

# “Up Time in Hospital Study”: Preliminary findings

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# Quiz #1

How many hours per day do older adults spend upright?

- a) <1hour
- b) 1-3 hours
- c) 4-6 hours
- d) 7-9 hours
- e) 10+ hours

# Upright time of community-dwelling older adults

	Sample Size	Age	Upright time/day
Godfrey et al. <i>Age Ageing</i> 2013	98	50+ (mean 69)	<b>5.8 hr</b>
Fitzsimons et al. <i>Prev Med</i> 2013	24	60+ (mean 68)	<b>5.9 hr</b>
Aguilar-Farias <i>J Sci Med Sports</i> 2014	37	65+ (mean 74)	<b>5.9 hr</b>
Grant et al. <i>J Aging Phys Act</i> 2010	20	65+ (mean 74)	<b>6 hr</b>
Lord et al. <i>Age Ageing</i> 2011	56	70+ (mean 79)	<b>4.2 hr</b>

## Quiz #2

How many hours per day do older patients spend upright during hospitalization?

- a) <30 minutes
- b) 30 minutes-1.5 hours
- c) 2-3.5 hours
- d) 4-5.5 hours
- e) 6+ hours

# Upright time in hospitalized older patients

	Population (All 65+)	Upright time/day
Brown et al. 2009	45 medical wards patients (74 years), ambulatory, no dementia and delirium	43 min
Grant et al. 2010	30 rehabilitation wards patients (81 years), no mobility and cognitive impairments	75 min
Pedersen et al. 2013	42 acute medical ward patients (85 years), no severe dementia and COPD	66 min

# Bed Rest Effect on Muscle Mass

## Bed Rest

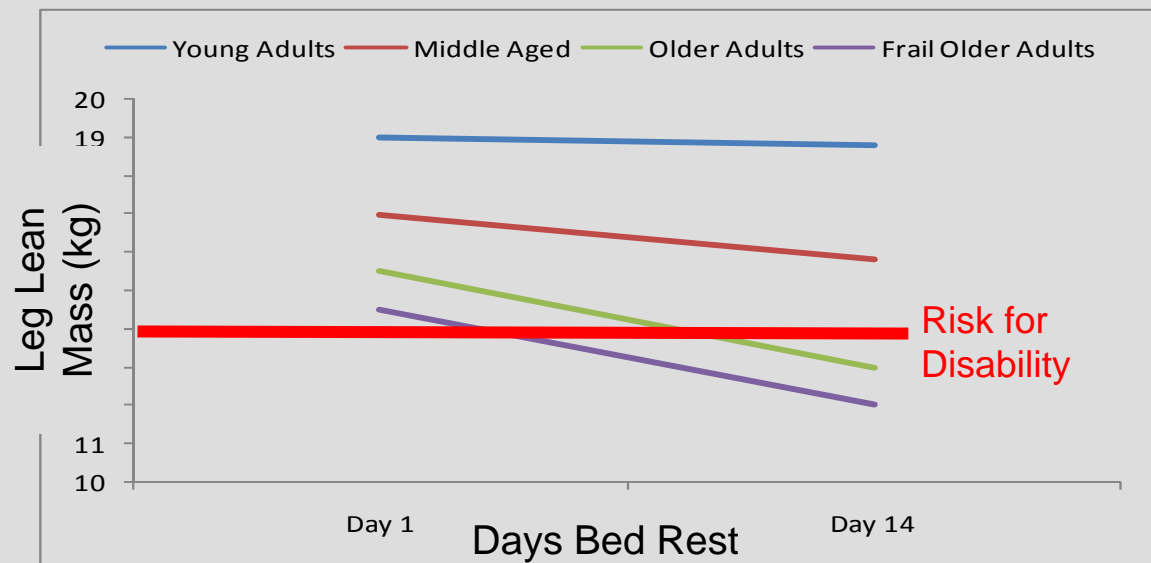
### Muscle Mass Loss/Day

- Young adults ~15 gr
- Middle Aged ~ 85 gr
- Older Adults ~ 95 gr

## Reduced Walking

### Muscle Mass Loss/Day

- Older Adults ~ 40 gr



# Purpose

- Examine how much time hospitalized patients spend per day upright
- Examine whether upright time is associated with health outcomes during hospitalization

