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Subacute inpatient rehabilitation across a range of impairments: intensity of therapy received and outcomes

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Subacute inpatient rehabilitation across a range of impairments: intensity of therapy received and outcomes

Abstract
Context

- in sub-acute rehabilitation there is an increasing body of research regarding the relationship between IOT and a range of outcomes, such as LOS and functional gain
- amount and type of inpatient rehabilitation treatment required to maximise outcomes not clearly established

Keywords
subacute, therapy, inpatient, received, outcomes, rehabilitation, across, range, impairments, intensity

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This conference paper is available at Research Online: http://ro.uow.edu.au/ahsri/287
What is AROC?

- AROC began as a joint initiative of the whole Australian rehabilitation sector (providers, payers, regulators and consumers) with support from key New Zealand providers.
- Established 1 July 2002 as a not-for-profit Centre.
- The Australasian Faculty of Rehabilitation Medicine (AFRM) is the auspice body and data custodian.
- The Centre for Health Service Development (CHSD) at the University of Wollongong is the data manager and responsible for AROC’s day to day operations.
AROC Coverage

• 196 Australian rehabilitation units submitted data to AROC in the 2012 calendar year

• 36 New Zealand rehab unit members

• In 2012 data describing nearly 95,000 episodes was submitted to AROC between the two countries
Context

• in sub-acute rehabilitation there is an increasing body of research regarding the relationship between IOT and a range of outcomes, such as LOS and functional gain

• amount and type of inpatient rehabilitation treatment required to maximise outcomes not clearly established
Recommended IOT

• General recommendations
  Eg: AFRM Standards for the Provision of Inpatient Adult Rehabilitation Medicine Services in Public and Private Hospitals (2011)

• Impairment specific clinical guidelines
Research questions

For rehabilitation inpatients:

• does intensity of therapy vary across impairment groups?

• does intensity of therapy have an impact on functional outcomes within impairment groups?

• does intensity of therapy have an impact on length of stay within impairment groups?
Study design

- intensity of therapy (IOT) in this study was defined as total therapy minutes received by the patient/therapy day
- prospective multisite observational design
- ethics approval gained (UOW/ISLHD)
- DOHA: 12 months’ funding
Data sources

• AROC core data collection
• Intensity of therapy project data
IOT project data items

Episode details

• Enable data linkage with core AROC data collection eg date of birth, rehabilitation impairment code, episode begin and end date

Therapy occasion of service details

• Date, group/individual, therapy time (actual total minutes of direct face-to-face therapy received by the patient), therapy type, therapist
IOT project data collection

• commenced at facilities’ convenience between 1 March and 20 June 2012
• continuous period of approximately 12 weeks
• all rehabilitation episodes commenced and finalised within the data collection period
• data collection on “tail end” episodes negotiated with individual facilities
Outcome measures

AROC outcome measures include:

• Functional Independence Measure (FIM)
• Length of stay
• Discharge destination
Results

• EOI: 76 facilities (approximately 40% AROC Australian membership)
• Agreement to participate: 29 facilities
• Actual participants: 26 facilities
• Total IOT episodes: 2,439
• Total IOT episodes merged with AROC data: 2,018
## Impairment

<table>
<thead>
<tr>
<th>Impairment</th>
<th>IOT Episodes merged with AROC data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
</tr>
<tr>
<td>Orthopaedic Replacements</td>
<td>401</td>
</tr>
<tr>
<td>Reconditioning</td>
<td>394</td>
</tr>
<tr>
<td>Orthopaedic Fractures</td>
<td>327</td>
</tr>
<tr>
<td>Stroke</td>
<td>263</td>
</tr>
<tr>
<td>Orthopaedic Surgery Other</td>
<td>110</td>
</tr>
<tr>
<td>Pain Syndromes</td>
<td>103</td>
</tr>
<tr>
<td>Cardiac</td>
<td>78</td>
</tr>
<tr>
<td>Brain Dysfunction</td>
<td>70</td>
</tr>
<tr>
<td>Neurological Conditions</td>
<td>68</td>
</tr>
<tr>
<td>Pulmonary</td>
<td>63</td>
</tr>
<tr>
<td>Amputation of Limb</td>
<td>57</td>
</tr>
<tr>
<td>Other Disabling Impairments</td>
<td>32</td>
</tr>
<tr>
<td>Spinal Cord Dysfunction</td>
<td>26</td>
</tr>
<tr>
<td>Arthritis</td>
<td>13</td>
</tr>
<tr>
<td>Major Multiple Trauma</td>
<td>9</td>
</tr>
<tr>
<td>Congenital Deformities</td>
<td>2</td>
</tr>
<tr>
<td>Burns</td>
<td>2</td>
</tr>
<tr>
<td>Developmental Disabilities</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,018</strong></td>
</tr>
</tbody>
</table>
## Impairment

<table>
<thead>
<tr>
<th>Impairment</th>
<th>Number</th>
<th>% all impairments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orthopaedic Replacements</td>
<td>401</td>
<td>20%</td>
</tr>
<tr>
<td>Reconditioning</td>
<td>394</td>
<td>20%</td>
</tr>
<tr>
<td>Orthopaedic Fractures</td>
<td>327</td>
<td>16%</td>
</tr>
<tr>
<td>Stroke</td>
<td>263</td>
<td>13%</td>
</tr>
<tr>
<td>Orthopaedic Surgery Other</td>
<td>110</td>
<td>5%</td>
</tr>
<tr>
<td>Pain Syndromes</td>
<td>103</td>
<td>5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,598</td>
<td>79%</td>
</tr>
</tbody>
</table>
Therapy Minutes by Therapy Type:
all participating facilities

