Opening the black box of evidence based-in hospital stroke rehabilitation; the REVIHR study

Niki Chouliara, Brian Crosbie, Rebecca Fisher, Marion Walker on behalf of the steering group
Overview

• Background and research questions of the REVIHR project

• Methodology and preliminary results of the quantitative study

• Discussion of key findings
The REVIHR study

“Research to Implement Evidence Based In-Hospital Rehabilitation”

Background

“ Appropriately delivered, high intensity, specialist rehabilitation early post stroke leads to better functional outcomes for stroke patients” (Stroke Trialists, 1997; 2007)

The Issue

• In the UK face-to-face therapist patient contact time is lower than in other countries (Wolfe, 2004; De Wit, 2007)

• Patients spend most of their time alone and unoccupied

• Variability in interdisciplinary working (SSNAP audits)
Research Questions

1. What is being delivered?

2. Why do differences occur?

3. How can we facilitate evidence-based practice?
**Methodology**

- **Design:** mixed methods including observational behavioural mapping study and qualitative interviews under a realist evaluation framework (Pawson & Tiley, 1997)

- **Site selection:** Four rehabilitation units across East Midlands selected based on:
  1. spread of performance in national audits (scores A-D in SSNAP audits)
  2. unit size (16-28 beds; WTE per 10 beds: OTs= 0.7-2.7, PTs=1.3-3.2)
  3. location (urban, semi-rural)

- **Patient participants’ inclusion criteria:**
  1. confirmed stroke per clinical records
  2. within one month after first or recurrent stroke
  3. >16 years

- **Duration:** data collected between February 2015 and March 2016

- **Analyses:**
  1. assessed normality of casemix data across the four sites
  2. assessed proportion of time per activity over total time of observations for each site and comparisons across four sites
  3. applied multilevel modelling to account for dependency of observations
Observational mapping

• **When?** 15 days of observation per site on five occasions over a year
  7 days a week: 8 am to 5 pm or 3 pm to 8 pm

• **How?** Patients observed over 3 consecutive days; observations
  recorded every 10 min/1 min per patient

• **Where?** Rehabilitation wards. Patients not followed off ward/
  observed when behind closed curtains

• **Data gathered:** up to 50 patients observed
  in each of the four sites

• **27 activity categories with focus on ADL**
  (e.g. eating, dressing, walking)
Therapists’ and nurses’ activity logs

• **Who?** OTs, PTs, nurses, rehabilitation and health care assistants delivering rehabilitation to patients recruited to the observational study

• **When?** days when patient observations took place

• **How?** recordings made on simple paper based activity log

• **14 activity categories including:** one-to-one patient interaction, patient administration, discussion about patient(s), team meetings, supervision, training
## Sample characteristics

