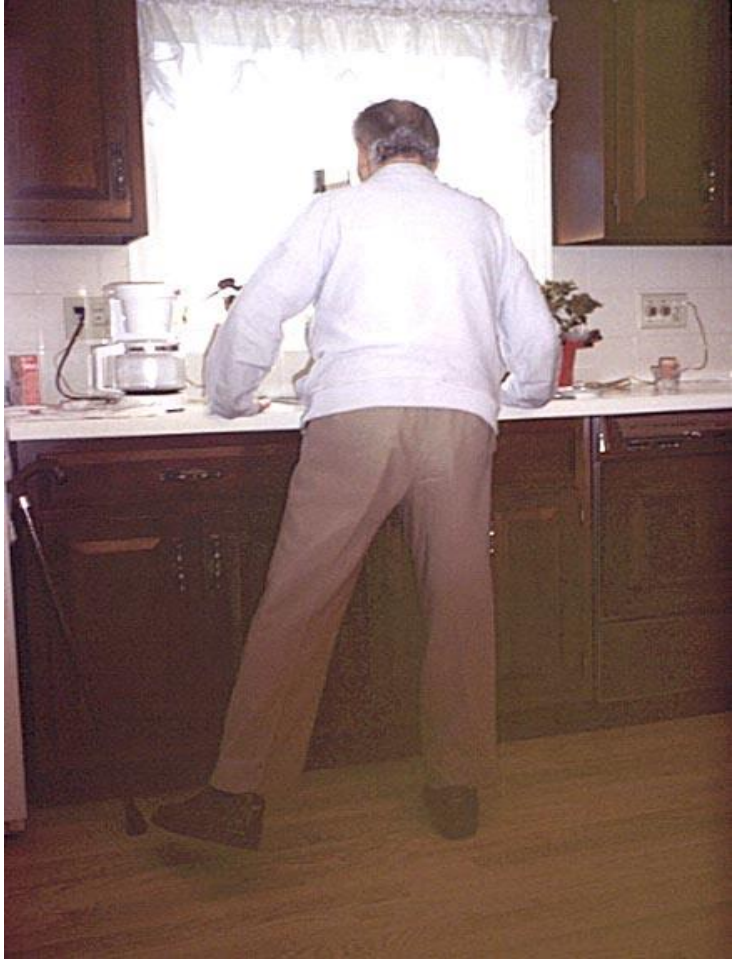


No. of Participants	**188**	**182**	**181**	**178**
% Reduction	**--**	**17**	**46**	**40**
p-value	**--**	**0.40**	**0.004**	**0.007**

Gill et al, NEJM, 2002

Areas Targeted

- Muscle strength
- Balance and transfers
- Gait: indoor and outdoor
- Assistive devices and footwear
- Compensatory strategies
- Home environment




LIFE

Early, goal-directed mobilisation in the surgical intensive care unit: a randomised controlled trial

Resulted in improved patient mobilisation throughout SICU admission, shortened patient length of stay in the SICU, and improved patients' functional mobility at hospital discharge

A Define a challenging mobilisation goal each day

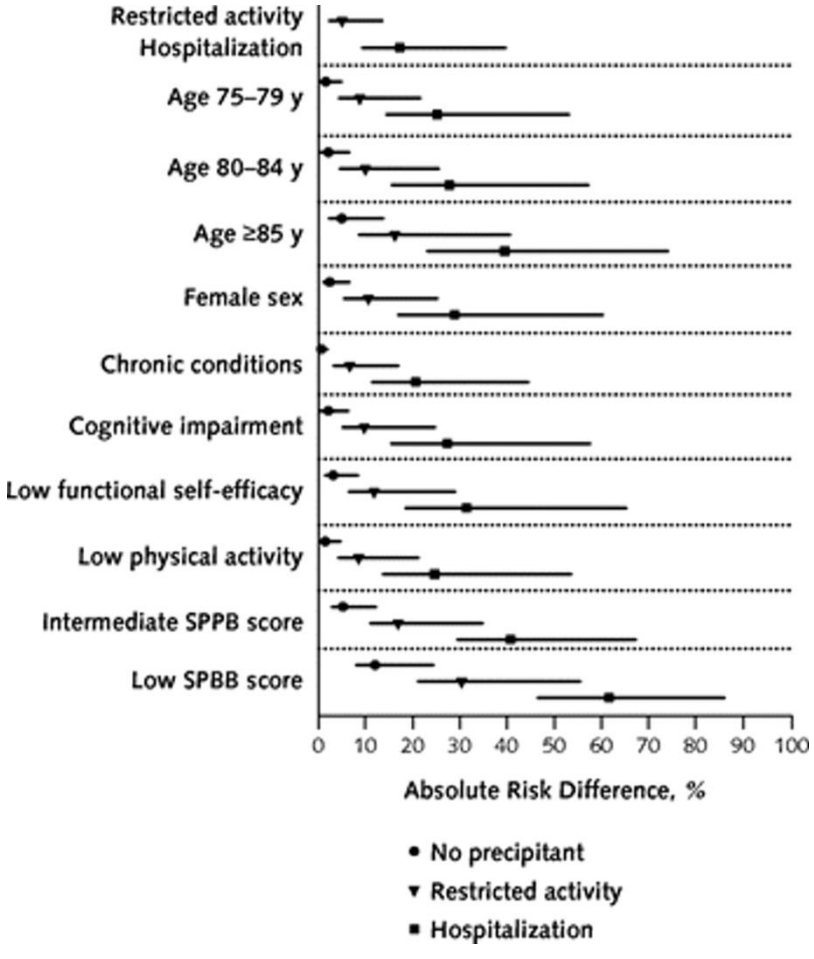
Safety criteria to advance mobilisation	Level 0 **No activity**	Level 1 **Passive range of motion**	Level 2 **Sitting**	Level 3 **Standing**	Level 4 **Ambulation**
	a) Stable spine b) No excessive predicted mortality within the next 24 h c) ICP <20 cm H_2O →				
		a) Follows one-step commands b) Volitional movement present c) No SCI, open lumbar drains, open EVD, femoral-vein access for CVVH →			
			a) 3 of 5 bilateral quadriceps strength* b) Sits with no support c) No weight-bearing restrictions →		
				a) Stands twice with minimal assistance b) Steps-in-place with minimal assistance →	

