

A decorative graphic consisting of several overlapping, curved, trapezoidal segments in orange, blue, and green, arranged in a circular pattern around the central text.

**REHABILITATION**  
in health systems



# REHABILITATION in health systems

Rehabilitation in health systems

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# Executive summary

Global trends in health and ageing require a major scaling up of rehabilitation services in countries around the world and in low- and middle-income countries in particular (1–4). Strengthening service delivery and ensuring it is adequately financed is fundamental to ensuring that rehabilitation is available and affordable for those who need it. This document provides evidence-based, expert-informed recommendations and good practice statements to support health systems and stakeholders in strengthening and extending high-quality rehabilitation services so that they can better respond to the needs of populations.

The recommendations are intended for government leaders and health policy-makers and are also relevant for sectors such as workforce and training. The recommendations and good practice statements may also be useful for people involved in rehabilitation research, service delivery, financing and assistive products, including professional organizations, academic institutions, civil society and nongovernmental and international organizations.

The recommendations were made in accordance with the standards and procedures outlined in the *WHO handbook for guideline development* (5) and were thus framed in a process consisting of systematic formulation of research questions, evidence retrieval and appraisal, according to “grading of recommendations, assessment, development and evaluation” (GRADE). The document underwent extensive peer review. The process involved commissioned research groups, the WHO Secretariat, a Guidelines Development Group and an external review group, with final clearance and endorsement by the WHO Guidelines Review Committee.

## Recommendations on rehabilitation in health systems



### Rehabilitation services should be integrated in health systems

**Strength:** *Conditional*

**Quality of evidence:** *Very low*

While rehabilitation for a health condition is usually provided in conjunction with other health services, it is currently not effectively integrated into health systems in many parts of the world. This has been attributed partly to how and by whom rehabilitation is governed (6,7). Clear designation of responsibility for rehabilitation is necessary for its effective integration into health systems. In most situations, the ministry of health will be the most appropriate agency for governing rehabilitation, with strong links to other relevant sectors, such as social welfare, education and labour.



### Rehabilitation services should be integrated into and between primary, secondary and tertiary levels of health systems

**Strength:** *Strong*

**Quality of evidence:** *Very low*

The underdevelopment of rehabilitation in many countries and pervasive misconceptions of rehabilitation as a luxury adjunct to essential care or only for people with significant disability have often resulted in services only at selected levels of health systems. Rehabilitation is, however, required at all levels, for identification of needs and for an effective continuum of care throughout a person's recovery. Standardized referral pathways and other coordination mechanisms between levels help to ensure good transition of care for optimal outcomes.



### **A multi-disciplinary rehabilitation workforce should be available**

*Strength: Strong*

*Quality of evidence: High*

A multi-disciplinary workforce in a health system ensures that the range of rehabilitation needs for different domains of functioning can be met. While multi-disciplinary rehabilitation is not always necessary, it has been shown to be effective in the management of many conditions, especially those that are chronic, complex or severe (8–10). As different rehabilitation disciplines require specific skills, a multi-disciplinary workforce can significantly improve the quality of care.



### **Both community and hospital rehabilitation services should be available**

*Strength: Strong*

*Quality of evidence: Moderate*

Rehabilitation in both hospital and community settings is necessary to ensure timely intervention and access to services. Rehabilitation in hospital settings enables early intervention, which can speed recovery, optimize outcomes and facilitate smooth, timely discharge (6,11). Many people require rehabilitation well beyond discharge from hospital, while other users may require services solely in the community. People with developmental, sensory or cognitive impairment, for example, may benefit from long-term interventions that are often best delivered at home, school or in the workplace (12).



### **Hospitals should include specialized rehabilitation units for inpatients with complex needs**

*Strength: Strong*

*Quality of evidence: Very high*

Specialized rehabilitation wards provide intensive, highly specialized interventions for restoring functioning to people with complex rehabilitation needs. In a number of instances, the results are superior to those of rehabilitation provided in general wards, such as in the context of lower-limb amputation (13), spinal cord injury (14) and stroke (10) and in the care of older people (15).



### **Financial resources should be allocated to rehabilitation services to implement and sustain the recommendations on service delivery**

*Strength: Strong*

*Quality of evidence: Very low*

How health systems allocate financial resources significantly affects service delivery, yet many countries do not allocate specific budgets for rehabilitation services (16). Allocation of resources for rehabilitation can increase both the availability and the quality of rehabilitation services and minimize out-of-pocket expenses, which is a significant barrier to service utilization (6).



### **Where health insurance exists or is to become available, it should cover rehabilitation services**

*Strength: Conditional*

*Quality of evidence: Very low*

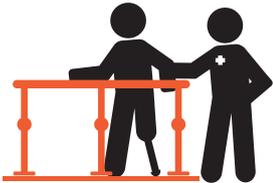
Health insurance is a common mechanism for decreasing financial barriers to health services, yet inclusion of rehabilitation in insurance coverage is variable, and, in many parts of the world, health insurance protects only a minority of the population (17). When health insurance includes rehabilitation, access to and use of rehabilitation services is increased. This mechanism should therefore be part of broader initiatives to improve the affordability of rehabilitation services.

## Good practice statements on assistive products



**Financing and procurement policies should ensure that assistive products are available to everyone who needs them**

**Adequate training should be offered to users to whom assistive products are provided.**



Assistive products play an important role in improving functioning and increasing independence and participation; however, accessing such products can be difficult, particularly in some low- and middle-income countries (18). It is important not only to increase access to and the affordability of assistive products but also to train users in effective, safe use and maintenance of the products over time, when necessary. Rehabilitation professionals can ensure that the assistive products that people receive are suitable for them and their environment and are adapted as the needs of the users evolve.



