

Enhanced Recovery After Critical Care: designing and testing an enhanced care pathway

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Health and Care Research



REFLECT

Structured Judgement
Review

Interviews

Human Factors
Analysis



Problems in care and avoidability of death after discharge from intensive care

Multicentre case record review



3 NHS Trusts

Record review of 300 patients who died following ICU discharge

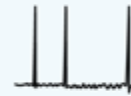
50 / 300 were discharged for end-of-life care



168 / 250 (67%) discharged out of hours



167 / 241 (69%) sub-optimal rehabilitation



17 / 40 (43%) inadequate investigation of new AF



50 / 150 (33%) incomplete sepsis management



76 / 250 (30%) no nutritional plan

Of 250 patients who died following ICU discharge

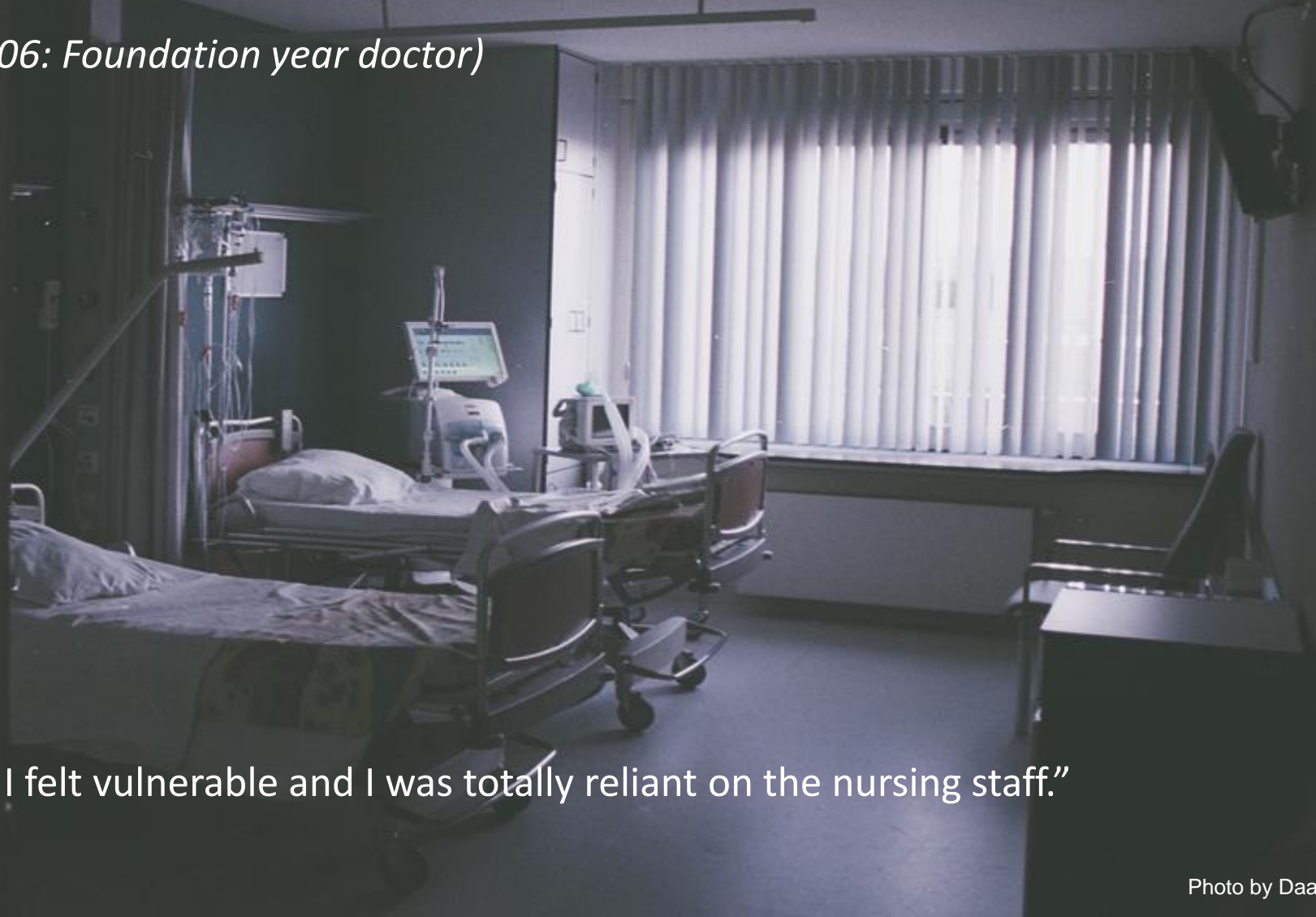
20 deaths probably avoidable

45 further deaths with some degree of avoidability



“...and that was often quite scary because when they come from ICU obviously they are a lot sicker than other people on the ward, umm, and if you like don't know that they've been gradually getting better . . . just the snapshot of when they arrive often. . . looks a bit alarming.”

