



**HOPE  
HEALTHCARE**

# **Analysis Of Functional Improvement In Stroke Patients Relative To Time Of Transfer To Rehabilitation**

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bringing  
hope to life

# Rehabilitation and Brain Plasticity

- Better outcomes from stroke are seen when rehabilitation is
  - More intense
  - Task specific
  - Meaningful to patient
  - Provided in an enriched environment

# The Earlier the Better

- Evidence supports clinical association between early rehabilitation and improved functional outcomes
- Animal models suggest brain is “primed” to recover early after stroke

# Multidisciplinary Stroke Units

- Models of stroke unit care
  - Combined Acute/Subacute Units
  - Dedicated Stroke Rehabilitation Unit
  - Stroke Rehabilitation Programmes offered on a General Rehabilitation Ward
- Ultimately co-ordination between acute and subacute stroke services seems essential

# Previous Findings

- Analysis of 406 stroke patients found no correlation between time of admission and outcome from stroke
- Methodological limitations

# Objective

- To examine whether timing of admission to rehabilitation is a major determining factor in outcome following stroke

# Study Design

- All patients with a diagnosis of stroke discharged from our rehabilitation units between 1/1/07-9/10/09 were included in the study

# Study Design 2

- Transferred to one of our two rehabilitation units
  - One unit in a general community hospital
  - One freestanding unit
- Similar Referral and Admitting criteria for the two units
- Some patients transferred between the two units, in which case the two admissions were combined
- Patients with medical interruption < 3 weeks also had admissions combined

# Study Design 3

- Referral Source
  - General Community Hospital
  - University Teaching Hospital 10km away
- Referral sources have multidisciplinary stroke services/stroke units

# Functional Independence Measure

- A instrument that measures the level of independence of a person and their “burden of care”
- 18 items are measured
  - Motor Items include self care, sphincter control, transfers and locomotion
  - Cognitive Items include communication and social cognition
- Each item scored using a seven level scale:
  - 7 (complete independence) to 1 (total assistance)

# Analysis

- Data analysed for differences in outcome according to time taken to transfer to rehabilitation
- Outcome variables
  - Length of Stay (LOS)
  - Discharge FIM
  - FIM Difference (Discharge FIM-Admission FIM)
  - FIM Efficiency (FIM gains/days)
  - Discharge Destination

# Analysis

- Patients were grouped according to their time to transfer into 3 day periods
  - <3 days
  - 4-6 days
  - 7-9 days etc
- Analysis by SPSS for Windows v18
- Kruskal-Wallis Test for significant between group relationships

# Results

- 267 episodes of care
  - 4 patients with medical interruptions
  - 2 patients excluded (extreme outliers)
- 261 patients included
- Time to admission from stroke onset
  - Between 2 - 76 days

# Patient Admission Details

<b>Item</b>	<b>US PSROP (n=1161)</b>	<b>Canada (IBM)</b>	<b>Our study (261)</b>
<b>Mean Age</b>	<b>66.0</b>	<b>70.8</b>	<b>72.4</b>
<b>Lived alone Pre-Stroke</b>	<b>20.7%</b>	<b>24.5%</b>	<b>21.5%</b>
<b>Mean Admission FIM</b>	<b>61.0</b>	<b>75.2</b>	<b>71.4</b>
<b>Mean/Median Stroke Onset to Rehab Admit (days)</b>	<b>13.8/7</b>	<b>26/14</b>	<b>17.4/14</b>

