REVIEW

Referral to geriatric rehabilitation: a scoping review of triage factors in acutely hospitalised older patients

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Abstract

Objective: Old or frail acutely hospitalised patients can benefit from geriatric rehabilitation but criteria concerning referral decisions are unclear. This review presents an overview of clinical factors associated with referral to geriatric rehabilitation that may further consensus between hospital and rehabilitation professionals on triage.

Design: Scoping review.

Methods: A review was conducted following Arksey and O’Malley’s framework. The search included literature concerning a broad spectrum of acutely hospitalised patients and factors associated with their referral to geriatric rehabilitation.

Results: Selected abstracts were categorised into distinct geriatric rehabilitation care pathways such as stroke, hip fracture, amputation of lower limb, cardiac and oncologic rehabilitation. Abstracts on internal medical patients were further reviewed and 29 studies were included. A total of 13 studies focused on factors identifying rehabilitation needs and 16 on factors associated with outcome of geriatric rehabilitation. Triage factors were diverse and included frailty status, functional decline, cognitive symptoms and multimorbidity. Mood symptoms and living situation further specified post-acute care needs. In overview, triage factors could be characterised as demographic (n = 4), diagnosis-related (n = 8), mental (n = 6), functional (n = 10) or multi-domain (n = 12) and mapped in a transitional care pathway.

Conclusions and implications: Frailty and functional decline are characteristics frequently associated with referral to geriatric rehabilitation of acutely hospitalised internal medical patients. A comprehensive geriatric assessment or a simpler multi-domain set of tests reveals rehabilitation needs and approximates a functional prognosis. Professional consensus on factors and timing of triage in hospital is within reach.

Keywords: geriatric rehabilitation, triage, post-acute care, rehabilitation needs, frailty, older people

Key Points
• Criteria for referral to geriatric rehabilitation are unclear.
• Rehabilitation potential correlates with frailty status and psychosocial needs.
• Comprehensive Geriatric Assessment and multi-domain tools support triage decisions.
• Professional consensus on triage is in reach.
Introduction

Geriatric rehabilitation is post-acute restorative care that is adapted to older or frail hospitalised patients, especially those with pre-existing functional decline or specific care needs [1–3]. Its central goal is to optimise functional capacities and support societal participation despite impairments [4]. Old or frail patients with stroke, fractures, amputation, or undergoing orthopaedic surgery can profit from this kind of post-acute care. Patients who are hospitalised with acute internal illnesses such as infections, organ failure or exacerbations of chronic diseases can benefit from rehabilitation as well [4–7]. Since acute hospitalisation of older patients is often associated with functional decline, geriatric rehabilitative care has become an important post-acute care pathway enabling patients to continue living at home [8, 9]. It is either a home-based service offered by community care organisations or an inpatient care trajectory in geriatric hospitals, geriatric wards, rehabilitation hospitals, skilled nursing facilities or nursing homes with rehabilitation units [4].

Accurate identification of patients for rehabilitative care is pivotal to optimise targeting of care and prevent unnecessary transitions. In the triage process a patient’s care needs, his functional prognosis and personal wishes should serve as building blocks for the decision-making [10–12]. Triage for rehabilitative care assumes a multifaceted, patient-oriented examination and evaluation of all relevant factors to establish the rehabilitation potential [10, 13, 14]. The assessment of a patient’s rehabilitation prognosis, however, is predominantly based on clinical intuition. A strong evidence base for the clinical factors that contribute to post-acute care decision-making is absent [15, 16].

Apart from clinical factors, organisational aspects play an important role in referral practice [17, 18]. Pressure to discharge early is a key driver for hospital referral practice [19]. Other non-clinical factors in referral procedures are the capacity of local facilities and their distance from the patient’s home [20]. Healthcare regulations and insurance policy also represent limitations for rehabilitation facility placement [6, 21].

In the absence of consensus on clinical criteria for rehabilitation needs and potential of old or frail acutely hospitalised patients we undertook a scoping review of the literature on geriatric rehabilitation triage decisions. Scoping reviews are a form of knowledge synthesis that addresses broad or fragmented areas of research, aiming to map the literature on a practice that is less studied or understood in literature [22]. The purpose of this review is to present an overview of factors considered relevant to assess the eligibility of hospital patients for geriatric rehabilitation in order to advance professional consensus concerning triage.