(Site A, Staff member 06: Foundation year doctor)



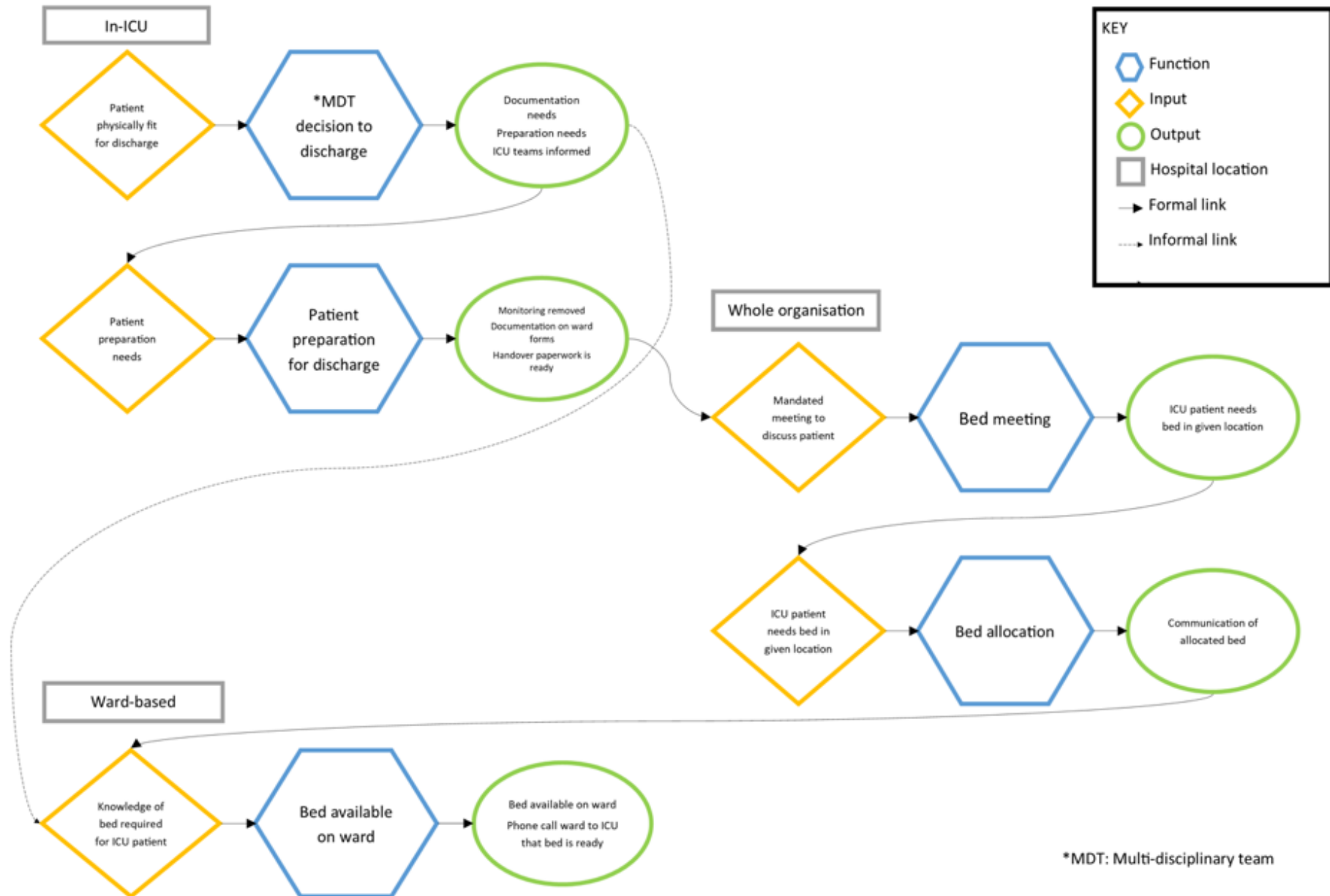
“I was just so very weak that I felt vulnerable and I was totally reliant on the nursing staff.”

(Site C, Patient 02)

Functional Resonance Analysis Methods definitions

FRAM Aspect	Definition	Example
Function	Activity in a process	Decision to discharge from ICU
Input	Starts the function	Patient ready for ICU discharge
Precondition	Must be satisfied before the function can start	Patient does not need vaso-active drugs only administered in ICU
Resource	Needed to carry out function	Nurse time to complete documentation
Control	Monitors or controls the function	National guideline on night-time discharge
Time	Any time constraint that affects the function	Timing of bed meeting
Output	The outcome of the function	Bed allocated to patient ready for discharge

