# CENTRE FOR QUALITY AND PATIENT SAFETY RESEARCH

## Monash Health Partnership

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# Co-creating BRAIN-TRK:

## Behavioural Resource App for Interventions for Neurocognitive disorders – Translating Research Knowledge


Associate Professor Bernice Redley

Centre for Quality and Patient Safety Research – Monash Health Partnership


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DCRC Dementia Collaborative Research Centres

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# Team

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|---|---|---|
| Investigators: | Professor Alison Hutchinson | Deakin University |
| | Associate Professor Bernice Redley | Deakin University |
| | Dr Helen Rawson | Deakin University |
| | Dr Emily Tomlinson | Deakin University |
| | Cherene Ockerby | Monash Health |
| | Professor Tracey Bucknall | Deakin University |
| | Professor Ben Richardson | Cairnmillar Institute |
| | Adjunct Professor Cheyne Chalmers | Monash Health |
| | Professor Don Campbell | Monash Health |
| | Professor Beverly O'Connell | University of Manitoba |
| Project Manager | Charlotte Peel | Monash Health |

# Learning Objectives

1. Understand the problem of neurocognitive disorders in hospital settings
2. Describe co-design and testing for an ecologically valid novel technology for nurses in hospital settings
3. Identify how to help nurses engage in regular screening to monitor behaviours and implement evidence-based strategies
4. Explore factors impacting usability, feasibility for practice, and acceptability to nurses

# INTRODUCTION

## Neurocognitive disorders in hospital settings – patient and staff perspectives

**Nurses report preventing and managing BPS is challenging**

**Patients with BPS have HIGH RISK of preventable harm in hospital**

# Evidence-based recommendations to reduce Behavioural & Psychological Symptoms (BPS) of neurocognitive disorders

Tailored, individual, **evidence-based interventions can REDUCE BPS** symptoms, risk of harm, and complications