Methods

We followed the framework for scoping reviews by Arksey and O’Malley and refined by Levac, starting with a broad definition of the study population [22–24].

The research team consisted of care of older people physicians, an internal medical resident, geriatric rehabilitation specialists and researchers. The core elements of the search string (Appendix B) were key words associated with ‘geriatric patients’, ‘rehabilitation’, ‘referral/triage’ and ‘in-hospital’. Growing numbers of patients have received geriatric rehabilitation care since 2000; we therefore limited our search to articles published between January 2000 and July 2020. We included English, French or German articles extracted from PubMed, Embase, CINAHL, PsycINFO and the Cochrane Library. Our protocol is in Appendix A.

Selection of abstracts

A priori inclusion and exclusion criteria were set. Two reviewers (X, Y) independently screened the abstracts. A third member of the scoping team (Z) was consulted when consensus about selection was not reached.

We included studies

- on referral to rehabilitative post-acute care of vulnerable, community dwelling, acutely hospitalised older patients.
- on prognostic factors influencing functional recovery in acutely hospitalised old or vulnerable community dwelling persons.
- targeting rehabilitative post-acute care referral and involving family caregivers or professionals.
- on interventions concerning selection for geriatric rehabilitation.

We excluded studies

- reporting exclusively on prevention of adverse outcomes in frail older hospital patients.
- involving hospitalised long-term care patients.
- on efficacy of a specific geriatric rehabilitation intervention.
- focusing only on burden of family caregivers.

Narrowing down and re-evaluation

Categories of abstracts were formed according to the main hospital diagnosis of the study population and the associated rehabilitative care pathway. For the remaining abstracts three overarching categories were formed: triage education on geriatric rehabilitation triage decisions. Scoping reviews are a form of knowledge synthesis that addresses broad or fragmented areas of research, aiming to map the literature on a practice that is less studied or understood in literature [22]. The purpose of this review is to present an overview of factors considered relevant to assess the eligibility of hospital patients for geriatric rehabilitation in order to advance professional consensus concerning triage.

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with the purpose of our research: an inventory of patient-related factors concerning referral to geriatric rehabilitation. They continued with the selection for full text evaluation. All through the selection phases arguments to amend inclusion and exclusion criteria were discussed.

Charting of data
Included studies were scrutinised to extract data about aims, design and findings and papers were categorised according to their focus, whether on rehabilitation needs or on potential to recover. Triage factors were extracted, categorised and presented.

Results
The literature search resulted in a total of 1,245 abstracts, which were assigned to diagnostic categories associated with rehabilitation care pathways. Reports on stroke patients represented the largest group followed by patients with internal medical diagnoses such as infections, organ failure, malnutrition, deconditioning, ulcers or a deterioration of chronic illness. This category of abstracts was further reviewed. Other categories concerned cardiac rehabilitation patients, patients with hip-fracture, other trauma, amputation, elective orthopaedic surgery and patients with delirium, dementia or psychiatric diagnoses. Figure 1 shows the flow diagram of the selection process.

Included studies
Design
We found 29 studies on factors related to recovery of internal medical patients; 19 of these were prospective cohort studies [27, 29–37, 39, 40, 42, 45, 48–53], eight retrospective [28, 38, 41, 43–47, 50] and two used mixed methods, combining a cohort study with interviews or a survey [25, 26]. The sample size varied from 100 [27] to over 60,000 [28]. Duration of follow-up was 3 months [29, 30], 6 months [31, 32] or 1 year after discharge [33, 34].

Settings and participants
A total of 11 studies were situated in acute hospital wards and included only internal medical or acute geriatric hospital patients [30, 33, 35–38, 40–44], another four also included other acute hospital patients [25, 31, 35, 36]. A total of 14 studies were situated in rehabilitation settings: one outpatient rehabilitation setting [31], the other 13 situated in intermediate care units in skilled nursing facilities, rehabilitation hospitals or geriatric rehabilitation hospital wards [27–29, 32, 45–52, 55].