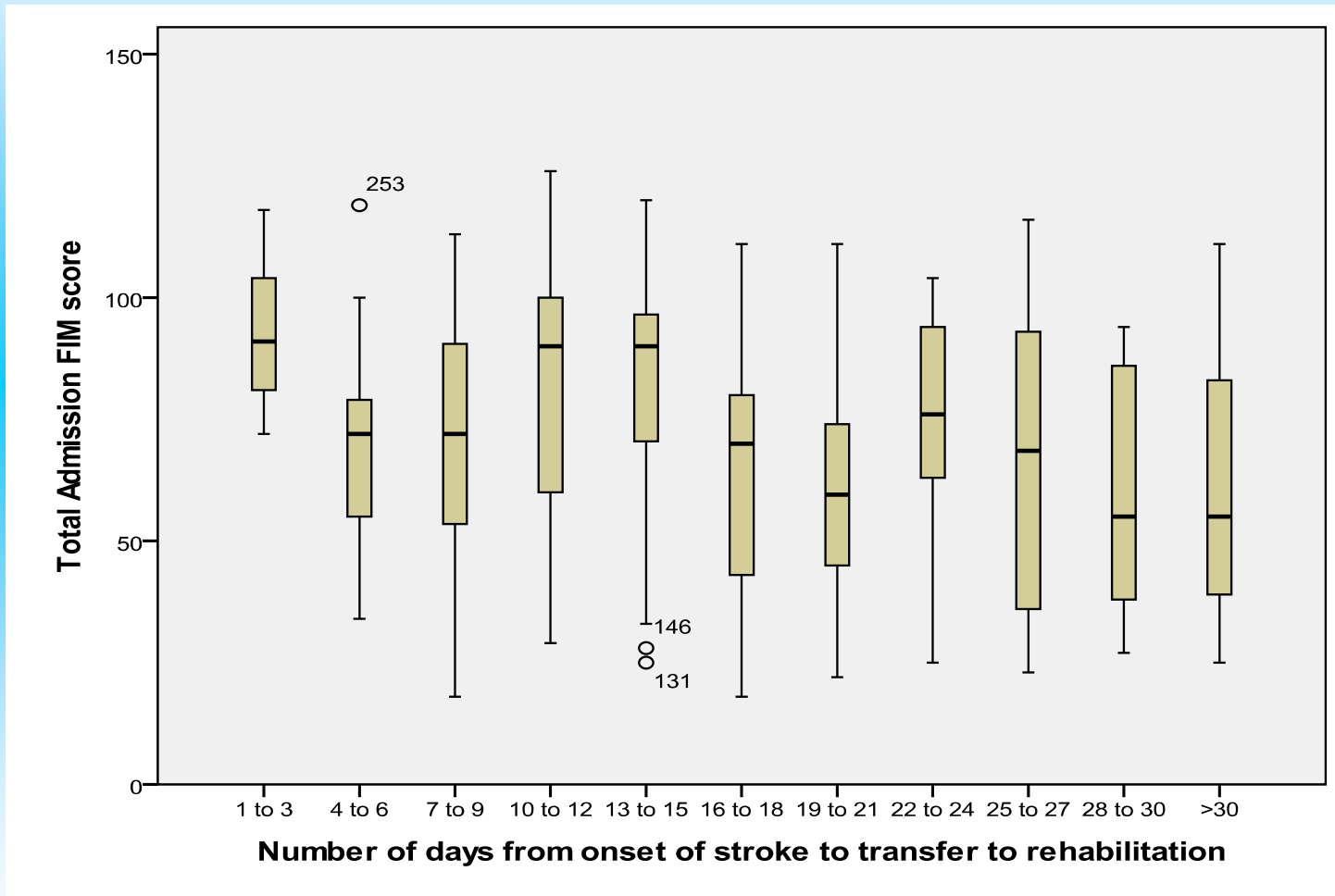
# Overall Outcome Data

<b>Item</b>	<b>US PSROP (n=1161)</b>	<b>Canada (IBM)</b>	<b>Our study (261)</b>
<b>Mean Rehab LOS (days)</b>	<b>18.6</b>	<b>38</b>	<b>33</b>
<b>Mean Discharge FIM</b>	<b>87.2</b>	<b>96.3</b>	<b>92.7</b>
<b>Mean FIM Difference</b>	<b>26.2</b>	<b>21.1</b>	<b>21.3</b>
<b>FIM Efficiency (FIM gains/day)</b>	<b>1.41</b>	<b>0.56</b>	<b>0.82</b>
<b>Number of Patients Home</b>	<b>78.0%</b>	<b>67.3%</b>	<b>81.6%</b>

# Results

- No relationship was found between time to admission and
  - FIM difference
  - FIM efficiency.
  - Discharge destination
- A weak relationship was found between time to admission and
  - Length of stay
  - Discharge FIM

