Barriers and facilitators to mobility of patients hospitalised on an acute medical ward: a systematic review

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1 **ABSTRACT**

2 **Background**

3 Low patient mobility is common during hospitalisation and associated with adverse outcomes. To

4 change practice, interventions should address barriers and facilitators to mobility. Our aim was to

5 systematically review the literature to provide a synthesised overview of patient-, healthcare

6 professional (HCP)- and environment-/system-related barriers and facilitators to mobility of patients

7 hospitalised on an acute care medical ward.

8 **Methods**

9 We searched Medline, Embase, PsycInfo, Web of Science Core Collection, Cochrane CENTRAL,

10 CINHAHL and Google Scholar (inception to October 18, 2021) to identify studies reporting barriers

11 and/or facilitators to mobility of adults hospitalised on an acute medical ward. We applied a

12 deductive and inductive thematic analysis to classify barriers and facilitators into themes and

13 subthemes relevant for clinical practice.

14 **Results**

15 Among 26 studies (16 qualitative, 7 quantitative, 3 mixed methods), barriers and facilitators were

16 categorised into 10 themes: patient situation, knowledge, beliefs, experiences, intentions, emotions,

17 social influences, role/identity, implementation/organisation, environment/resources. Barriers

18 included patient characteristics (e.g., impaired cognitive/physical status) and symptoms, HCPs

19 prioritising other tasks over mobility, HCPs labelling patients as "too sick", fear of injury, lack of

20 time, lack of clarity about responsibility, patient medical devices, and non-encouraging environment.

21 Facilitators included knowledge of mobility importance, HCP skills, interdisciplinarity,

22 documentation and unit expectations, encouraging staff, goal individualisation, activity program,

23 family/visitor/volunteer support, and availability of equipment.

24 **Conclusion**

25 This synthesised overview of patient-, HCP- and environment-/system-related barriers and

26 facilitators to mobility of adults hospitalised on an acute medical ward can help researchers and

27 clinicians focus on what can realistically be influenced to improve mobility.

28 **Systematic review registration:** PROSPERO, CRD42021285954.

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1. INTRODUCTION

Low mobility of hospitalised patients has been called an epidemic.[1] While 80% of hospitalised patients would be able to ambulate independently, over 80% of hospital stay is spent in bed and only about 3% walking or standing.[1,2] Low mobility during hospitalisation is associated with cascading physical, psychological and societal adverse outcomes.[1-5] In addition, only 30% of patients with functional decline during hospitalisation recover at one year, and 40% die (vs. 18% of those without decline).[6]

Several interventions could increase mobility of medical inpatients under study conditions,[5,7,8] but did not lead to a broad-scale change in practices. To durably and effectively implement changes, interventions should address barriers and facilitators at patient, healthcare professional (HCP), and environment/system levels that can be realistically modified in practice. For example, an intervention requiring additional resources that is unavailable in everyday practice (e.g., additional staff) may not be applicable.

A synthesised overview of the barriers and facilitators to mobility in acute medical wards would be help developing scalable interventions to change practices. Previous authors reviewed barriers and facilitators to mobility, but they either did not provide synthesised results that can be easily used, included qualitative studies only, or did not focus on acute medical wards, where distinct patterns of (im)mobility can be observed compared to wards with specific mobility protocols.[9-11] The aim of this systematic review was thus to identify and provide a synthesised and useful overview of barriers and facilitators to mobility on acute medical wards, offering information for future interventions to improve mobility and reduce the burden of low mobility in this context.

2. METHODS

53   We performed a systematic search to identify publications reporting barriers and/or

54   facilitators to mobility of adults hospitalised on an acute medical ward (registration on

55   PROSPERO: CRD42021285954).

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57   **2.1. Search strategy and inclusion criteria**

58   We searched Medline (Ovid), Embase (OvidSP), PsycInfo, Web of Science Core Collection,

59   Cochrane CENTRAL, CINHAHL (EBSCOhost) and Google Scholar, from inception until October

60   18, 2021 (detailed search strategy in **Supplementary Table S1**). After that date, we set up an alert

61   in Medline (Ovid) to identify new publications. We excluded articles focusing on a specific condition

62   (e.g., after an operation or a stroke) or other settings (e.g., rehabilitation, surgical wards). However,

63   we included articles including surgical wards if medical wards were also covered, to avoid excluding

64   articles discussing barriers and facilitators applying to acute medical wards as well. We excluded

65   editorials, commentaries, conference abstracts, study protocols and articles not in English language.

