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Applying Model of Human Occupation in Acute Medical Unit for an Adult with MELAS Syndrome: A single case study

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Abstract

Background

Mitochondrial Encephalomyopathy, Lactic Acidosis, and Stroke-like Episodes (MELAS) syndrome presents unique challenges in acute medical units due to its complex medical, neurological, and cognitive impairments. The fast-paced, often chaotic environment of AMUs can hinder continuity of care and limit access to specialized rehabilitation resources.

Methods

This case study describes the medical course and explores the application of the Model of Human Occupation (MOHO) in enhancing rehabilitation outcomes for a 45-year-old male with MELAS syndrome in an acute medical unit in the United Kingdom.

Results

Following a cardiac arrest and subsequent intensive care unit stay, occupational therapy interventions, guided by MOHO, were implemented to address the patient's complex needs. Strategies included errorless learning, specific skill training, family-inclusive therapy, and environmental aids, habit and routine training, activities of daily living, functional mobility, and life roles.

Discussion

This case describes the use of MOHO in an acute care setting and application in occupational therapy assessment and intervention. Results underscore the potential of MOHO in acute care, advocating for its continued use to optimize outcomes, facilitate individualized care, and enhance discharge planning for patients with complex needs like MELAS syndrome.

Background

Mitochondrial encephalomyopathy lactic acidosis and stroke-like episodes (MELAS) syndrome is a rare maternally inherited mitochondrial disorder that predominantly affects the nervous system and muscles and typically appears in childhood (between age 2-15) after a period of normal early development (El-Hattab et al., 2015; Pia & Lui, 2024). MELAS syndrome is progressive with no current therapeutic treatment available to slow the rate of progression, with the average life expectancy being 17 years following the onset of seizures or neurological deficits (Pia & Lui, 2024). The incidence rate is 1 in 4000 people with MELAS syndrome being one of the most common mitochondrial conditions (Pia & Lui, 2024).

Individuals with MELAS syndrome may present with a complex and multifaceted medical profile, including failure to thrive, short stature, progressive intellectual deterioration, psychiatric disorders (e.g., depression with psychotic features, schizophrenia, bipolar disorder), sensorineural hearing loss, endocrine dysfunctions (e.g., diabetes, hypothyroidism), cardiovascular complications, and visual or renal impairments (El-Hattab et al., 2015). These symptoms affect the individual's physical health as well as their cognitive, emotional, and social functioning. As a result, engagement in daily activities, independence in self-care, social interaction, academic and vocational pursuits, and participation in meaningful occupations can be severely limited.

Acute Medical Unit Environment and Challenges

The Acute Medical Unit (AMU) is a model of care designed for the rapid assessment and management of patients presenting with acute medical conditions. The

AMU aims to improve efficiency and reduce hospital length of stay by providing timely diagnostics, treatment, and discharge planning within the first 24 to 72 hours of admission (Dean et al., 2022; O'Dell et al., 2016). This model is commonly implemented in the United Kingdom, Ireland, Australia, and New Zealand (Byrne & Silke, 2011; van Galen et al., 2017). Unlike Emergency Departments (EDs), which manage a broad range of acute presentations including trauma and surgical cases, AMUs focus specifically on medical patients requiring urgent care. Patients in the AMU are either discharged after initial management or transferred to specialty wards for further treatment (Reid et al., 2018; Realdi et al., 2011).

The AMU setting presents multiple challenges for patients, staff, and therapists. Frequent changes in medical teams and a large nursing pool disrupt continuity of care, limiting consistent, personalized treatment (de Almeida & Mattews, 2016). Noise and lack of privacy increase patient stress, especially for those needing dignity and calm, like seizure patients (Dean et al., 2022). Staffing shortages often prevent the ideal 1:4 nurse-patient ratio, reducing nurses' responsiveness (Dean et al., 2022; NICE, 2019). Occupational and physical therapists also face inconsistent caseloads across ED and AMU, weekend staffing shortages, and a focus on discharge over rehabilitation, disrupting therapy continuity (Society for Acute Medicine, 2015; Lau et al., 2016). Unclear medical plans and fast-paced discharge processes hinder timely discharge planning. Limited access to rehab equipment further reduces therapy quality (Lau et al., 2016). Overall, these factors significantly impact patient care and rehabilitation effectiveness.

