Hospital Authority Convention 2025

A Pilot Study on the Effectiveness of a Smart OT Delirium Program Leveraging Advanced Technologies for Delirium Patients

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Delirium

Common symptoms

Common neuropsychiatric syndrome in acute hospital setting:
Affect ~ **30% of hospitalized adults**

Hallucination

Delusion

Agitation

Change of mood

↓ ADL function

↓ Cognitive function

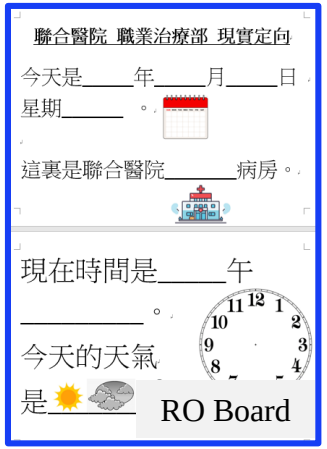
↑ Motor impairment

↑ Fall risk

Affects ADL/cognitive function
→ Requires OT input

(Trzepacz et al., 2010)
(Wilson et al, 2020)

Current OT Delirium Programme in 11A


聯合醫院 職業治療部 現實定向

今天是_____年_____月_____日
星期_____。

這裏是聯合醫院_____病房。

現在時間是_____午
_____。

今天的天氣
是_____

RO Board


Aromatherapy

Reality Orientation

Motor Stimulation

ADL Training

01

02

03

04

05

Multiple approaches

Cognitive Stimulation

Multisensory Stimulation

*Collaboration with 11A nurses


Grooming kit

Why starts to integrate **new smart elements** on top of current delirium programme?

Improvement Area for the Current Programme?

1. Labour intensive training mode
   - Need **constant presence** of our staffs to guild patients throughout the training activities
   - Need to **adjust grading of training activities manually** in accordance of patient's performance
   - Unable to **share information** of training results with other colleagues

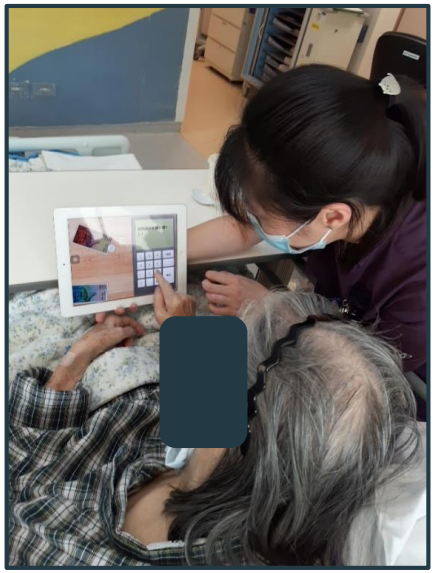
2. Conventional training modalities with less attractiveness
   - **Difficult to arouse patient's interest** to participate in repetitive conventional trainings
   - Mainly focus on **single sense** rather than multisensory stimulation in each conventional training activities

Idea of Pilot Smart Delirium Programme:

To incorporate various new technologies in training sessions

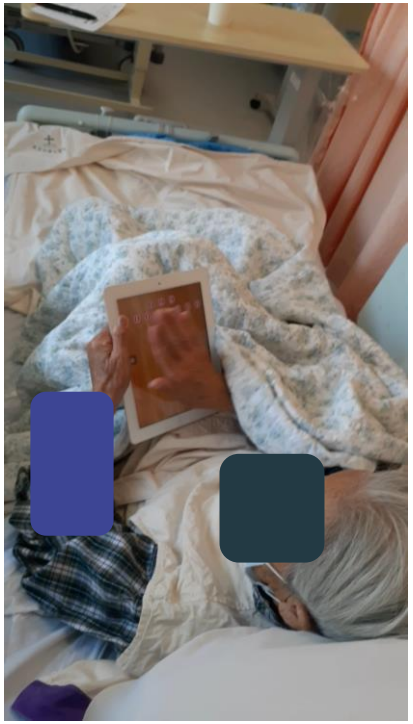
- Able to provide **immediate feedback and grading** according to patient's performance
- **Reduce dependency** on intensive man power for daily trainings
- **Easier data recording** of objective performance results
- **Multisensory stimulation** in a single training
- New and creative modalities to raise interest of patients, **improving compliance and motivation**