Outcome
Primary outcome of the hospital studies was discharge disposition: discharge home versus non-home or transition to geriatric rehabilitation. In geriatric rehabilitation settings the primary outcome was discharge to independent living versus long-term care. In our selection two studies fitted best to our research purpose, focusing exclusively on referral of internal medical patients to geriatric rehabilitation [37, 38]. An overview of participants, settings and primary outcome is given in Table 1.

Focus of studies
Rehabilitation needs
Triage factors associated with rehabilitation needs were evaluated in 13 studies [25–27, 35–44]. These papers described patient characteristics and symptoms indicative of the necessity of post-acute care. Activities of Daily Living (ADL) dependency and cognitive decline were factors frequently associated with referral to rehabilitation [27, 36, 38–44]. Other examples of this type of triage factors were living without help at their own home, having a less than excellent self-rated health, symptoms of depression, multimorbidity, case complexity and length of hospital stay. Multi-domain triage tools assessing rehabilitation needs were the Hospital Admission Risk Profile, the INTERMED score and the Post-Acute Care Discharge score [36, 37, 41].

Rehabilitation outcome
The focus of the other 16 studies was to examine patient factors predicting rehabilitation outcome [28–34, 45–53]. Outcome was measured as duration of rehabilitation, functional gain or discharge destination. Pre-existing loss of instrumental ADL adversely affected functional gain during rehabilitation [28, 29, 35, 39, 45, 48–50]. Rehabilitation outcome was negatively associated with duration of the trajectory of functional loss before the acute illness and with the presence of mobility problems at admission [33, 34, 45]. The relation between severity of frailty and low functional gain during rehabilitation was reported in four studies [38, 45, 51, 52]. In a severely frail cohort, daily use of a measurement instrument for mobility and balance improved the prediction on discharge destination [49]. In-hospital deconditioning was associated with poor rehabilitation outcome when the patient was also malnourished [46]. Furthermore, oncologic or cardiovascular comorbidity reduced the outcome of geriatric rehabilitation [25, 29, 33].

Table 2 presents an overview of the triage factors in our selection.

Figure 2 presents an overview of triage factors and the care pathway prior to geriatric rehabilitation admission. It visualises when triage information was assessed in the included studies.

Multi-domain measurements
Instruments measuring multiple domains of functioning supported triage and discharge planning in five of the included studies. The Hospital Admission Risk Profile score, consisting of age, cognitive status and i-ADL 2 weeks before admission identified individuals at risk of hospital-related
Table 1. Participants and outcome in selected studies

| Transition                           | Participants                  | Hospital to geriatric rehabilitation | Hospital to post-acute care | Rehabilitation or post-acute care to home |
|--------------------------------------|-------------------------------|--------------------------------------|----------------------------|------------------------------------------|
| Internal medical patients            | Luby [37], Meyer [42]         | Boyd [33], Callum [35], D’Souza [40], Koch [36], Liu [41] |
| Acute geriatric patients             | Hartley [43]                  | Gijzel [30], Hartley [38], Lyons [44] |
| Acute hospital patients              | Buurman [34], Koné [26]       | Bowles [25], Jackson [39]            |
| Medical geriatric rehabilitation     |                               |                                      | Hubbard [49], Kortebein [28], Luk [50], Singh [51], Wakabayashi [48], Abrahamsen [29], Abrahamsen [32], Arjunan [52], Gill [45], Jupp [55], Leung [27], Ling [46], Siming [47], Peel [31] |
| Geriatric rehabilitation patients    |                               |                                      |                            |

Acute geriatric patients: admitted to Department of Medicine for the elderly wards or to geriatric wards. Medical geriatric rehabilitation patients: patients with neurological or internal, non-surgical, rehabilitation diagnoses.

