

Delirium in geriatric rehabilitation: the continued case of B.M

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INTRODUCTION

For the purpose of this article, please remember that B.M. was admitted to geriatric rehabilitation after his acute hospitalization due to his neck fracture of the left femur and sepsis (*Escherichia Coli* ESBL +).

SEARCH STRATEGY

A narrative review of delirium in geriatric rehabilitation is presented in this paper by reviewing studies that have examined delirium in these facilities, including intermediate care hospitals, geriatric rehabilitation hospitals, skilled nursing facilities, and post-acute care facilities. Though this is a narrative review, our search was not based on a systematic search strategy, but on an established approach for selecting the latest knowledge in the field, in addition to already published work that was already well-known in the field. After an overview of the different types of these settings, their general objectives, the main characteristics of the patients admitted there, and the estimated prevalence of delirium, literature evidence will be reviewed supporting the following: (1) peculiarities related to delirium in geriatric rehab, such as its manifestations and symptoms, delirium subtypes, duration and outcomes; (2) challenges in diagnosing delirium in such settings, and (3) strategies for preventing it. For this purpose, our search has been conducted in PubMed Database using the following search terms: delirium, post-acute, geriatric rehab, intermediate care, and skilled nursing facilities. In this review, articles published in English in the last 10 years were included and, based on clinical criteria and clinical management experts (authors of the manuscript), articles that were really oriented to the setting and the objective of the review were selected. In addition, the references of the selected articles were also examined during the review process in case any further articles of interest had emerged. Initially, 31 articles were identified between 2013 and 2023. As a result of the complete review, 21 original articles were selected for inclusion in the review.

GERIATRIC REHAB

After discharge from an acute care hospital, many older patients are unable to return to their previous living environment due to transitory or

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permanent changes in their clinical or functional conditions. Therefore, they may require admission to post-acute or intermediate care facilities in order to manage and improve the quality and safety of the transition to their previous situation through rehabilitation and reablement and/or adaptation of the environment (caregiving, physical environment etc). There has been an increase in intermediate care settings both in Europe and around the world in recent years; though their names and functions can differ from country to country, there are common elements defining this care setting ¹. Within these intermediate care facilities, settings like intermediate care hospitals, geriatric rehab hospitals, post-acute care settings, and Skilled Nursing Facilities (SNF) can be included. The provision of these services at home, for a transitory and limited phase, is also possible ². In spite of their differences, all of these facilities operate in the same way, by sharing the temporality of the stay, a multidisciplinary recovery-oriented approach, and the same objective: to allow the patient to return to his or her previous living situation as soon as possible.

Hence, when it comes to talking about delirium in Geriatric Rehab, this review will rely on scientific evidence and information about delirium across all of these intermediate care facilities.

In a study carried out in the United Kingdom (UK) in 2021, patients who required intermediate care were old (with a mean age of 81 years) and mostly women (60%). One noteworthy finding of this study is that 75% of patients had multimorbidity and almost a third died within one year ³. Among patients who require Geriatric Rehab, hip fractures, strokes, post-surgical complications, patients admitted intensive care, cancer patients with complications, and patients who suffer from functional deterioration after chronic disease decompensation are the most common diagnoses. In relation to the comorbidities, some published studies have shown that up to 70% of patients admitted to intermediate care hospitals show some degree of cognitive impairment (such as mild cognitive impairment or dementia) ⁴.

There are therefore face patients who, upon admission, are dependent on Basic Activities of Daily Life (BADLs), have high rates of dementia, and have multimorbidity, all factors that, evidence-based, increases their vulnerability to delirium). In addition, they experience precipitating factors that contribute significantly to delirium development, like a hip fracture (around 12-51% incident delirium), a stroke (33% incident delirium), a surgery (13-50% incident delirium) or being in the Intensive Care Unit (19-82% incident delirium) ⁵. Despite all these risk factors, delirium prevalence in older patients in these settings ranges from 6-40%, according to studies ³⁻⁹.

Despite the increased availability of intermediate care services, which has led to more publications about

delirium in these settings, there is still a lack of literature regarding delirium in intermediate care settings, and the evidence available is still very limited.

