Early Supported Discharge for Stroke; Bringing Stroke Care Home.

Integrated Care Approach for Frailty in the Older Person Conference, March 8th 2017

Mairéad Chawke
Senior Physiotherapist & Joint ESD Co-Ordinator
Galway University Hospitals
What is Early Supported Discharge?

- ESD aims to accelerate discharge for a subgroup of stroke patients.
- **Alternative** to inpatient rehabilitation.
- Reduction in LOS
- Provided within the patients own home or community setting.
- Intensity matches inpatient rehabilitation setting.
- Up to 8 weeks of therapy input.
On discharge from GUH services, options of referral to PCCC, Croi and Quest.
Supporting Evidence

First RCT’s late 1990’s.


‘To establish the effects and costs of ESD services compared with conventional services.’
**Services for reducing duration of hospital care for acute stroke patients**

**Review**: Services for reducing duration of hospital care for acute stroke patients  
**Comparison**: 9 Early supported discharge service versus conventional care: EDI service subgroups: service base  
**Outcome**: 1 Death or dependency

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Treatment n/N</th>
<th>Control n/N</th>
<th>Odds Ratio M-H,Fixed 95% CI</th>
<th>Weight</th>
<th>Odds Ratio M-H,Fixed 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Con Hungry in-pris</td>
<td>25/59</td>
<td>32/54</td>
<td>-</td>
<td>8.1%</td>
<td>0.66 [0.32, 1.40]</td>
</tr>
<tr>
<td>Belfast 2004</td>
<td>105/167</td>
<td>109/164</td>
<td>0.85 [0.54, 1.34]</td>
<td>19.4%</td>
<td></td>
</tr>
<tr>
<td>Liverpool 2001</td>
<td>5/12</td>
<td>7/11</td>
<td>0.41 [0.08, 2.19]</td>
<td>2.0%</td>
<td></td>
</tr>
<tr>
<td>Nonnew 2000</td>
<td>17/56</td>
<td>24/56</td>
<td>0.55 [0.25, 1.20]</td>
<td>8.2%</td>
<td></td>
</tr>
<tr>
<td>Newcastle 1997</td>
<td>22/46</td>
<td>26/46</td>
<td>0.59 [0.28, 1.35]</td>
<td>6.9%</td>
<td></td>
</tr>
<tr>
<td>Oslo 2000</td>
<td>16/42</td>
<td>17/40</td>
<td>0.33 [0.14, 2.01]</td>
<td>5.1%</td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal (95% CI)</strong></td>
<td><strong>384</strong></td>
<td><strong>371</strong></td>
<td></td>
<td>49.7%</td>
<td><strong>0.72 [0.53, 0.96]</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital outreach</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adelaide 2005</td>
<td>12/42</td>
<td>16/44</td>
<td>0.78 [0.32, 1.92]</td>
<td>5.1%</td>
<td></td>
</tr>
<tr>
<td>Copenhagen 2009</td>
<td>17/50</td>
<td>25/50</td>
<td>0.52 [0.23, 1.15]</td>
<td>7.8%</td>
<td></td>
</tr>
<tr>
<td>Glosstop 2005</td>
<td>18/103</td>
<td>17/95</td>
<td>0.97 [0.47, 2.02]</td>
<td>6.9%</td>
<td></td>
</tr>
<tr>
<td>Stockholm 1998</td>
<td>5/42</td>
<td>12/41</td>
<td>0.56 [0.24, 1.17]</td>
<td>4.5%</td>
<td></td>
</tr>
<tr>
<td>Trondheim 2000</td>
<td>64/160</td>
<td>81/160</td>
<td>0.65 [0.32, 1.01]</td>
<td>23.1%</td>
<td></td>
</tr>
<tr>
<td>Trondheim 2004</td>
<td>15/31</td>
<td>15/31</td>
<td>1.59 [0.62, 4.63]</td>
<td>2.8%</td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal (95% CI)</strong></td>
<td><strong>428</strong></td>
<td><strong>421</strong></td>
<td></td>
<td>50.3%</td>
<td><strong>0.74 [0.56, 1.00]</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>812</strong></td>
<td><strong>792</strong></td>
<td></td>
<td>100.0%</td>
<td><strong>0.73 [0.59, 0.90]</strong></td>
</tr>
</tbody>
</table>

**Cochrane Database of Systematic Reviews**  
12 SEP 2012 DOI: 10.1002/14651858.CD000443.pub3  
Ref:CD000443-fig-00901
‘Appropriately resourced ESD services provided for a selected group of stroke patients can reduce long-term dependency and admission to institutional care as well as reducing the length of hospital stay. We observed no adverse impact on the mood or subjective health status of patients or carers’.

Why does it work?