Table 2. Characteristics, symptoms and measures associated with referral to geriatric rehabilitation

| Demographic | Diagnoses, syndromes | Cognitive and mental status | Mobility and Functional status | Multi-domain tools and measures |
|-------------|----------------------|----------------------------|--------------------------------|--------------------------------|
| Age [33, 36, 41, 51] | Admission diagnosis [29] | Clock in the Box [39] | Mobility | Fraility |
| Sex [26, 50, 51] | Non-surgical rehabilitation diagnosis [47] | MMSE [41] | Gait speed [31, 52] | Fraility Index [51, 52] |
|   | Multimorbidity [25, 37] | Cognitive impairment [43, 44] | Qualitative gait [52] | Frailty Index-CGA [49] |
| Living without or with intermittent help [25, 37] | Metastatic cancer or cardiovascular disease as comorbidity [33] | Depressive symptoms [25, 35] | Physical activity [30]Balance [25, 49] | Clinical Fraility Scale [38, 43, 44] |
| Education [39, 45] | Vision impairment [55] | Momentary well-being [30] | Hierarchal Assessment of Balance and Mobility (HABAM) [70] | Comprehensive Geriatric Assessment |
|   | Low albumin [33] | Elderly Mobility Scale [44] | De Morton Mobility Index, toilet transfer [40] | Comprehensive Geriatric Assessment (CGA) [29, 45] |
|   | Malnutrition, sarcopenia, in hospital deconditioning [26, 28, 34, 37, 48] | Functional status | Functional decline (ADL or i-ADL) [33, 38, 41, 47, 48] | CGA Multidimensional Prognostic Index [42] |
|   |   |   |   | Multi-domain tools |
|   |   |   |   | Case complexity, amount of nursing care (INTERMED) [37] |

In italics: factors identifying rehabilitation needs. ADL = Activities of Daily Living. I-ADL = instrumental Activities of Daily Living. BI = Barthel Index. CGA = Comprehensive geriatric Assessment. MMSE = Mini Mental State Examination. INTERMED is a system for classifying case complexity.
functional decline and predicted risk of facility placement [41]. In Luthy’s study case complexity and nursing workload was taken into account, next to biomedical and psychosocial case-complexity [37]. More recently the Post-acute Care Discharge score and the Selfcare Index (SPI) were developed, two complementary and more elaborate triage instruments [36, 42]. A study on resilience concluded that frequent assessments of both physical and psychological indicators supported prediction of recovery (of geriatric patients by clinicians) [30].

Table 3 shows additional information on the selected studies.

Discussion

This review presents an overview and categorisation of relevant triage factors. It shows that triage decisions are based on symptoms and measurements of frailty, functional decline, geriatric syndromes such as cognitive impairment or deconditioning and new or pre-existing care needs. Triage factors relate to rehabilitation needs and influence rehabilitation outcome. A minimal, multidisciplinary set of clinical data regarding the relevant domains, which is assembled as early as possible during hospital stay, can support identification of rehabilitation needs, as well as assessment of rehabilitation eligibility.

Triage support

Referral decision-making is part of clinical routine, but professionals receive little training for this task [53, 54]. To support triage decisions, use of multi-domain tools help to identify rehabilitation needs or predict rehabilitation outcome [36, 41, 42, 55]. These tools inform referral decision-making by adding criteria that are deemed relevant for triage. Although a comprehensive geriatric assessment explores all relevant domains and facilitates a personalised care plan, a set of multi-domain tools assessing ADL function, frailty status, comorbidity and cognition may also give sufficient information regarding rehabilitation eligibility [46, 56–58].

A potentially promising and evidence-based approach to support decision-making is to use structured patient data for automated triage support [59, 60]. These alternative tools and methods would be less extensive than performing a comprehensive geriatric assessment and they are applicable in settings where geriatric medical care is not available. Interpretation of clinical data concerning referral decision-making, however, requires geriatric rehabilitation expertise. Evaluation of the patients’ situation and the dialogue with patients and their family on preferred treatment remains essential despite availability of triage support.