# 1. Introduction

## 1.1 Rationale

### Growing need to strengthen rehabilitation

Globally, but especially in low- and middle-income countries, rehabilitation in health systems requires strengthening so that high-quality, affordable services are available to all who need them (1,6). Such strengthening will not only ensure respect for human rights but also improve health and provide social and economic benefits. Furthermore, as universal health coverage is firmly identified as the target of Sustainable Development Goal 3 (health), countries are encouraged to ensure equitable access to high-quality, affordable health services, including rehabilitation (19). Progress towards universal health coverage, and universal rehabilitation coverage in particular, varies widely around the world. Historically, rehabilitation has been a low priority for many governments, especially those with limited health investment, which has resulted in underdeveloped, poorly coordinated services (6). For example, while there is a notable scarcity of robust data on the availability of rehabilitation services, several studies conducted in southern Africa indicate a substantial gap between the requirement for rehabilitation and its reception (20–23). It is urgent to support countries in preparing to address the growth in demand for rehabilitation services that is anticipated with ageing populations, the rising prevalence of noncommunicable diseases and the increasing numbers of people living with the consequences of injury (1–4).

Rehabilitation services benefit health and society, for individuals, communities and national economies (6,24–29). Investment in rehabilitation increases human capacity by allowing people with a health condition to achieve and maintain optimal functioning, by improving their health and by increasing their participation in life, such as in education and work, thus increasing their economic productivity (30). For children in particular, rehabilitation optimizes development, with far-reaching implications for participation in education, community activities and in later years, work (31–33). Rehabilitation can also expedite hospital discharge, prevent readmission (34,35) and allow people to remain longer in their homes (15,36,37). While the economic benefits associated with these outcomes are generally recognized only in longer-term analysis, their impact can be profound (27,38–42).

### Aims of rehabilitation

Rehabilitation is a set of interventions designed to optimize functioning and reduce disability in individuals with health conditions in interaction with their environment. Health condition refers to disease (acute or chronic), disorder, injury or trauma. A health condition may also include other circumstances such as pregnancy, ageing, stress, congenital anomaly, or genetic predisposition (6). Rehabilitation thus maximizes people's ability to live, work and learn to their best potential. Evidence also suggests that rehabilitation can reduce the functional difficulties associated with ageing and improve quality of life (2,37,43).

## Reason for recommendations on rehabilitation

These recommendations respond to strong calls in the *World report on disability* for Member States to “develop, implement, and monitor policies, regulatory mechanisms, and standards for rehabilitation services, as well as promoting access to those services” (6, p. 122). The recommendations are also intended to support countries in implementing objective 2 of the *WHO global disability action plan 2014–2021*, “to strengthen and extend rehabilitation, habilitation, assistive technology, assistance and support services, and community-based rehabilitation” (30, p. 3). The United Nations Convention on the Rights of Persons with Disabilities (44) calls on Member States to take appropriate measures to organize, strengthen and extend rehabilitation services and programmes (Article 26). To date, limited information has been available to countries on strengthening rehabilitation in the health system to respond to the growing population demand for services. The aims of these recommendations are to address this information gap and to provide system-level recommendations for improving rehabilitation service delivery.

### 1.2 Objective

The objective of these recommendations is to provide evidence-based, expert-informed recommendations to guide governments and other stakeholders in developing and extending rehabilitation services and delivering them equitably at all levels of health systems and on all service delivery platforms. Their aim is to strengthen the quality of rehabilitation service delivery by advocating a multi-disciplinary workforce and the establishment of sustainable funding mechanisms to support and maintain service delivery and development.

### 1.3 Target audience

These recommendations are intended for government leaders and health policy-makers and are relevant for various sectors, such as those involved in workforce and training. The recommendations and good practice statements may also be useful for the broad range of stakeholders involved in rehabilitation service delivery, financing, research and assistive products, such as professional organizations, academic institutions, civil society and nongovernmental and international organizations.

### 1.4 Scope

The recommendations focus solely on rehabilitation in the context of health systems. They address the elements of service delivery and financing specifically; recommendations on leadership and governance, workforce and information systems will be addressed comprehensively in future WHO publications.

The recommendations are intended to promote equitable access to affordable rehabilitation services. They do not provide guidance on clinical interventions.

## 1.5 Methods

The recommendations were developed according to standard WHO procedures, detailed in the *WHO handbook for guideline development* (5). The process thus comprised formulation of questions, evidence retrieval and assessment to ensure that they were informed by evidence. Decisions on the direction of the recommendations were achieved by consensus; when necessary, the Guidelines Development Group sought guidance from the methodologists and from Guidelines Review Committee. Each recommendation is based on a PICO (population, intervention, comparison and outcome) question. For each question, the population is defined as anybody who requires rehabilitation, and the outcomes of interest include better quality of services, equitable access and affordability, with subsequent outcomes of increased service use, people-centred care and improved health (including rehabilitation) outcomes. Because the population and outcomes are the same for all the PICO questions, only the intervention and the comparison are included in the questions preceding the recommendations below. For comprehensive details of the method for developing the recommendations, see Annex 1.





## 2. Overarching principles

The recommendations for rehabilitation service delivery and financing in this document are based on the following overarching principles of relevance and priority. These principles may be used in policy-making, planning and implementation of the recommendations, according to the national context.

- **Rehabilitation contributes to the provision of comprehensive person-centred care.**  
Rehabilitation is an integral component of health services, which ensures that people can realize their full functional potential in the environments in which they live and work (6,45,46).
- **Rehabilitation services are relevant along the continuum of care.**  
Rehabilitation includes interventions for the prevention of impairment and deterioration in the acute phase of care as well as for optimization and maintenance of functioning in the post-acute and long-term phases of care (47,48).
- **Rehabilitation is part of universal health coverage; efforts should therefore be made to increase the quality, accessibility and affordability of services.**  
Efforts to achieve universal health coverage should include actions and policies to improve the quality, accessibility and affordability of rehabilitation, thus acknowledging its importance as a health service (46–48).
- **Policies and interventions are required to address the scope and intensity of needs for rehabilitation services in various population groups and geographical areas, so that high-quality rehabilitation services are accessible and affordable to everyone who needs them.**  
People experience various barriers to accessing rehabilitation services. Therefore, specific requirements in the population and strategies to address them should be identified so that the health system can ensure equitable availability of services (6,49,50).