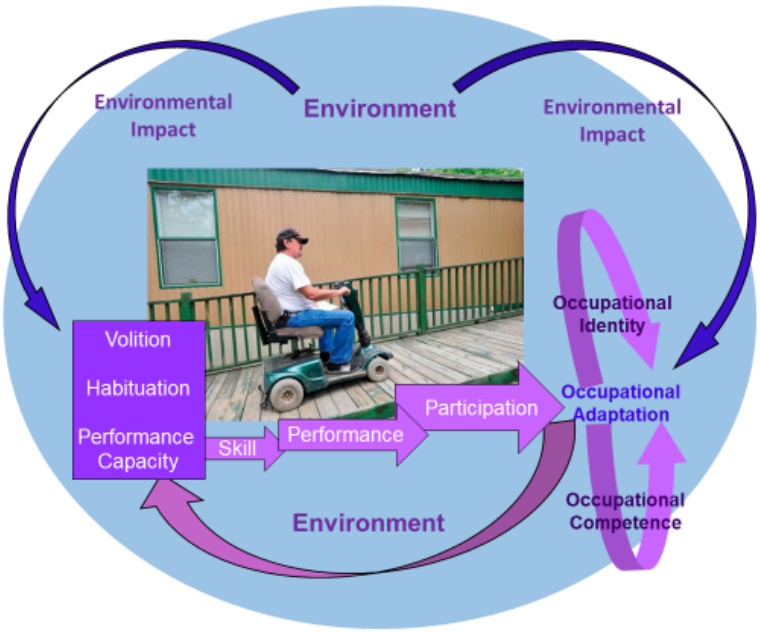
Use of the Model of Human Occupation in Acute Care

Whilst research has recognized the need for occupational therapists (OT) as part of the multi-disciplinary symptom-management approach to MELAS, there is limited literature addressing their specific role (El-Hattab et al., 2015). To overcome challenges faced by acute medicine OTs, implementing an occupation-centered model can enhance patient occupational performance while advocating for the unique contributions of occupational therapy (Wong & Fisher, 2015). The Model of Human Occupation (MOHO) conceptualizes how individuals engage in and adapt their occupations through continuous interaction with their environment, functioning as a dynamic, open-cycle system (Taylor et al., 2023; Lin et al., 2023). This model incorporates environmental input and feedback from actions, which are processed through three interconnected subsystems: volition, habituation, and performance (Taylor et al., 2023). The volition subsystem drives motivation and consists of personal causation (one's belief in their own effectiveness), interests (the pursuit of meaningful and enjoyable activities), and values (the personal significance placed on specific occupational behaviors) (Taylor et al., 2023). The habituation subsystem organizes behavior into patterns and routines, shaped by internalized roles and habits that emerge through repeated engagement in activities, often without conscious thought (Taylor et al., 2023). The performance subsystem involves the capacity for skilled and purposeful action. As input moves through these subsystems, it produces output, both action and feedback, which in turn becomes new input, allowing for continuous adjustment and adaptation (Taylor et al., 2023). Figure 1 illustrates how the four key constructs, volition, habituation,

performance capacity, and environment, interconnect and flow through the MOHO process.

Figure 1

Model of Human Occupation



Note. Adapted by G. Fisher from Taylor, R. (2017). *Kielhofner's Model of Human Occupation: Theory and application* (5th Ed.). Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins. Photo credit: Valentino Mauricio, beaumontenterprise.com

Historically, the MOHO was underutilized in acute care settings due to its complexity and time demands. However, its focus on patients' and families' priorities, as well as individualized support needs after discharge, makes it valuable for guiding interventions (Lin et al., 2023). Consequently, MOHO was chosen to guide the patient's intervention during his stay in the AMU, as it provided a structured approach to explore and address the complexities influencing his occupational performance and participation.

This case study aims to describe the application of MOHO in the assessment and intervention of a patient with MELAS Syndrome within an AMU. Using the patient's journey as a lens, it explores the unique challenges of managing a complex, rare, and fluctuating condition in the fast-paced, generalist environment of an AMU. The patient's neurological, metabolic, psychological, and rehabilitative needs reveal a mismatch between their requirements and the setting's capacity for coordinated, specialist care. Their case highlights broader systemic issues, including care continuity, communication, and access to therapy, factors that are critical when supporting high-dependency individuals in acute settings.

Methodology

This case study was conducted in a medium-sized teaching acute hospital in London, United Kingdom. A single-case study was used to provide an in-depth analysis of this rare neurological condition, addressing the limited research available (Yin, 2018). This design also allowed for the observation of changes from the baseline to the post-treatment phase (Deitz & Lin, 2023). Power analysis was not conducted due to the rarity of the diagnosis, which limited the availability of comparable cases and justified the use of a single-case approach. The research department of the authors' medical institution did not require additional ethical approval for case studies involving a small sample size. Written consent to share the medical and rehabilitation outcomes in this case study was obtained from the patient's next of kin, as the patient was unable to provide consent directly due to impaired cognition and lack of capacity.

Data Collection

Descriptive data for this case study were gathered using a multi-method approach, including retrospective chart review, direct clinical observation, and interdisciplinary team discussions. The patient's medical records, comprising therapy notes, nursing documentation, and diagnostic reports, were reviewed to construct a comprehensive narrative of their medical history, acute presentation, and rehabilitation process. Additional insights from clinicians and therapists involved in the patient's care offered valuable context regarding the challenges encountered within the AMU setting. This triangulation of data sources facilitated a holistic and clinically grounded analysis of both the patient's experience and the systemic factors influencing care delivery.

Within the AMU therapy team, the Boston University Activity Measure for Post-Acute Care "6-Clicks" (AM-PAC) was used as a standardized and validated outcome measure to assess functional performance in domains such as mobility, activities of daily living (ADLs), and applied cognition (Jette et al., 2014; Casey et al., 2023). Each section is scored on a scale from 0 to 24, with higher scores indicating greater independence. In the Applied Cognition section, scores below 22 suggest potential cognitive impairment, warranting further cognitive evaluation (Casey et al., 2023).

