Open Call for Ideas

AI-Enabled Digital Nurse Brain Sheet

(Use Case by SGH)

1. Background

Acute care nurses operate in highly dynamic and interruption-prone environments where they must simultaneously manage the care of multiple patients during a single shift. For each patient, nurses are required to keep track of medications, vital sign monitoring, investigations, procedures, clinician reviews, pending results, follow-up actions, and numerous time-sensitive tasks. Care plans can change rapidly as new clinical information emerges, patients' conditions evolve, and priorities shift throughout the day.

Despite extensive digitalisation of clinical documentation and workflows, nurses continue to rely heavily on handwritten “brain” sheets as personal cognitive aids. These notes help nurses organise, prioritise and track activities across all assigned patients. While highly valued, paper-based brain sheets have limitations. They become cluttered as information changes, require frequent manual updates, may be misplaced and are difficult to share with colleagues. Though certain tools have been implemented to improve visibility of nursing tasks, assigned workload and shift details, there remains an opportunity to further support nurses in rapidly understanding what has been completed, what remains outstanding and what requires follow-up across multiple patients. Such capabilities may improve situational awareness, support care coordination and facilitate communication between nurses during the shift and at handover while reducing the effort required to consolidate information from multiple sources.

2. Challenge Statement

How might we help nurses rapidly synthesise patient information and maintain visibility of care tasks across multiple patients throughout their shifts, reducing cognitive burden and supporting timely, reliable nursing care in a fast-paced clinical environment?

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3. Current State

Today, many nurses create handwritten brain sheets during shift handovers and throughout their workday. These notes serve as personalised memory aids that consolidate important patient information and outstanding tasks into a single portable reference.

Although much of the underlying information already exists within the EMR and other digital systems, nurses often spend time manually transcribing, updating, and reorganising information to maintain awareness of what needs to be done, for whom, and when. As tasks are completed or priorities change, notes are frequently rewritten, crossed out, or rearranged.

Because brain sheets are personal paper-based artefacts, they offer limited visibility to other team members. Colleagues may be unaware of pending tasks that could benefit from shared workload or assistance. If a brain sheet is misplaced, nurses may need to reconstruct outstanding work from multiple systems and memory, creating additional workload and increasing the risk of missed or delayed tasks.

The current tools used by the nurses helps to provide improved visibility of nursing tasks and workflow organisation by presenting activities and timelines within a consolidated interface for the nurse's assigned workload and shift. This reduces reliance on handwritten brain sheets for task tracking, improve visibility of scheduled and outstanding activities. However, nurses will still need to manually type and enter to update ad-hoc tasks within the system. In busy and interruption-prone clinical environments, opportunities to immediately document such information may be limited, resulting in continued reliance on memory, handwritten notes or delayed documentation.
More importantly, nurses may continue to spend time consolidating information across multiple patients and sources to understand:

- What has been completed
- What remains outstanding
- What information should be communicated to colleagues during the shift
- What information should be handed over at shift change

As a result, nurses may continue to rely on a combination of electronic systems, handwritten notes, memory and verbal communication to maintain situational awareness and coordinate care effectively.

The underlying challenge is maintaining visibility of tasks across multiple patients while rapidly synthesising and communicating evolving patient information, completed activities, and outstanding care needs in a fast-paced clinical environment.

4. Desired Future State

We are seeking innovative ideas that can transform how nurses organise, manage and coordinate clinical tasks throughout their shifts.

We envision a future where nurses have access to a single, continuously updated digital view of their workload across all assigned patients. Relevant information could be automatically aggregated from existing systems and presented in a manner that supports rapid understanding of patient status, outstanding work and care coordination needs.

In this future state, nurses would be able to easily capture completed, upcoming or overdue activities, and update care plans as circumstances change. Proposed ideas should preserve the speed, flexibility, and personalisation that make traditional brain sheets valuable while leveraging digital capabilities to improve visibility, collaboration, and task reliability.

Rather than relying heavily on memory, handwritten notes and manual information gathering, nurses would be supported by intelligent tools that help them focus their attention on delivering safe, timely, and patient-centred care.

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5. Key Design Requirements

Proposed ideas must:

- Provide a single, consolidated view of nursing tasks and priorities across multiple patients, with real-time visibility of upcoming, pending, and overdue activities.
- Enable efficient task management throughout a shift, including rapid task capture, updating, completion, and reprioritisation while reducing manual transcription and administrative effort.
- Integrate seamlessly with existing clinical systems, workflows, and mobile platforms, leveraging available digital capabilities where possible.
- Preserve the flexibility, simplicity, and usability of traditional brain sheets while reducing cognitive workload and supporting effective decision-making.
- Support team collaboration, privacy, security, and governance requirements, including appropriate visibility of outstanding clinical tasks and healthcare data protection standards.

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6. Expected Outcomes

a. Better Nursing Experience

- Reduced cognitive burden and administrative effort associated with managing, updating, and tracking multiple concurrent tasks throughout a shift.
- Greater visibility of priorities and outstanding clinical tasks, enabling nurses to manage complex patient assignments with increased confidence and efficiency.

b. Enhanced Patient Safety and Care Quality

- Reduced risk of missed, delayed, or forgotten clinical tasks through improved task tracking and follow-up management.
- More timely, reliable, and consistent delivery of nursing care across shifts.

c. Improved Team Coordination

- Greater visibility of outstanding work across the care team, enabling more effective workload sharing and collaboration.
- Improved continuity of care during handovers and shift transitions, with less reliance on verbal reminders and informal workarounds.

d. Greater Healthcare System Efficiency

- Reduced administrative burden through better use of existing clinical data, systems, and digital infrastructure.
- Improved operational efficiency with potential scalability across nursing specialties, healthcare institutions, and other healthcare professional groups.

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7. Invitation to Pitch

We welcome ideas from startups, technology providers, healthcare innovators, academic institutions, and multidisciplinary teams that can transform the way nurses manage clinical tasks and coordinate workflows.

This challenge is intentionally solution-agnostic, allowing participants to propose a wide range of approaches and emerging technologies. We encourage innovative and scalable solutions that reduce cognitive burden, strengthen nursing workflow efficiency, improve patient safety, and empower nurses to deliver high-quality care in increasingly complex healthcare environments.