ICU discharge FRAM



*MDT: Multi-disciplinary team



Implications: out-of-hours discharge

Discharge after 4pm should be avoided where possible

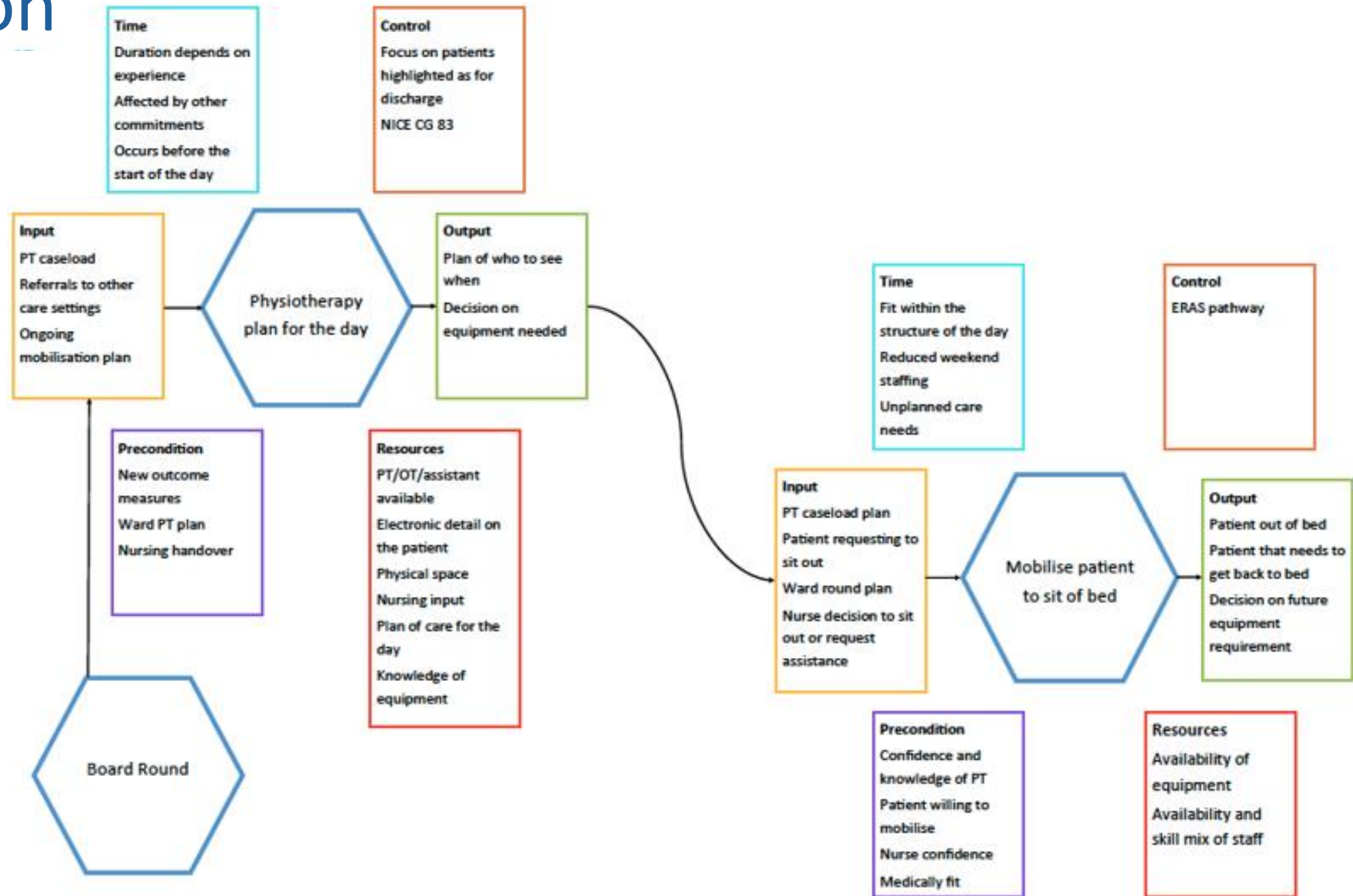
Identifying patients who may be ready for discharge the next day starts the process earlier

Requires organisational change

Where discharge after 4pm is unavoidable, wards should be supported to ensure patient safety overnight