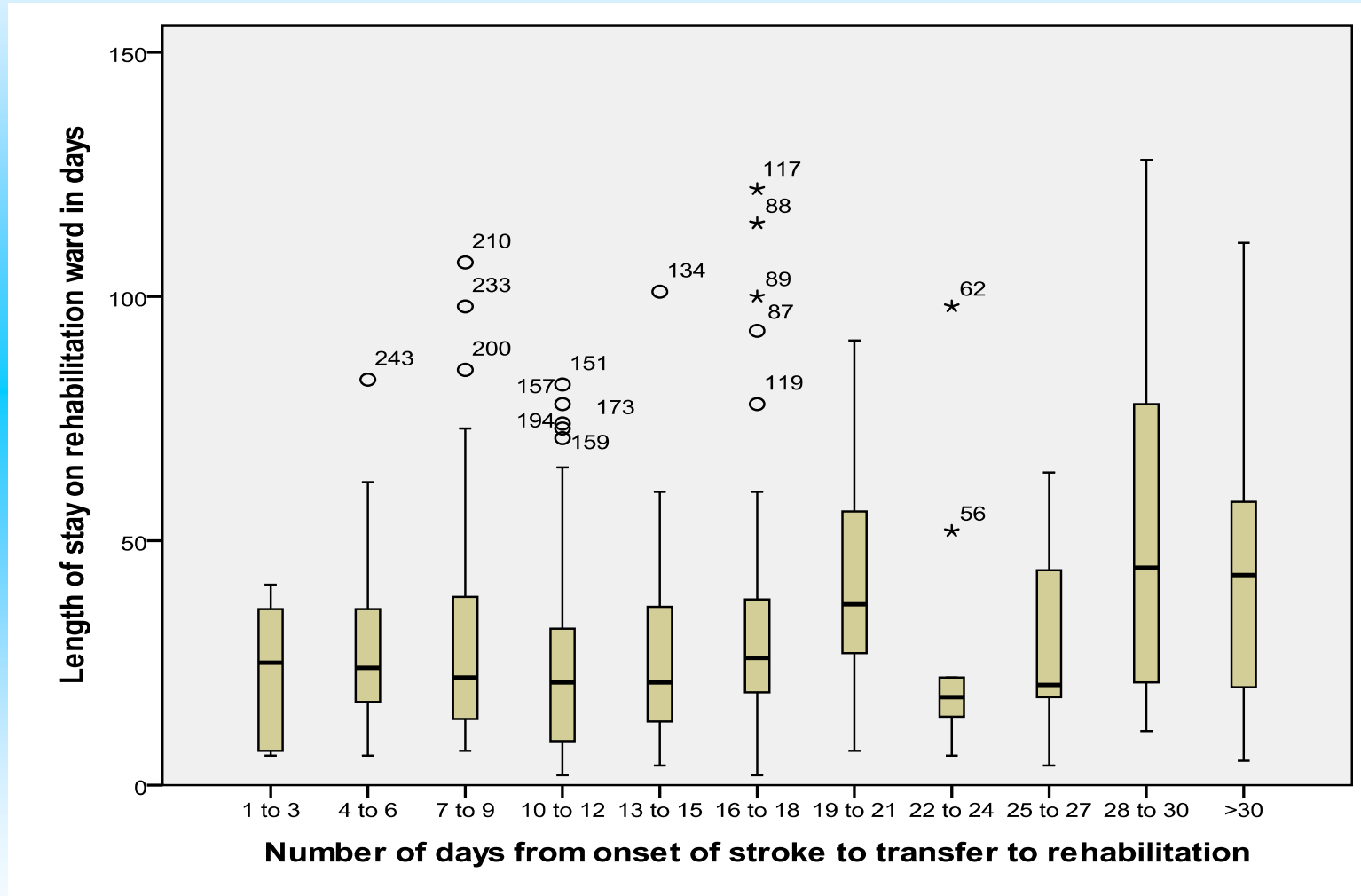
# Admission FIM Box and Whiskers



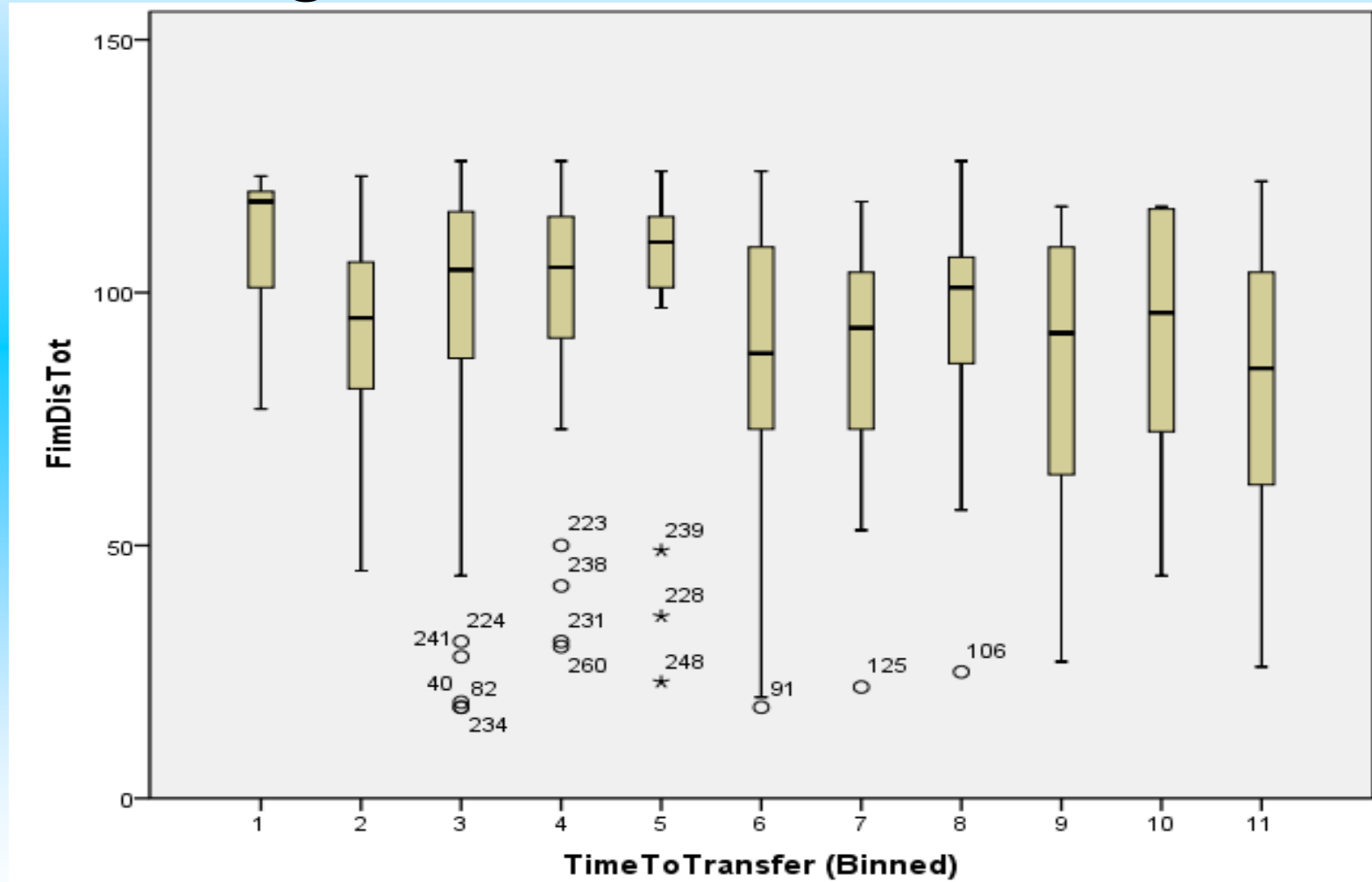
# Patient Groups

Time To Transfer	No of patients
1-3 days	5
4-6 days	25
7-9 days	38
10-12 days	46
13-15 days	31
16-18 days	33
19-21 days	21
22-24 days	13
25-27 days	13
28-30 days	7
>30 days	29
Total	261