Geriatric syndromes and rehabilitation eligibility

Frailty, cognitive decline, new ADL dependencies and deconditioning are geriatric syndromes that can indicate rehabilitation needs in older internal medical patients [10, 61–63]. Especially when symptoms of depression or delirium coexist, these syndromes give rise to rehabilitation needs. On the other hand, these clinical characteristics and their associated care needs represent factors that may influence the rehabilitation prognosis unfavourably [35, 39, 43]. Both frailty and cognitive impairment are related to negative health outcomes and diminished responsiveness to therapy [64–66]. Since geriatric rehabilitation wards strive to make specific care adjustments for these patients, mild or moderate cognitive decline need not be a criterion to exclude patients for rehabilitation oriented care [27]. Establishing the potential of the individual to profit from rehabilitation is a complex clinical judgement that calls for geriatric assessment and careful multidisciplinary observation of frail or cognitively impaired patients [62, 67]. When individual patient characteristics such as mood, coping style, motivation and family support are taken into account, rehabilitation programs that address these personal resources can support patients despite frailty [68–70]. Programs with a lower intensity of treatment and longer duration, including outpatient treatment represent promising options for frail patients, despite the relation between severity of frailty and low functional gain [3, 62]. The assessment of rehabilitation eligibility, in the presence of geriatric syndromes, thus calls for a multifaceted evaluation of triage factors, preferably a comprehensive geriatric assessment.

Strengths

Our review had several strengths. Firstly, the methodology of exploring literature without appraisal of the evidence allowed us to present a comprehensive overview of triage factors. Secondly, we focused on complex triage decisions: those concerning patients with internal medical diagnoses. In this domain, compared with orthopaedic or neurological rehabilitation, evidence is scarce.

Our data synthesis led to a distinction between patient characteristics that indicate rehabilitation needs and those associated with outcome of rehabilitation. This distinction may be helpful in decision-making and in developing a core-set.

Limitations

We described only triage factors concerning patients with internal medical diagnoses and these may be less applicable to patients with other diagnoses. Triage factors for the latter may have been missed. The assembling of triage factors for internal medical patients, however, provides the field with a starting point to reach consensus on a triage core-set. Essential diagnosis-specific triage elements of other patient groups can be added later. Furthermore, we refrained from reviewing the abstracts concerning professional triage training, organisation of triage processes and health economic factors regarding triage. A thorough exploration of these ‘non-clinical’ triage aspects calls for a comprehensive literature search in other sources.
### Table 3. Characteristics of selected studies

| Author and year | Subject and hypothesis | Population and setting | Exclusion | Triage factors |
|-----------------|------------------------|------------------------|-----------|---------------|
| Bowles [25] 2009. | Expert knowledge of important factors in post-acute care (PAC) referral, identification of characteristics hospitalised patients needing PAC | ≥65 years | Not cognitively intact | Living without or with intermittent help, multimorbidity, depressive symptoms, balance, less than excellent self-rated health |
| Cullum [35] 2008. | Relationship between depressive symptoms and hospital outcomes | ≥65 years | Severe dysphasia, severe deafness, moderately impaired cognitive function. | Depressive symptoms. |
| D’Souza [40] 2020 | Association between patient factors and patients’ discharge destination from acute medical wards. | ≥75 years | Palliative care patients or transferred from other units | Premorbid physical function, current functional status, mobility, toilet transfer. |
| Hartley, Adamson [38] 2017 | Association between Clinical Frailty Scale and functional trajectories. | ≥75 years | Patients outside hospital region. | Functional decline, frailty. |
| Hartley Alexander [43] 2017 | Compare functional trajectories of patients with and without cognitive impairment | ≥75 years | Patients outside hospital region. | Cognitive impairment, frailty. |
| Jackson [39] 2016. | Predictive validity for discharge location of the Clock in the Box at admission. | ≥55 years | Detoxification or palliative admission, cognitive or sensory impairment, delirium | Cognitive screening. |
| Koch [36] 2019 | Predict post-acute care needs early after admission by combining a self-care index with PAC-Discharge score | ≥16 years | Patients transferred from other hospital, from NH, terminally ill patients. | Self-care abilities, amount of nursing care, active medical diagnoses at admission, living with help at home, disabilities, age. |
| Koné [26] 2018 | Factors associated with transfer to transitional care or to geriatric rehabilitation | ≥18 years | Sex, length of hospital stay. | |
| Leung [27] 2016 | Characteristics and outcomes of elderly patients admitted to a slow stream, low-intensity and long-duration inpatient rehabilitation program | ≥60 years | Medically unstable, palliative, undergoing chemotherapy or dialysis, wandering behaviour. | Functional decline |
| Liu [41] 2016. | Association of the Hospital admission risk profile (HARP) score with discharge to SNF or Acute Rehab Unit. | ≥70 years | Age, cognitive status, instrumental ADL. | |
| Luthy [37] 2007. | Biomedical and psychosocial characteristics associated with PAC utilisation. | ≥18 years | Other diagnoses than congestive heart failure, community acquired pneumonia, malaise or fall. | Psychosocial complexity, comorbidity, medical diagnoses. |