Mobilisation FRAM



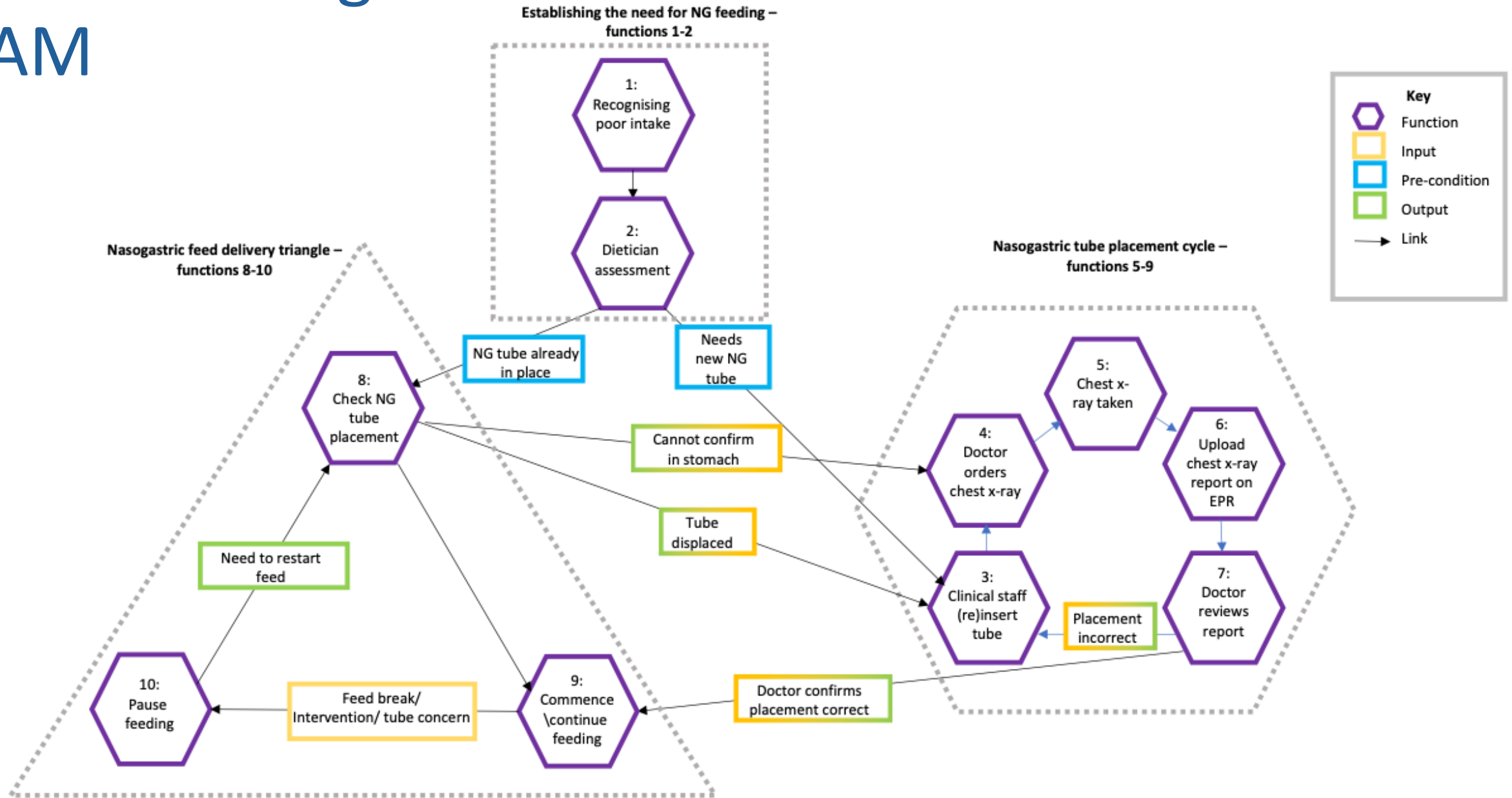
Implications: mobilisation

Patients discharged from ICU who are unable to stand and step to a chair are particularly susceptible to missing mobilisation interventions due to down-prioritisation and limits of the ward-based system of care

This results in prolonged periods in bed, and associated harm



Enteral feeding FRAM



Implications: nutrition

Nutrition management, especially enteral nutrition, relies on MDT collaboration

The FRAM identifies multiple points where delays to restarting feeding can occur

These failures have a cumulative effect, resulting in very poor nutrition delivery

Adequate nutrition delivery is essential for rehabilitation



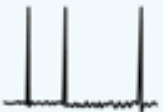
Summary of findings: areas for change



Night-time discharge



Rehabilitation



Management of ongoing medical problems



Nutrition support



Handover and communication

Critical Care Outreach Teams/Follow-up services

Continuity of information

Education of ward staff

Support with acute deterioration and specialist skills

Co-ordination of input from specialist services

Responsive and approachable

But...

Post-ICU patients usually discharged from CCOT on day 1 or 2 following transfer and not re-referred at deterioration



WHY
NOW

ERACC: Enhanced Recovery After Critical Care

NIHR Programme Grant for Applied Research

Co-leading with Prof Peter Watkinson

£2.6 million over 6 years

12 co-applicants with broad methodological expertise, including 3 PPI members

The team



Owen Gustafson



Peter Watkinson



Natalie Pattison



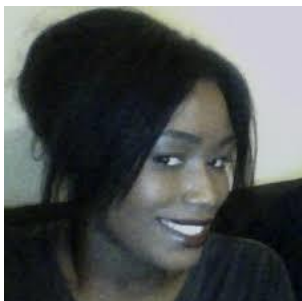
Jo McPeake



Richard Mandunya



Alison Phillips



Corina Cheeks



Steve Morris



David McWilliams



Judith Merriweather



Akshay Shah



Tim Walsh



Stephen Gerry

ERACC: A programme of mixed methods research

Aim:

To develop, refine, implement and test a theroretically-driven, co-developed ERACC pathway to increase the number of Hospital Free Days following discharge from ICU.

Primary outcome:

Hospital free days

Selected with our PPI group as more relevant than mortality alone

Why an enhanced care pathway?