## 3. Recommendations and good practice statements

These recommendations describe the foundations for strengthening rehabilitation in health systems. They are based on the rigorous prescribed system of evidence collection, review and assessment described above and in Annex 1, which underpinned the decisions of the researchers and the Guidelines Development Group about the direction, strength and quality of the evidence for each recommendation. The good practice statements did not undergo this process, as the Group had sufficient confidence in their benefits that the process of evidence collection and appraisal would have been unproductive and a poor use of resources. Their confidence stemmed from the underlying value of ensuring equitable service delivery and the availability of assistive products, as expressed in the Sustainable Development Goals, specifically target 3.8, and objective 2 of the *WHO global disability action plan 2014–2021*; and the large body of indirect evidence for the net benefit of the course of action stated (19,30).

Each recommendation, which is based on the best available evidence, was prescribed a strength (how unequivocally it can be suggested that the recommendation be implemented) and assessment of the quality of the evidence. The strength of the recommendation and the assessment of the quality of the evidence are not necessarily correlated.

### 3.1 Strength of recommendations and quality of evidence

The strength of the recommendations and the ratings of the quality of evidence were determined according to processes defined by the WHO Guidelines Review Committee (5). This process is designed to ensure transparent, systematic, evidence-based decision-making; importantly, it allows the strength of a recommendation to be based on factors beyond the quality of the available evidence. It is critical that users of this document not assume that a recommendation based on low- or very low-quality evidence is weaker or less important than those based on moderate- or high-quality evidence. Use of evidence identified in the systematic literature reviews to determine the quality of the evidence for each recommendation is further explained below.

#### 3.1.1 Determining the strength of a recommendation

The strength of a recommendation was decided by the Guideline Development Group after consideration of the balance of benefits versus harm and burden, the degree of variation in the values and preferences of different stakeholders, resource implications and the quality of the evidence. On the basis of these factors, the recommendation were deemed strong or conditional (5, p. 129).

**Strong:** The desirable effects of adherence to the recommendation outweigh the undesirable effects. Thus, in most situations, the recommendation can be adopted as policy.

**Conditional:** There is uncertainty about the factors listed above, OR local adaptation should account for greater variation in values and preferences, OR resource requirements make the intervention suitable for some but not for other locations. Therefore, substantial debate and involvement of stakeholders will be required before this recommendation can be adopted as policy.

### 3.1.2 Assessing the certainty of the evidence

In the WHO guideline development process, the GRADE approach is used to assess the certainty of evidence identified in systematic literature reviews. This approach is based primarily on the level of certainty of the estimated effects of the intervention (5, p. 113). The ratings are:

**High:** The Guideline Development Group is very confident that the true effect lies close to the estimated effect. Further research is unlikely to change the confidence in the estimated effect.

**Moderate:** The Guideline Development Group is moderately confident in the effect estimate. The true effect is likely to be close to the estimate, but there is a possibility that it is substantially different. Further research is likely to have an important impact on the confidence in the estimate of effect and may change the estimate.

**Low:** Confidence in the effect estimate is limited. The true effect may be substantially different from the estimated true effect. Further research is very likely to have an important impact on the confidence in the estimate of effect and is likely to change the estimate.

**Very low:** The Group has very little confidence in the effect estimate. The true effect is likely to be substantially different from the estimated effect. Any estimate of effect is highly uncertain.

Of the various types of study, randomized controlled trials generally provide the most certain estimated effects. This type of study is not, however, suitable for all types of intervention. For example, when assessing a systems-level intervention and comparison, randomization is neither feasible nor meaningful. For these types of intervention, case studies or observational and longitudinal studies more adequately capture what and how environmental factors impact implementation of interventions in different contexts (51).

The decision-making process used by the Guideline Development Group for each recommendation in this guideline is documented in the evidence-to-decision tables in Annex 2. The GRADE tables used to rate the quality of the evidence are available online<sup>1</sup>, while the references for key indirect evidence underlying the recommendations are listed after each evidence-to-decision table.

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<sup>1</sup> [www.who.int/disabilities/rehabilitation\\_guidelines/en/](http://www.who.int/disabilities/rehabilitation_guidelines/en/)

## 3.2 Recommendations and good practice statements

The model of rehabilitation service delivery used in a health system have significant clinical and economic implications; the way in which service delivery is planned, financed and implemented affects who can access services, the quality of the services that can be delivered in different settings and the resources, both human and fiscal, required (52). The essential aim of a model of service delivery should be to ensure that “effective, safe and quality personal and non-personal health interventions... are provided to those in need and where needed (including infrastructure), with minimal waste of resources” (53, p. vi). As service delivery is one of the six elements of a health system, achieving a strong service delivery model is fundamental to strengthening and extending rehabilitation. The following recommendations address some of the key policy strategies that countries should formulate, with careful consideration of their context.

The evidence-to-decision tables on which the recommendations are based are shown in Annex 2.



## A: Should rehabilitation services be integrated into the health system<sup>1</sup> or into the social or welfare system or equivalent?

### Background

While rehabilitation is delivered in the context of a health condition, usually in conjunction with other health services, it is currently not effectively integrated into the health system in many parts of the world. This has been attributed in part to how and by whom rehabilitation is administered (6,7). Responsibility for rehabilitation should be clearly designated for effective integration into the health system. This is becoming more important in view of the anticipated increase in the demand for rehabilitation services (1,2) and the multiplicity of actors involved in providing rehabilitation. Although rehabilitation addresses the needs of people with any health condition or impairment, whether temporary or long-term, it is commonly associated with disability and is often administered in the same ministry (usually a ministry for social welfare). In some countries, rehabilitation governance is shared between the ministries of health and of social welfare (6,7). Determination of whether rehabilitation should be integrated into the health system or into the social welfare system includes issues of rehabilitation governance and the impact on how rehabilitation is integrated into services.

