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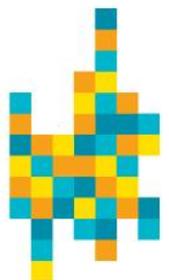


Cost-effectiveness analysis (CEA) of a continuous chain of rehabilitation after severe traumatic brain injury

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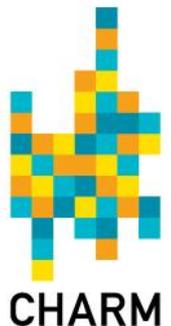
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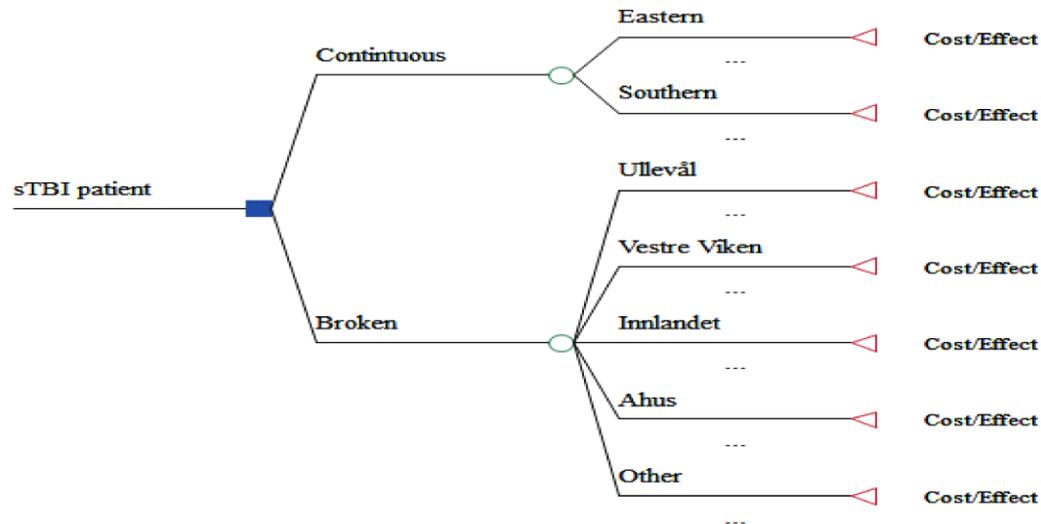
Background

- ✓ Severe TBI (sTBI) represents a substantial financial burden on the health care system, as well as on patients, family and society. Hence, treatment with the potential for reducing these burdens is demanded.
- ✓ Our previous study suggests that a combination of medical treatment and early continuous rehabilitation could reduce the length of hospital stay and better functional outcome for patients with sTBI.
- ✓ However, the long-term cost-effectiveness of rehabilitation after sTBI has yet to be determined.



Study aims

- ✓ To compare the cost-effectiveness of a continuous chain of rehabilitation trajectory with a broken chain rehabilitation trajectory for patients with sTBI.



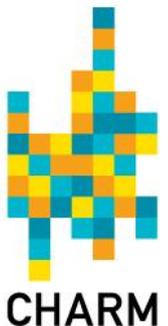
Study population and design

2005-2007

✓ ***Inclusion criteria:***

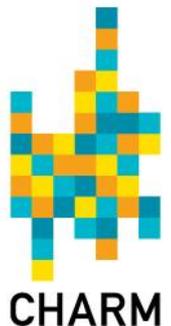
- Age 16–55 years
- ICD-10 diagnosis of intracranial injuries (S06.1-S06.9)
- Glasgow Coma Scale (GCS) score ≤ 8
- Need of neuro-intensive care for at least 5 days
- Survival 5 years post-injury

✓ ***Quasi-experimental study design*** (*Andelic et al. J Neurotrauma, 2012*)