# Up Time in Hospital Study

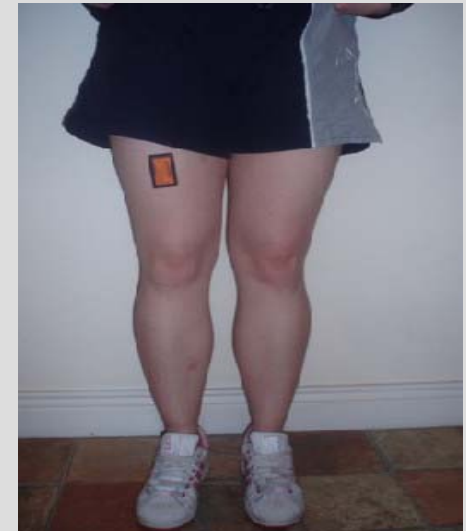
*Study in progress*

- Upright Time in Hospitalized Patients Across Levels of Frailty
- ~150 patients hospitalized males and females 60+
- Within 48 hours of admission in a Canadian Hospital
  - Directly to Geriatric Assessment Unit
  - Via Emergency Department (Internal Medicine) to any unit



# Movement Sensors

- ActivPAL accelerometer
- Tracking sedentary & upright time
  - lying down, sitting
  - standing, walking
- Objectively measured
- Does not require skilled personnel
- Day- and night-time
- Until discharge or up to 2 weeks



# Outcomes

- In-hospital Outcomes
  - Mortality
  - Length of stay
  - Falls
  - Self report change in health status (better/same/worse)
  - Changes in function, mobility, balance, strength, cognition
- Post discharge outcomes
  - Admission to Long Term Care
  - Readmissions
  - Mortality

# Recruitment

- 189 participants approached: 120 patients included in study
- 57 admitted to a geriatric unit: 16 directly, 41 via ED
- 63 via ED to other non-geriatric units
- Admitted from: 106 Home, 13 LTC
- Discharge Location: 85 Home, 18 LTC, 3 Remain in Hospital, 14 Died in Hospital
- Length of Stay: 17.3± 18.0 days (range 2-127 days)