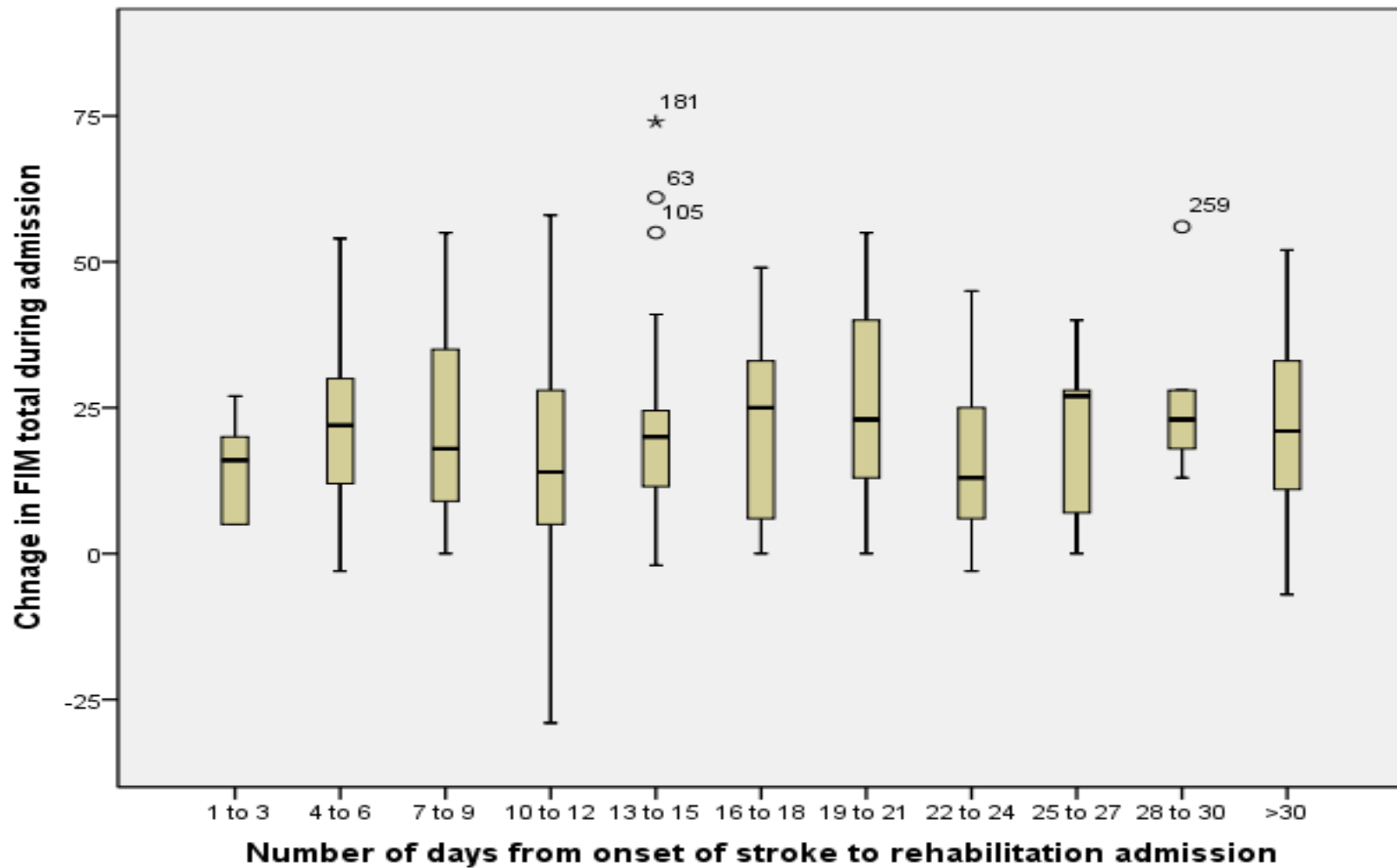
# LOS Box and Whiskers Plot



# Discharge FIM Box and Whiskers

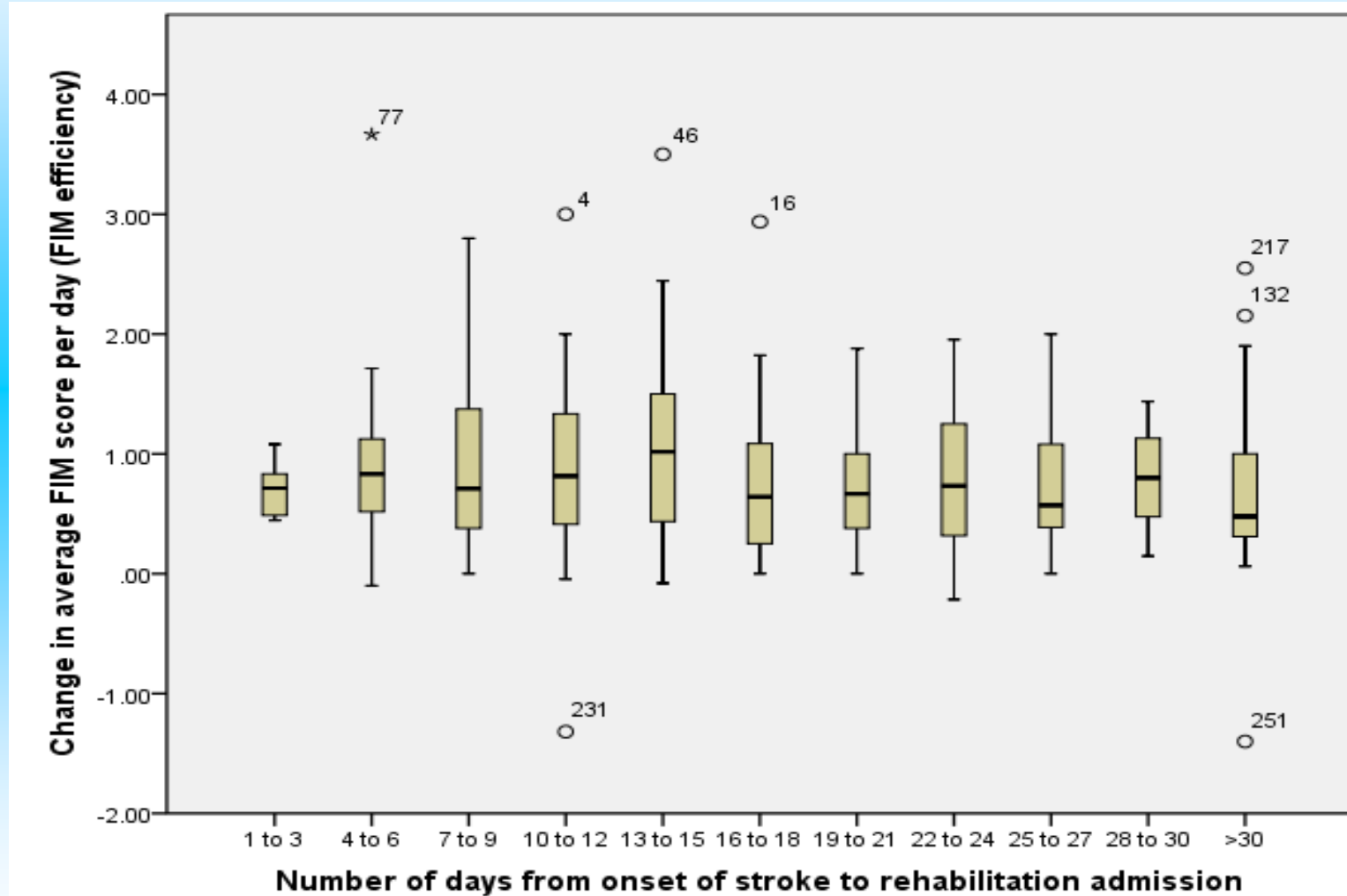


# FIM Difference Box and Whiskers