Results

James' Inpatient Hospital Journey

James (pseudonym), a 45-year-old Filipino-British man with a confirmed diagnosis of MELAS was admitted to an acute hospital due to increased seizure frequency. His medical history included Parkinsonism, mitochondrial diabetes, autism

spectrum disorder, learning disability, depression, anxiety, ataxia, and epilepsy. His most recent stroke-like episodes had occurred in 2023. Prior to this admission, James resided independently in a first-floor apartment within an extra support assisted living facility. The environment was fully accessible to his needs, and he was able to mobilize indoors with a walker. He received four daily visits from carers who assisted with essential activities of daily living such as showering, dressing, meal preparation, cleaning, and medication management. His family played a significant role in his life, regularly visiting to accompany him outside and support his physical activities. James placed great value on his role as a son and brother, relationships that later proved integral to his rehabilitation engagement.

Upon admission (Day 0), James was transferred to AMU for seizure management. At the time, he remained functionally at baseline, displaying independent indoor mobility and thus not requiring therapy input from the acute medicine team. Initial seizure management included an increase in Keppra, with escalation to ICU and potential intubation planned if required. Differential diagnoses included refractory status epilepticus and high-frequency seizure activity. Aspiration pneumonia was suspected, prompting initiation of empirical antibiotics and escalation of Lacosamide to 150 mg twice daily. Following neurology input, Clobazam was also increased to 10 mg twice daily. Despite these interventions, on Day 22, James experienced a cardiac arrest due to a prolonged seizure episode, necessitating 14 mg of Lorazepam and intubation. He was subsequently transferred to ICU for further management. A nasogastric tube was inserted for nutritional support, and diabetic specialist nurses were involved in optimizing enteral intake.

During his ICU stay, the therapy team implemented early rehabilitation guided by the ABCDEF bundle (Marra et al., 2017), working closely with the wider multidisciplinary team. This evidence-based, interdisciplinary framework supports pain management, spontaneous breathing trials, sedation minimization, delirium monitoring, early mobility, and family involvement to enhance patient outcomes (Marra et al., 2017). James was successfully extubated on Day 25, following four days of intubation. In the early phase of his ICU admission, rehabilitation efforts concentrated on bundle elements D (Delirium management), E (Early mobility), and F (Family engagement). However, his therapy participation was limited by drowsiness and probable hypoactive ICU delirium. He exhibited poor static sitting balance and required maximal assistance from two staff to sit at the edge of the bed. The OT performed a specialist seating assessment and provided a tilt-in-space wheelchair to support his low muscle tone, generalized weakness, and fatigue, aiming to improve his sleep-wake cycle and promote family interaction. Despite participating in daily rehabilitation sessions, James continued to require intensive medical management.

A palliative care consultation was also convened when James was in ICU. James' family recognized the likelihood that he would not return to his previous level of independence and acknowledged that discharge to a nursing home might be necessary. Although they had long anticipated this possibility, the decision remained emotionally difficult. They expressed relief at the reduction in sedation following antiepileptic drug adjustments, which allowed for more meaningful interaction. However, they also voiced guilt regarding their inability to provide care at home, particularly given their mother's own health challenges and the prior loss of their father. These discussions were central

to shaping a discharge plan that acknowledged James's evolving needs while preserving the family's involvement and values.

After being stepped down from ICU on Day 44, James was transferred to the Enhanced Care Unit, where he remained until Day 50. During this period, the multidisciplinary team, including gastroenterology and neurology, agreed on the need for long-term enteral feeding and James underwent a percutaneous endoscopic gastrostomy (PEG) placement on Day 47. He was subsequently transferred back to the AMU for ongoing medical and rehabilitation management from Days 50 to 62. Although medically stable for transfer to the neurology unit on Day 62, James experienced a prolonged seizure on Day 63, necessitating a 24-hour return to Enhanced Care before stepping down once again to AMU. He remained in AMU from Days 71 to 75 and resumed therapy with the AMU rehabilitation team. He was then transferred back to the neurology unit on Day 75, where he stayed until his discharge on Day 125.

A formal Mental Capacity Assessment was attempted on Day 82 to evaluate James's ability to engage in discharge planning. This was conducted collaboratively by the discharge and speech and language therapy teams, using various communication aids such as visual supports, repetition, and simplified language. However, James was unable to demonstrate sufficient understanding, retention, or reasoning, nor could he express a coherent preference, and it was jointly concluded that he lacked capacity to make discharge-related decisions.

This case study focuses on his rehabilitation trajectory, particularly his AMU stay from Day 50 to 62, and the multidisciplinary efforts involved in planning for a safe and appropriate discharge. A summary of key clinical events is provided in Table 1.