(Continued)
| Author and year | Subject and hypothesis                                                                 | Population and setting                                                                 | Exclusion                                                                                     | Triage factors                                                                                     |
|----------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Lyons [44]     | Mobility trajectories and the associated patient characteristics (frailty and cognitive impairment) | Department of Medicine for the Elderly, first admittances Tertiary hospital            | Inability to consent or to speak, terminal situation.                                         | CGA, Multimorbidity, medication, pressure ulcer risk, nutrition, ADL and instrumental ADL, cognitive status, living situation. |
| Meyer [42]     | Predictive value of the Multidimensional Prognostic Index concerning nursing needs and discharge allocation. | Renal, rheumatoid, diabetic or internal medical patients with comorbidity Tertiary hospital | Major cognitive impairment, delirium.                                                     | CGA, Multimorbidity, medication, pressure ulcer risk, nutrition, ADL and instrumental ADL, cognitive status, living situation. |
| Abrahamsen Haugland, Nilsen [32] | Better post-acute care decision-making. Potential predictors for not returning to own home after rehabilitation. | Intermediate Care Unit with short-term rehabilitation                                   | NH decides if suitable for Intermediate Care.                                               | CGA.                                                                                           |
| Abrahamsen Haugland, Ranhoff [29] | Predictive value of admission diagnoses, degree of functional loss; simple versus comprehensive assessment. | Intermediate Care Unit with short-term rehabilitation                                   | NH decides if suitable for Intermediate Care.                                               | CGA.                                                                                           |
| Arjunan [52]   | Compare predictive value of Frailty Index and gait speed concerning geriatric rehabilitation outcome. | Inpatient rehabilitation ward Tertiary hospital                                         | Amputees                                                                                 | Gait, frailty.                                                                                 |
| Boyd [33]      | Functional outcomes in the year after discharge; identify predictors of failure to recovery to baseline function | Tertiary care hospital, community teaching hospital                                      | Hospital stay of less than two days, admission to Intensive Care Unit.                      | Age, co-morbidity, dementia, nutritional status                                                   |
| Buurman [34]   | Disability trajectories in the year before and after SNF admission, association with adverse outcomes | Community dwelling                                                                    | Disabled in ADL at baseline.                                                              | Decline of basic ADL.                                                                          |
| Gijzel [30]    | Develop dynamical indicators of resilience                                               | Geriatric ward                                                                          | LoHS<3 days, inability to respond, contact isolation.                                      | Resilience, wellbeing.                                                                         |
| Gill [45]      | Factors associated with recovery of prehospital function                                | Tertiary hospital                                                                        | Disabled in ADL at baseline.                                                              | Mobility, nutritional status, cognitive status, Mobility, balance                              |
| Hubbard [49]   | Bedside assessment of balance and mobility. Association of mobility and balance impairments to adverse outcomes. | Community dwelling.                                                                    | Patients without a primary or comorbid deconditioning diagnosis.                          | Medication, vision, mental state, mobility.                                                     |
| Jupp [55]      | Factors linked to discharge to residential placement after rehabilitation. Tool to guide rehabilitation requirements | Two non-acute rehabilitation hospitals                                                  | Deconditioning.                                                                            |                                                                                                                                 |
| Kortebein [28] | Inpatient rehabilitation outcomes of older adults diagnosed with debility: Hypothesis: Functional improvement of patients with a primary diagnosis of debility is lower than in comorbid debility | 70% of rehabilitation facilities USA (IRF's)                                           |                                                                                                                                              |                                                                                                                                 |
| Ling [46]      | Association of premorbid activity limitation stages with post-hospital discharge disposition | Medicare enrollees. All cause hospitalisation                                           | ADL and instrumental ADL.                                                                 |                                                                                                                                 |