### Summary of research evidence

No published literature directly related to this question was identified. The direction of the recommendation was thus based on the consensus of the Guideline Development Group, which considered:

- the anticipated benefits of integration of rehabilitation into the health system with regard to improved coordination with medical and other health services, improved accountability and quality assurance and sustainability; and
- previous challenges associated with integrating rehabilitation into health services when it is administered by the social welfare system.

While the extent of these effects could not be determined, the overall assessment of benefits and harm led the Group to conclude that rehabilitation should be integrated into health systems.

### A. Rehabilitation services should be integrated into health systems

**Strength of recommendation:** Conditional | **Quality of evidence:** Very low

#### Remarks:

- Clear designation of responsibility for rehabilitation governance is necessary for effective integration of rehabilitation services into health systems. In most situations, the ministry of health will be the most appropriate agency for rehabilitation governance.
- Strong links between the ministry of health and other relevant sectors such as social welfare, education and labour are important to promote efficient person-centred rehabilitation service delivery.
- When a considerable shift in governance is required to integrate rehabilitation into a health system, careful consideration should be given to the capacity of the health system and its ministry to govern, invest in and coordinate services. A phase of transition between ministries may be required.

<sup>1</sup> In the context of this recommendation, integration in the health system involves the management and delivery of rehabilitation in conjunction with other health services so that people receive timely, comprehensive and well-coordinated care, according to their needs and across different levels of the health system. Adapted from *Integrated health Services – what and why?* Technical Brief No. 1. World Health Organization, 2008. [http://www.who.int/healthsystems/service\\_delivery\\_techbrief1.pdf](http://www.who.int/healthsystems/service_delivery_techbrief1.pdf)

## Rationale

In recommending that rehabilitation should be integrated into health systems, the Guidelines Development Group considered the anticipated benefits with regard to improved coordination with medical and other health services, accountability, quality assurance and sustainability. Given previous challenges in integrating rehabilitation into health services when it is administered by a ministry for social welfare or equivalent, the Guidelines Development Group suggested that rehabilitation should be governed by the ministry of health. This suggestion was grounded in the understanding that:

- Rehabilitation is a health strategy, with promotion, prevention, treatment and palliation, and rehabilitation interventions are delivered in the context of health conditions or impairments (49,50).
- Rehabilitation services are usually provided in conjunction with other health services and share common resources (such as financing, technology, infrastructure and human resources).
- Planning and policy-making for rehabilitation should be based on information captured and organized by health information systems.



## B: Should rehabilitation services be integrated into and between primary, secondary and tertiary levels of the health system or only into selected levels?

### Background

In many parts of the world, rehabilitation services are often provided only at selected levels of the health system.<sup>1</sup> The reasons include underdevelopment of the rehabilitation sector and insufficient human resources and investment, which limit distribution of services among levels. Several long-standing misconceptions about rehabilitation have also determined at which level it is available. One pervasive misconception is that rehabilitation services are needed only by people with disabilities.<sup>2</sup> When rehabilitation is considered to consist of interventions for a specific (minority) group of people rather than as an important aspect of health care for all, it may be under-prioritized and under-funded. This is compounded by another common misconception of rehabilitation as a luxury non-essential health service. Furthermore, when the role of rehabilitation in acute and post-acute care is not recognized, its integration into secondary and tertiary levels of the health system can be neglected. This question is a reflection of the situation of rehabilitation provision in many countries, and seeks to bring clarity to the levels of the health system at which rehabilitation should be available.

### Summary of research evidence

Published research directly on the availability of rehabilitation at different levels of the health system was limited. Studies on values and preferences (54–57), acceptability (58) and feasibility (58–60) nevertheless support integration of rehabilitation in and between primary as well as secondary and tertiary levels of the health system.



<sup>1</sup> **Primary services** are usually the first point of contact within a health system and may be provided by general health care workers; they represent a link to more specialized care. Primary services are usually provided locally in a range of settings (typically communities). **Secondary services** include health care provided by medical specialists and other health professionals. They are usually based at the district or regional level and provided in a range of settings (typically hospitals and institutions). **Tertiary services** include specialized consultative health care, usually based at national level and provided in hospitals on an inpatient basis (based on definitions in the health component of the community-based rehabilitation guidelines (18)).

<sup>2</sup> In the Convention on the Rights of Persons with Disabilities (44), people with disabilities are defined as “those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others.”

## B. Rehabilitation services should be integrated into and between primary, secondary and tertiary levels of health system

**Strength of recommendation:** Strong | **Quality of evidence:** Very low

### Remarks:

- Coordination mechanisms, including standardized referral pathways, in and between the different levels of the health system are essential for facilitating a smooth continuum of care for people who require multiple services or prolonged care.
- Integration of rehabilitation into and between different levels of the health systems calls for a capable workforce, and consideration should be given to the capacity of the workforce to function at primary, secondary and tertiary levels, including the number of rehabilitation personnel available, their distribution, skills and competence. Where the capacity of the rehabilitation workforce is limited, task-shifting may be effective for increasing access to rehabilitation care. Such mechanisms should be used with caution, however, with consideration of limitations to specialization or to the extent of interventions if the workforce has not had specific professional training.
- Effective integration of rehabilitation into and among all levels of the health systems is the responsibility not only of dedicated rehabilitation professionals but of all health workers. Promoting understanding among health workers of the principles of rehabilitation and its role in different contexts is imperative for high-quality care, appropriate referral and optimal use of services.
- While the initial investment required to implement rehabilitation in and among the different levels of the health system may be considerable (particularly if existing services are limited), the associated long-term savings can mitigate any strain on the health system in the context of limited revenue for health care.