Table 1

James' Occupational Therapy Timeline: James' Inpatient Journey

Day	Key Events	Occupational Therapy Involvement
Day 0	Admitted to AMU for seizure management. Functionally at baseline.	No OT input required; functionally independent with indoor mobility.
Day 22	Peri-arrest event due to prolonged seizure. Intubated and transferred to ICU.	ICU OT involvement begins in ICU. Initial focus on early rehab using ABCDEF bundle (elements D, E, F).
Day 25	Successfully extubated after 4 days.	ICU OT assessed for static sitting balance and introduced tilt-in-space wheelchair.
Days 25–44	ICU stay continues. Persistent medical instability.	ICU OT focus on positioning and promoting wake-sleep cycle, family interaction, and sensory regulation.
Days 44–50	Transferred to Enhanced Care Unit. PEG inserted on Day 47.	Continued ICU OT support; preparing for AMU rehab phase. Seating reassessed; minimal rehab due to fatigue.
Day 50	Transferred to AMU. Intensive OT assessment initiated.	Initial AMU OT assessment. Fluctuating cognition noted.
Days 50–62	AMU rehabilitation phase. Medically stable.	Intensive AMU OT intervention phase ● 2 daily rehab sessions (10:30 a.m. & 3:30 p.m.) ● Transdisciplinary model adopted for 24-hour rehab.
Day 63	Seizure relapse; returned to Enhanced Care for 24 hrs.	AMU OT paused due to clinical instability.
Days 71–75	Returned to AMU.	AMU OT resumed. Continued with modified routine and checklist.
Day 75	Transferred to Neurology Unit.	Rehabilitation team changed from AMU team to neuro team.
Day 82	Mental Capacity Assessment attempted and discontinued.	Led by discharge team and speech and language therapist.
Day 83	Best Interest Meeting held with family and team.	Both AMU OT and neuro OT involved in framing realistic rehab goals and shaping discharge pathway.
Day 86	Onset of worsening neuropsychiatric symptoms.	Limited neuro OT sessions due to behavioral concerns.
Day 100	Olanzapine initiated.	No further neuro OT input.
Days 86–125	Discharge planning in Neurology Unit.	No further neuro OT input. AMU OT supported with complex discharge planning.

Occupational Therapy Assessment and Intervention on AMU

James' initial OT assessment on the AMU was conducted on Day 50, following his transfer from Enhanced Care. Due to fluctuating alertness and the ability to follow only single-step commands, the assessment was primarily based on functional activities

and clinical observation. James presented with global muscle weakness, hypotonia, impaired coordination, and significant fatigue. He required a hoist for all functional transfers and tolerated only brief periods of sitting upright in a tilt-in-space wheelchair. Despite these physical limitations, he retained functional range of motion in all limbs, a crucial factor supporting engagement in basic daily activities. This aligns with the performance capacity component of MOHO, reflecting the physical and cognitive abilities available to him at the time.

James' volition appeared to be significantly affected by his fluctuating cognitive status and episodes of agitation. While his baseline level of engagement prior to admission was described as communicative and stable, during hospitalization, James was inconsistently responsive. He occasionally engaged when interventions were structured within predictable routines and familiar activities, supporting the role of volition in sustaining participation when environmental demands were appropriately adapted.

The habituation component of MOHO was disrupted, as James had lost access to the daily routines and role identities that had previously provided structure and meaning. However, during brief periods of improved alertness and cognitive clarity, the use of structured daily routines within therapy sessions facilitated short bursts of engagement. This underscores the importance of using habitual frameworks to re-establish meaningful patterns of activity.

James' environment, including both physical and social aspects, played a critical role in shaping his occupational engagement. The supportive input from the multidisciplinary team and the use of assistive equipment such as a tilt-in-space

wheelchair facilitated participation in basic tasks. However, environmental challenge, including frequent medical interventions, unfamiliar settings, and noise, likely contributed to cognitive overload and increased agitation, especially in the latter stages hospitalization.

From Day 86, James' increasing neuropsychiatric symptoms, particularly agitation and hallucination, negatively impacted participation and further complicated assessment. The escalation in symptoms made it difficult to discern whether observed changes reflected acute cognitive decline or ongoing fluctuation. Consequently, the therapeutic approach shifted from recovery-based rehabilitation to long-term disability management. This decision informed discharge planning, ultimately resulting in transfer to a specialist rehabilitation facility equipped to support individuals with complex cognitive and physical disabilities.

Habit and Routine Training

A disability management approach was the primary rehabilitation strategy for James, considering the progressive nature of MELAS syndrome. Disability management is a specialized service within rehabilitation settings that supports individuals with chronic, progressive, or long-term conditions in maintaining functional abilities, independence, and engagement in meaningful life roles over time (Nottinghamshire Integrated Care Board, 2020). In AMU, James' OT quickly recognized the necessity of a structured routine to enhance James' occupational performance and support his ability to maintain life roles as the disease advanced (Giles et al., 2019; Morgan et al., 2022). The neurofunctional approach was employed in developing James's treatment plan, which is particularly effective for individuals with severe cognitive impairments. This

approach involves specific skill training to help patients perform functional behaviors (Giles, 2018). OTs typically used a directive method, providing explicit cues or instructions while the patient engaged in a particular skill or functional task. This intervention ensured that the patient repeatedly performed familiar tasks under the therapists' guidance, minimizing errors (Giles, 2018).