PECULIARITIES OF DELIRIUM FEATURES IN GERIATRIC REHAB

Symptoms of delirium are the same in a post-acute or an intermediate care hospital (which, for this review, include geriatric rehabilitation services) as in an acute hospital, what differs is its persistence. According to Marcantonio et al, only 14% of delirium cases in a SNF, a setting which include the transitional and recovery components, and which can be included in the post-acute or intermediate care umbrella, were resolved after one week. In contrast, in 86% of patients, delirium persisted after one week (22% improved, 52% remained the same, 12% worsened) ¹⁰. Regarding delirium subtypes, studies differ on their prevalence in geriatric rehabilitation facilities. However, the hypoactive ^{11,12} and the mixed one seem to be more prevalent ¹³.

Even though all these data might suggest that the environment of a post-acute care facility influences delirium persistence, it is unclear and more research is required. Even though aggressive rehabilitation and active medical management can help to clear delirium in the facility, some patients may find significant benefit in returning home, particularly those who are frail and demented. Additionally, there is also evidence that in patients with dementia admitted to SNF who experienced greater pain than average, they also experienced more delirium ¹⁴.

In relation to the impact of delirium, there is enough scientific evidence to conclude that presenting delirium in an intermediate hospital has very similar consequences as presenting delirium in an acute hospital. Delirium in a geriatric rehab setting is also associated with a higher mortality rate, cognitive impairment, dementia, institutionalization, readmission, and functional impairment ¹⁵⁻²².

There are also differences in the impact of different delirium subtypes: patients with hyperactive delirium seem to have shorter durations of delirium, and patients with hypoactive delirium appear to have higher mortality rates ²³.

The physical evolution of patients undergoing geriatric rehabilitation is a fundamental aspect which delirium obviously interferes with. Research confirms that patients with delirium who improve or resolve within one week experience similar functional recovery to patients without delirium. Conversely, patients who present persistent delirium (> 1 week) will have a worse functional recovery, not only due to their delirium itself, but also because they are unable to fully participate in rehabilitation

programs and medical and nursing management^{10,11}. Additionally, depending on their delirium subtype, patients with delirium will also exhibit different functional trajectories. Those with hyperactive delirium will have a better functional recovery capacity than those with hypoactive delirium (Who will have a poor recovery capacity)²³.

THE CHALLENGE OF DIAGNOSING DELIRIUM IN GERIATRIC REHAB

Typically, delirium is challenging to diagnose, so misdiagnosis and under-detection of delirium occur frequently in clinical settings.

There is a huge problem with delirium screening and diagnosis in acute care hospitals, as well as post-acute rehabilitation, where 60% of cases pass unnoticed, especially in older patients with many chronic conditions²⁴.

The diagnosis of delirium can be even more challenging in intermediate care facilities due to the following factors:

- upon discharge from an acute hospital admission, the care team at an intermediate care centre only has limited objective knowledge of the patient's cognitive and functional state. Therefore, family members or caregivers will have to provide additional information;
- intermediate care hospitals tend to have a lower nurse-to-patient ratio, which hinders the early detection of delirium due to fewer nursing interactions with patients;
- there are also other comorbid conditions, such as dementia, that make it more difficult to diagnose delirium in patients with these conditions.

The staff of intermediate care settings, therefore, will have to rely on other sources of information apart from the patient, such as medical records, family interviews, etc... and it will be crucial to educate staff about the importance of identifying delirium in order to improve the diagnosis of delirium. To accomplish this, delirium screening should be established as part of patient care routines²⁵.

Among the 21 studies reviewed, 19 used screening tools to identify delirium in intermediate care settings. As shown in Figure 1, most papers used the Confusion Assessment Method (CAM) or a CAM-based screening instrument ($n = 13$, 68%)^{8,9,11,14,15,20-22,25,29}, whereas 3 articles used the 4ATest (4AT) (16%)^{12,13,30}, and 2 articles used the Delirium Rating Scale Revised-98 (DRS-98) (11%)^{4,7}. The Memorial Delirium Assessment Scale (MDAS) and the Delirium Diagnostic Tool-provisional (DDT-Pro) were only used in one study each^{24,30}.