- Unclear in the evidence.
- ? Enriched environment.
- ? Enhanced transferability of skills.
- ? Client engagement and motivation.
- ? Goal setting
IHF Stroke Guidelines, 2010
‘ESD should be provided by a well–resourced, co–ordinated, specialist multi–disciplinary team’.
‘ESD should target stroke survivors with mild – moderate disability’.

ESRI report, 2014
Up to 44% of patients could benefit. ESD could free up over 24,000 bed days annually.
Nationally

- INASC 2008; re-audit 2015.
- 3 ESD teams exist.
- Covering 4 acute hospitals.
- GUH 2012
- Further national development.
- Urban versus Blended model.
Population Distribution

- Population of Co. Galway 258,552 (2016 census)
- Of this the city accounts for 79,504
- Population distribution hugely different between city and county
- Highest number of younger adults of any city in Ireland
- Corresponding high numbers of over 40s and young children in remainder of the county

Needed to develop a response to these characteristics to successfully deliver ESD to the maximum number who would benefit
Galway ESD Model

- Service offered according to two zones:
  - Zone One: City & Suburbs (10 kms from base)
  - Zone Two: Satellite towns and rural areas (25 kms from base)

- Zone One – domiciliary rehab.

- Zone Two patients typically travel into base site for 2 sessions per week, with remaining sessions delivered at home (blended model).

- Proposed Zone 3.
Service Development Timeline

- Early 2012: Review of evidence base and pre-service audit.
- Late 2012: 17 week Pilot
- 2013: Post-pilot review, business case development, recruitment and planning, service re-established.
- 2016: Permanency of team
Referral Criteria

✓ Acute stroke.
✓ Medically stable for discharge home.
✓ Can transfer independently or with min/mod assist x 1.
✓ Must have ongoing rehabilitation needs for which they would have to remain as an inpatient for if ESD were not available.
✓ Catchment area.
✓ Agree to ESD.
Stroke ESD Team – GUH

- 0.85 WTE Physio
- 0.85 WTE OT
- 0.5 WTE SALT
- 0.3 Co–ordinator, PT and OT
- 0.2 MSW

- Approval of 1.0 WTE Therapy Assistant post

- Input from CNS **, medical team
Medical Management on ESD

- Remains under care of Stroke Consultant for medical issues related to CVA for duration of Rehab– key worker to liaise with med team if issue
- If unwell – GP or GUH if stroke related illness
- If pt returns to GUH during working hours– ASU Reg/Consultant will review/next steps
- Out of hours– pt to advise GP/ED they are participating in the ESD pilot
- If pt needs re-admission due to CVA related illness, will be under on-call CVA team
Key Performance Indicators
FIM/FAM

Patient Goal Attainment Evaluated at weekly MDT’s

Therapy Specific Outcome Measures

LOS Saving

Demographics

Patient and Carer Feedback
Cost–Efficacy

- Costs over first full year
  - Euro 118,672

- If offset against bed day savings where bed costs are
  - 900 euro per day (HSE): Euro 390,600 (30.4%)
  - 500 euro per day (ESRI): Euro 217,000 (54.7%)
Services for reducing duration of hospital care for acute stroke patients

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Treatment n/N</th>
<th>Control n/N</th>
<th>Odds Ratio</th>
<th>Weight</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M-H, Fixed, 95% CI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Community-in-reach</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belfast 2004</td>
<td>25/59</td>
<td>32/54</td>
<td></td>
<td>6.1 %</td>
<td>0.65 [0.63, 1.49]</td>
</tr>
<tr>
<td>London 1999</td>
<td>105/167</td>
<td>109/164</td>
<td></td>
<td>19.4 %</td>
<td>0.85 [0.64, 1.34]</td>
</tr>
<tr>
<td>Manchester 2001</td>
<td>5/12</td>
<td>7/11</td>
<td></td>
<td>2.0 %</td>
<td>0.41 [0.08, 2.19]</td>
</tr>
<tr>
<td>Newcastle 2000</td>
<td>17/56</td>
<td>24/56</td>
<td></td>
<td>8.2 %</td>
<td>0.55 [0.25, 1.20]</td>
</tr>
<tr>
<td>Oslo 2000</td>
<td>22/46</td>
<td>26/46</td>
<td></td>
<td>6.9 %</td>
<td>0.59 [0.26, 1.35]</td>
</tr>
</tbody>
</table>

Subtotal (95% CI) 384 371 49.7% 0.72 [0.53, 0.96]

Total events: 154 (Treatment), 217 (Control)
Heterogeneity: Ch² = 1.81, df = 5 (P = 0.87); I² = 0.0%
Test for overall effect: Z = 2.22 (P = 0.027)