Smart Delirium Programme in ward 11A



Smart Cognitive Training Tablets:

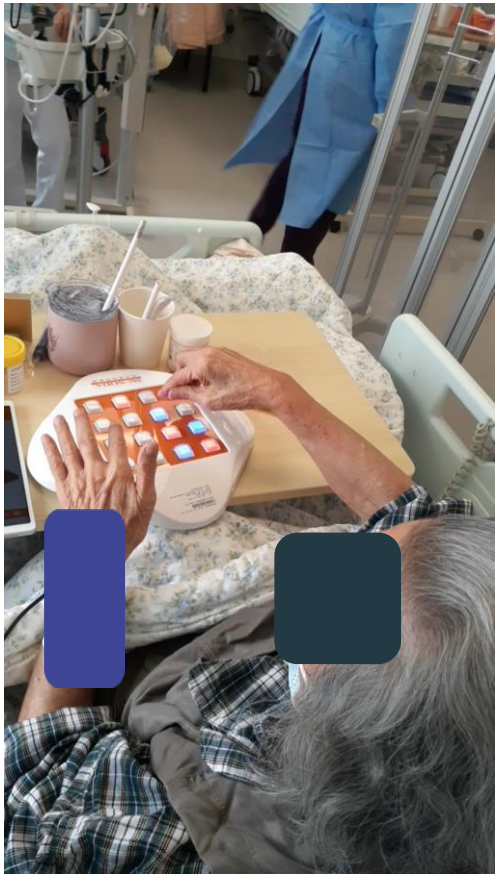
- For attention training and activity engagement
- For cognitive training with cultural base content (eg. HKD calculation)
- For reality orientation with real time info

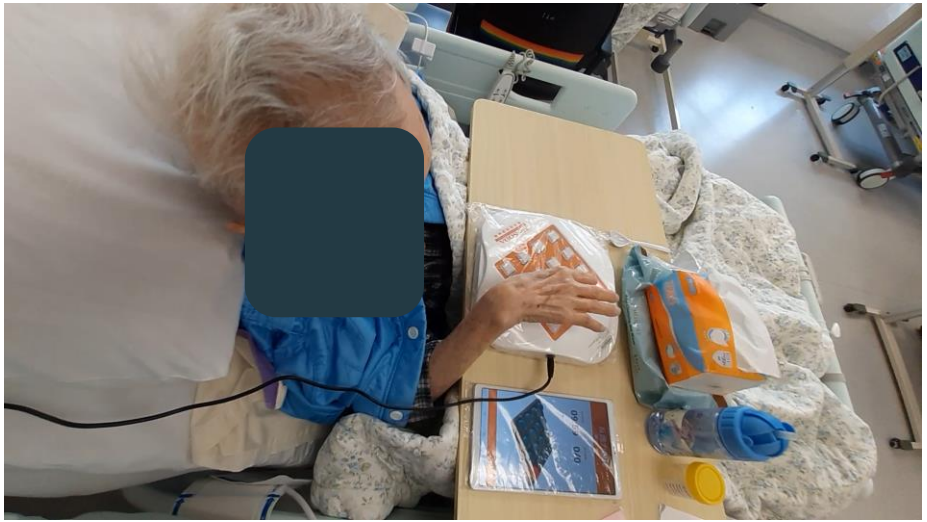


PARO Smart Interactive Robot:

- For **hypoactive** patients
  - Multisensory stimulation with interactive feedbacks
- For **hyperactive** patients
  - Calming effect

Smart Delirium Programme in ward 11A





ME-SODA interactive attention training device :

- Immediate audio feedback for grading of training
- Variety of attention training (Eg. sustained attention, selective attention) for patient-centred training
- Physical device for visual, auditory and tactile stimulation

Study Design

Inclusion Criteria

- Referred to OT for delirium/ cognitive rehab
- Cases with delirium features
- 4AT ≥ 4 or AMT ≤6

Exclusion Criteria

- No delirium features
- Severe violent behaviour
- Severe communication barrier (Eg. Hearing impairment/ dysphasia)
- Unfit medical condition

Outcome Measures

- 4AT (A higher score indicates increase in delirium features)
- AMT
- Digit forward span test
- HK-MoCA
- MBI

Session Details

- 15 mins/ session
- 3-5 sessions of training
- Recruitment period: 3/2024-11/2024