### Rationale

In light of limited evidence directly addressing the research question, the Guidelines Development Group carefully considered the implications of integration of rehabilitation services across all levels of care and found that there is potential for moderate benefits and trivial risk of harms. Depending on their needs and the interventions available to address them, people will require different types and intensities of rehabilitation at different levels of the health system, as they may move between primary, secondary and tertiary levels during their care. Fragmentation among different levels of the health system is a recurrent issue in many countries, and can compromise health outcomes. The recommendations for rehabilitation in the World report on disability called for better coordination among levels of care and sectors to maximize the efficiency of services and to optimize health outcomes (6). Integration of rehabilitation services at all levels can facilitate the provision of person-centred care, a concept in which health services are organized to respond to the needs of people rather than health conditions (52). For this reason, health systems should ensure the availability of rehabilitation services at each level, with established coordination mechanisms, so that rehabilitation can follow the continuum of care as required.

## C: Should a multi-disciplinary or a single-disciplinary rehabilitation workforce be available?

### Background

Multi-disciplinary rehabilitation (provided by two or more disciplines) is common in many health care settings when a person's needs require a broader scope of specializations than can be met by any one discipline. It is commonly used in chronic, severe or complex injuries or illnesses, such as traumatic injury or stroke. For example, a physiotherapist may deal with musculoskeletal and mobilization concerns while a speech pathologist will assist with language and swallowing, and an occupational therapists will work to restore independence in daily living. In many low- and middle-income settings, however, the rehabilitation workforce comprises a single discipline, often physiotherapy, resulting in wide gaps in rehabilitation services. These are either not addressed or are addressed by other health personnel, who may be inadequately trained or specialized, with ensuing impacts on the quality of care.

### Summary of research evidence

Eight systematic reviews related to the PICO question were retrieved. Several studies that addressed the effectiveness of multi-disciplinary rehabilitation in older populations found that it can improve functional status, including activities of daily living, and reduce admissions to nursing homes and mortality (15, 61). Handoll et al. found a tendency towards better overall results of multi-disciplinary rehabilitation among older people with hip fracture, but the findings were not statistically significant (9). Two systematic reviews were conducted of the effect of multi-disciplinary rehabilitation for adults with back pain and one for adults with neck-and-shoulder pain (8, 62, 63). Kamper et al. found that people who received multi-disciplinary rehabilitation experienced less pain and disability and there was a positive influence on work status (8). Karjalainen et al. found moderate evidence for the effectiveness of multi-disciplinary rehabilitation in helping people return to work faster, take shorter sick leave and have subjective disability (62). In an earlier study, the authors found little scientific evidence for an effect on neck-



and-shoulder pain (63). In a systematic review, Ng et al. found evidence to suggest that multi-disciplinary rehabilitation improved the quality of life and reduced the length of hospitalization; high-intensity multi-disciplinary rehabilitation reduced disability (64). The effectiveness of multi-disciplinary rehabilitation has also been shown in adults with acquired brain injury (65). Four studies were identified in the systematic review of the values, preferences and acceptability of multi-disciplinary rehabilitation. Three found that users value and prefer multi-disciplinary rehabilitation for stroke and mental health (66–68). In a qualitative study, Gage et al. found that multi-disciplinary rehabilitation was well accepted by a sample of people with Parkinson disease (69).

### C. A multi-disciplinary rehabilitation workforce should be available

**Strength of recommendation:** Strong | **Quality of evidence:** High

#### Remarks:

- The demand for multi-disciplinary rehabilitation interventions depends on the health condition being addressed, its severity and other factors such as age and rehabilitation goals. It is important, therefore, that multi-disciplinary rehabilitation be based on a needs assessment.
- Provision of multi-disciplinary rehabilitation depends on the availability of skilled personnel. As described in the *World report on disability*, these professions include occupational therapy, physiotherapy (sometimes referred to as physical therapy), physical and rehabilitation medicine, prosthetics and orthotics, psychology, social work and speech and language therapy (6, pp. 97 and 100).
- Planning the establishment or formation of a multi-disciplinary rehabilitation workforce should include consideration of the scope and specialization of the competence required to address the needs of the population; in certain settings and contexts, including where a professional rehabilitation workforce has not been fully established, trans-disciplinary approaches<sup>1</sup> may be appropriate.
- Implementing rehabilitation as a multi-disciplinary health service in the health system therefore requires:
  - collaboration with the ministry for higher education to ensure that institutions provide qualification of various rehabilitation professionals (6);
  - ensuring that mechanisms for retaining and further developing the rehabilitation workforce are available, such as by supporting professional organizations (6,70);
  - ensuring that the rehabilitation workforce is distributed appropriately, so that multi-disciplinary rehabilitation services are also available in rural and remote communities and to people living in poverty (6); and
  - investing adequate funding into relevant facilities and programmes to support the provision of multi-disciplinary rehabilitation, such as hospitals and community services (6).

#### Rationale

The availability of a multi-disciplinary rehabilitation workforce in a health system helps to ensure that all the rehabilitation needs of the population are met. The needs are diverse, and providing high-quality rehabilitation for a range of health conditions requires the skills of various, multiple rehabilitation disciplines. For example, the skills required to rehabilitate an adult with an orthopaedic condition differ from those required to rehabilitate a child with cerebral palsy. As different rehabilitation professionals have different specialities, a multi-disciplinary rehabilitation workforce can significantly improve the quality of care a country can provide to its population. Furthermore, joint interventions by people in multiple rehabilitation disciplines, all of which may not be necessary, have been shown to be effective in the management of many conditions, including stroke, hip fracture and chronic back pain (8–10). The benefits of multi-disciplinary rehabilitation are demonstrated in health outcomes and in indicators such as reduced hospital admission rates and greater patient satisfaction (6,66,69). An example of the scaling-up of the rehabilitation workforce is given in Box 1.

<sup>1</sup> Trans-disciplinary approaches" refers to the practice of crossing disciplinary boundaries to provide a broader scope of practice. Here, it is advised only in contexts in which there is an insufficient professional rehabilitation workforce to address the needs of the population adequately.