Enhanced Recovery After
Surgery



**NATIONAL CLINICAL
GUIDELINE FOR STROKE**
for the United Kingdom and Ireland

Cohort study

Ethnographic observations

Cluster randomised trial

PDSA cycles Literature reviews

Implementation Science

Health economic evaluation

Semi-structured interviews

Feasibility study

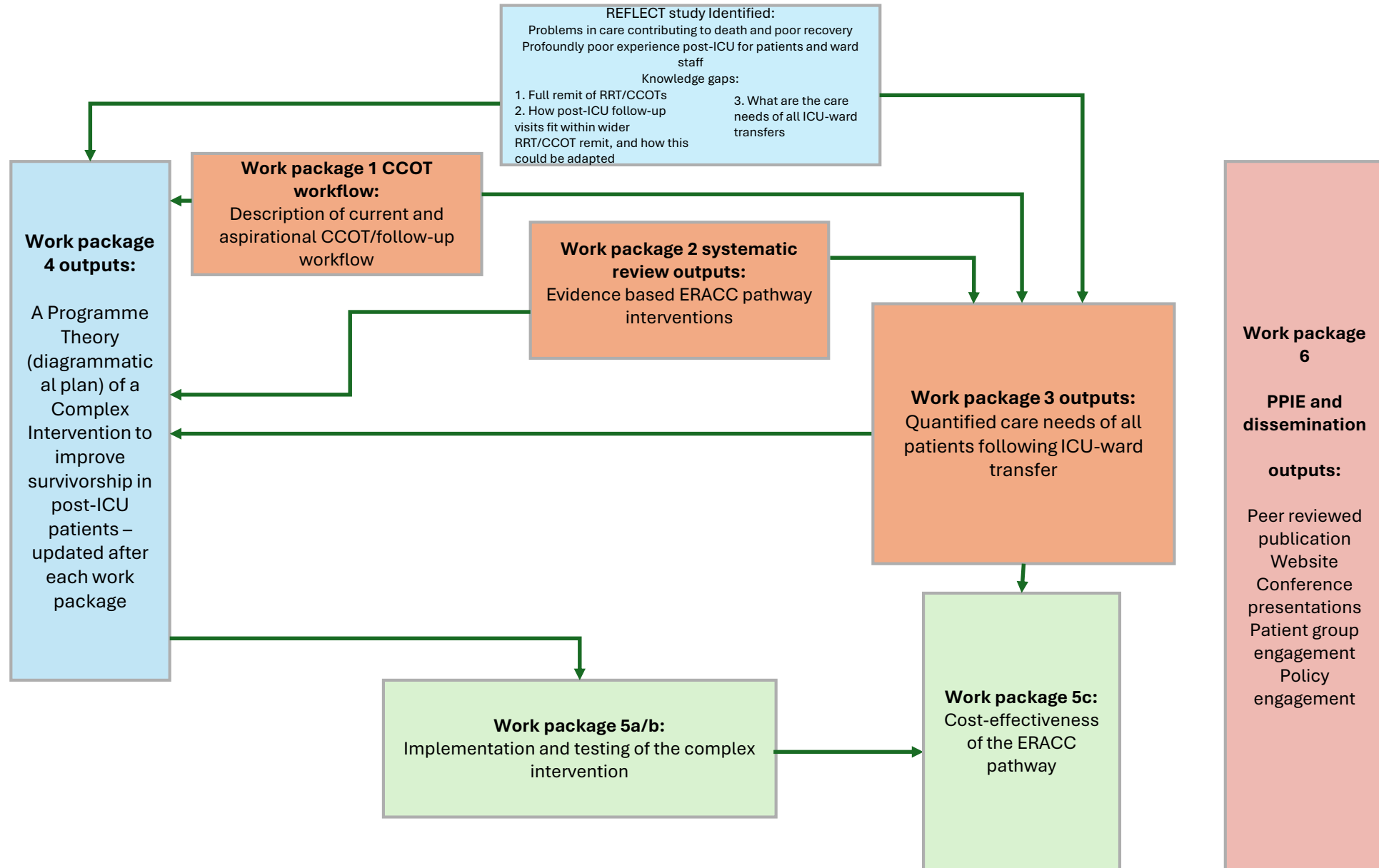
Delphi consensus

Stakeholder co-design

Work packages

Aims	Methods
1. Understand current clinical provision	UK wide survey, qualitative study (interviews/ethnography)
2. Identify key ERACC components	Scoping review, umbrella review, Delphi study
3. Understand current post-ICU care needs	3 site cohort study (case notes review)
4a. Iteratively co-design the pathway	3 site co-development (focus groups, PDSA cycles, stakeholder work)
4b. Feasibility test the pathway	3 sites, clear progression criteria
5a. Cluster randomised trial	16 sites, data-enabled outcome collection
5b. Process evaluation	3 sites, qualitative and adherence assessment
5c. Health economics evaluation	Questionnaire sub-study

Enhanced Recovery After Critical Care (ERACC): Developing and Testing a Care Pathway for Patients Discharged From ICU.



What is implementation science?

The study of methods and strategies to translate effective healthcare innovations into clinical practice.

- What works?
- Who does it work for?
- Under what circumstances?