Patient Service Flow

Patients included in the Smart Delirium Programme after screening:

Pre Assessments

Conduct Selected Assessments

- 4AT (A higher score indicates increase in delirium features)
- AMT
- Digit forward span test
- HK-MoCA
- MBI

Intervention Sessions

Smart Delirium Training

- **At least 3 sessions, up to 5 sessions** of training
- Limited by patients' short length of stay in acute hospital ward

Post Assessments

Re-conduct Assessments

- **Data collection and analyzing stage**
- Compare various outcome measures to evaluate effectiveness of the Smart Delirium Programme

Follow Up Actions

Training Continuity

- Identify cases with **training potentials and needs**
- Refer to follow Up in **Occupational Therapy OPD** for cognitive training in the community phase

Study Demographics

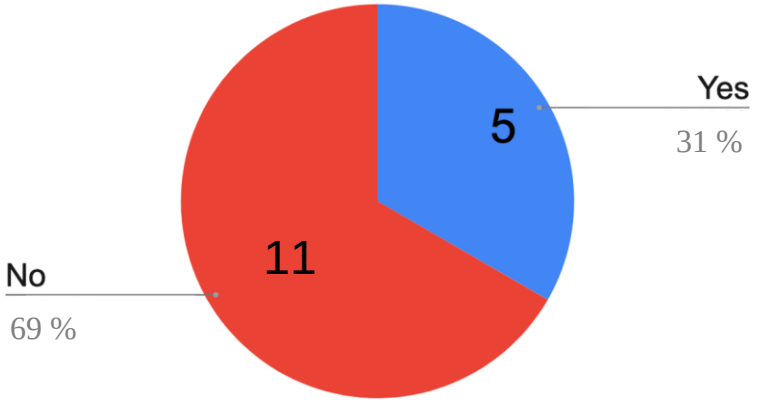
Pre-post clinical outcome design

Total number of cases recruited : 37
→ **16 cases completed the programme**

** Cases drop out due to transfer to other wards/ hospital or early discharge home

Average age of cases: 87.5 years old

Out of 16 cases completed the programme, total number of cases **labelled dementia** before:



Average number of sessions attended: 4.13

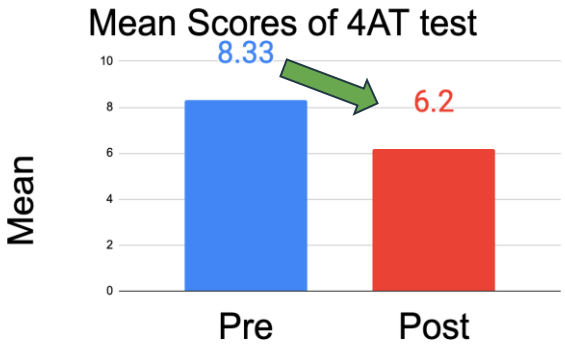
Study Results

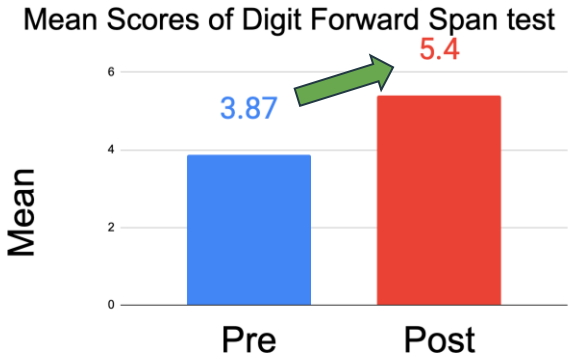
Significant (P value ≤ 0.05)

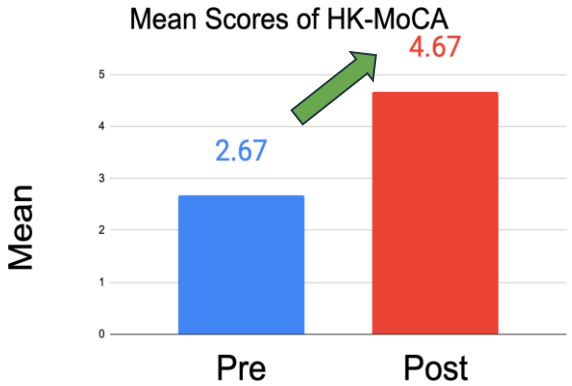
Outcome parameters		Mean	Standard Deviation	Difference	Significant (P value)
HK-MoCA	Pre	2.67	2.90	2.00	0.007*
	Post	4.67	2.44		
AMT	Pre	2.33	1.99	1.00	0.123
	Post	3.33	1.95		
Digit Forward Span	Pre	3.87	2.42	1.53	0.017*
	Post	5.40	2.44		
4AT	Pre	8.33	2.74	-2.13	0.005*
	Post	6.20	3.23		
MBI	Pre	37.93	21.52	3.34	0.066
	Post	41.27	22.98		