66   After removal of duplicates of the initial search results, HM and CEA independently reviewed all

67   titles and abstracts. They compared their initial selection and agreed by discussion on which articles

68   to keep for full-text review. The same process was used for full-text review and for articles identified

69   through the alert. Both reviewers searched the references of the retained articles for additional

70   relevant publications, using the same process. Reviews and meta-analyses identified through the

71   initial search strategy were kept for reference screening only.

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73   **2.2. Risk of bias and quality assessment**

74   HM and CEA independently assessed the quality and risk of bias of included articles, using

75   the Mixed Methods Appraisal Tool (MMAT).[12-14] Disagreements were solved by discussion. The

76   MMAT assesses the methodological quality of studies included in a systematic review encompassing

77   both qualitative and quantitative data.

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2.3. Data extraction and analysis

We extracted the following study characteristics: author(s), publication year, setting, design, methods (qualitative, quantitative, mixed methods), and population studied. We used MAXQDA2020 (VERBI Software, 2018, Berlin, Germany) to extract barriers and facilitators identified in the included articles at the levels of patients, HCPs and environment/system. We applied an iterative process for data coding and used both a deductive and inductive thematic analysis to create themes and subthemes. The deductive approach was based on the domains of the Theoretical Domains Framework (TDF),[15] that we adapted using an inductive approach, to obtain themes and subthemes as meaningful, relevant and applicable as possible for clinical practice. We chose not to simply use the domains of the TDF because some items could not have been classified into one of those domains, so it might not have reflected some important themes arising from the articles. Similar factors presented sometimes as barrier (e.g., staff shortage) and other times as facilitator (e.g., having enough staff) were mentioned only once (either as barrier or as facilitator) to avoid repetition and provide a useful synthesised overview. We classified the data into patient-, HCP- or environment-/system-related barriers or facilitators. We purposefully did not categorise the results according to whom mentioned them, but rather to whom they were related to, to provide more actionable results; for example, if a patient would mention that HCPs fear that patients fall, we would classify that as an HCP-related barrier. On the other hand, if a patient would mention a lack of space to ambulate, we would categorise that as an environment-/system-related barrier. Data coding was done by CEA, CM and MM.

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3. RESULTS

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3.1. Study identification

The search strategy retrieved 5,098 unique publications, among which 38 were taken forwards to full-text screening and 25 met inclusion criteria (**Figure 1**). Of those, three reviews were excluded after screening their references. Three additional articles were identified through reference hand-searching and one through the Alerting Service in Medline (Ovid) on November 1, 2021, yielding a total of 26 publications included (**Supplementary Text S1**).[16-41]

3.2. Study characteristics

Study characteristics are detailed in **Table 1**. Three studies used a mixed methods design,[26,38,41] 16 were qualitative,[16,18,20,21,24,25,27,29-31,33,35-37,39,40] and seven quantitative.[17,19,22,23,28,32,34] The population included patients and HCPs in seven studies[16,18,21,30,31,36,41], only patients in eight studies,[17,19,27,29,32,35,39,40] and only HCPs in 11 studies.[20,22-26,28,33,34,37,38] All types of caregivers that may play a role in improving mobility of patients hospitalised on a medical ward were represented (nurses, nursing assistants, nurse practitioners, physicians, physical therapists, occupational therapists, social/home-care workers, managers, family caregivers, volunteers), but nurses were over-represented. Thirteen studies focused on older patients.[17,18,20,22,23,27,29,30,35-37,39,40] Twelve studies were conducted in America (USA,[17,18,22-25,28,29,34,36,39] or Canada),[33] eleven in Europe,[16,21,26,27,30,32,35,37,38,40,41] two in Asia (Singapore)[20,31] and one in Australia.[19] The sample size varied from six[30] to 498[17] patients, and from five[16] to 261[33] HCPs.