Translational Research Continuum

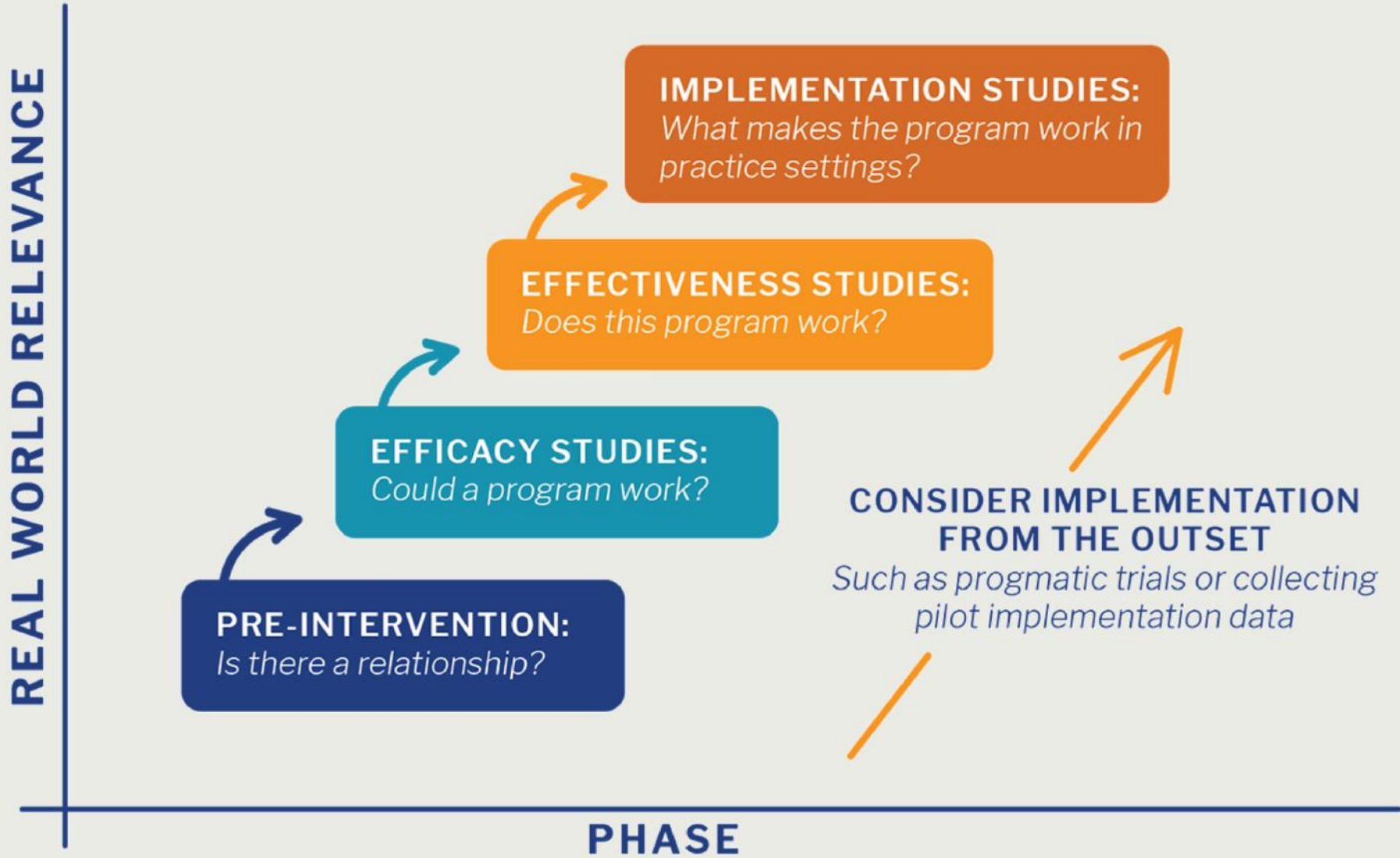
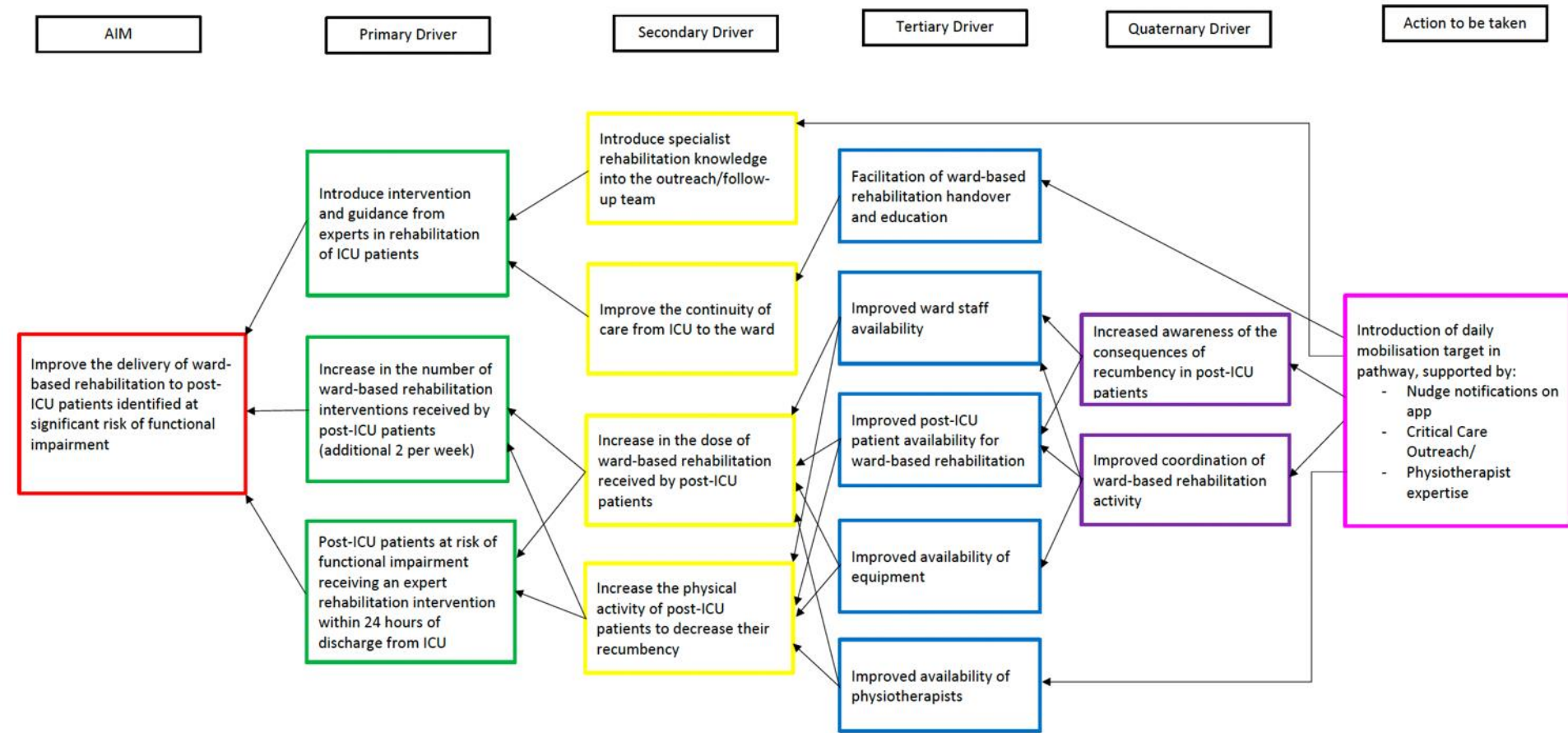