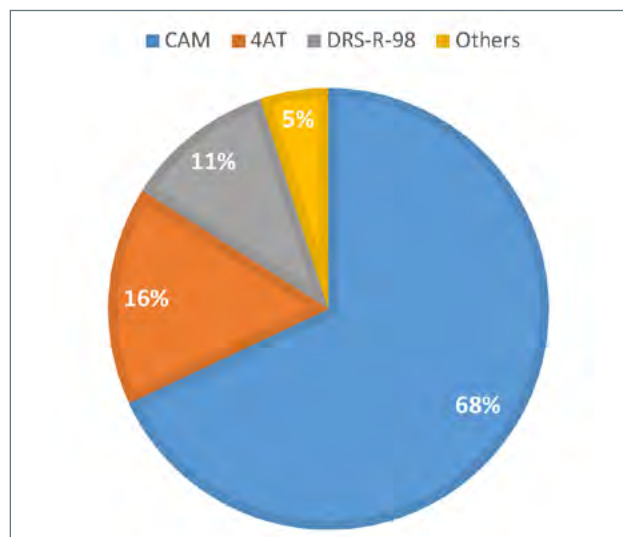


Figure 1. Delirium screening tools used in Intermediate Care Settings.

In spite of these studies and the array of delirium screening scales currently available³¹, there have been no systematic reviews of delirium screening tools in intermediate care, nor has there been sufficient research to recommend one tool over another. In any case, there are several factors to consider when choosing a screening tool for these environments, including the type of clinical setting, staff training, available resources and of course, feasibility and validity for the population this tool is being used on.

Another absolutely essential aspect when choosing a screening tool for delirium in intermediate care facilities is that it must be an easy-to-use tool that relies on nursing assessment (despite the nursing leadership in these settings) and useful for evaluating patients with dementia. Dementia can be distinguished from delirium most commonly by assessing inattention and acute onset of illness³². In recent years, the increasingly popular 4AT and some CAM-derived assessments have included both items and can be used with confidence in different care settings³¹. In patients with moderate-severe dementia, it may also be helpful to assess changes in motor performance to diagnose delirium³³, or even use new tools designed specifically for these patients, such as the 4-DSD³⁴.

As such, it is important to highlight the fact that observing functional progress and motor changes in patients admitted to geriatric rehabilitation hospitals may help in diagnosing delirium. Whenever there is a delirium episode, clinical staff will also notice that there are functional impairments and motor fluctuations occurring concurrently with the delirium episode. Thus, these motor signs are not only a consequence of delirium, but

also a sign of delirium that may help in detecting delirium. Furthermore, delirium is not only a very significant risk factor for falls, but between 24 and 96% of falls will be in patients with delirium^{35,36}.

PREVENTING DELIRIUM IN GERIATRIC REHAB

In intermediate care hospitals, delirium prevention can also be achieved using non-pharmacological measures that have been proven to reduce the incidence of delirium in other healthcare settings. Additionally, in intermediate care hospitals it will be necessary to pay attention to other aspects, such as transitional care and education interventions for health professionals. As a result, three interventions have demonstrated efficacy in preventing delirium in geriatric rehabilitation hospitals:

- A. Providing transitional care;
- B. Developing and implementing non-pharmacological interventions (multicomponent interventions);
- C. Healthcare professional education interventions.

TRANSITIONAL CARE

For older adults with multiple chronic conditions (which are the majority of patients in Intermediate Care facilities), adequate transitional care is particularly relevant because hospital transitions can have devastating effects on the health and well-being of older adults and their family caregivers. As an example, serious medication errors are common during transition periods, which can contribute to delirium development.

In addition, poor communication, incomplete information transfer, insufficient education of older adults and their family caregivers, as well as the absence of a single point of contact to ensure continuity of care, can all contribute to poor transitional care and poor clinical and healthcare outcomes³⁷.

When considering the transfer of information regarding delirium, it is necessary to note that while up to 50% of delirium persists beyond discharge from acute care settings (associated with poor outcomes), delirium only accounts for 3 to 16% of documented cases at discharge³⁸.

It is recommended that any intervention that intends to improve the transition from an acute care setting to a lower level of care should include strategies to assess patients for delirium during hospitalization and after discharge, as well as educating caregivers and patients regarding delirium. Additionally, it is critical to improve communication among all stakeholders (patients, family caregivers, and providers) as well as share medical electronic records as information systems. Furthermore, involving the pharmacy team in care-transition activities can also be beneficial in identifying discrepancies and resolving medication errors³⁹.