**HOWEVER** strategies used in acute hospitals **rarely adhere to best practice** recommendations

# Challenge of translating knowledge into clinical practice

## GAP

Between knowledge and practice

## KNOWLEDGE

Best available evidence for interventions which reduce symptoms/harm

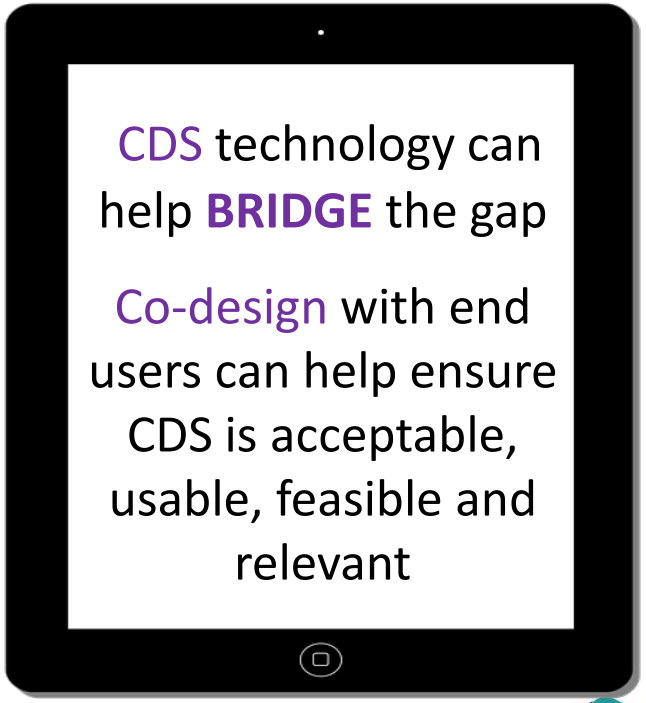
## PRACTICE

Everyday nursing care of people experiencing BPS in hospital

# Using Clinical Decision Support (CDS) to bridge the knowledge-practice gap

## KNOWLEDGE

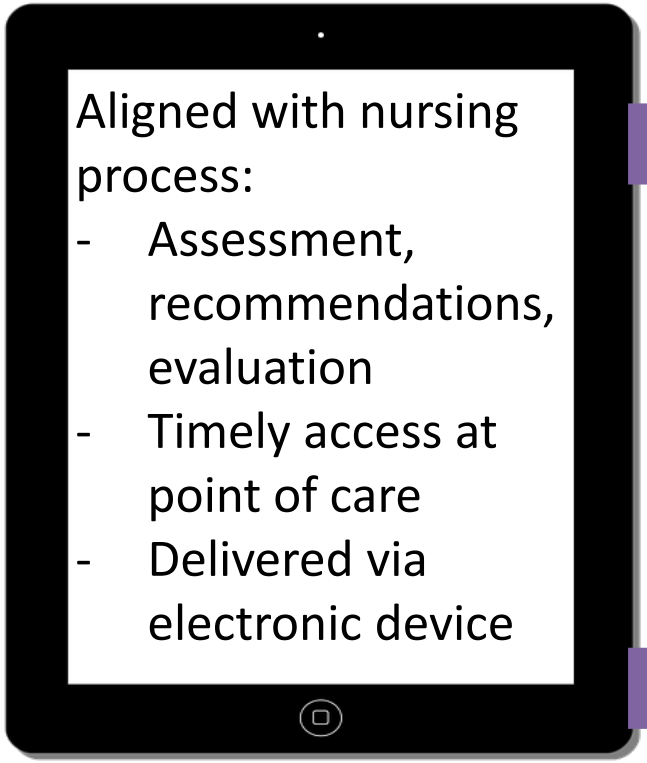
Best available evidence for interventions which reduce symptoms/harm

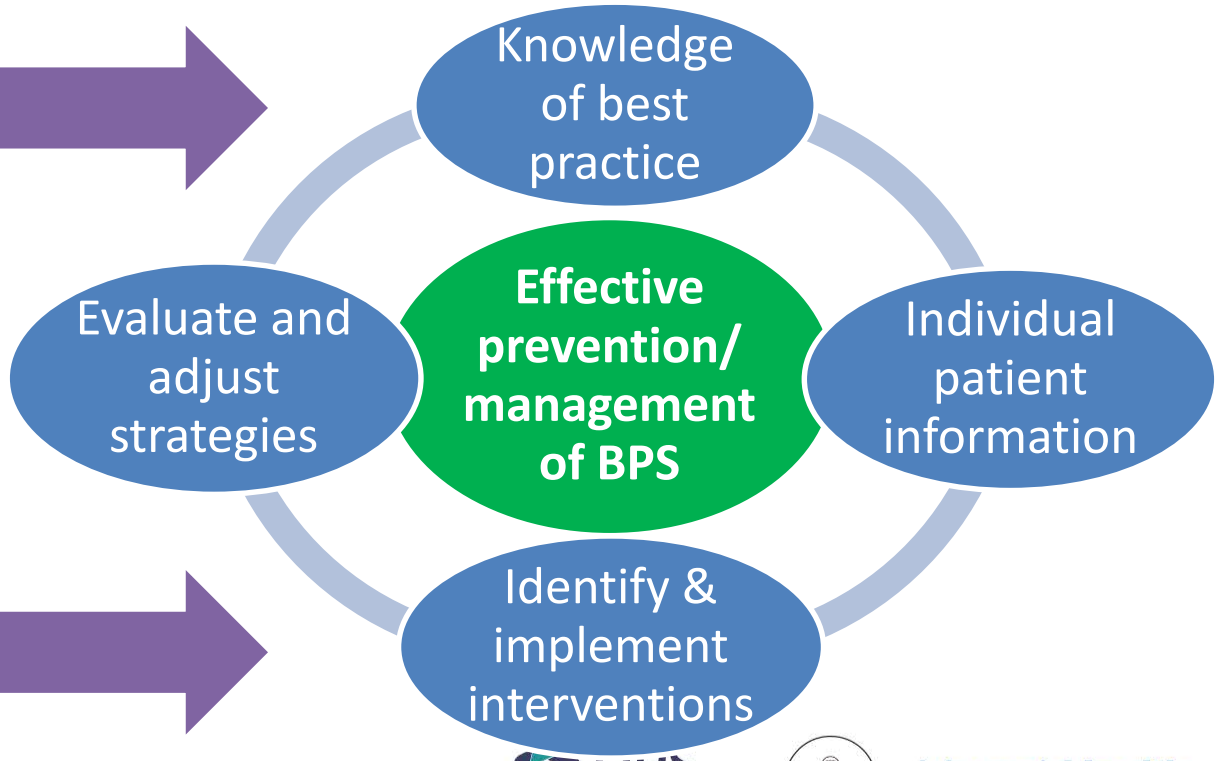



## PRACTICE

Everyday nursing care of people experiencing BPS in hospital

# Using CDS to support clinical decision-making



# Aim and Objectives

To promote nurses' use of evidence-based practice to prevent harm to people with BPS