Figure 2

Situation	Inputs	Activities		Outputs and Outcomes		
What's driving the change	What we need	What we do	Reach	Short	Medium	Long
<p>Three quarters of ICUs in the UK provide post-ICU follow-up care. There is significant variation in care delivery and there is a lack of evidence in how care should be provided.</p> <p>Almost 10% of patients in the UK die, or are readmitted to ICU following initial discharge.</p> <p>25% of critical care survivors are readmitted to hospital in the 3 months following hospital discharge.</p> <p>Patients and family members have poor experiences following a critical care discharge</p> <p>Staff find caring for post-ICU patients on wards is stressful because they feel unable to meet their care needs.</p>	<p>Standardised, evidence based guidelines to support ICU survivors in hospital following ICU discharge</p> <p>Full understanding of current patient need following ICU discharge</p> <p>Digitally enabled care solutions which fit with current NHS systems, to ensure that care is reliably delivered</p> <p>Co-designed solutions with providers, patients and families to ensure that any potential solutions are safe, effective and person centred</p>	<p>Work with a national forum to understand the integration of a standardised pathway into routine care</p> <p>Design and define key features of optimal care in the immediate post-ICU discharge period</p> <p>Create a standardised, evidence based ERACC pathway</p> <p>Understand the optimal implementation process for this co-designed pathway</p> <p>Test and measure the clinical and cost-effectiveness of a standardised care pathway</p> <p>Disseminate the findings to ensure widespread patient and service benefit</p>	<p>Vulnerable patients and their families will receive evidence-based organised follow-on care targeted to improve a key life outcome which they have identified</p> <p>Critical Care Outreach Teams will have an evidence base to provide specific care to post-ICU patients</p> <p>Ward care teams will experience reduced fear related to caring for post-ICU patients, by providing structured care and support and clear goals for care delivery.</p> <p>The NHS as a whole should benefit from decreased healthcare use, particularly reduced ICU and hospital readmission, by providing efficient, timely, evidenced preventative care.</p>	<p>Understanding of systems to identify areas for improvement in ward based care following critical care discharge</p> <p>Development of a digital resource for enhancing care following critical care discharge</p> <p>Knowledge, evidence and understanding of the contextual factors which enable and facilitate improved care</p> <p>Opportunities for ward based staff to be involved in improvement activities and research</p> <p>An improved evidence base for post-ICU care needs, outcomes and support.</p>	<p>Improved pathway of care delivered in a reliable manner for patients following critical care</p> <p>Development of a learning system/community of practice for those involved in the programme of work</p>	<p>People receive improved quality of care, measured via more hospital free days in the 90 days following hospital discharge for ICU survivors (potentially over 250,000 extra hospital free days for UK patients each year)</p> <p>People experience improved 90-day mortality, more days alive in hospital after ICU discharge, and reduced chance ICU and hospital readmission.</p> <p>Findings implemented into national policy via our links with multiple national groups.</p>