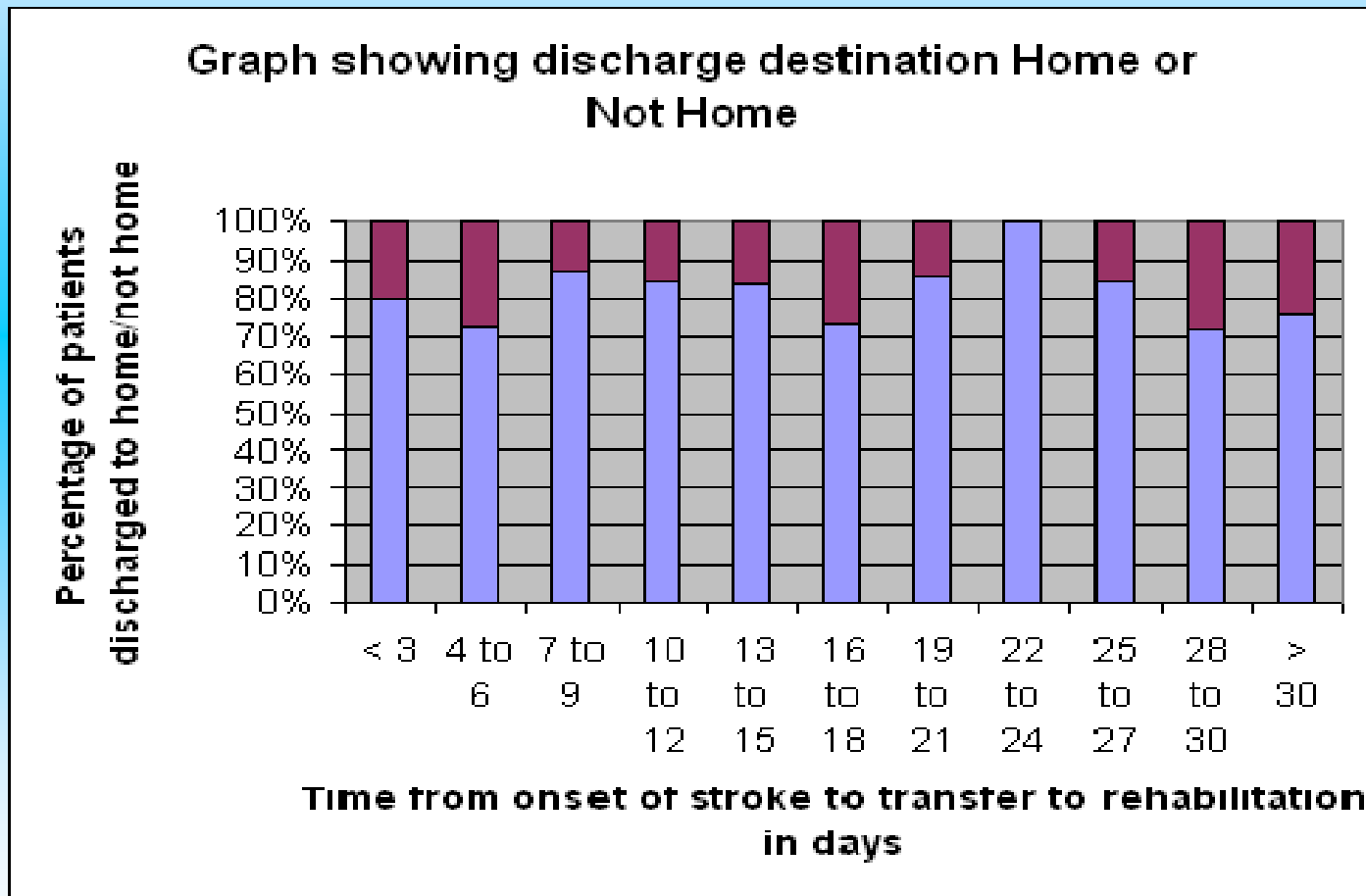




# FIM Efficiency Box and Whiskers



# Discharge Home/Not Home



# Discussion

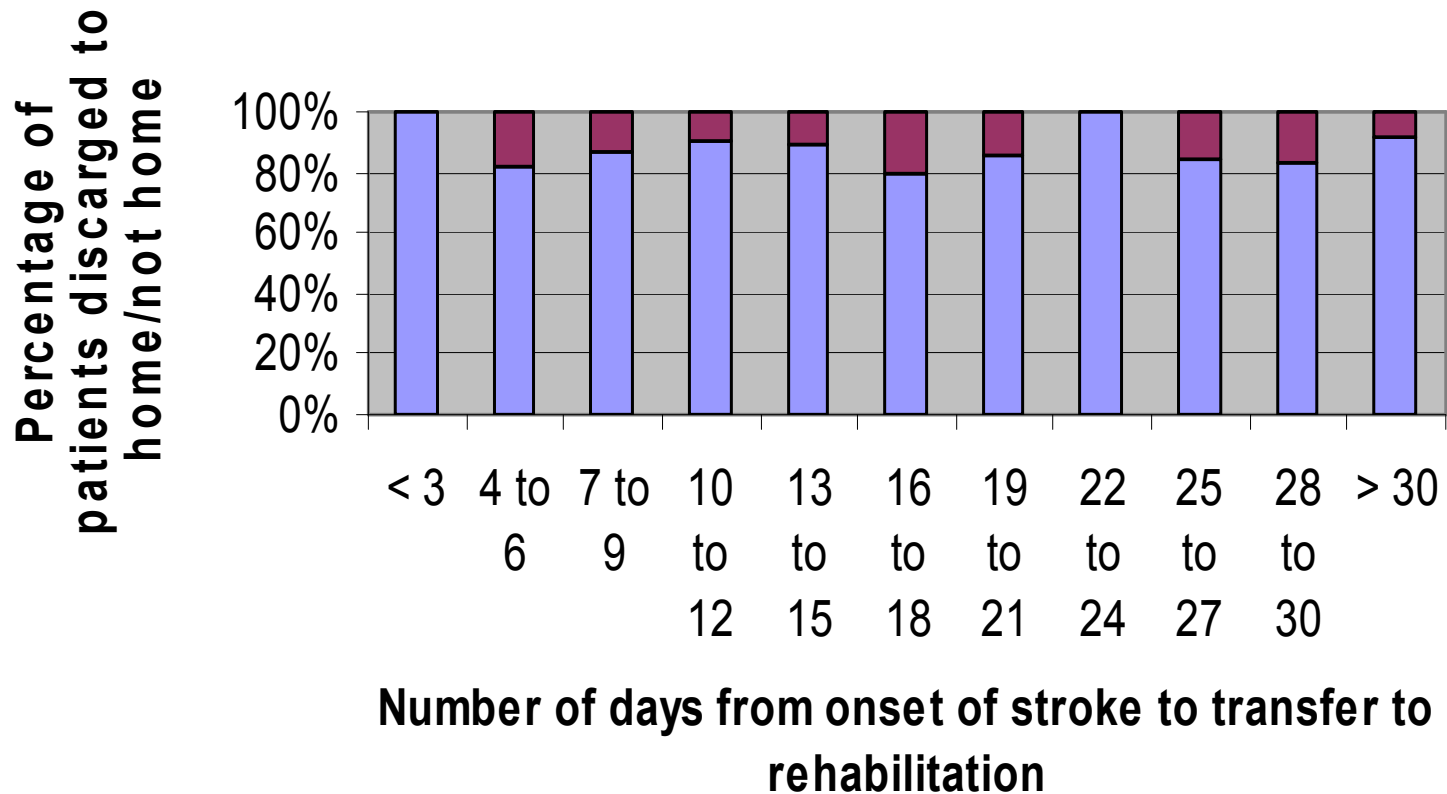
- Based on our data, there is no evidence that timing of transfer to rehabilitation affects clinical outcomes
- May be because the majority of our patients are admitted to acute stroke units where multidisciplinary team input is utilised

