Individualizing Surgical Care for the Older Adult

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University of California, San Francisco

Mr. D is an 86 year old man with chronic kidney disease, mild dementia, and a bile duct tumor.
Individualizing Surgical Care for Older Adults

Patient

Clinician

System

Individualizing Surgical Care for Older Adults
Hip Fracture in Older Adults: How many regain function and who?

Surgery & Rehabilitation

Start of care model

Outcome of care model

*Manuscript submitted for Peer-Review

Methods

- Health & Retirement Study (HRS)
- Activities of daily living (ADL's)
- Every 2 Years
- Medicare Data
Methods

- Outcomes:
  - Returned
  - Declined
  - Died

- Predictors of ADL independence
  - Multivariate stepwise logistic regression

Subject Characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N = 733</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (mean, SD)</td>
<td>84 ± 7</td>
</tr>
<tr>
<td>Women</td>
<td>77%</td>
</tr>
<tr>
<td>Dementia</td>
<td>17%</td>
</tr>
<tr>
<td>Charlson Comorbidity Score ≥3</td>
<td>44%</td>
</tr>
<tr>
<td>Independent in all ADLs</td>
<td>74%</td>
</tr>
</tbody>
</table>
Low Rates of Recovery

Baseline Function Categories

Independent in all ADL’s prior to Hip Fracture (N=538)
Dependent in 1 ADL prior to Hip Fracture (N=86)
Dependent in 2+ ADL’s prior to Hip Fracture (N=100)

Post-Hip Fracture Outcome

Death | Decline in Function | Return to Function
---|---|---

| Independent in all ADL’s prior to Hip Fracture (N=538) | 37% | 27% | 36% |
| Dependent in 1 ADL prior to Hip Fracture (N=86) | 54% | 32% | 14% |
| Dependent in 2+ ADL’s prior to Hip Fracture (N=100) | 58% | 23% | 19% |

Death Decline in Function Return to Function

Decline in Function Return to Function

Baseline Function Categories

Independent in all ADL’s prior to Hip Fracture (N=538)
Dependent in 1 ADL prior to Hip Fracture (N=86)
Dependent in 2+ ADL’s prior to Hip Fracture (N=100)

Post-Hip Fracture Outcome

Death | Decline in Function | Return to Function
---|---|---

| Independent in all ADL’s prior to Hip Fracture (N=538) | 36% |
| Dependent in 1 ADL prior to Hip Fracture (N=86) |
| Dependent in 2+ ADL’s prior to Hip Fracture (N=100) |
Conclusions & Implications

- Low rates of ADL recovery
- Not likely to regain ADL independence:
  - ≥ 85 years old
  - Dementia
  - High comorbidity burden
Conclusions & Implications

Consider a new care model:

Geriatrics & Palliative Care
Rehabilitation

Start of care model
Outcome of care model

Individualizing Surgical Care for Older Adults
3 Studies: **Risks**, Benefits, & Life Expectancy

Outcomes after Breast Cancer Surgery in Nursing Home Residents: A National Study

*Abstract accepted by AGS National Meeting

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**Methods**

- 2003- 2009 Minimum Data Set (MDS)
  - MDS-ADL score: 0 - 28

- Procedures:
  - Lumpectomy
  - Mastectomy
  - Lumpectomy or Mastectomy
  + Lymph Node Dissection
Methods

- Outcomes
  - 1-year functional decline
  - 1-year mortality

- Predictors of 1-year mortality
  - Cox proportional hazard

Subject Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Lumpectomy (N= 493)</th>
<th>Mastectomy (N=1107)</th>
<th>+Lymph Node Dissection (N=2580)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (mean, SD)</td>
<td>83 ± 7</td>
<td>84 ± 7</td>
<td>81 ± 7</td>
</tr>
<tr>
<td>Baseline MDS-ADL</td>
<td>15 ± 8</td>
<td>14 ± 8</td>
<td>13 ± 8</td>
</tr>
<tr>
<td>Functional decline prior to surgery</td>
<td>27%</td>
<td>25%</td>
<td>24%</td>
</tr>
<tr>
<td>Dementia</td>
<td>49%</td>
<td>53%</td>
<td>46%</td>
</tr>
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</table>
Significant Functional Decline and Death at 1 Year

<table>
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<tr>
<td>Change in MDS-ADL</td>
<td>-3.4 points</td>
<td>-2.9 points</td>
<td>-2.5 points</td>
</tr>
<tr>
<td>Mortality</td>
<td>42%</td>
<td>31%</td>
<td>26%</td>
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2 point change in MDS-ADL score = clinically significant

Significant Functional Decline and Death at 1 Year

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Poor baseline MDS-ADL score strongly associated with death at 1 year in all treatment groups
Conclusions & Implications

- 1-year mortality is high
- Poor baseline function = higher risk of death
- Set realistic expectations for outcomes
- Inform decisions about surgery

3 Studies: Risks, Benefits, & Life Expectancy

Time to benefit for colorectal cancer screening: survival meta-analysis of flexible sigmoidoscopy trials

Victoria Tang, Willy John Boscardin, Irene Stijacic-Cenzer, Sei Lee

Objective
To determine the time to benefit of using flexible sigmoidoscopy for colorectal cancer screening.