3.3. Quality assessment

Details of the quality assessment are presented in **Supplementary Table S2**. All qualitative studies were deemed of good quality. Among the non-randomised studies, one did not account for confounders,[23] and the other one did not provide information on completion of outcome data.[17] We evaluated that the sample of the quantitative descriptive studies might not be fully representative of

128 the target population, because of including only interested participants[22,28,32,34] or only the 24 first

129 participants who accepted the invitation.[19] The three mixed methods studies[26,38,41] did not address

130 divergences and inconsistencies between quantitative and qualitative results.

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132 **3.4. Thematic analysis**

133   We identified 10 main themes based on the domains of the TDF: 1) patient situation, 2)

134 knowledge, 3) beliefs, 4) experiences, 5) intentions, 6) emotions, 7) social influences, 8) role and

135 identity, 9) implementation and organisation, and 10) environment and resources. Each theme was

136 subdivided in two to five subthemes. The results of the thematic analysis are described in the next

137 paragraphs. **Table 2, Table 3** and **Table 4** respectively summarise patient-, HCP- and environment-

138 /system-related barriers and facilitators, while **Supplementary Table S3** provides a merged

139 overview of those.

140

141 **3.4.1. Patient situation**

142   Some patient characteristics (e.g., impaired cognitive or physical status) and symptoms (e.g.,

143 fatigue, pain, dyspnea, dizziness) and acute illness or confusion, were mentioned as barriers to

144 mobility. Some cultural aspects, such as patients and HCPs speaking a different language, were also

145 mentioned as barriers to mobility.

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147 **3.4.2. Knowledge**

148   Facilitators classified in this theme included patient and HCP knowledge and information

149 about the importance of mobility to avoid adverse consequences; patient knowledge of how to handle

150 their medical devices (e.g., bladder catheter) and of who to ask for help; patient information on

151 whether, when and where they are allowed to ambulate; nurse skills; nurse understanding the

152 meaning of a mobility order; and HCP skills on how to counsel patients regarding mobility.

3.4.3. Beliefs

Patients' and HCPs' mindset and expectations could act as a barrier or facilitator. On the one hand, persistent bedrest culture was mentioned as an important barrier for both patients and HCPs; the former not expecting to be physically active because of their older age and wanting HCPs to provide services because they paid for it; the latter preferring to avoid patient falls and favouring other ways to prevent complications of immobility, On the other hand, considering mobility as a priority and means for recovery was facilitating mobility. Patient labelling by HCPs could act as a barrier ("patient from nursing home/too sick to be mobilised") or facilitator ("active/community-living patient").

3.4.4. Experiences

Patient past experience of adverse effects of bedrest and current or past experience of positive effects of moving were facilitating mobility. On the opposite, having undergone a fall acted as a barrier to mobility by fear of recurrence.

3.4.5. Intentions

Having clear goals within or outside of the hospital, such as concrete activities to accomplish or the need to return to independence to avoid institutionalisation, were outlined as facilitators for the patients, increasing self-determination and motivation, while the lack of motivation or the lack of cooperation were impeding mobility. Agreeing on individualised goals between HCPs and patients was also important. Nurse behaviour could act as barrier (e.g., assisting patients to save time) or facilitator (e.g., not waiting to get a mobility order or questioning a bedrest order). Prioritisation of other works, such as providing medication, was an additional barrier.

3.4.6. Emotions

Emotions acted most frequently as barriers. Fear of injury was a core topic for both patients and HCPs, especially the fear of fall. On the other hand, patient and HCP fear of complications of immobility was encouraging mobility. Patients had also practical concerns that prevented ambulation, such as not being able to get back to their room or to call for help, and not wanting to bother the staff perceived as busy. Patient shame of appearing sick or of showing themselves in hospital gown and experiencing the hospital environment as boring prevented mobility. However, feeling bored to stay in bed could facilitate mobility. Some HCPs mentioned feeling sorry for sick patients and thus doing everything for them in a well-meaning attitude, preventing their independence and mobility.