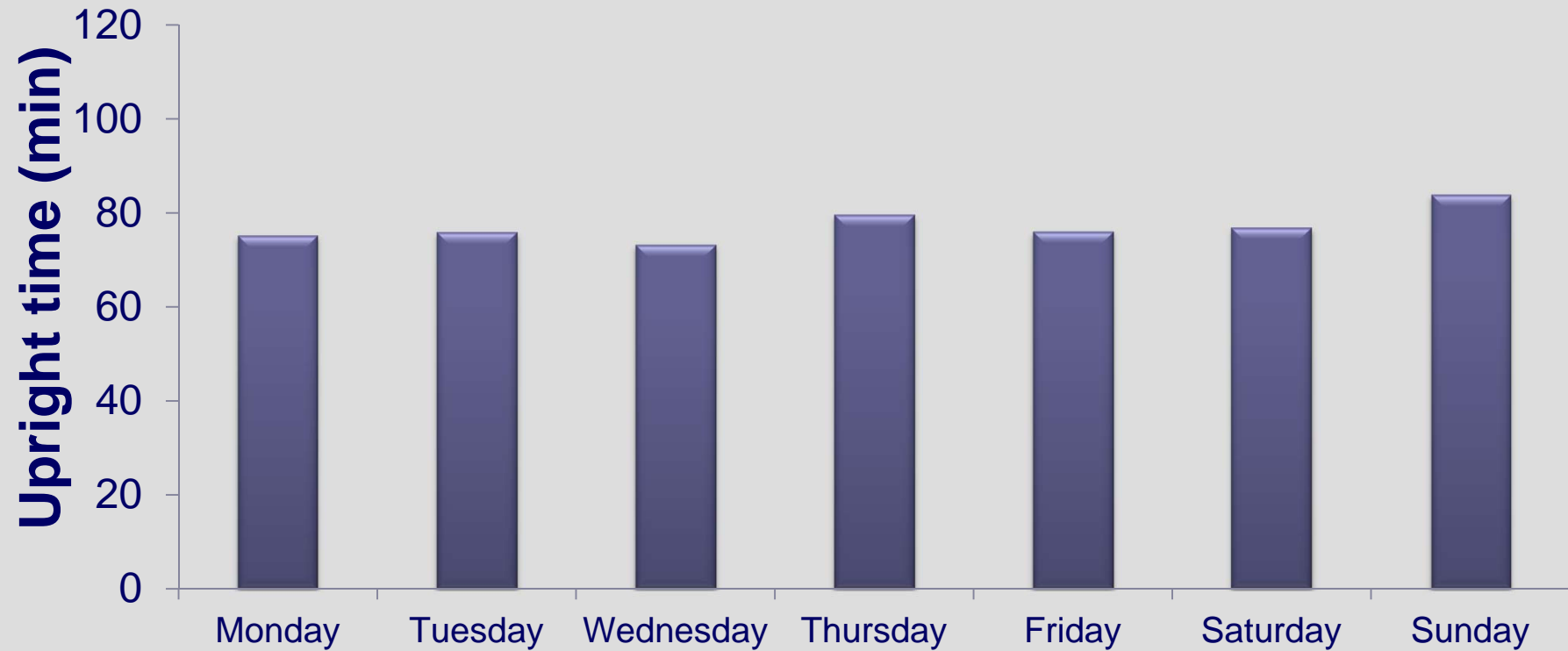
# Descriptive Characteristics

Participants (N=120)	
Age (Mean±SD)	82±8 (range 63-99 years)
% Females	57%
Years Education (Mean±SD)	12.7±4.9
% Living alone at time of Admission	34.5%
Number Admission Conditions (Mean±SD)	9.9±4.2
Number Admission Medications (Mean±SD)	9.9±5.2