- Physiotherapy: 53.3%
- Occupational Therapy: 23.7%
- Exercise Physiology: 6.2%
- Speech Pathology: 4.4%
- Social Work: 4.2%
- Hydrotherapy: 4.0%
- Dietary intervention: 1.8%
- Psychology: 1.5%
- Neuropsychology: 0.5%
- Podiatry: 0.3%
- Other: 0.1%

All participating facilities
Individual and group therapy
Distribution of therapy minutes: all participants

![Bar chart showing the distribution of therapy minutes for different conditions.](chart_image)
Therapy minutes/therapy day

Intensity of Therapy by Impairment
All Participating Facilities

Total Therapy Mins/Therapy Day

1. Stroke
2. Brain Dysfunction
3. Neurological Conditions
4. Spinal Cord Dysfunction
5. Amputation of Limb
6. Arthritis
7. Pain Syndromes
8a. Orthopaedic Fractures
8b. Orthopaedic Replacements
8c. Orthopaedic Surgery Other
9. Cardiac
10. Pulmonary
13. Other Disabling Impairments
16. Reconditioning
## Therapy minutes/therapy day

<table>
<thead>
<tr>
<th>Description</th>
<th>Count</th>
<th>Median</th>
<th>Mean</th>
<th>Stand Dev</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke</td>
<td>263</td>
<td>90</td>
<td>103</td>
<td>56</td>
<td>275</td>
</tr>
<tr>
<td>Orthopaedic fractures</td>
<td>329</td>
<td>62</td>
<td>69</td>
<td>35</td>
<td>196</td>
</tr>
<tr>
<td>Orthopaedic replacements</td>
<td>402</td>
<td>63</td>
<td>75</td>
<td>41</td>
<td>280</td>
</tr>
<tr>
<td>Orthopaedic surgery - other</td>
<td>112</td>
<td>69</td>
<td>72</td>
<td>33</td>
<td>170</td>
</tr>
<tr>
<td>Reconditioning</td>
<td>395</td>
<td>54</td>
<td>63</td>
<td>35</td>
<td>269</td>
</tr>
<tr>
<td>Pain syndromes</td>
<td>103</td>
<td>63</td>
<td>68</td>
<td>30</td>
<td>147</td>
</tr>
</tbody>
</table>
FIM change and intensity of therapy

• analyses are based on therapy minutes for physiotherapy, occupational therapy, exercise therapy, speech therapy, hydrotherapy, psychology and neuropsychology

• correlation between FIM change and IOT explored

• all statistical tests were applied at a statistical significance level of 5%
Stroke: FIM and IOT correlations

- weak positive correlations total n:
  - FIM motor score change: $r = 0.251$, $p = 0.000$, $n=226$
  - FIM cognitive score change: $r = 0.286$, $p = 0.000$, $n=226$

- stronger positive correlation admission subset FIM motor score < 47*
  - FIM motor: $r = 0.447$, $p = 0.000$, $n=72$
  - FIM cognitive: $r = 0.333$, $p=0.004$, $n=72$

*AN-SNAP classes 3-208: FIM motor 14-46, >=75
  3-209: FIM motor 14-46, < 75
Other impairments: FIM and IOT correlations

- weak to modest positive correlations between FIM cognitive score changes and IOT

<table>
<thead>
<tr>
<th>Impairment group</th>
<th>n</th>
<th>r</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>pulmonary conditions</td>
<td>57</td>
<td>0.469</td>
<td>0.000</td>
</tr>
<tr>
<td>brain dysfunction</td>
<td>51</td>
<td>0.359</td>
<td>0.010</td>
</tr>
<tr>
<td>other orthopaedic surgery</td>
<td>110</td>
<td>0.336</td>
<td>0.000</td>
</tr>
<tr>
<td>neurological conditions</td>
<td>65</td>
<td>0.272</td>
<td>0.003</td>
</tr>
<tr>
<td>orthopaedic fractures</td>
<td>293</td>
<td>0.180</td>
<td>0.002</td>
</tr>
<tr>
<td>reconditioning</td>
<td>331</td>
<td>0.146</td>
<td>0.008</td>
</tr>
<tr>
<td>orthopaedic replacements</td>
<td>378</td>
<td>0.145</td>
<td>0.005</td>
</tr>
</tbody>
</table>
LOS and intensity of therapy

• no correlation identified for any impairment in this study
Discharge destination and intensity of therapy

<table>
<thead>
<tr>
<th>Final Accommodation</th>
<th>&lt; 120 mins therapy/treatment day</th>
<th>=&gt;120 mins therapy/treatment day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private residence</td>
<td>92.2%</td>
<td>94.1%</td>
</tr>
<tr>
<td>Residential aged care, low level care</td>
<td>2.4%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Residential aged care, high level care</td>
<td>2.2%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Community group home</td>
<td>0.0%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Boarding house</td>
<td>0.1%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Transitional living unit</td>
<td>0.5%</td>
<td>0.4%</td>
</tr>
<tr>
<td>Other</td>
<td>2.0%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Unknown</td>
<td>0.4%</td>
<td>0.8%</td>
</tr>
</tbody>
</table>
Discharge destination and IOT: Distribution of discharge

• All valid episodes: more likely to return to private residence if they received a minimum of 120 minutes of therapy per treatment day
Conclusion

• This observational study provides a snapshot of the current status of the intensity of therapy received by inpatients in subacute rehabilitation facilities in Australia.

• One potential explanation for the lack of correlation between intensity of therapy and outcomes across many impairment groups may be that the threshold of intensity required to affect outcomes is substantially greater than observed in this study.
Questions
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