Outdoor Accessibility Standard for Geriatric Hip Fracture Patients

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Can a Hip Fracture Patient Back to Community after Rehabilitation?
Outdoor Activity is Important for Elderly People

Dangerous?
## Prevalence of Hip Fracture in HA

<table>
<thead>
<tr>
<th>Calendar Yr</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Episode</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Headcount</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Episode</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Headcount</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grand Total</td>
<td>8502</td>
<td>8351</td>
<td>8223</td>
</tr>
<tr>
<td>Headcount</td>
<td>5600</td>
<td>5623</td>
<td>5748</td>
</tr>
</tbody>
</table>

Source of data:

Clinical Data Analysis & Reporting System (CDARS)
Rehabilitation of Hip Fracture Patient in NTEC

TPH

NDH

AHNH

Rehabilitation Hospital for Hip Fracture Patients in NTE Cluster
In the year 2007, 580 hip fracture patients were admitted for rehabilitation in TPH.
% of Distribution of Pre-morbid Mobility Status

- Outdoor Walker: 48.7%
- Indoor Walker: 31.8%
- Assisted Walker: 6.6%
- Supervised Walker: 6.5%
- Dependent Walker: 2.7%
- Non Walker: 3.7%
Rehabilitation of Hip Fracture

Physiotherapy interventions are given based on the Hip Fracture Rehabilitation Protocol.
Physiotherapy Intervention
Change of Mobility Status for Pre-morbid Outdoor Walker Admission Vs Discharge

**Admission**

- Non-Walker: 27.3% (N=75)
- Assisted Walker: 71.7% (N=197)
- Independent Walker: 1.1% (N=3)

**Discharge**

- Independent Walker: 50%
- Assisted Walker: 46%
- Lyer/Sitter: 4%
Consequence of hip Fracture

- Some of these independent walkers become *home bound*

- *1st step* to outdoor environment is the *milestone* of returning to previous functional activities e.g. to restaurant, morning walk
Go Outside?
How to Assess the Outdoor Accessibility?

- Need to assess outdoor ability
- How can we know the accessibility??
- Home visit to assess
- Time is a limiting factor
- How to make a tailor-made outdoor assessment?
Planning to Improve the Service
Go to Community & Measure it
Geographic Consideration

- Where do most of our geriatric patients live in Tai Po area?
Methodology

Search:

- the Data Base of Census and Statistics Department

## 2006 Population By-census

<table>
<thead>
<tr>
<th>Type of Quarters</th>
<th>Occupied Quarters</th>
<th>Domestic Households</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>90 241</td>
<td>90 581</td>
<td>293 542</td>
</tr>
<tr>
<td>Permanent housing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public rental flats</td>
<td>19 891</td>
<td>20 009</td>
<td>63 385</td>
</tr>
<tr>
<td>Housing Authority subsidized sale flats</td>
<td>24 734</td>
<td>24 654</td>
<td>87 855</td>
</tr>
<tr>
<td>Housing Society subsidized sale flats</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Private residential flats</td>
<td>26 709</td>
<td>27 173</td>
<td>82 584</td>
</tr>
<tr>
<td>Villas/Bungalows/Modern village houses</td>
<td>15 857</td>
<td>15 831</td>
<td>50 318</td>
</tr>
<tr>
<td>Traditional village houses</td>
<td>1 365</td>
<td>1 365</td>
<td>3 711</td>
</tr>
<tr>
<td>Staff quarters</td>
<td>320</td>
<td>317</td>
<td>893</td>
</tr>
<tr>
<td>Non-domestic quarters</td>
<td>279</td>
<td>116</td>
<td>1 685</td>
</tr>
<tr>
<td>Temporary housing</td>
<td>1 086</td>
<td>1 116</td>
<td>3 111</td>
</tr>
</tbody>
</table>

Approximately 150,000
Methodology: Data from Web Site of Housing Authority

- In Tai Po, there are 6 public estates

- Tai Yuen Estate accommodates the largest number of elderly people among the Public Estates in Tai Po
Explore the Outdoor Accessibility
Methodology – Collection of Floor Plan

Rectangular Shape

V Shape

H Shape
Equipment

Distance Measuring Wheel

Tapes

Digital Angle Finder
Distance from Far Away Flat to the Lift
Distance from **Lift** to the **Main Entrance**
Distance from the Main Entrance to Outdoor Chair
Any *Slope* to Climb?

- There is a ramp at the main entrance of each building.
- The ramp has $5^\circ$ gradient with handrails installed at both sides.
Any **Stairs to Climb**?

- Most of flats have **direct lift landing**

- Except for the **first or highest** floor,

- Need to climb **16 treads of stairs**:
  - **Rise ~15cm**
  - **Run ~28cm**
### Result of the Measurement

<table>
<thead>
<tr>
<th>Shape</th>
<th>Distance from Far Away Flat to the Lift</th>
<th>Distance from Lift to the Outdoor Chair</th>
<th>Total Distance</th>
<th>Ramp</th>
<th>Stair</th>
</tr>
</thead>
<tbody>
<tr>
<td>H Shape</td>
<td>18m</td>
<td>30-51m</td>
<td>48m (Shortest)</td>
<td>Yes Ramp angle: 5°</td>
<td>16 treads</td>
</tr>
<tr>
<td>Horizontal Shape</td>
<td>45m</td>
<td>63m</td>
<td>108m</td>
<td>Yes Ramp angle: 5°</td>
<td>16 treads</td>
</tr>
<tr>
<td>V shape</td>
<td>45m</td>
<td>74 - 83m</td>
<td>128m (Longest)</td>
<td>Yes Ramp angle: 5°</td>
<td>16 treads</td>
</tr>
</tbody>
</table>
Summary of the Findings

If a patient can fulfill...

**Outdoor Accessibility Standard**:

1. Walking > **128 meters**

2. Able to climb a **ramp** with 5° gradients.

3. ± Climb 16 treads of stairs

I can go out & take a seat at outside
Clinical Implication(1)
Leads to Better Mode of Service
Do You Guess ??
Leads to Better Mode of Service

Now, with this standard, we can quantify the outdoor requirement and improve the accuracy of assessment on the outdoor ability of patients.
Clinical Implication (2):
A More Tailor-made Outdoor Training

= 128 m +Slope

= 16 Steps
Current Progress

- With support from Orthopedic Dept of CUHK

- A Research Assistant is recruited to assist the measurement
Future Planning

- Plan to extend the measurement on the remained 3 Public Estates

- Attain the Outdoor Accessibility Standard compatible to 50% of Population in Tai Po
Conclusion

- Measuring Community is **simple** but **practical**

- **Outdoor Accessibility Standard**: creates an **important guideline** for **assessment** and **intervention**

- This standard is beneficial **not just to** **Hip Fracture** **but** **Other patients**
Thank You!