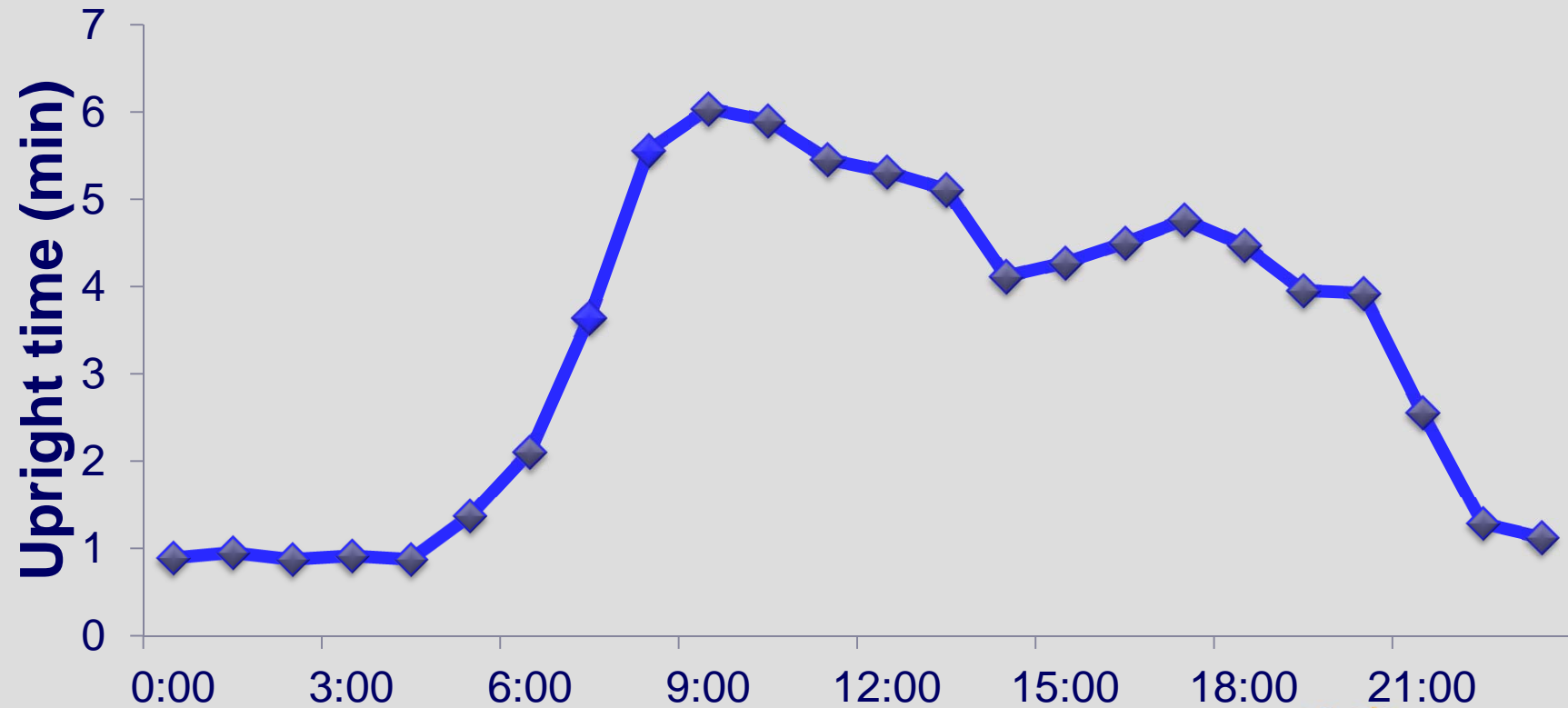
# Upright Time by Mobility Status

	<b>N</b>	<b>Upright time/day</b>
<b>All patients</b>	104	80±89 min
<b>Bedridden</b>	5	24±24 min
<b>Assistance /standby</b>	12	36±38 min
<b>Walk with aid</b>	52	78±89 min
<b>Walk independent</b>	35	108±97 min