# Acknowledgements

- Rehabilitation teams of Fairfield and Braeside hospitals

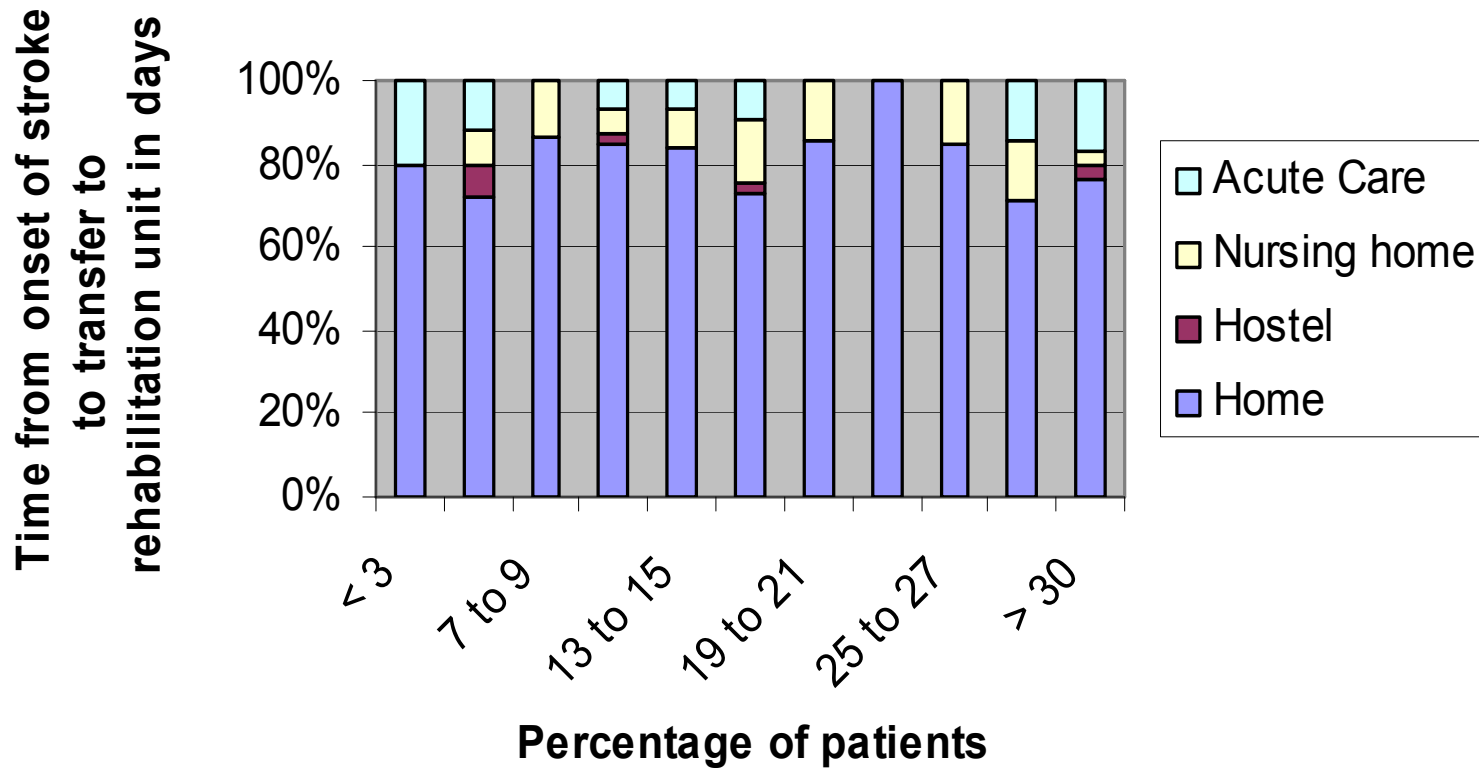


### Graph showing relative percentage of discharge destination excluding transfer back to acute hospital





### Chart showing percentage patients to various discharge destinations by grouped time taken for transfer





### Hypothesis Test Summary

	<b>Null Hypothesis</b>	<b>Test</b>	<b>Sig.</b>	<b>Decision</b>
<b>1</b>	The distribution of FIMefficiency is the same across categories of TimeToTransfer (Binned).	Independent-Samples Kruskal-Wallis Test	.755	Retain the null hypothesis.
<b>2</b>	The distribution of FIMdiffTot is the same across categories of TimeToTransfer (Binned).	Independent-Samples Kruskal-Wallis Test	.753	Retain the null hypothesis.
<b>3</b>	The distribution of FimDisTot is the same across categories of TimeToTransfer (Binned).	Independent-Samples Kruskal-Wallis Test	.005	Reject the null hypothesis.
<b>4</b>	The distribution of FimAdmTot is the same across categories of TimeToTransfer (Binned).	Independent-Samples Kruskal-Wallis Test	.001	Reject the null hypothesis.
<b>5</b>	The distribution of LOS is the same across categories of TimeToTransfer (Binned).	Independent-Samples Kruskal-Wallis Test	.025	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.