1. Co-develop an App-based intervention to promote and sustain nurses' use of best practice and consolidate knowledge at the point of care

2. Examine the App's:
- Acceptability
- Usability
- Feasibility

to nurses in hospital settings

## Design

- Integrated KT approach
- Process and outcome evaluation

## Setting

- Two inpatient wards / sites
- Different patient mix and models of care

## Sample

- Co-design: 1 consumer, 2-5 nurses per ward
- Implement: All ward nurses

# Stages of co-designing BRAIN-TRK

**Stage 1** Co-production
*Four months*

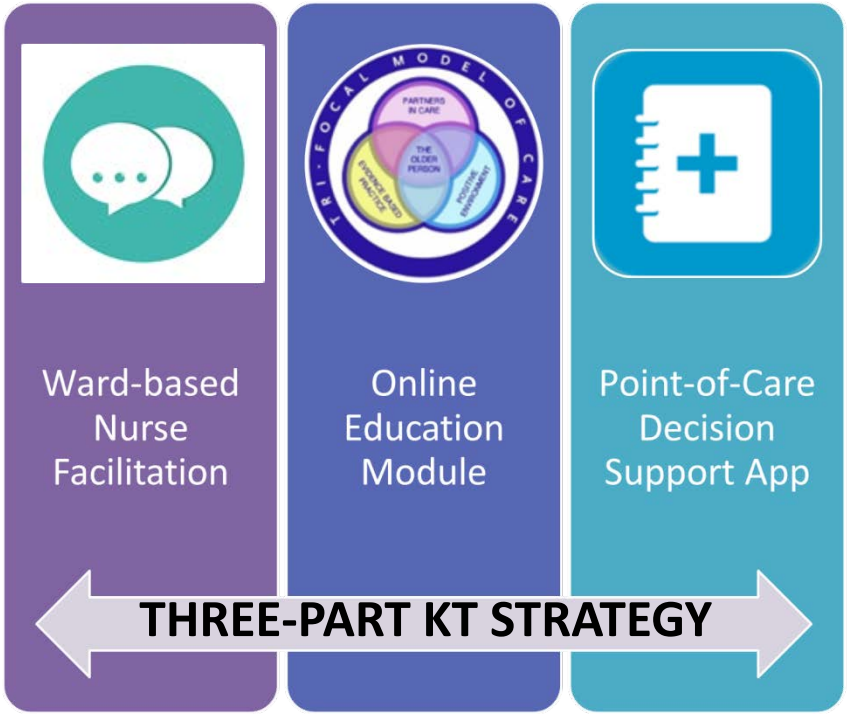
- *Baseline data collected*
- *App prototype co-designed*

**Stage 2** Implementation
*Three months*

- *Used by staff in patient care*
- *Iteratively tested and refined*

**Stage 3** Follow-up
*Two months*

- *Evaluation data collected*



# DATA COLLECTION

**TO EVALUATE:**

- Nurses' engagement with the App
- Acceptability, usability, feasibility

1. 80.5 hours of naturalistic observations of patient care, for 38 patients
2. Usage data extracted from the App for 32 patients
3. Individual and focus group interviews with nurses and nurse managers, n=25