James attended two rehabilitation sessions daily, scheduled at 10:30 a.m. and 3:30 p.m., with each session lasting at least 30 minutes. The exact duration of sessions varied depending on James's presenting symptoms, fatigue levels, and responsiveness, ensuring individualized and responsive care. The morning sessions focused on functional transfers and mobility retraining. Initially, bed transfer practice was introduced, with occupational therapists offering maximum physical and verbal prompts to compensate for James' impaired processing and initiation skills. Physical assistance from two OTs was necessary to help James sit on the edge of the bed. As sessions progressed, the level of physical support was gradually reduced, encouraging James' independence in bed transfers.

Caregiver Education

Caregiver education was a central component of the OT intervention throughout James's inpatient rehabilitation. His sister and mother were closely involved in his care, and OT sessions placed significant emphasis on equipping them with the knowledge and strategies to support his occupational participation and engagement. Therapists provided guidance to James's sister on the value of a structured daily routine and the use of a daily checklist as part of a 24-hour rehabilitation approach. The family was also

advised to bring James's personal clothing to the ward to help reinforce routine and support role re-engagement, thereby promoting a sense of normalcy and identity.

Education extended to the implementation of orientation tools, including a daily orientation board and visual cues, interventions that James was observed to respond to particularly well. Beyond practical strategies for cueing and support, occupational therapists also facilitated discussions with the family around James's rehabilitation potential. This ensured a shared understanding of realistic goals aligned with his progressive neurological condition.

PT/OT Co-treatment and Therapy Structure

Several morning sessions were co-delivered with a physiotherapist to collaboratively review and refine gait retraining strategies, with the OT specifically focusing on the use of backward chaining and cueing techniques to support functional mobility. These collaborative sessions focused on coordinated care, allowing both therapists to align their goals and use combined skill sets to maximize James's mobility outcomes. The co-treatment approach also enhanced continuity and minimized James' fatigue by reducing redundant interventions. For instance, following functional transfer practice, James would often transition to assisted ambulation, walking with handheld support from two people while following a family member around the unit. These progressive mobility tasks eventually allowed him to settle by the window for designated rest periods, during which he developed new hobbies and routines that contributed positively to his hospital experience.

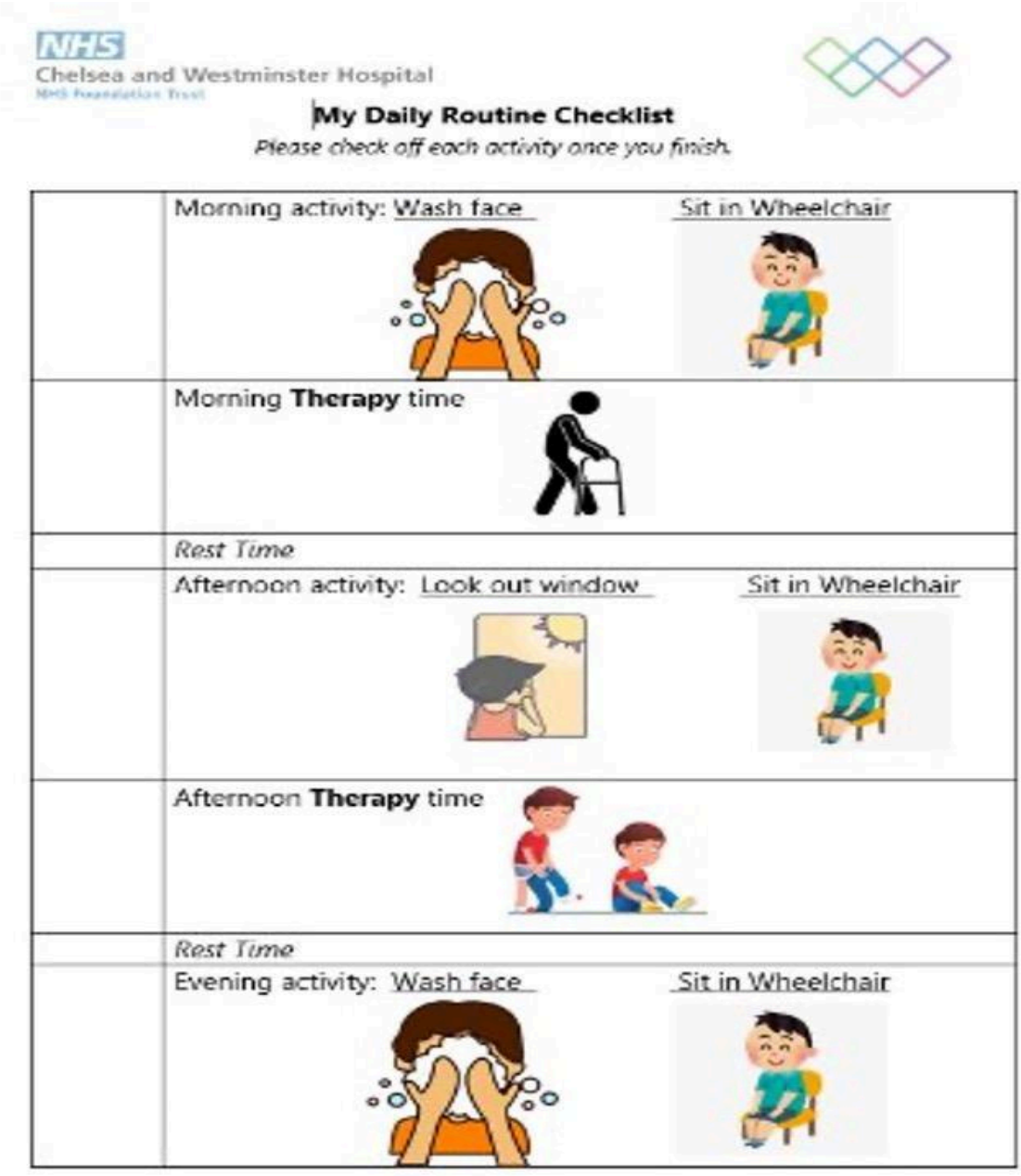
The afternoon sessions centered on ADL retraining and orientation. The OT provided James with two outfit choices each day, fostering a sense of control and