Study Results

Statistically Significant Results







Mean score: ↓ 2.63
P value: 0.005
Improvement seen in:
Alertness and Orientation domain

→ Resolving delirium features

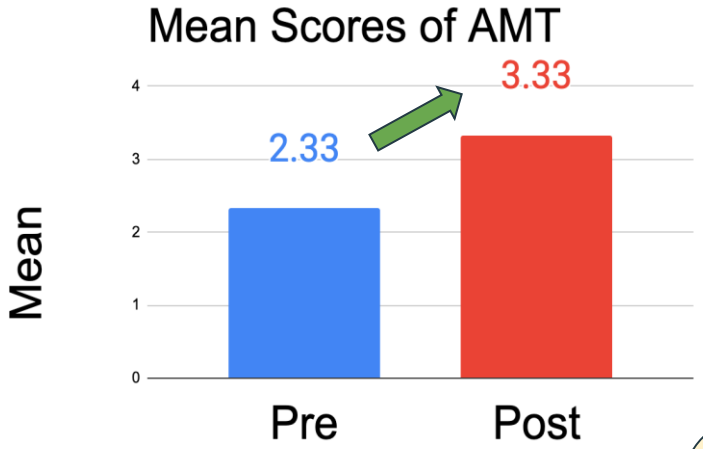
Mean score: ↑ 1.53
P value: 0.017

→ Improving attention

Mean score: ↑ 2
P value: 0.007
Improvement seen in:
Attention, language and orientation domain

→ Improving cognitive function

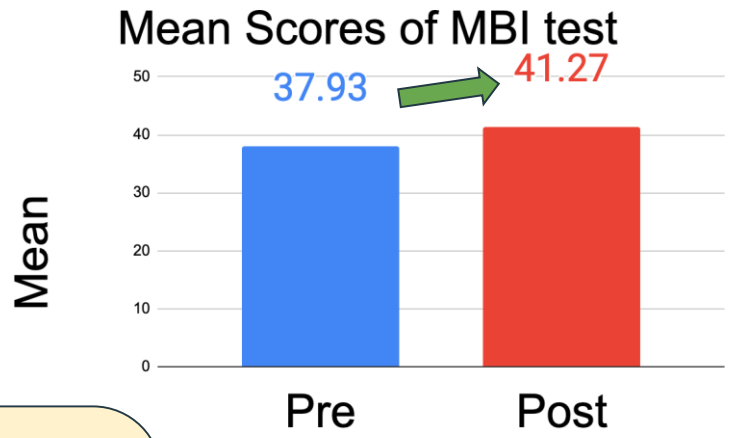
Study Results



Mean score: ↑ 1
P value: 0.123

→ **Improving orientation**

Results are not statistically significant
BUT
✓ Improvement in absolute assessment scores



Mean score: ↑ 3.34
P value: 0.066

→ **Improving ADL function**

Study Limitations and Future Improvement

- Short time frame and limited number of cases as a pilot programme
- Lack of control group in current study

→ Further work to **explore possibilities** to integrate new technology in geriatrics practice

→ Experiences provided **as reference** for future delirium care in in-patient setting

Conclusion

- OT Smart Delirium Programme was **beneficial** to targeted delirium patients
- OT Smart Delirium Programme:
  - Provide enrichment of **training varieties** and **real time feedback** to patients
  - Provide **tailor made** and **person centered treatment**
  - Integration of **smart technology** will definitely be the **future trend** in OT treatment

Acknowledgement

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Reference

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Trzepacz, P., Breitbart, W., Franklin, J., Levenson, J., Martini, D. R., & Wang, P. (2010). Treatment of patients with delirium. Practice Guideline for the treatment of patients with delirium. Trzepacz PT, cheir. American Psychiatric Association, APA Press.


Thank you!