3.4.7. Social influences

Competition between patients (e.g., group therapy) and HCP encouragement, explanations, incentives and persistence, were facilitators. HCPs valued the presence and coaching by more experienced HCPs, mostly physical therapists. Multidisciplinarity was mentioned as a core topic to improve patient mobility and avoid providing opposite messages from different HCPs. Patients were influenced by the rushing attitude of HCPs showing lack of time to help them in their mobility efforts. The support from family, visitors and volunteers was appreciated by both patients and HCPs.

3.4.8. Role and identity

Lack of clarity about who is responsible for patient mobility was mentioned as a barrier. Some HCPs estimated mobility was not the role of acute settings, or that patients were self-responsible ("HCPs are not cops"). Attributing mobility responsibility to other HCPs (e.g., only to nurses) or feeling responsible to mobilise patients only after getting a medical order, were also delaying mobility.

3.4.9. Implementation – organisation

This theme included mostly HCP- and environment-/system-related aspects. Organisational aspects, such as planning between staff members (e.g., assigning the same patients to the same HCPs each day) or an activity program for patients, were mentioned as facilitators. On the other hand, patients waiting for medical visit or an examination, as well as medical exams being postponed, were seen as organisational barriers. Good communication, documentation, including a monitoring system, clear unit expectations and goals regarding HCP attitude towards mobility, as well as making performance visible, conducting rounds or audits, and undergoing consequences for not mobilising, were described as potential facilitators. Administrative issues, such as patient needing permission for a walk or lack of mobility aids without order, were impeding ambulation. Physical therapy orders were most frequently seen as facilitators, but judged not efficient when ordered systematically, including for independent patients in the context of limited staff availability.

3.4.10. Environment and resources

HCP lack of time was outlined as a barrier to mobility by HCPs and patients. Family, visitors and volunteers could partly compensate for it, but patients mentioned also lacking time when having visits. The setup of the room (e.g., enough space) and of the hospital environment (e.g., dedicated rooms, marked ambulation routes), and appropriate equipment and materials (e.g., visual reminders, videos, mobility aids), could facilitate mobility. However, the hospital environment was described with danger zones (i.e., where patients cannot call for help) and lacking resting spots. Medical devices were usually seen as barriers to mobility, but poles could also support the patients as a tool to lean against.

4. DISCUSSION

In this systematic review including 26 studies, we summarised the barriers and facilitators to mobility of medical inpatients. The categorisation into 10 themes subdivided in two to five subthemes and according to whether the barriers and facilitators were related to the patients, the HCPs or the environment/system, provides a synthesised and useful overview for clinical practice and future research. This review can help clinicians and researchers in the development of interventions targeting realistically modifiable factors, so that changes can be durably and effectively implemented in clinical practice.

Interestingly, most identified barriers and facilitators are potentially modifiable. Even past experiences could be influenced by education. For example, explaining to patients having experienced a fall in the past that lying in bed can actually ultimately increase their risk of falling again,[42] might help them to overcome the fear of moving and falling. While a few factors cannot be changed (e.g., patient age), their effect on patients and HCPs might still be actionable, e.g., by educating them on the fact that it is not normal to stop moving at an older age. Quantifying barriers and facilitators, which was beyond the scope of our review, could also help to identify key targets for future interventions. However, interventions should target factors that are not only frequent and potentially modifiable, but also realistically and durably modifiable. For example, developing interventions requiring additional staff is of limited use, since this resource is unlikely to be available on the long term in clinical practice. But this lack of staff could be partly addressed by involving relatives, visitors and volunteers for tasks not requiring professional expertise (e.g., going for a walk with patients who might otherwise not leave the room by fear of the being able to find the way back or call for help). Volunteers could even be trained to provide more specific mobility support. Although the contribution of volunteers still has to be demonstrated, it seems safe and acceptable to healthcare professionals and patients.[43-45]

Another important finding of this review is the role of environmental and organisational barriers and facilitators that is likely underestimated, as attested by previous studies that barely

253   addressed them.[5,7,8] However, several of those barriers, such as ensuring the availability of seats and

254   informing the patients when they have to be in room, or agreeing on calling them when their presence

255   is required on the unit, could easily be addressed. Ensuring that mobility is officially part of the

256   workflow of all HCPs seems also easy to implement, and could help overcome prioritisation barriers,

257   i.e., the belief that other tasks are more important or that mobility is not part of their tasks, while

258   mobility is a core piece of treatment, particularly in older adults for which maintaining functional

259   status is central to preserve quality of life.