## Box 1

Scaling up the  
rehabilitation  
workforce in  
Guyana to provide  
multi-disciplinary  
rehabilitation

The scarcity of qualified, skilled health workers in Guyana is a major challenge for rehabilitation service delivery. Most rehabilitation professionals have been trained internationally and many do not return, attracted to higher wages in their country of training. As a result, Guyana has only 12 physiotherapists, no occupational or speech and language therapists and 45 rehabilitation assistants to provide services for a population of 800 000 people, the majority of whom live in rural areas.

The Ministry of Public Health, in collaboration with the Guyana Public Hospital Cooperation, is forming a multi-disciplinary workforce by expanding and strengthening training opportunities in the country and establishing a tiered model of a rehabilitation workforce. The University of Guyana offers professional degrees in occupational therapy, speech pathology and physiotherapy, with the support of international lecturers. The number of rehabilitation assistants is being increased through an 18-month course that provides basic training in the main areas of rehabilitation, and a 1-week course that is offered to community workers who will provide basic services and identify people in need of referral to more skilled personnel.

A growing number of graduates in rehabilitation in the coming years will increase the provision of professional multi-disciplinary rehabilitation services. Initially, the services will be available predominantly in the urban capital, Georgetown; however, as the numbers build, professional multi-disciplinary services will become available in rural areas. In the meantime, rehabilitation assistants and community workers help to ensure that people living in rural and remote areas can access basic services and be referred to professional care.



## D: Should rehabilitation services be available in both community and hospital settings or only in community or only in hospital settings?

### Background

Depending on factors such as the development of the rehabilitation sector and understanding and prioritization of the role and application of rehabilitation, these services are available in either the community, hospitals or both. Community rehabilitation services include services provided in a person's house, school or workplace, while hospital rehabilitation constitutes inpatient and outpatient services for people undergoing a surgical or non-surgical intervention for a health condition or impairment. The setting in which rehabilitation is provided has implications not only for access but also factors such as efficiency, cost-effectiveness and patient satisfaction. In addressing this question, the Guideline Development Group analysed studies on the identification and needs of different users, the continuum of care and contextual factors such as geography and infrastructure.

### Summary of research evidence

The evidence suggests that the cost-effectiveness and outcomes of rehabilitation in hospitals or in the community depend on the health condition being addressed and its severity. In the context of stroke, the evidence indicated the effectiveness of inpatient rehabilitation in stroke units with rehabilitation in the community after discharge (71–74). A Cochrane review by Taylor et al. (75) indicated that home-based and centre-based cardiac rehabilitation were equally effective in improving clinical and health-related quality of life. Cardiac rehabilitation in both home and community settings were effective in reducing hospital admissions, increasing quality of life and reducing mortality (76–78). There is evidence to suggest that community rehabilitation for mental health increases health-related quality of life and physical activity, reduces risk factors for homelessness and shifts use from hospitals to primary health care (79). In a systematic review, Burns et al. also found that people with psychotic disorders were more satisfied overall with treatment at home (80). Among older people, rehabilitation provided in hospital with early discharge and multi-disciplinary outreach was associated with a lower risk for delirium, greater patient satisfaction and lower cost (81). Another study found that complex community interventions can help older people live safely and independently (82).

Overall, rehabilitation provided at home is the preferred, more highly valued option for users (83–89). Two studies of cardiac rehabilitation showed that users preferred hospital services, and Court et al. found no difference in patient satisfaction with hospital and community services (90).

### D. Both community and hospital rehabilitation services should be available

**Strength of recommendation:** Strong | **Quality of evidence:** Moderate

#### Remarks:

- Well-distributed community rehabilitation services take into account factors such as geography, transport, cultural and social attitudes and demographics.
- People who provide rehabilitation services in the community may encounter challenges that are unique or beyond those experienced in a hospital; they may feel isolated from their peers, lack professional support and have poor access to the equipment and infrastructure they require. Establishing or strengthening support for people providing rehabilitation in the community is important in ensuring high-quality services, in staff retention and in service sustainability. Monitoring of requirements for rehabilitation equipment and infrastructure and effective systems of provision and maintenance ensure that people providing rehabilitation in the community are adequately equipped.

**Rationale**

Rehabilitation should be provided in both hospitals and communities to ensure timely intervention and access to services. Article 26 of the Convention on the Rights of Persons with Disabilities calls on Member States to make rehabilitation available at the earliest possible stage and make rehabilitation services available as close as possible to people's communities, including in rural areas (44). For many health conditions, including injury, rehabilitation is beneficial along the continuum of care. The presence of rehabilitation services in hospitals ensures that interventions commence at the earliest possible stage, which has been found to accelerate recovery, optimize outcomes and facilitate smooth, timely discharge (6,11). Moreover, providing rehabilitation during the acute phase of care can increase the likelihood of appropriate referral to follow-up services in the community (12). These outcomes are not only beneficial for the person receiving care but may also confer considerable financial advantages on the health system. When rehabilitation services are lacking or insufficient in a hospital, people may develop complications, such as skin breakdown or muscle contractures, be inappropriately discharged, deteriorate, sustain further injury or require a prolonged hospital stay (6). In addition, many people who are admitted to hospital require rehabilitation services after discharge.

Rehabilitation is appropriate not only for people with injuries or health conditions, such as a fracture or stroke but also for the prevention of injury or functional deterioration and for developing or maintaining functioning in the context of developmental, sensory, and cognitive impairments. Thus, many people who require rehabilitation may receive their treatment solely in the community. For example, children with developmental disability may require long-term interventions in settings such as community clinics, the home and school. For certain health conditions, such as sensory impairment (hearing or vision loss), it is especially important that interventions are provided in the settings in which a person lives, works or studies (91). Furthermore, people with some conditions, such as diabetes and cardiovascular disease, may not require hospital admission but require rehabilitation.

An example of how rehabilitation services can be provided both in the hospital and in the community in the context of a highly dispersed country is provided in Box 2.

The Solomon Islands consists of some 900 mountainous islands in the South Pacific. The country is experiencing growing urbanization, yet much of the population is widely dispersed, approximately 80% living in remote communities. A decentralized model of health service delivery reflects the distribution of the population. Thus, primary health care is delivered largely by local nurse aides, and secondary and tertiary care are provided in a 300–400-bed national referral hospital in the country's capital, Honiara.