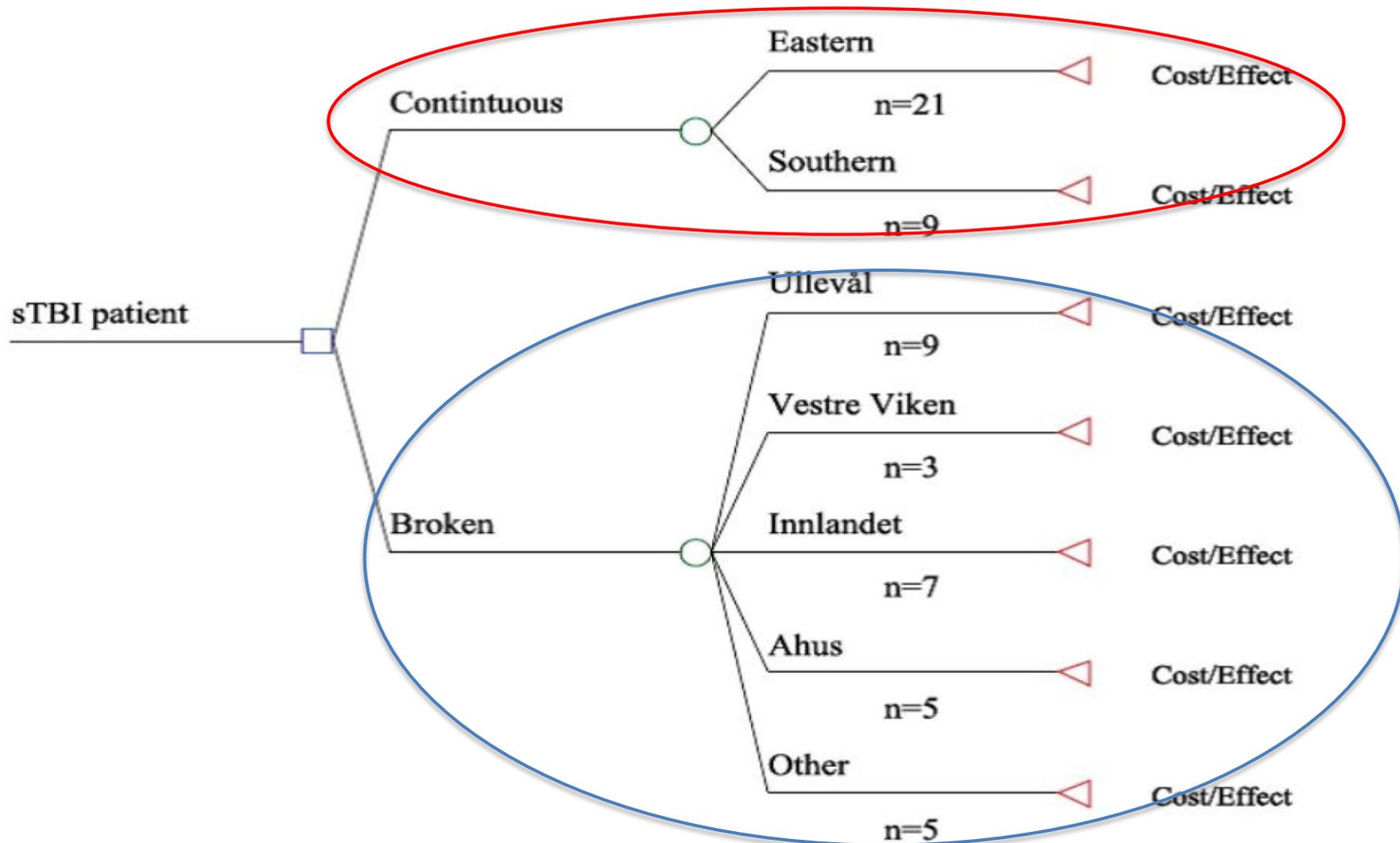


Two study groups

- ✓ ***Medical treatment and Continuous chain of rehabilitation, n=30***
(i.e. directly transfer from the ICU to specialized brain injury rehabilitation entities).
- ✓ ***Medical treatment and Broken chain of rehabilitation, n=29***
(i.e. discharge to local hospitals and delayed admission to brain injury rehabilitation).
- ✓ Both groups were followed-up at *6-weeks, 1-year* and *5-years* post-injury.



Analysis: A decision tree model

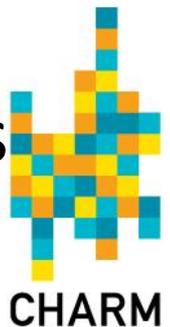


Analysis cont.

- ✓ Incremental cost-effectiveness ratio (ICER) of continuous versus broken chain of rehabilitation.

$$ICER = \frac{\text{Cost of continuous chain} - \text{Cost of broken chain}}{-(\text{Health effect of continuous chain} - \text{Health effect broken chain})} = \frac{\Delta C}{\Delta E}$$