260   Emotions and social influences were also highlighted by patients and HCPs. It is important

261   to explore and account for the emotions of each counterpart, and provide appropriate explanations

262   when needed (e.g., regarding safety concerns). Debriefing each other feelings after an injury might

263   help encouraging future mobilising efforts instead of blocking patients and HCPs fearing additional

264   injuries or complaints. HCPs should also become aware of how their behavior might prevent (e.g.,

265   rushing attitude) or encourage (e.g., patience, perseverance) the patients in their mobility actions.

266   A step forwards, which was beyond the scope of our review, could be to quantify barriers

267   and facilitators to mobility, to suggest key targets for future interventions. However, it is also

268   important to keep in mind which barriers and facilitators can be modified in real-life practice. For

269   example, an intervention requiring higher staff resources (a key barrier to mobility) would not be

270   helpful in real-world setting where human and financial resources are limited.

271

272   **4.1. Limitations and strengths**

273   This review has several strengths. First, we used a systematic review methodology. Second,

274   we searched multiple databases, including large highly inclusive databases (e.g., Embase) and

275   smaller more focused databases (e.g., PsycInfo), increasing both sensitivity and specificity of the

276   search. Third, we excluded studies assessing mobility in specific contexts with special protocols

277   (e.g., after a stroke or an orthopedic operation), providing information more applicable to the general

medical hospitalised population. Finally, the deductive and inductive thematic analysis allowed drawing a classification of barriers and facilitators that is meaningful for application in clinical practice.

We must acknowledge some limitations. First, we did not exclude studies conducted in both medical and surgical wards, which may have reduced the specificity of our conclusions. However, those studies did not discuss specific conditions (e.g., stroke) or protocols, so that we think their results can be applied to the general medical population. Second, we did not quantify the barriers and facilitators, but this has been done previously.[9]

4.2. Clinical implications and conclusion

This systematic review provides a practical and meaningful overview of patient-, HCP- and environment-/system-related barriers and facilitators to mobility of adults hospitalised on an acute medical ward. This offers a support for the development of future interventions aiming to durably and effectively implement changes in practices regarding mobility of patients hospitalised on an acute medical ward. While most factors are theoretically modifiable, to effectively change practices, it is important that future studies focus on aspects that can realistically be changed in a context of potentially limited resources, and to avoid developing and testing interventions that we know cannot be durably implemented in clinical practice (e.g., requiring additional unavailable resources).