Rehabilitation service delivery in the Solomon Islands, like other health services, faces the challenges of reaching a scattered population with limited resources. The Ministry of Health and Medical Services, however, provides strong leadership, funding and coordination to facilitate access to services for people even in remote communities. The system of service delivery includes community and hospital services connected through an official referral system that is also accessed by doctors, nurses, family members and care providers.

In the population of 595 000, community rehabilitation services are delivered by 24 widely dispersed community rehabilitation field officers and 11 rehabilitation officers. They are locally trained to identify people in need of rehabilitation, provide basic services, promote community awareness and link people with professional rehabilitation services when indicated. The officers are supported by more senior provincial coordinators and directors. The national referral hospital has physiotherapy, occupational therapy and speech and language therapy services. Many of the rehabilitation professionals who deliver these services are international volunteers, although some physiotherapists are locally trained.

Accessing rehabilitation and identifying people who require rehabilitation are difficult, given the geography of the Solomon Islands. The Ministry therefore funds transport between health services via the official referral system, and the distribution of community rehabilitation officers means that basic services and links to professional services are available even in many remote communities.

## Box 2

### Providing rehabilitation services to a highly dispersed population in the Solomon Islands



## E: Should rehabilitation services for people with complex needs<sup>1</sup> be provided in specialized rehabilitation units or only in general wards or non-specialized units?

### Background

The provision of inpatient rehabilitation in specialized units is a model of service delivery for people with complex needs in many parts of the world, while some countries provide rehabilitation only in general wards or other non-specialized units. “Specialized rehabilitation units” are understood to be dedicated areas (facilities or wards) that provide rehabilitation assessment, treatment and management. Services are delivered by a multi-disciplinary team with recognized qualifications that prepare them to provide specialist rehabilitation. Specialized units for rehabilitation may care for people with specific health conditions or in specific age groups (such as older people) or people with complex rehabilitation needs more generally. The aim of this question was to determine the effectiveness of specialized rehabilitation units as compared with other models of service delivery for people with complex needs in order to guide service delivery planning and development.

### Summary of research evidence

The evidence on outcomes of specialized rehabilitation was limited but did include high-quality systematic reviews and a meta-analysis. A Cochrane review by the Stroke Trialists’ Collaboration found that designated stroke units providing multi-disciplinary care were more effective in reducing mortality, increasing independence and keeping people at home (one year after stroke) than the provision of rehabilitation in general wards (10). No difference in



<sup>1</sup> Complex needs are understood in the context of this recommendation to be needs that arise from having significant or multiple health conditions that impact various domains of functioning (such as vision, communication, cognition, and mobility).

length of stay was observed. A “narrative review” found that specialized rehabilitation units improved the health outcomes of people with spinal cord injury as compared with general non-specialized wards (92). Similarly, a randomized controlled trial of the outcomes of people with lower extremity amputation who received rehabilitation in specialized units or in general wards found a 33% greater improvement in physical functioning at discharge among those treated in specialized units. They were also more likely to be discharged and receive the assistive products they required (13). Another systematic review and meta-analysis found that multi-disciplinary rehabilitation provided in a specialized unit specifically designed for older people could improve functional outcomes, reduce admissions to nursing homes and reduce mortality (15).

### E. Hospitals should include specialized rehabilitation units for inpatients with complex needs

**Strength of recommendation:** Strong | **Quality of evidence:** High

#### Remarks:

- The establishment or extension of specialized rehabilitation units should be based on the context of the health system, specifically:
  - the availability or development of a multi-disciplinary rehabilitation workforce with adequate specialization to work effectively in these settings, or, where the rehabilitation workforce is underdeveloped, international recruitment as an interim measure; and
  - allocation of funding for the necessary equipment and consumables for effective rehabilitation.
- Specialized rehabilitation units cannot replace rehabilitation in general wards and in the community.
- Hospitals should endeavor to apply a system of needs assessment in order to ensure the best use of specialized rehabilitation units.
- Establishment or extension of specialized rehabilitation units should be accompanied by promotion of internal and external referral mechanisms.

#### Rationale

Evidence indicates that rehabilitation provided in specialized units results in better outcomes than that provided in general wards (10,14,15). Examples of situations in which specialized rehabilitation units may be particularly beneficial are:

- management of health conditions that require prolonged, specialized rehabilitation, such as for people with stroke, brain injury, spinal cord injury and complex fractures;
- after a prolonged hospital stay, when people, particularly older people, may be deconditioned and require customized rehabilitation before returning home in order to be sufficiently safe and independent; and
- management of chronic conditions that require intermittent rehabilitation so that people can maintain or improve their functioning.

It is likely that the benefits associated with positive outcomes of rehabilitation in specialized units are associated with their focus on restoring functioning, the intensity of rehabilitation and the degree of specialization of providers in these settings.

## F: Should financial resources be allocated to rehabilitation?

### Background

In many parts of the world, no specific funding is allocated to rehabilitation services. A study of 114 countries in 2005 found that one third did not have a specific budget for these services (16). Rather, resources are drawn from other areas of health, competing for often limited resources. Furthermore, external barriers, such as macroeconomic crises, corruption, political instability or lack of political will for reform can hinder adequate financial investment in rehabilitation services (93).

Target 3.8 of the Sustainable Development Goals calls for Member States to achieve universal health coverage. As countries move towards this target, well-planned, carefully implemented financing strategies are needed to ensure that rehabilitation services are included in essential packages of care and covered by financial risk protection mechanisms (94). The aim of this question was to ascertain whether countries should allocate dedicated financial resources to support and sustain quality rehabilitation services.