Design
Survival meta-analysis.

Data Sources
A Cochrane Collaboration systematic review published in 2015, Medline, and Cochrane Library databases.

Eligibility Criteria
Randomized controlled trials comparing screening flexible sigmoidoscopy with no screening. Trials with fewer than 100 flexible sigmoidoscopy screenings.

Victoria Tang et al. BMJ 2015;350:bmj.h1662
9.5 years to prevent 1 death per 1,000 screened

Conclusions & Implications

- Time to Benefit: 9.5 years
- Inform decisions about screening
  - Beneficial if Life Expectancy >> 10 years
  - Not Beneficial if Life Expectancy << 10 years
Conclusions & Implications

- Time to Benefit: 9.5 years
- Inform decisions about screening
  - Beneficial if Life Expectancy $\gg$ 10 years
  - Not Beneficial if Life Expectancy $\ll$ 10 years
- Same concept for surgical procedures
  - Ex: Abdominal Aortic Aneurysm Repair

3 Studies: Risks, Benefits, & Life Expectancy

Clinician Factors Associated with PSA Screening in Older Veterans with Limited Life Expectancy

*Accepted by JAMA-IM for publication
Methods

- 2011 National VA Data
- Men with limited life expectancy
- Outcome: % men with screening PSA
- Predictor: clinician degree-training level
- Analysis: log-Poisson regression models

Subject Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Men with Limited Life Expectancy (N= 203,717)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age ≥ 85</td>
<td>39%</td>
</tr>
<tr>
<td>High comorbidity</td>
<td>74%</td>
</tr>
<tr>
<td>Physician trainee</td>
<td>11%</td>
</tr>
<tr>
<td>Physician attending</td>
<td>64%</td>
</tr>
</tbody>
</table>
Higher screening rates seen in men associated with clinicians out of training

Conclusions & Implications

- PSA Screening:
  - > 1/3 men with limited life expectancy
  - Clinicians in all categories

* p<0.0001
Conclusions & Implications

- PSA Screening:
  - > 1/3 men with limited life expectancy
  - Clinicians in all categories
- Interventions to incorporate life expectancy

Individualizing Surgical Care for Older Adults
Preparing Older Adults for High Risk Surgery with Advance Care Planning
Individualizing Surgical Care for Older Adults
Thank You

Predictors & Probability of Returning to ADL Independence After Hip Fracture (N = 538)

*Adjusted Multivariate Logistic Regression
Significant Functional Decline and Death at 1 year

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<td>Mortality</td>
<td>42%</td>
<td>31%</td>
<td>26%</td>
</tr>
<tr>
<td>Hazard Ratio (95% CI)</td>
<td>Baseline MDS-ADL 20 - 28</td>
<td>2.6 (1.5 - 4.4)</td>
<td>2.1 (1.5 - 2.9)</td>
</tr>
</tbody>
</table>

Man with LLE

PSA
Clinic ordering PSA

No PSA
Clinic ordering most labs
### Clinician Characteristic

<table>
<thead>
<tr>
<th>Clinician Characteristic</th>
<th>Unadjusted Risk Ratio (99% CI)</th>
<th>Adjusted Risk Ratio (99% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician Trainee</td>
<td>Ref.</td>
<td>Ref.</td>
</tr>
<tr>
<td>Physician Attending</td>
<td>1.9 (1.8 – 2.0)</td>
<td>1.6 (1.5 – 1.7)</td>
</tr>
<tr>
<td>Nurse Practitioner</td>
<td>1.8 (1.7 – 1.9)</td>
<td>1.6 (1.5 – 1.8)</td>
</tr>
<tr>
<td>Physician Assistant</td>
<td>1.9 (1.8 – 2.1)</td>
<td>1.6 (1.4 – 1.8)</td>
</tr>
</tbody>
</table>

* p<0.0001

### Presented Studies

- Functional Recovery in Older Adults after Hip Fracture
- Outcomes after Breast Cancer Surgery in Nursing Home Residents
- Lagtime to Benefit for Colorectal Cancer Screening with Flexible Sigmoidoscopy
- Clinician Characteristics associated with PSA Screening in Men with Limited Life Expectancy
- Advance Care Planning in the Pre-operative Setting
Individualizing Surgical Care for Older Adults