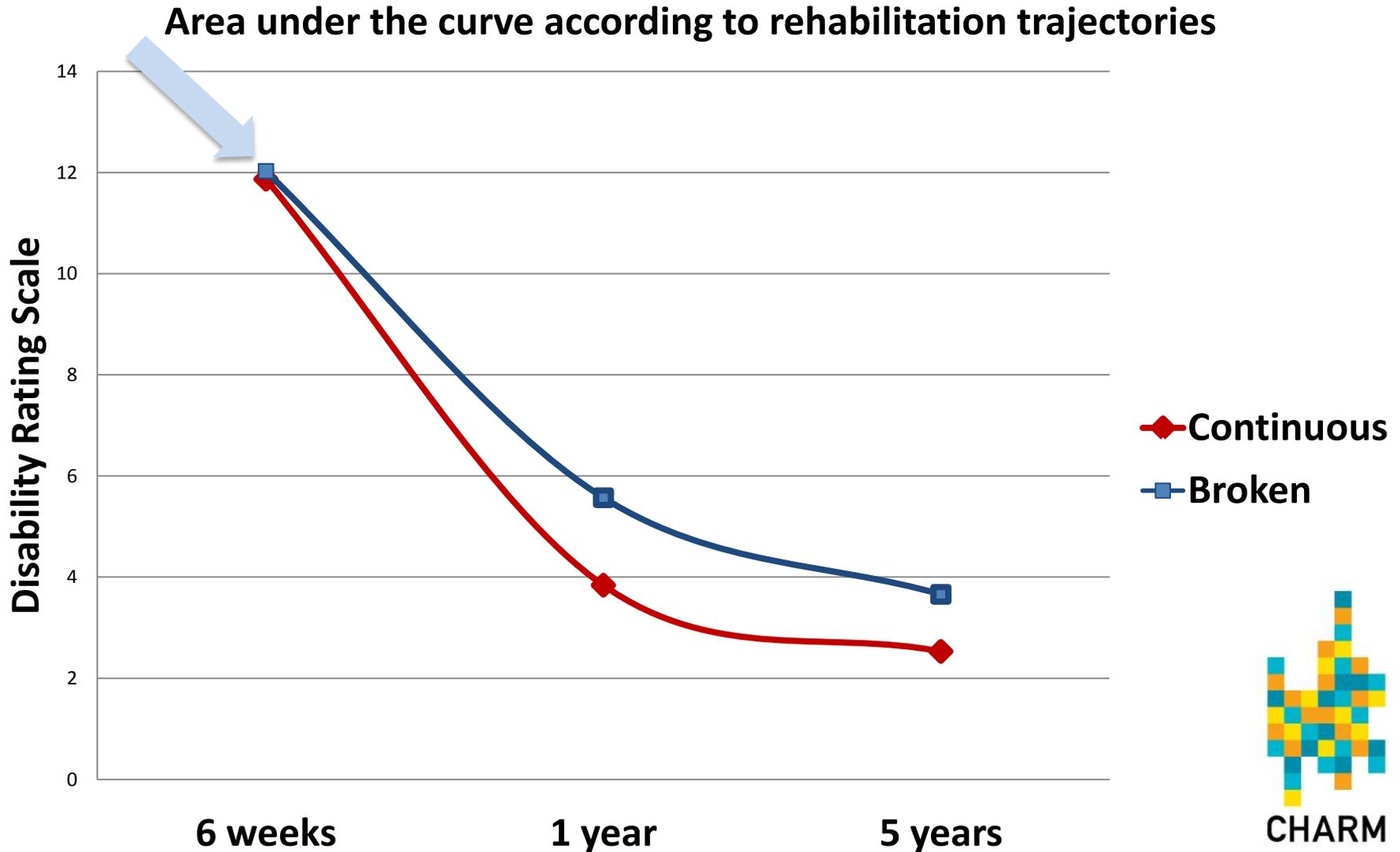
- ✓ The costs were estimated by means of average costs per diagnosis related group (DRG).
- ✓ The health effect was based on point estimates from the Disability Rating Scale (DRS).



Results - Costs

| Rehab. trajectory | Number of patients (N) | Average 1 year cost per patient USD, (SD) | Average 5 years cost per patient USD, (SD) | Mean LOS 1 year/5 year (Days) |
|--------------------------|------------------------|---|--|-------------------------------|
| <u>Continuous</u> | 30 | 196,092 (72,968) | <u>207,498 (77,162)</u> | 103/115 |
| Acute hospitals | | | 154,659 (63,742) | |
| Rehab. units | | | 52,671 (52,671) | |
| <u>Broken</u> | 29 | 198,943 (117,420) | <u>213,705 (127,485)</u> | 133/148 |
| Acute hospitals | | | 127,485 (102,323) | |
| Rehab. units | | | 86,220 (77,162) | |