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405

Table 1. Study characteristics

First author, year	Setting	Population	Patients	HCPs	Quali-tative	Quanti-tative	Design & methods
Andreasen, 2018[16]	Medical ward, university hospital (DK)	7 patients & 5 nurses	Yes	Yes	Yes	No	Focus groups, interviews. Process evaluation of an intervention. Medical ward.
Brown, 2004[17]	University hospital (USA)	498 patients (70+)	Yes	No	No	Yes	Prospective cohort study. Assessment of bedrest orders in relation to mobility. Medical wards.
Brown, 2007[18]	Medical wards, university hospital (USA)	10 patients (75+), 10 nurses, 9 residents	Yes	Yes	Yes	No	Qualitative semi-structured interviews. Medical wards.
Cattanach, 2014[19]	Medical wards, teaching hospital (Australia)	24 patients (18+)	Yes	No	No	Yes	Quantitative survey. Medical wards.
Chan, 2019[20]	Acute hospital (Singapore)	30 nurses caring for older adults	No	Yes	Yes	No	Semi-structured focus groups until data saturation. Wards not specified.
De Klein, 2021[21]	Medical wards, University hospital (NL)	8 patients (18+) & 9 HCPs (PTs, nurses, physicians)	Yes	Yes	Yes	No	Semi-structured interviews. Medical wards.
Dermody, 2017[22]	Medical wards, community hospital (USA)	85 nurses caring for older adults	No	Yes	No	Yes	Questionnaire: Overall Provider Barriers Scale (see Hoyer 2015). Medical and surgical wards..
Dermody, 2018[23]	Medical wards, community hospital (USA)	61 nurses caring for 77 older adults	No	Yes	No	Yes	Cross-sectional descriptive correlational design. Predictor = Overall Provider Barriers Scale (see Hoyer, 2015). Medical wards.
Doherty-King, 2011[24]	Medical & surgical wards of 2 teaching hospitals (USA)	25 nurses	No	Yes	Yes	No	Interviews. Wards not specified.
Doherty-King, 2013[25]	Medical & surgical wards of 2 teaching hospitals (USA)	25 nurses	No	Yes	Yes	No	Interviews. Medical and surgical wards.
Geelen, 2021[26]	Medical wards, university hospital (NL)	Survey: 15 physicians, 106 nurses, 4 NAs, 4 PTs FGs: 30 HCPs (physician with nurses)	No	Yes	Yes	Yes	Sequential procedure with quantitative survey followed by focus groups. Medical and surgical wards..
Holst, 2015[27]	2 medical departments, 1 university hospital (DK)	13 patients (60+)	Yes	No	Yes	No	Semi-structured interviews. Medical wards.
Hoyer, 2015[28]	Medical wards, 1 academic and 1 community-based hospital (USA)	38 OTs & PTs and 82 nurses	No	Yes	No	Yes	Survey development and validation (Overall Provider Barriers Scale). Comparison of responses by nurses and therapists. Medical wards.
King, 2021[29]	Community setting after hospitalisation in previous year (USA)	11 adults (65+)	Yes	No	Yes	No	Focus groups. Wards not specified.

Lim, 2020[30]	Medical wards for older people, 1 hospital (UK)	6 patients, 6 nurses, 7 therapists, 6 volunteers from the intervention	Yes	Yes	Yes	No	Interviews (only with patients) and focus groups. Process evaluation of an intervention. Medical wards.
Lim, 2020[31]	Medical ward, tertiary public hospital (Singapore)	14 patients (69+), 6 family caregivers, 10 nurses	Yes	Yes	Yes	No	Semi-structured interviews. Medical wards.
Meesters, 2019[32]	Medical and surgical wards, university hospital (NL)	336 patients	Yes	No	No	Yes	Questionnaire. Medical and surgical wards..
Moore, 2014[33]	14 hospitals (Canada)	261 HCPs (nurses, NPs, OTs, PTs, physicians, managers)	No	Yes	Yes	No	Focus groups. Wards not specified.
Nease, 2021[34]	Medical and surgical nonorthopedic wards, 4 community hospitals (USA)	31 physicians/NPs, 113 nurses, 42 OT/PTs, 33 NAs	No	Yes	No	Yes	Questionnaire: modified Overall Provider Barriers Scale (see Hoyer 2015). Medical and surgical wards.
O'Hare, 2017[35]	Medical wards, acute teaching hospital (IE)	13 older frail patients	Yes	No	Yes	No	Interviews. Participants of the Augmented Prescribed Exercise Programme (APEP). Wards not specified.
Pavon, 2021[36]	Medical wards, 2 academic hospitals (USA)	19 older patients and 48 HCPs (physicians, nurses, PTs, OTs)	Yes	Yes	Yes	No	Interviews and focus groups. Medical wards.
Rasmussen, 2020[37]	1 university hospital & 1 municipality (DK)	2 nurses, 2 PTs, 2 OTs, 5 social/home-care workers caring for frail older adults	No	Yes	Yes	No	Focus groups. Wards not specified.
Scheerman, 2020[38]	Medical and surgical wards, 1 academic teaching hospital (NL)	108 nurses caring for older patients	No	Yes	Yes	Yes	Questionnaire and interviews. Medical and surgical wards.
So, 2012[39]	Medical and surgical wards, 1 teaching hospital (USA)	28 patients (65+)	Yes	No	Yes	No	Interviews. Medical wards.
Stefansdottir, 2021[40]	Medical wards, 2 hospitals (DK)	20 patients (65+)	Yes	No	Yes	No	Interviews. Process evaluation of an intervention. Medical wards.
Zisberg, 2018[41]	Medical wards, 1 academic hospital (IL)	189 patients, 11 HCPs (nurses, physicians, PTs)	Yes	Yes	Yes	Yes	Questionnaire, interviews, focus groups. Medical wards.