Collected during Stages 2 & 3

# FINDINGS

**BRAIN-TRK App**

Content

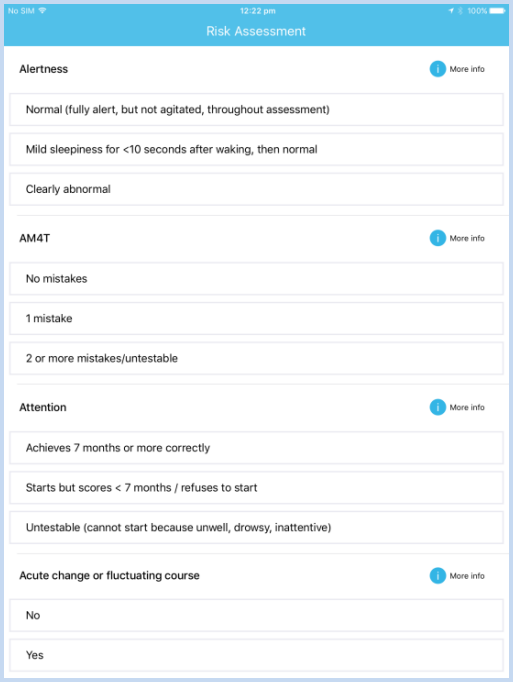
Structure

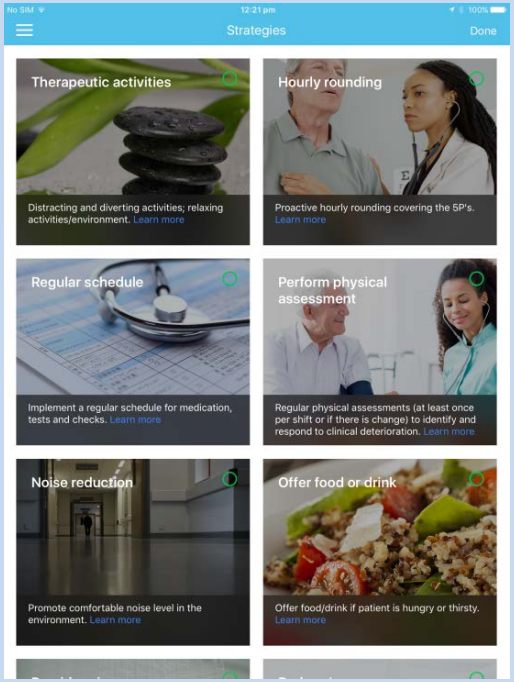
Workflow

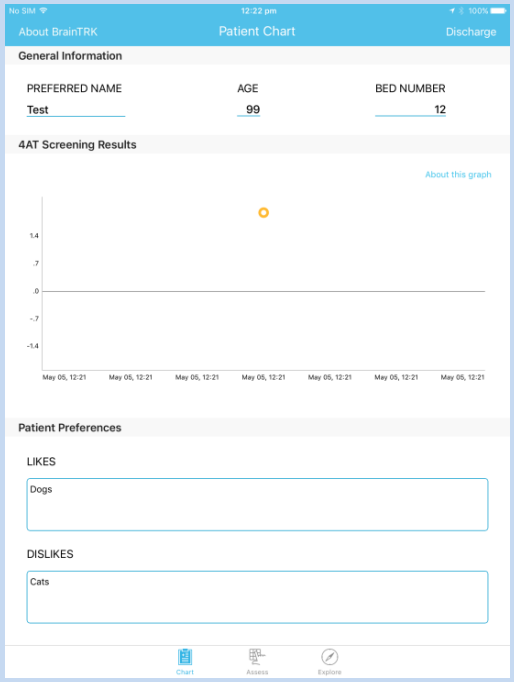
Assess cognition

Implement strategies

Monitor changes

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# Case study

**PAST HX | DOB 28/2/1938**
**79 years | Male**
COPD, IHD, diabetes
Peripheral neuropathy and chronic pain
Anxiety and depression

**Social History**
Retired school teacher
Lives with family at home
Speaks Greek
Likes gardening, walking

## BILL

Admission note: decline in self-care, hyperglycaemia, altered behaviour

**TODAY**
Bill has returned from a chest x-ray. You arrive to conduct an assessment and update his care plan.
When you walk in, Bill is trying to climb out of bed.
He lashes out at you, is restless, tells you to go away, he can do it. He tells you his name and birthdate.

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# BILL

* Enter individual information
* Conduct 4AT cognitive assessment
* Enter behaviours, risk factors, symptoms
* Select intervention/s from those recommended

* Evaluate interventions
* Repeat at least every 8 hours
* Track Bill's outcomes
* Tailor and communicate ongoing care strategies

Implement intervention/s and monitor Bill's symptoms

# FINDINGS: App use during naturalistic observations

- 44.7% (n=17) of 38 eligible patients
- App in use at start of observation:64.7% (n=11)
- 3 nurses observed: completing 4AT; assessing behaviour; selecting strategies
- 2 nurses observed: evaluating effectiveness

Of the 17 patients:

- 52.9% (n=9) had dementia
- 52.9% (n=9) had delirium
- 35.3% (n=6) had other cognitive impairment

Most common BPS:

- Confusion 76.5% (n=13)
- Wandering 35.3% (n=6)
- Climbing 35.3% (n=6)

# FINDINGS: App usage data during implementation

Nurses used the App with
- Total 32 patients

**ALL patients had 4AT**
**Total 105 completed**
Mean score 5.69
(possible delirium +/- cognitive impairment )

Preferences entered for:
**Likes: 84.4%** of pts
**Dislikes: 65.7%** of pts


**Total 146 risks for 31 patients**
Wandering 33.6%
Aggression 31.5%
Elimination 29.5%

**99 strategy sets**
Rounding 84.8%
Therapeutic 64.6%
Physical ass. 55.6%

0-10 strategies evaluated per pt

# FINDINGS: Acceptability, usability and feasibility of BRAIN-TRK

## ACCEPTABILITY

**Enhanced by:**

- ✓ Familiarity with the App
- ✓ Perceived benefits

**Reduced by:**

- ✓ Increased workload/time
- ✓ Inconsistent use by peers
- ✓ Perceived pressure to use
- ✓ Resistance to change

## USABILITY and FEASIBILITY

**Enhanced by:**

- ✓ Useful and usable content and design
- ✓ Experiencing effectiveness of App

**Reduced by:**

- ✓ Unclear expectations & lack of familiarity
- ✓ Device-related factors
- ✓ Difficulty fitting App into usual workflows

# CONCLUSION

**Contribution to practice and scholarship**

## The BRAIN-TRK App

- Evidence-based point-of-care tool to support nurses' decision-making, address BPS, prevent harm & consolidate knowledge
- Co-designed by nurses and consumers for hospital settings

## Recommended for use with:

Patients in hospital with one or more risk factors for BPS including: aged 65+ years, cognitive impairment / delirium, severe medical illness, altered behaviour

# CONCLUSION

## Evaluation, limitations and future research

### The BRAIN-TRK App assisted nurses to manage BPS

- Helped nurses effectively screen and monitor patients at risk
- Provided immediate advice on implementing evidence-based interventions


### Future research

- Address study limitations
- Refine content & workflows
- Test impact & sustainability
- Integration with Electronic Medical Record

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# REFERENCES


Australian Commission on Safety and Quality in Health Care. (2016a). *Caring for cognitive impairment - commit to high quality care for people with cognitive impairment in hospital, including the prevention, recognition and treatment of delirium*. Retrieved from http://cognitivecare.gov.au/

Australian Commission on Safety and Quality in Health Care. (2016b). *Delirium clinical care standard*. Retrieved from: http://www.safetyandquality.gov.au/wp-content/uploads/2016/07/Delirium-Clinical-Care-Standard-Web-PDF.pdf

Duceppe, M. A., Williamson, D. R., Elliott, A., Para, M., Poirier, M. C., Delisle, M. S., . . . Perreault, M. (2017). Modifiable risk factors for delirium in critically ill trauma patients. *Journal of Intensive Care Medicine*. doi:10.1177/0885066617698646

Jackson, T. A., Gladman, J. R., Harwood, R. H., MacLullich, A. M., Sampson, E. L., Sheehan, B., & Davis, D. H. (2017). Challenges and opportunities in understanding dementia and delirium in the acute hospital. *PLoS Medicine, 14*(3), e1002247. doi:10.1371/journal.pmed.1002247

Loo Gee, B., Griffiths, K. M., & Gulliver, A. (2015). Effectiveness of mobile technologies delivering Ecological Momentary Interventions for stress and anxiety: A systematic review. *Journal of the American Medical Informatics Association, 23*(1), 221-229. doi:10.1093/jamia/ocv043

Suwanabol, P. A., & Hinshaw, D. B. (2017). Interventions to reduce postoperative delirium: Aligning surgical care with patients' needs and priorities. *JAMA Surgery, 152*(9), 834-834. doi:10.1001/jamasurg.2017.1084

Tomlinson, E. J., Phillips, N. M., Mohebbi, M., & Hutchinson, A. M. (2017). Risk factors for incident delirium in an acute general medical setting: A retrospective case-control study. *Journal of Clinical Nursing, 26*(5-6), 658-667. doi:10.1111/jocn.13529