2. Hospital-out-reach

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Treatment n/N</th>
<th>Control n/N</th>
<th>Odds Ratio</th>
<th>Weight</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M-H, Fixed, 95% CI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adelaide 2000</td>
<td>12/42</td>
<td>16/44</td>
<td></td>
<td>5.1 %</td>
<td>0.78 [0.63, 1.32]</td>
</tr>
<tr>
<td>Copenhagen 2009</td>
<td>17/50</td>
<td>25/50</td>
<td></td>
<td>7.8 %</td>
<td>0.52 [0.23, 1.15]</td>
</tr>
<tr>
<td>Glosup 2005</td>
<td>18/103</td>
<td>17/95</td>
<td></td>
<td>6.9 %</td>
<td>0.97 [0.47, 1.82]</td>
</tr>
<tr>
<td>Stockholm 1998</td>
<td>5/42</td>
<td>12/41</td>
<td></td>
<td>4.5 %</td>
<td>0.55 [0.24, 1.22]</td>
</tr>
<tr>
<td>Trondheim 2000</td>
<td>64/160</td>
<td>81/160</td>
<td></td>
<td>23.1 %</td>
<td>0.63 [0.42, 1.01]</td>
</tr>
<tr>
<td>Trondheim 2004</td>
<td>15/31</td>
<td>15/31</td>
<td></td>
<td>2.8 %</td>
<td>1.59 [0.62, 0.63]</td>
</tr>
</tbody>
</table>

Subtotal (95% CI) 428 421 50.3% 0.74 [0.56, 1.00]

Total events: 146 (Treatment), 166 (Control)
Heterogeneity: Ch² = 4.27, df = 5 (P = 0.51); I² = 0.0%
Test for overall effect: Z = 1.99 (P = 0.047)

Total (95% CI) 812 792 100.0% 0.73 [0.59, 0.90]

Total events: 334 (Treatment), 383 (Control)
Heterogeneity: Ch² = 6.11, df = 11 (P = 0.87); I² = 0.3%
Test for overall effect: Z = 2.97 (P = 0.003)
Test for subgroup differences: Ch² = 0.03, df = 1 (P = 0.85), I² = 0.0%
An audit to compare the characteristics and outcomes of Urban and Rural ESD patients
Demographics

- 51 patients participated in the Early Supported Discharge programme during 2014 & 2015
  - 36 were in our “urban” catchment area, 15 in the “rural” area
  - 32 male; 19 female
  - 37 discharged from the acute site, 14 from rehab (MPUH)

- 654 bed days were saved based on estimated date of discharge (were ESD not available)
  - Average length of stay saving per participant was 12.8 days
6 Urban patients lived alone; no rural patient did

Age range overall was 28–89
  ◦ Median of 67.5 in Urban area and 75 in the Rural area (p=0.079)

Average length of ESD input was 34.4 days in urban group, 39.5 days in the rural group (p=0.438)

Hospital LOS ranged from 6–90. Average was 23.4 days in Zone 1, 27.6 in Zone 2 (p=0.45)
- Functional Independence Measure (FIM) used as primary outcome measure.
- The tool was used at the start and end of the ESD rehabilitation period as an outcome measurement tool (n=37).
- Overall, ESD patients gained an average of 8.7 FIM points while on the programme (range 0–25)
  - There was a statistically significant improvement in Discharge FIM scores compared to Baseline FIM scores
    (Wilcoxon Signed Rank test P<0.001)
Comparison of Urban and Rural Patients

- No statistically significant differences were found between the urban and rural groups in terms of initial FIM, Discharge FIM or overall FIM change.

<table>
<thead>
<tr>
<th></th>
<th>URBAN (Zone 1)</th>
<th>RURAL (Zone 2)</th>
<th>Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial FIM</td>
<td>104</td>
<td>103.3</td>
<td>(Mann Whitney U test, P = 1.000)</td>
</tr>
<tr>
<td>Discharge FIM</td>
<td>112.9</td>
<td>111.6</td>
<td>(Mann Whitney U test, P = 0.654)</td>
</tr>
<tr>
<td>FIM Change</td>
<td>9.0</td>
<td>8.3</td>
<td>Mann Whitney U test, P = 0.722</td>
</tr>
</tbody>
</table>
Based on the audit data, this programme is meeting its two primary goals; namely facilitating an early discharge from the hospital setting, while maintaining a high quality and effective rehabilitation service for patients with stroke.

Our audit of outcomes suggests that both rural and urban dwelling people can demonstrate functional change while on ESD, and to a similar degree.

The blended model is a feasible model of service delivery, balancing the need for appropriate therapy “dosage” with resource utilisation.

Further research is required to establish optimum service delivery.
References


Acknowlegedgements

- Participants in the ESD programme
- Dr Tom Walsh and Stroke GUH Medical teams
- Ciara Breen ESD OT and Joint Co-Ordinator
- Eithne Waldron
- Clare McMahon ESD SALT
- Susan Murphy ESD MSW
- Prof Tadhg Stapleton
- HSE Stroke Clinical Programme