408 **Abbreviations:** HCP, healthcare provider; NA, nursing assistant; NP, nurse practitioner; OP, occupational therapist; PT, physical therapist.

Table 2. Thematic analysis of patient-related barriers and facilitators to mobility.

PATIENT SITUATION	
Characteristics	**High age, large size, high weight** **Impaired cognitive / physical status, fall risk, needing assistance** **Dependent / inactive before hospitalisation**
Culture - behavior	**Background / culture / language**
Symptoms – signs – illness	**Weakness, fatigue, stiffness, pain, dyspnea, dizziness, gastrointestinal problems - Acute illness/confusion/dementia/delirium**
KNOWLEDGE	
Importance	*Knowing / being informed about the importance & outcomes of immobility*
Skills – how to	*Knowing how to handle devices* *Knowing if, when, where to move & who to ask for help*
BELIEFS	
Mindset - expectations	**Bedrest culture - not expecting to move in hospital / at older age** **"Sick role" behavior** **HCPs should do everything (patients pay for service)** *Mobility as a means for recovery*
Labelling	**Labelling family as not trained to ensure safety regarding mobility**
EXPERIENCES	
Past experiences	**Experienced falls** / *Adverse consequences of bedrest*
Effects of mobility	*Positive effects of mobility – higher self-confidence* *Improvement during mobility tests*
INTENTIONS	
Initiative	**Not motivated, not cooperating, not wanting to move** *Taking initiative – self-determination – motivation*
Goals	*Needing to care for self, return to independence* *Concrete activities / goals within or outside the hospital* *Being discharged / return home / avoid nursing home*
EMOTIONS	
Anxiety – fears	**Worries about situation/illness, fearing injury, falling, heart attack, not being able to get back/call for help, getting lost, dislodging devices** **Relatives' concerns about safety** *Fearing complications of bedrest/immobility*
Empathy	**Not wanting to bother staff / empathy for staff**
Other negative feelings	**Fatalism/Self-pity; lonely, sad;** *bored to stay in bed* **Shame: not wanting to be perceived as sick / draw attention with hospital gown/catheters** **Boring hospital environment**
SOCIAL INFLUENCES	
HCPs	*Relationship with HCP on a personal level*
Patients/other	*Family / visitor / volunteer support*
ROLE - IDENTITY	
Responsibility	*Feeling responsible for own mobility*
IMPLEMENTATION - ORGANISATION	
Organisation	**Lack of sleep**
ENVIRONMENT - RESOURCES	
Time – Staffing	**Visitors not letting time to patients to move** **Missing personal mobility aids from home**

Support	*Assistance from family, visitor, volunteer*
Hospital environment	**Boring hospital environment**

411 **Legend:** Barriers are in bold, facilitators in italics. Themes are in grey fields, subthemes in
412 column 1. **Abbreviations**: HCP, healthcare professional; IV, intravenous; PT, physical therapist.
413

414   **Table 3.** Thematic analysis of healthcare professional-related barriers and facilitators to mobility.