tapping into his volition. Errorless learning and habit training techniques were used to reteach the steps for dressing and simple face-washing tasks. These techniques, effective for patients with severe cognitive impairments, helped James relearn specific skills in targeted tasks (Giles et al., 2019). James responded well to these meaningful activities, which contributed to his re-engagement in life roles. A daily orientation board was introduced to enhance the James' orientation, functional communication, and visual tracking.

The AMU therapy team operated under a transdisciplinary model, where members shared and applied knowledge across disciplines, allowing for a more integrated and cohesive approach to James's care. OTs, physiotherapists, and nursing staff collaborated closely, often blending roles to provide comprehensive 24-hour rehabilitation. To ensure consistency, OTs provided a daily routine checklist, offering positive visual reinforcement by allowing James to tick off tasks as completed independently or with support from the multidisciplinary team (MDT). This process reinforced James' sense of efficacy, confidence, and personal causation (Taylor et al., 2023). Additionally, the checklist supported interdisciplinary collaboration and reinforced the transdisciplinary ethos of the unit by allowing all care team members to contribute to and monitor James's progress.

Figure 2

James' daily routine checklist



Functional Outcomes

During his stay on AMU, James demonstrated significant functional impairments across all domains of the AM-PAC "6-Clicks" assessment tool. On initial evaluation, he scored 11/24 in Basic Mobility, 12/24 in ADL, and 6/24 in Applied Cognition. These

scores remained largely unchanged throughout his AMU admission (Days 52 to 60), reflecting the ongoing impact of medical instability, seizure activity, and profound physical and cognitive limitations. The consistently low scores indicated a continued need for maximal assistance in most daily tasks and limited short-term potential for functional independence.

Despite the absence of measurable change in AM-PAC scores, notable clinical improvements were observed in James' occupational engagement during therapy sessions. He progressed from being entirely passive in care to participating in short-distance mobility tasks with handheld assistance from two staff members. He also became more engaged in self-care activities, including selecting his own clothing with support and participating in grooming routines alongside his family. Additionally, James was able to tolerate extended periods of upright sitting in a tilt-in-space wheelchair, allowing for increased interaction with family members and greater participation in structured daily routines.

James' applied cognition score remained static at 6/24 throughout his AMU stay. No further standardized cognitive assessments were conducted due to the significant variability in his mental status, which was closely linked to the frequency and severity of his seizures. Although he had a pre-existing learning disability, prior to hospitalization James had been described as alert, communicative, and behaviourally settled. During admission, he was generally oriented to name but frequently disoriented to time and place. On days without seizure activity, he occasionally responded to environmental cues such as orientation boards, with maximal prompting. While he was unable to consistently follow single-step commands, occupational therapists noted improved

responsiveness when therapeutic activities were embedded in familiar routines and meaningful contexts. These clinical observations suggest that James' volitional engagement and performance capacity could be supported through environmental structuring, despite minimal change in standardized outcome measures

Barriers to Rehabilitation

Several barriers were identified that affected the provision and effectiveness of therapy interventions. The most prominent challenges included stroke-like episodes, seizures, abnormal muscle tone, and reduced exercise tolerance, which had been present since pre-admission. These factors significantly limited James' ability to participate fully and consistently in therapy, impacting overall progress and the potential success of interventions.

The term "stroke-like episodes" is used because there is no vascular occlusion, and the symptoms do not align with any specific vascular territory. These episodes can last for several days and present with a range of varying symptoms, making them distinct from typical strokes (Pia & Lui, 2024). James exhibited varying neurological symptoms that would impact on sessions such as lower limb weakness and visual changes, however seemingly resolved after a couple of days. Due to the varying nature of symptoms and affected timeline, it was important to subjectively risk assess and adapt session plans as required.