B Implement the challenging mobilisation goal across shifts

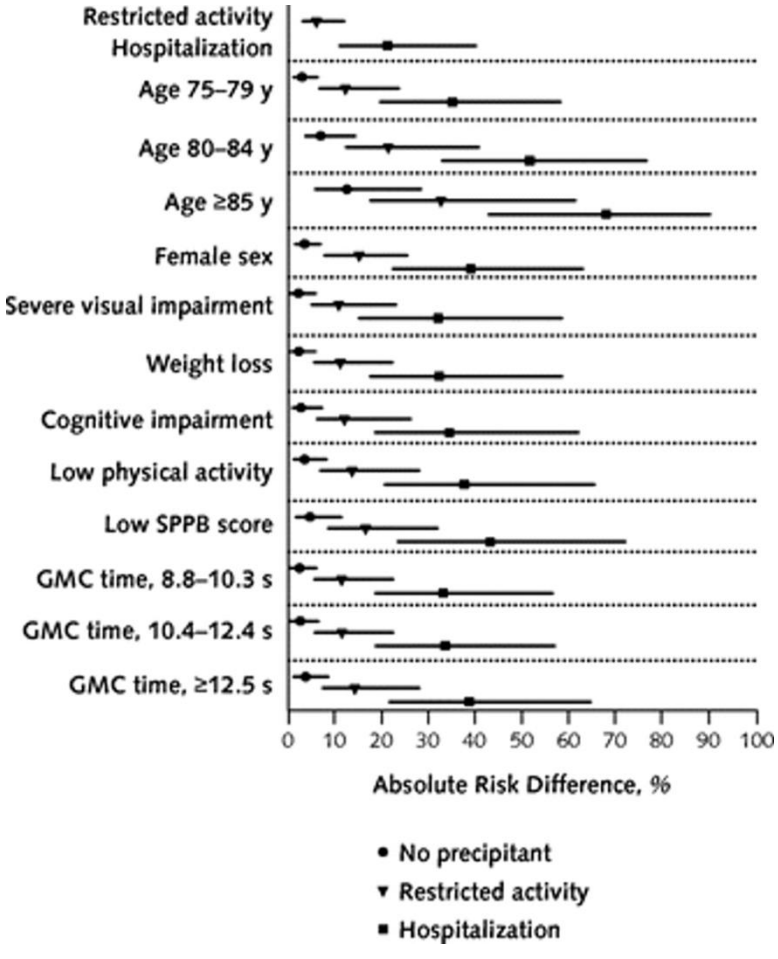
- Address potential barriers for the goal
- Develop appropriate procedures to reach the goal
- Ensure inter-professional closed-loop communication

Schaller et al, Lancet, 2016

Walking ¼ Mile



Driving a Car



Gill, et al, Ann Intern Med, 2012

Gaps and Opportunities

- Better elucidate reasons for poor functional outcomes after major surgery, including role of intervening events
- Determine whether early mobilization after major surgery improves long-term functional outcomes
- Evaluate multifactorial interventions to improve functional outcomes after major surgery
  - prehabilitation, early mobilitization, rehabilitation
  - identify components that are most effective
  - identify persons who would benefit most