Results - Health effect



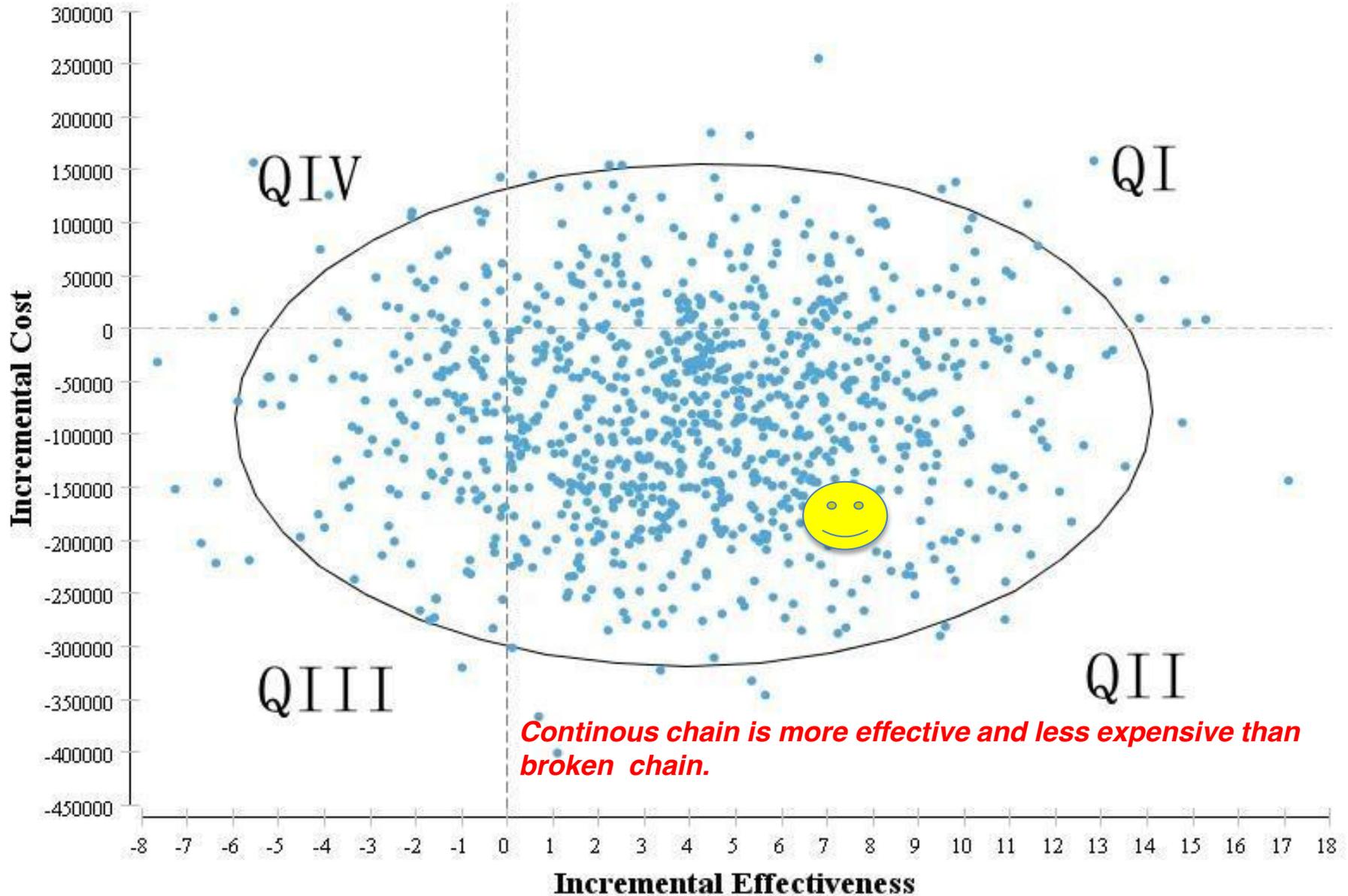
Results - ICER

| Time perspective | Rehab. trajectory | C (\$) | E | C/E | ΔC | ΔE | ICER |
|------------------|-------------------|---------|-------|--------|------------|------------|-----------|
| 1 year | Continuous | 196,092 | 6.95 | 27,997 | -2,852 | 0.83 | Dominant* |
| | Broken | 198,943 | 7.78 | 24,903 | | | |
| 5 years | Continuous | 207,498 | 19.40 | 10,692 | -6,207 | 4.06 | Dominant |
| | Broken | 213,705 | 23.46 | 9,420 | | | |



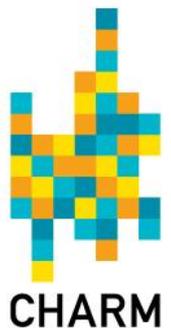
*The strategy that is less costly and more effective

Incremental Cost-Effectiveness, Continuous chain v. Broken chain



Conclusion and implications

- ✓ Under some reasonable assumptions, our study results suggest that the continuous chain of rehabilitation not only improves patients' outcome, but is also cost-effective.
- ✓ The knowledge generated by this study could be used to improve resource allocation and develop better rehabilitation programs for patient with sTBI.



Thank you for your attention!

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