In MELAS syndrome, seizures can present as either tonic-clonic or myoclonic types. An earlier onset of seizures is linked to an increased likelihood of drug-resistant epilepsy, which often leads to more severe clinical impairments and complications (Pia & Lui, 2024). During the hospital admission, it was challenging to establish a consistent

method of communication. However, James and their family were able to identify a long-standing, useful phrase—"Head is fuzzy"—which had been established to help James verbalize just before the onset of a seizure to ensure appropriate safety measures were implemented. This phrase became a key indicator of an impending seizure and remained a consistent phrase that he was able to communicate throughout admission.

James exhibited abnormal muscle tone throughout the admission, though there is currently limited research on whether this may be associated with MELAS syndrome (Pia & Lui, 2024). The tonal changes became more pronounced when James was fatigued, at which point he displayed increased extensor tone throughout their body. As a result of this extensor tone, he was assessed to require a tilt-in-space wheelchair to accommodate postural needs. The tilt was adjusted throughout the day in accordance with fatigue levels - whilst initially being sat out in an upright position, as he became fatigued and increased extensor tone was noted the nursing staff were able to apply a tilt to ensure James remained safe and supported in the chair with the change in position also encouraging pressure relief.

Patients with mitochondrial dysfunction tend to have poor exercise tolerance given the central role of mitochondria in energy metabolism (Venturelli et al., 2019). At baseline James was not able to mobilize outdoors secondary to fatigue and ataxic gait - therefore, therapy focus was on building up exercise tolerance in relation to completing chosen occupations such as dressing and washing face.

Complex Discharge Planning

Facilitating safe discharge planning is a key responsibility of occupational therapy in acute care settings (Society for Acute Medicine, 2015). Based on James's AM-PAC "6-Clicks" scores, post-acute care was deemed a more suitable discharge destination to address his ongoing needs (Jette et al., 2014). He scored 11/24 in basic mobility and 12/24 in ADLs, both of which were significantly below the recommended cutoffs for discharge to home, which are 17/24 for basic mobility and 18/24 for ADLs (Herbold et al., 2022; Jette et al., 2014).

From a physical environmental perspective described in MOHO, James required access to specialized rehabilitation equipment and to be in a medical setting capable of managing his unpredictable seizures. PEG tube, and skin and pressure care. Additionally, multidisciplinary rehabilitation was required to support ongoing postural management, wheelchair assessments, behavioral management, and quality-of-life-focused treatments. In terms of his occupational environment described in MOHO, James needed opportunities to engage in rehabilitation activities and family-inclusive tasks that would improve his quality of life and help restore his family roles. Given these considerations, his previous extra-care assisted living apartment was no longer a viable option, as it would have severely limited his occupational performance and engagement.

A potential discharge pathway identified by the AMU therapy team involved transfer to a neuro-specialist center for long-term disability management. Recognizing that full recovery may not be feasible in many degenerative conditions, the focus shifts toward implementing adaptive strategies that facilitate participation in daily activities and

effective self-management within the context of changing capabilities. This pathway integrates key elements of rehabilitation, health promotion, and environmental adaptation, and is typically delivered through a coordinated interdisciplinary or transdisciplinary team. Emphasis is placed on person-centered goal setting, continuity of care, and the prevention of secondary complications, with the overarching aim of maximizing autonomy, participation, and quality of life.

When James's acute medical therapy team proposed discharge to a long-term rehabilitation hospital specializing in disability management, this recommendation was met with disagreement from the neurotherapy and medical teams, who expressed concerns regarding James' limited rehabilitation potential. This divergence highlighted a significant barrier within James' social environment. Furthermore, the local authority initially declined to fund the proposed discharge plan, introducing an additional obstacle related to James' social and occupational environment. After multiple interdisciplinary meetings and discussions involving the medical team, the neurological rehabilitation team, the acute medical rehabilitation team, and the local authority, a consensus was reached. James was ultimately discharged to the recommended long-term rehabilitation facility, where he could continue his rehabilitation journey with a focus on disability management.

Discussion

The integration of an occupation-centered model is fundamental to occupational therapy practice (Wong & Fisher, 2015). Historically, the MOHO has been predominantly applied in mental health settings, whereas the Person-Environment-Occupation (PEO) model has been more frequently utilized in fast-paced acute care environments

(Bugajska & Brooks, 2020; Maclean et al., 2012) However, recent research highlights the effectiveness of MOHO in acute care settings, demonstrating its capacity to support therapists in delivering occupation-based interventions (Lin et al., 2023).

In the present case study, James exhibited complex therapeutic needs, influenced by intrinsic factors such as fluctuating motor and cognitive functions, unstable medical conditions, and unclear internal motivation, as well as extrinsic pressures from unpredictable environmental factors. Throughout the rehabilitation process, MOHO provided a framework for occupational therapists to understand the multifaceted nature of James' needs. This model facilitated collaboration with James and his family to identify priorities and develop an individualized, occupation-centered daily routine.

The daily routine checklist was designed to align with James' volition, emphasizing activities such as dressing and walking. Evidence indicates that tailoring therapy sessions to an individual's intrinsic motivation and focusing on occupation-based interventions can enhance both clinical outcomes and patient satisfaction (Gemma-Wall et al., 2023). This case study reflects these findings, as James' family expressed satisfaction verbally with the structured daily routine implemented within AMU despite challenges such as staff turnover and an unpredictable hospital schedule.