PATIENT SITUATION	
Characteristics	*Knowing patient's mobility status*
Culture - behavior	**Language barrier**
KNOWLEDGE	
Importance	*Knowing the importance & outcomes of immobility* *Knowing the indications to mobilise*
Skills – how to	*Skills to mobilise and advice patients - high grade / training*
Definitions	*Knowing the definition of mobility & the meaning of a mobility order*
BELIEFS	
Mindset - expectations	**Bedrest culture - Fall prevention more important** **Other ways to prevent complications** *Promotion of mobility considered a priority*
Labelling	Patient labelling: **nursing home / too sick;** *community-living / active*
INTENTIONS	
Initiative	*Not waiting for PT / mobility order Questioning mobility order*
Goals	*Agreeing on defined goals with patients - Goal individualisation* *Monitor progress / prevent complications*
Prioritisation	**Other tasks more important than mobility**
Workload	**Bedrest/assisting = less work/saving time**
EMOTIONS	
Anxiety – fears	**Fearing injury (of patients / HCPs), complaints** *Fearing complications of immobility* *HCP feeling confident & strong*
Empathy	**Feeling sorry for patients => well-meaning, doing everything for them**
SOCIAL INFLUENCES	
HCPs	**Active discouragement to move - Rushing (showing lack of time)** **Opposite messages from different HCPs** *Interprofessionalism – multidisciplinarity* *PT present, coaching/teaching* *Behavior towards patients: encouraging, patient, persevering,* *authoritative, explaining* *Incentives for patients*
Patients/other	*Asking family / volunteers for help*
ROLE - IDENTITY	
Responsibility	**Attributing mobility responsibility to other HCPs – staff/patient role** **unclear; not role to force patients (they are self-responsible)** **Mobility not role of acute setting** **Responsible to mobilise only if ordered**
IMPLEMENTATION - ORGANISATION	
Organisation	**Lack of standardised approach** *Assigning same patients to same staff - Planning between staff members*
Communication – collaboration	*Communication – documentation* *Easy access to question / specialists*
Orders	**Bedrest orders – Unclear mobility order** **Systematic PT orders for independent patients (not efficient)** *PT order*
Expectations – surveillance	*Unit expectations / goal formulation* *Unit performance visible*

ENVIRONMENT - RESOURCES	
Time – Staffing	**Lack of time** **More than one person needed to mobilise**
Support	*Providing information and assistance* *Assistance from other HCPs (with more expertise)*
Room	**Using motion sensor alarm / bed barriers** **Clutter in patients' rooms**
Hospital	**Clutter in hallways**
Medical devices	*Reducing the number of medical devices* *Orders to cap IV line / remove catheters*

415 **Legend:** Barriers are in bold, facilitators in italics. Themes are in grey fields, subthemes in
416 column 1.
417 **Abbreviations**: HCP, healthcare professional; IV, intravenous; PT, physical therapist.
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420 **Table 4.** Thematic analysis of environment/resources-related barriers and facilitators to mobility.

SOCIAL INFLUENCES	
Patients/other	*Competition between patients / group therapy*
IMPLEMENTATION - ORGANISATION	
Organisation	**Patients distributed through hospital - Medical exam postponed** **Patient having to be in room for visit / drink for exam** *Meaningful activities – activity program*
Orders	**Permission needed to go for a walk** **Mobility aid available only when ordered**
Expectations – surveillance	**Mobilisation not part of HCP workflow** *Documentation / monitoring system* *Unit manager - chart audit – unit rounds* *Consequences for not mobilising*
ENVIRONMENT - RESOURCES	
Time – Staffing	**Staff shortage - No PTs on weekends** *Mobility volunteers when staff lacking time*
Support	**No monitoring system (for mobility/aids)** *Equipment, material (e.g., job aids, visual reminders, videos, flyers)*
Room	**No / inappropriate / uncomfortable chair** **Danger zones (where unable to get help)** *Room attractive, comfortable, big enough*
Hospital	**Unfamiliar environment** **Danger zones / Lack of seats / resting spots** *Bike on the ward: move remaining around* *Rooms for physical activity - shared rooms* *Marked ambulation routes*
Medical devices	*IV poles with handles / to lean against*

421 **Legend:** Barriers are in bold, facilitators in italics. Themes are in grey fields, subthemes in
422 column 1.
423 **Abbreviations**: HCP, healthcare professional; IV, intravenous; PT, physical therapist.
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Figure 1. Flow-chart.