Figure 1. Example driver diagram of rehabilitation component



Outcome measures

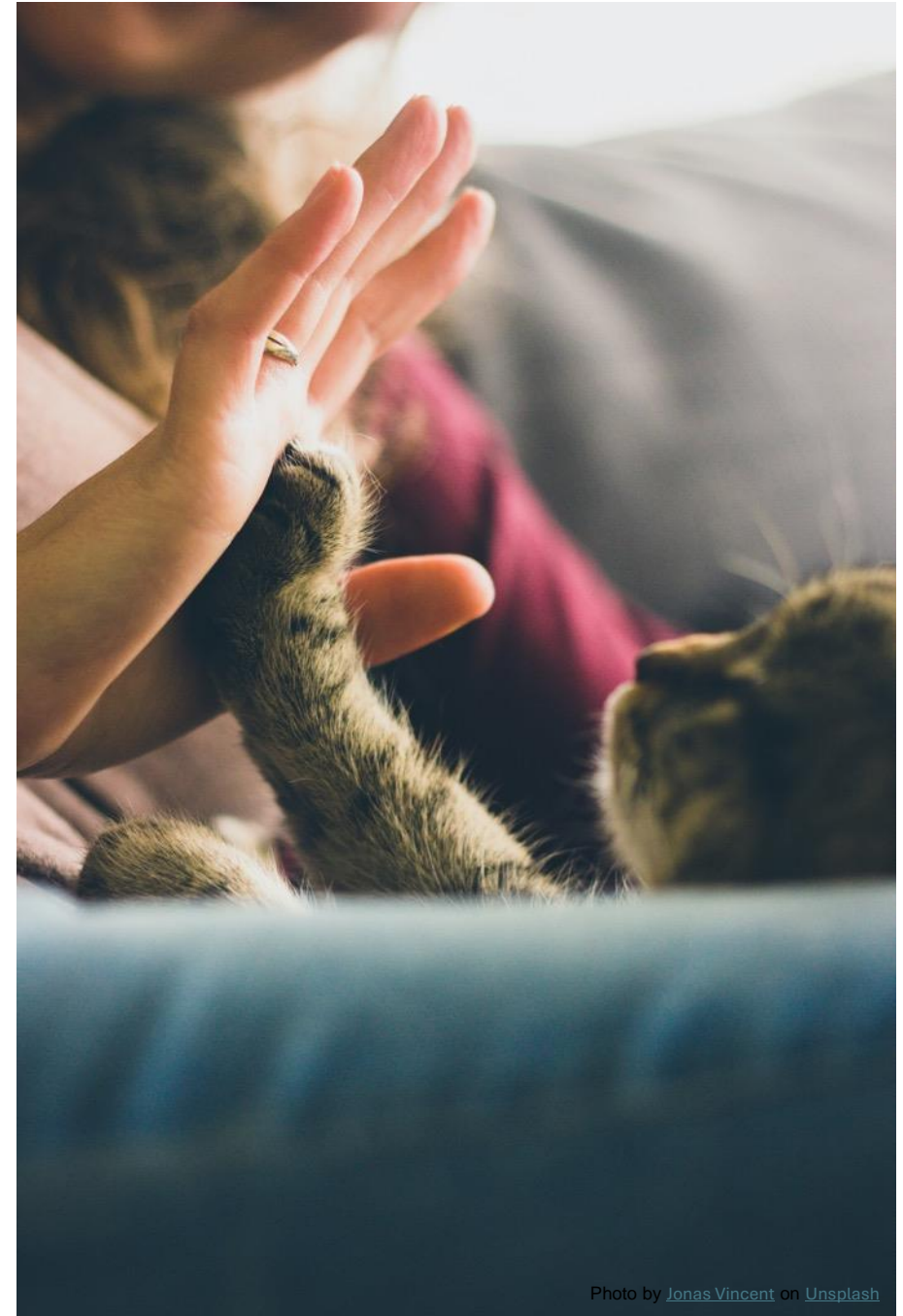
Delivery:
 Updated rehabilitation plan within 24 hours of discharge from ICU
 Rehabilitation intervention within 24 hours of discharge from ICU
 Delivery of 2 additional rehabilitation interventions per week

Effectiveness:
 Time to regaining ICU discharge level of mobility
 Post-ICU length of stay
 Discharge destination
 PE/VTE
 Aerobic capacity measure

Output

An intervention to increase days alive at home after critical illness ***deliverable in current NHS practice***

- Mortality
- Length of stay
- Reduced hospital/ICU readmission
- Better quality recovery
- Better experience for staff



Join us!

- 16 sites
- Across the UK
- Diverse representation
 - Population
 - Post-ICU provision
 - Hospital settings



Site recruitment: development work

3 sites across the UK

Qualitative observations and interviews to understand current CCOT/follow-up practices

A cohort study of post-ICU care needs

Local pathway design and iteration with stakeholders

- Includes 0.5 WTE funding for a member of the CCOT/follow-up team

Site recruitment: clinical trial

- 16 sites across the UK
- Randomised 1:1
- Intervention sites will receive 0.5 WTE CCOT/follow-up team funding to refine and implement the ERACC pathway into practice

Site requirements

- Some form of in-hospital Critical Care Outreach of Follow-up service (variability in provision important for the trial)
- Willingness to support buy-out of 0.5 WTE in the team
- Clinical buy-in
- R&D support

Expressions of interest

- Eol request through regional follow-up groups soon
- Contact details

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Linkedin: Sarah Vollam

Website:

<https://www.ndcn.ox.ac.uk/research/critical-care-research-group-kadoorie-centre>

W W A T C H

T H I S

S P A C E