The routine allowed for a structure that then correlated well with the use of errorless learning which research has shown to be effective with patients with cognitive impairments in acquiring meaningful skills to enable engagement in chosen occupations, thus potentially increasing their autonomy, sense of self and ultimately

quality of life (de Werd et al., 2013; Giles et al., 2019; Skidmore et al., 2017). The use of errorless learning was interpreted into each task, whereby each task was broken down into smaller steps with therapists stopping as errors occurred to encourage correction with use of appropriate prompts/cues (Giles et al., 2019). It was noted that following days of consecutive therapy, therapists were able to fade cues and prompts as James was able to successfully perform more steps. These findings indicated that daily routine checklist and errorless learning were effective when consistently applied within consecutive sessions. Upon reflection this may have been a useful strategy to educate James' family on, in order to allow for the continuity of approaches on days where therapy was not available such as weekends.

Complex discharge planning often involves a variety of health care professionals. It is not solely one profession's decision (Olson et al., 2022; NICE, 2019; Patel et al., 2019). Family meetings and multidisciplinary team discussions are often held to discuss the best possible outcomes (Patel et al., 2019; NICE, 2018). Disagreement is common during this process due to lack of understanding of patients' goals, different focus based on each professional's perspective, and poor communication (Olson et al., 2022; Patel et al., 2019). These challenges are reflected in this case. Using the MOHO, James's occupational therapists identified the essential physical, social, and occupational supports needed to provide James with the best opportunity to enhance his engagement in meaningful occupations. To maximize James' occupational engagement and participation through a disability management approach, his AMU occupational therapists advocated for James to be referred to a neurorehabilitation center for long-term disability management. Further considerations were made based on James'

identified important occupations, which were access to a garden or outdoors and being able to participate in therapy.

While the above AMU therapy recommendations were taken on board at the end, there were barriers faced prior to James being accepted to a specialist neurorehabilitation center for long term disability management. Reasons likely include lack of understanding between professionals, limited funding opportunities, and differing priorities, which is evident in recent literature (NICE, 2018; Olson et al., 2022). To overcome these challenges, the AMU OTs utilized MDT meetings, supported discharge planning paperwork, and provided joint sessions with the neuro therapy team. These strategies were also suggested by studies on effective discharge planning (NICE, 2018; Olson et al., 2022).

Several limitations of this study must be acknowledged. First, as a single case study, the findings are not generalizable. Second, the case is drawn from one UK hospital, where discharge planning may reflect country-specific healthcare practices. Third, the focus on James' stay in the AMU may omit relevant factors from other phases of his inpatient care, such as the neurology ward or ICU. Additionally, confounding variables such as ongoing medical instability may have influenced outcome measures related to occupational performance. The use of standardized assessments, including MOHO-based tools, was limited due to the fast-paced and medically unstable nature of acute care, where time constraints and rapid decision-making often preclude comprehensive assessment. Furthermore, the setting lacked a valid license for MOHO tools, and the patient's cognitive and physical state restricted meaningful engagement in structured evaluations.

Future research should explore studies across multiple sites to improve generalizability and capture the full continuum of inpatient rehabilitation. Examining the feasibility of brief, standardized occupational therapy assessments in acute care may help address current gaps in evaluating functional performance. Additionally, further studies are needed to assess the effectiveness of MOHO-based interventions in acute medical units for individuals with rare neurological conditions, and to determine the practicality of using MOHO assessments, such as the Occupational Self-Assessment–Short Form (OSA-SF) and the Role Checklist, in these fast-paced environments.

Conclusion

In conclusion, applying the MOHO provided a valuable framework for addressing the complex interaction between James' personal capacities, occupational performance, and environmental demands. By targeting volition, the therapy team was able to embed meaningful and familiar activities into structured routines, supporting motivation and promoting engagement despite cognitive and physical limitations. The disruption to James' habituation was addressed through the reintroduction of consistent daily schedules and occupational roles, which facilitated participation in basic self-care tasks and social interaction. Interventions based on performance capacity, such as the use of errorless learning and the neurofunctional approach, focused on maximizing function within the patient's existing abilities, enabling small but meaningful gains in occupational performance. Finally, the environmental component of MOHO guided the team in adapting the physical and social context of care and advocating for a discharge plan aligned with James' long-term support needs. Together, these components enabled a

client-centred, occupation-focused approach that supported both rehabilitation and longer-term disability management.

Practice Implications

- The use of MOHO in developing occupation-based interventions enhances patient engagement and fulfillment in life roles, particularly in complex cases like MELAS Syndrome, while it's environmental and component framework provides therapists with a structured approach to advocate for discharge destinations that address this unique population, ensuring continuity of care.
- Incorporating errorless learning and the neurofunctional approach within MOHO-based interventions can improve performance skills in patients with severe cognitive impairments, fostering greater occupational engagement.
- Volition, a key element of the MOHO, influences patient motivation and engagement in care. By understanding a patient's values and goals, healthcare providers can enhance communication and collaboration with both the patient and staff. This personalized approach helps align care plans with the patient's preferences, improving overall engagement and satisfaction in the care process.

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