<table>
<thead>
<tr>
<th></th>
<th>Site 1 (n=33)</th>
<th>Site 2 (n=35)</th>
<th>Site 3 (n=39)</th>
<th>Site 4 (n=37)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N=144</strong></td>
<td></td>
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<tr>
<td><strong>Age, Median (IQR)</strong></td>
<td>73 (63-85)</td>
<td>75 (64-84)</td>
<td>76 (72-83)</td>
<td>80 (73-84)</td>
<td>0.26*</td>
</tr>
<tr>
<td><strong>Men, n (%)</strong></td>
<td>19 (57.6)</td>
<td>17 (48.6)</td>
<td>18 (46.1)</td>
<td>19 (51.3)</td>
<td>0.8†</td>
</tr>
<tr>
<td><strong>NIHSS, Mean (SD)</strong> (at admission)</td>
<td>10.15 (26.8)</td>
<td>12.06 (6.9)</td>
<td>11.6 (7.2)</td>
<td>11.7 (6.2)</td>
<td>0.73‡</td>
</tr>
<tr>
<td><strong>Barthel Index, Median (IQR)</strong> (at time of observation)</td>
<td>32.5 (20-52.5)</td>
<td>25 (15-40)</td>
<td>40 (5-60)</td>
<td>15 (10-42.5)</td>
<td>0.13*</td>
</tr>
<tr>
<td><strong>Side of symptoms, n (%)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td>18 (62.1)</td>
<td>26 (74.3)</td>
<td>15 (44.1)</td>
<td>21 (61.7)</td>
<td>0.08†</td>
</tr>
<tr>
<td>Left</td>
<td>11 (37.9)</td>
<td>9 (25.7)</td>
<td>19 (55.9)</td>
<td>13 (38.2)</td>
<td></td>
</tr>
<tr>
<td><strong>Stroke type, n (%)</strong></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Infarct</td>
<td>25 (86.2)</td>
<td>30 (85.7)</td>
<td>24 (72.7)</td>
<td>27 (79.4)</td>
<td>0.47†</td>
</tr>
<tr>
<td>Haemorrhage</td>
<td>4 (13.8)</td>
<td>5 (14.3)</td>
<td>9 (27.3)</td>
<td>7 (20.6)</td>
<td></td>
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<tr>
<td><strong>OCSP Classification, n (%)</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>LAC</td>
<td>8 (26.67)</td>
<td>2 (5.7)</td>
<td>7 (20.6)</td>
<td>4 (11.1)</td>
<td>0.64†</td>
</tr>
<tr>
<td>PAC</td>
<td>6 (20)</td>
<td>15 (42.9)</td>
<td>10 (29.4)</td>
<td>10 (27.8)</td>
<td></td>
</tr>
<tr>
<td>POC</td>
<td>2 (6.7)</td>
<td>1 (2.9)</td>
<td>2 (5.9)</td>
<td>2 (5.6)</td>
<td></td>
</tr>
<tr>
<td>TAC</td>
<td>8 (26.7)</td>
<td>10 (28.6)</td>
<td>8 (23.5)</td>
<td>11 (30.6)</td>
<td></td>
</tr>
<tr>
<td>Uncertain</td>
<td>6 (20)</td>
<td>7 (20)</td>
<td>7 (20.6)</td>
<td>9 (25)</td>
<td></td>
</tr>
<tr>
<td><strong>Modified Ranking Scale, n (%)</strong></td>
<td></td>
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<tr>
<td>0-1</td>
<td>21 (80.8)</td>
<td>22 (64.7)</td>
<td>22 (66.7)</td>
<td>19 (54.28)</td>
<td>0.27†</td>
</tr>
<tr>
<td>2-3</td>
<td>3 (11.5)</td>
<td>7 (20.6)</td>
<td>6 (18.2)</td>
<td>14 (40)</td>
<td></td>
</tr>
<tr>
<td>4-5</td>
<td>2 (7.6)</td>
<td>8 (23.5)</td>
<td>5 (15.15)</td>
<td>2 (5.71)</td>
<td></td>
</tr>
<tr>
<td><strong>COG4, Median (IQR)</strong></td>
<td>2 (0-4)</td>
<td>2 (0-3)</td>
<td>1 (0-5)</td>
<td>2 (1-3)</td>
<td>0.72*</td>
</tr>
</tbody>
</table>

*Kruskal-Wallis, †χ²; ‡ANOVA
• Sleeping or lying with no activity accounted for more than a third of patients' day

• Practice of ADL activities took up 17% of their time and less than 1/3 of observations described some level of physical activity

• Minimal amount of time was spent in psychological and educational interventions
Patients were not involved in any interactions for more than half of their day.

A health care professional was present for 18% of observations.

Patients spent 2.6% of their time with an OT and 3.7% with a PT.

The most frequent contact was with family members.

* Categories not mutually exclusive
• Patients least active when alone & most physically active in the presence of therapists

• Highest levels of self-care activities in the presence of nurses

• Patients active for 88% of their time with family
Patients spent the majority of their time by their beds.

Activity in gym made up a very small proportion of their day.

Therapy kitchen & off-hospital activity observed only in two sites.
Staff reported activities across the four sites

- Therapy 47%
- Administration 31%
- Meetings 16%
- Training 5%
- Home visits 1.2%

N = 159 therapist activity logs

- Non-therapeutic activities occupied more than half of therapists’ time.
- Therapy staff spent 1/3 of their time in administrative tasks.
- Overall, OTs (36.4%) spent more time in administrative activities than PTs (29.4%)
Conclusions & Key Messages

- Patients spend a large amount of their day in their rooms, inactive and without any interaction

- Findings highlight the potential to increase patients’ activity levels by:
  - promoting self-directed exercising
  - actively involving carers in the rehabilitation process
  - reducing the time therapists are required to spend in administrative activities

- Nurses have an important role to play in the training of ADL activities

- Future research should explore opportunities to enrich the environment and promote patient activity within existing resources
Acknowledgments

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niki.chouliara@nottingham.ac.uk
www.clahrc-em.nihr.ac.uk
@CLAHRC_EM

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