(Continued)
| Author and year | Subject and hypothesis | Population and setting | Exclusion | Triage factors |
|-----------------|------------------------|------------------------|-----------|---------------|
| Luk [50] 2011. | Relationship between gender and rehabilitation outcome. Efficiency and efficacy of motor and functional outcomes. *Hypothesis: there are important gender differences in geriatric rehabilitation outcome.* | ≥65 years Two Geriatric Units Geriatric medical care. | Not admitted from acute geriatric unit. | Sex. |
| Peel [31] 2014. | Meaningful improvement in gait speed. Predictive properties gait speed at follow-up. | Six sites of a community-based Transition Care Program (TCP). | | Mobility. |
| Singh [51] 2012 | Comparison of chronological age, gender, co-morbidities and frailty as predictors of adverse outcomes. | Acute geriatric medicine rehabilitation unit Tertiary care teaching hospital | Severe dementia, acute stroke, chronically bedbound. | Age, sex, frailty. |
| Simning [47] 2019 | Patient characteristics associated with patient-reported lack of functional improvement. *Hypothesis: demographic, socioeconomic, health status and rehabilitation characteristics are associated with patient reported outcome of rehabilitation.* | National Health and Aging Trends Study of Medicare beneficiaries receiving rehabilitation services in 2015 and 2016 | | Functional decline. |
| Wakaba-yashi [48] 2014 | Association nutritional status and rehabilitation outcome in older inpatients with hospital-associated deconditioning. *Hypothesis: hospital-associated deconditioning is a result of inactivity and malnutrition.* | ≥65 years Tertiary-care acute general hospital department of rehabilitation medicine | Not diagnosed with hospital-associated deconditioning. | Nutritional status. |

ADL: Activity of Daily Living. IC: Intermediate Care. CGA: Comprehensive Geriatric Assessment. IRF: Inpatient Rehabilitation Facility. LoHS: Length of Hospital Stay. MDCC: Multi-Disciplinary Case Conference. NH: Nursing Home. PAC: Post-Acute Care. NH: Nursing Home. SNF: Skilled Nursing Facility. TCP: Transition Care Program. VA: Veteran’s Affairs.
Finally, we discussed our findings only within the research team and decided to consult other professionals in a later stage as part of a broad consensus procedure.

**Recommendations**

Geriatric rehabilitation triage factors are routinely assembled clinical criteria, though measured with different instruments by different professionals. Use of a core-set triage will advance communication of relevant triage factors in patient handovers. It will also facilitate the reports on course and outcome of geriatric rehabilitation.

Therefore, hospital and geriatric rehabilitation experts should achieve (to reach) consensus on a feasible and well-defined subset of triage factors. This should include at least pre-existing and actual functional and cognitive status, severity of frailty and profile of psycho-social needs.

Both implementation of a triage core-set and feedback between settings on geriatric rehabilitation trajectories will enhance the transparency and the quality of triage decisions.
Conclusions and implications

Triage factors concerning geriatric rehabilitation patients with internal medical diagnoses were measures of frailty, functional status, cognitive impairments and new or pre-existing care needs. They also referred to geriatric syndromes like in-hospital deconditioning and multimorbidity. Triage factors were assembled at various moments during hospital stay. A comprehensive geriatric assessment or a less extensive set of multi-domain tests including functional, cognitive and frailty status informs triage decisions and may contribute to awareness of rehabilitation needs earlier during hospital stay. Future steps should include consensus between hospital professionals and rehabilitation teams on a core-set of triage criteria, in order to support decision-making.

Supplementary Data: Supplementary data mentioned in the text are available to subscribers in Age and Ageing online.

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