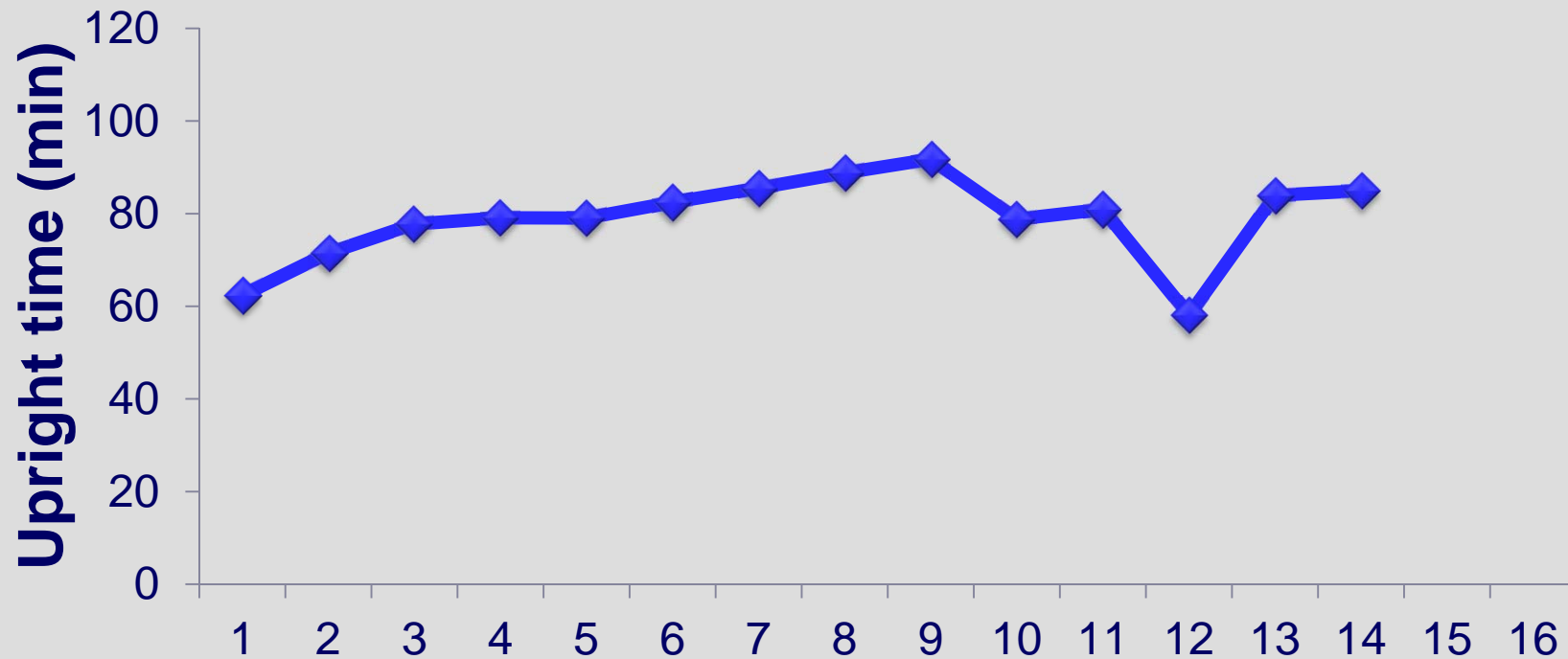
# Upright Time by Day of the Week



# Upright Time by Time of the Day

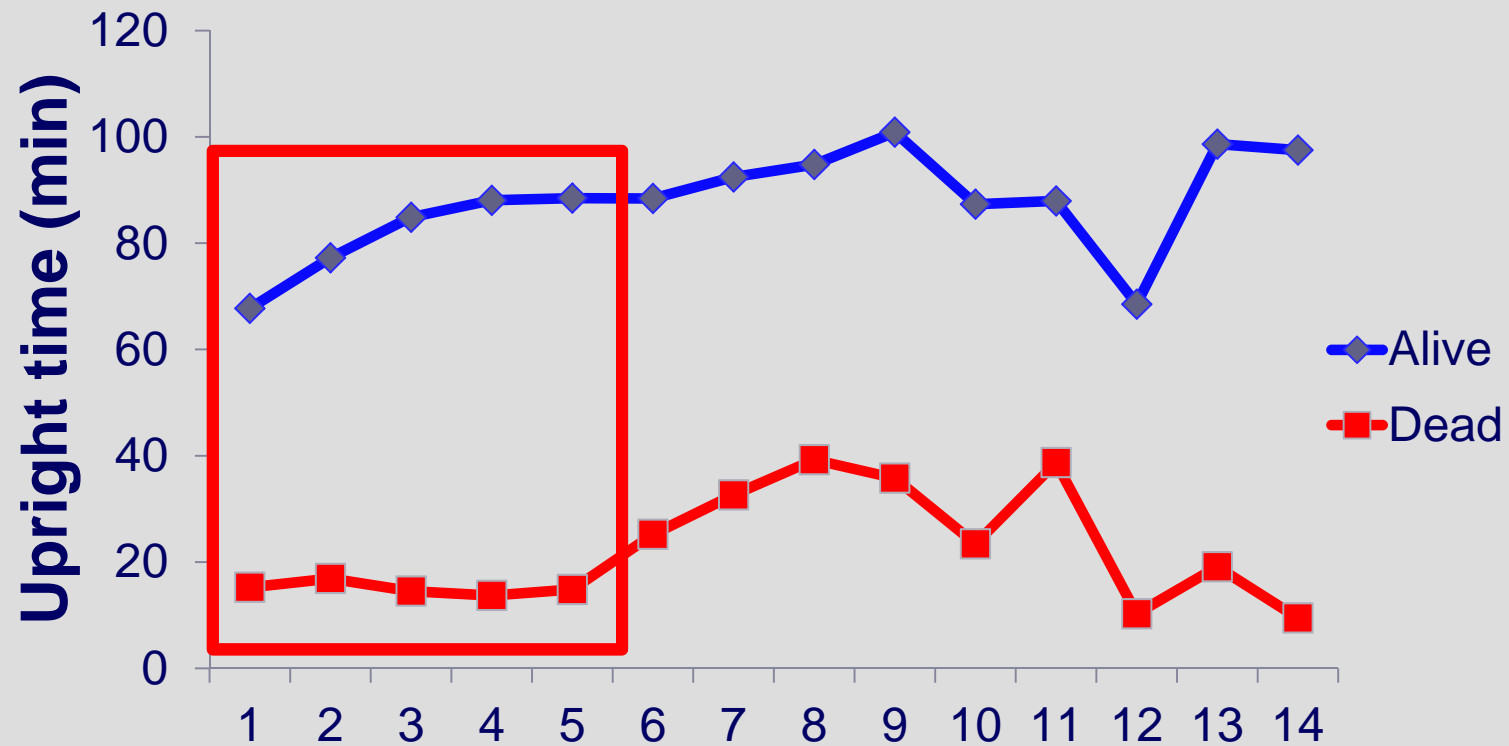


# Upright Time by Day in Hospital





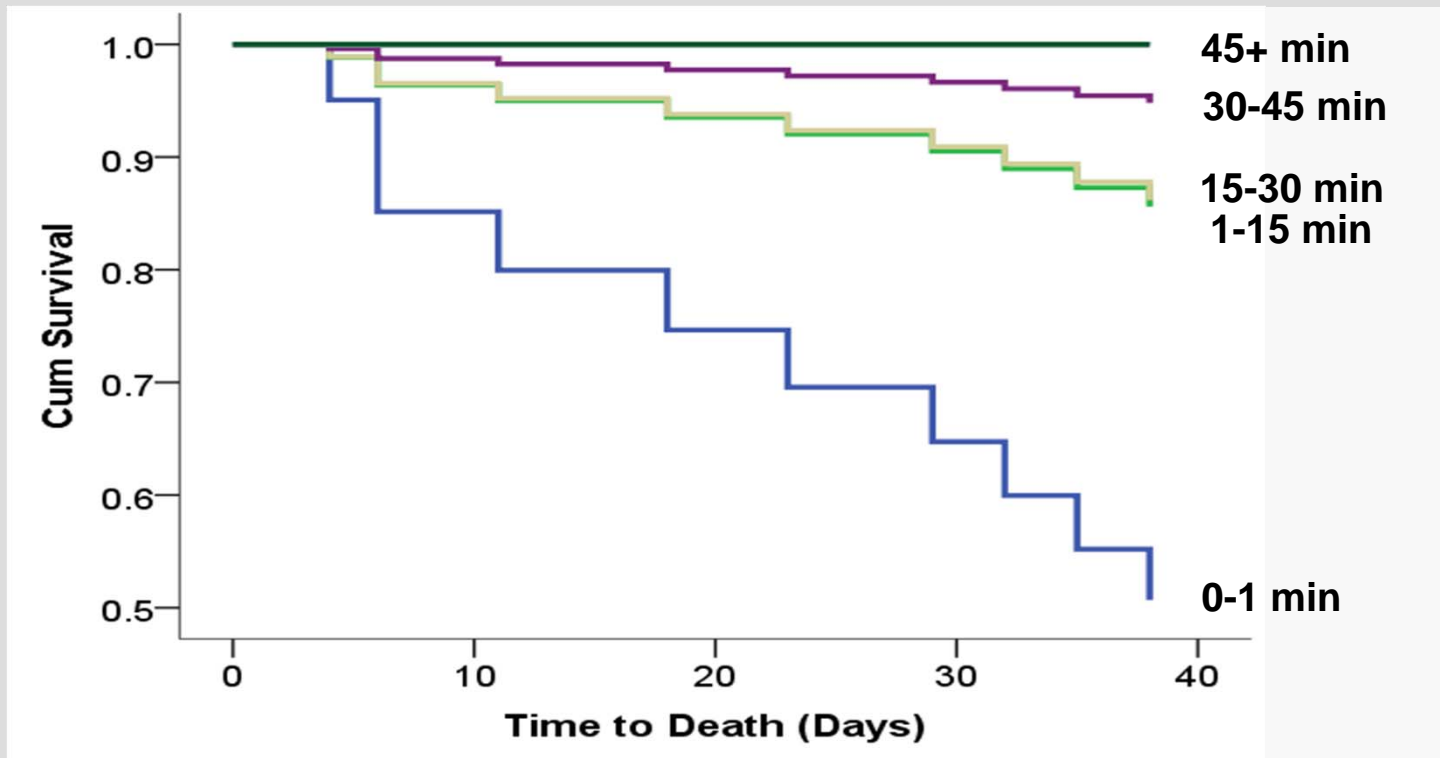
# Upright Time by Day in Hospital



# Predicting Mortality

	HR (95% CI)	p value
Age (per 1 year)	1.00 (0.92-1.10)	0.94
Sex (Females)	1.42 (0.40-5.09)	0.59
Upright Time (per 1 min)	0.93 (0.88-0.98)	0.005*
Age (per 1 year)	0.99 (0.89-1.10)	0.86
Sex (Females)	1.44 (0.36-5.75)	0.61
Frailty Score	1.82 (0.88-3.76)	0.11
Mobility Status	1.05 (0.63-1.73)	0.87
Upright Time (per 1 min)	0.93 (0.88-0.99)	0.019*

# Predicting Mortality



# Conclusion

- Patients spent most of their time lying in bed, even when they can walk independently
- Mobility should be treated as a vital sign
- Movement sensors can be used to track the recovery of patients during hospitalization
- Mobilizing patients early has potential to be life-saving and to reduce length of stay

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