DEVELOPING AND IMPLEMENTING NON-PHARMACOLOGICAL INTERVENTIONS

Whenever multicomponent interventions such as the "HELP" program are applied in intermediate care units or geriatric rehab hospitals, certain differences and peculiarities need to be taken into consideration. Due to the high prevalence of dementia in intermediate care hospitals, clinical professionals are dealing with patients at greater risk of delirium but for whom multicomponent interventions are less effective. Moreover, the high prevalence of delirium on admission will limit preventive measures, since many patients will already be experiencing delirium before being admitted. Finally, the low nurse-patient ratio will exacerbate the difficulty of screening and diagnosing these patients with delirium²⁷.

Most of non-pharmacological interventions can be used in geriatric rehabilitation hospitals in order to implement multicomponent programs to treat delirium, for example:

- address sensory impairments;
- promotion of sleep;
- get patients up and moving;
- avoid dehydration;
- cognitive stimulation and reorientation;
- polypharmacy review.

However, a few modifications may be required in some cases²⁸:

- regarding mobility, patients are recommended to receive only two interventions daily (instead of three, since they participate in regular rehabilitation);
- it is important to perform more leg exercises while sitting in a wheelchair;
- in terms of meals, assistance is limited and the emphasis is on self-feeding and communal eating (patients may self-feed and eat together).

On the other hand, regardless of whether a person is doing physiotherapy, physical activity, especially related to everyday activities (getting to the bathroom by walking, ambulating several times during the day) should still be promoted. Generally, rehabilitation time is insufficient. Therefore, in addition to physiotherapists, occupational therapists will play an important role in geriatric rehabilitation services. Patients who are treated by occupational therapists are helped to maintain function by restoring a daily routine to their daily lives by performing activities, positioning, conducting cognitive assessments, and offering cognitive stimulation. Therefore, occupational therapy has shown promising results in the prevention and treatment of delirium during the early stages of rehabilitation⁴⁰.

Adapted multicomponent programs for patients admitted to rehabilitation facilities have also demonstrated significant results in reducing the prevalence of delirium, improving cognitive and functional outcomes

and reducing the length of stay. Further, this adapted intervention was effective in patients with preexisting delirium at admission as well as patients at moderate to high risk for delirium²⁸.

HEALTHCARE PROFESSIONAL EDUCATION INTERVENTIONS

There is a need for improved education of post-acute facility staff in the recognition and management of delirium. The appropriate management of prevalent delirium in a patient just transferred from the hospital may be different from incident delirium in long-term care residents because for post-acute patients, improvement, rather than maintenance, is the expected and desired trajectory. Staff must therefore focus their efforts not only on declining patients, but also on those who do not improve. On the other hand, distinguishing symptoms of dementia from symptoms of delirium may be difficult in the absence of detailed knowledge of baseline mental status. Consequently, in the post-acute setting, it is crucial that the staff behave as if these symptoms are due to delirium, and therefore potentially reversible, to give the patient the best chance of recovery. Preventing delirium and taking care of delirium patients shall be recognized as part of the nursing staff routine in every intermediate care hospital⁴¹.

CONCLUSIONS

Patients admitted to geriatric rehabilitation hospitals are generally old, frail, with high prevalence and severity of dementia and relevant disability, which makes them particularly vulnerable to delirium. As a result, delirium is prevalent and persistent in these inpatient facilities, and it is associated with poor functional recovery, among other negative outcomes. Due to the high prevalence of dementia in Intermediate Care Facilities, delirium can be challenging to diagnose. A close monitoring of both motor and cognitive functions may be helpful in identifying those patients who are delirious. Several preventive strategies can be implemented in Geriatric Rehab Hospitals regarding the prevention of delirium, including transitional care, adapted multicomponent strategies, and healthcare professional education programs.

Conflict of interest statement

The authors declare no conflict of interest.

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Author contributions

NG, CN, MI: concept, NG: design; NG, CN, MI: literature search; NG, CN, MI: writing.

Ethical consideration

Not applicable.

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