### Summary of research evidence

No direct comparisons of allocating and not allocating financial resources for rehabilitation were identified; therefore, studies on the outcomes of decisions on resource allocation with respect to rehabilitation use and cost-effectiveness were analysed. One study indicated that rehabilitation use is based on numerous factors, including the severity of the impairment and co-morbid conditions, so that it is difficult to make firm predictions about rehabilitation use (95). A systematic review and meta-analysis found that different models of rehabilitation service provision are cost-effective for different patient groups and situations; inpatient rehabilitation is the most cost-effective method for some and community-based services for others (96). A systematic review of the economic outcomes of rehabilitation showed that rehabilitation interventions are cost-effective or result in cost-saving in a variety of conditions (42).

### F. Financial resources should be allocated to rehabilitation services to implement and sustain the recommendations on service delivery

**Strength of recommendation:** Strong | **Quality of evidence:** Very low

#### Remarks:

- The financial resources invested for implementing the recommendations for rehabilitation service delivery should be sufficient to ensure equitable access to services, including for people living in poverty.
- The amount of the financial investment into rehabilitation services should reflect their benefits and not be based on crude statistics on disability, which can result in considerable underestimates of the true rehabilitation needs of a population.
- Rehabilitation services can be delivered by public, private or not-for profit providers, and many countries rely on a mix. Countries are encouraged to use the type and range of service providers that best ensure equitable access to affordable, high-quality rehabilitation services for everyone who needs them (93). Added advantages of this approach are the benefit of different sources of funding, reduced competition for scarce resources and extended reach of services in the population.
- Equitable financing for rehabilitation services can be based on mechanisms such as pooling and redistributing funds to subsidize people who cannot afford to pay for them (97).
- The distribution of investments in rehabilitation services should ensure that the same quality and access to services are achieved for all people. Due consideration should also be given to the indirect costs associated with accessing services, such as transport (6, p. 114).

## Rationale

While evidence to answer the question is limited, the Guideline Development Group found that the balance of benefits and harm is strongly in favour of allocating financial resources for rehabilitation and that failure to do so is potentially more harmful and costly than allocating resources.

Experience shows that allocation of funding by health systems significantly affects service provision and equity (97). Allocation of resources has been identified as a key mechanism for strengthening and improving access to rehabilitation services (6, p. 122). While allocation of designated financial resource for rehabilitation may be perceived as placing additional demands on often strained financial resources for health, it is important that policy-makers acknowledge that investing in rehabilitation is an investment in human capital and has broad economic implications for various sectors, as it is associated with increased participation in labour markets and education, longer independent living and fewer or shorter hospital admissions (15,30,34,36,98).



## G: When health insurance exists, should it cover rehabilitation services?

### Background

While direct user fees are the simplest form of transaction for health services and can sustain health systems by generating revenue, they can result in a considerable decrease in service use when applied universally in a population, and people living in poverty may be the most adversely affected (93). People with significant disability, who are more likely to require rehabilitation services intensively and/or over a long period, are also 50% more likely to experience catastrophic health expenditure (6). The Sustainable Development Goals strongly emphasize equity. Therefore, financing models should address the needs of people living in poverty, those who are geographically isolated and those who are marginalized, to ensure that “no one is left behind” (19).

Financial barriers to health services are well documented, and health insurance, either public or private, is a common mechanism used to remove them. Rehabilitation, however, is covered by insurance to varying degrees. Because of the role insurance plays in achieving equitable access to and optimal use of health services, the aim of this question was to determine whether rehabilitation should be included in insurance coverage.



### Summary of research evidence

No research directly related to insurance coverage of rehabilitation and its impact was identified. Several studies explored the impact of health insurance on service access and use of health services, however, and showed that people without insurance had substantially more unmet health needs and recommended health services were underused. The findings pertained to both adults and children (99-103). One study showed that the effect of not having insurance was amplified for people with a disability, while in another caregivers reported insufficient coverage of services by insurance providers (100-104).

#### G. Where health insurance exists or is to become available, it should cover rehabilitation services

**Strength of recommendation:** Conditional | **Quality of evidence:** Very low

##### Remarks:

- Health insurance is one of numerous mechanisms for increasing access to and use of health services and for protecting people from burdensome expenses (105). This recommendation does not endorse any particular method or arrangement of health insurance but indicates that, where it is used, rehabilitation should be covered.
- In accordance with Article 28.2.A of the Convention on the Rights of Persons with Disabilities and in alignment with target 3.8 of the Sustainable Development Goals, people living in poverty should not incur out-of-pocket expenses for rehabilitation services (44). Insurance is a financial protection mechanism that can substitute for direct user fees. In many settings, particularly low- and middle-income countries, however, health insurance protects only a minority of the population (17, pp. 41-42). It is therefore important that this mechanism be applied as part of broader initiatives to improve the affordability of rehabilitation services.

### Rationale

This recommendation is based not only on evidence of the positive effects of insurance on health outcomes but also on the principle that rehabilitation is an important aspect of health care and should thus be covered by health insurance (6,99-101,103,105). Furthermore, the considerable number of people, especially those with disability, who face financial barriers to rehabilitation services and suffer financial hardship as a result means that every effort should be made to reduce out-of-pocket expenses.

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## Good practice statements for assistive products

### Background

Prescription of and training in the use of assistive products are important in rehabilitation for many people in order to improve functioning and to increase independence and participation. The Guideline Development Group decided that it was important to provide “good practice statements” on the provision of assistive products and appropriate training in their use. These statements are based on the importance of equitable, high-quality service delivery and the underlying certainty that they have more benefits than harm for the population.

Accessing appropriate assistive products can be challenging throughout the world but especially in low-income countries, where as little as 5–15% of the population have access to the products they need<sup>1</sup> (18). The Global Cooperation on Assistive Technology (GATE) initiative is working to improve the availability and affordability of assistive products (106). It is equally important that provision of these products be accompanied by the necessary training, so that they can be used effectively and safely and be maintained over time (Box 3). Rehabilitation providers are well positioned to support training in the use of many products, such as prostheses, hearing aids and wheelchairs. Involvement of appropriate rehabilitation professionals, especially for users with complex needs, can help ensure that the products are suitable for the person and the environment in which they will be used, that the products are adapted or changed as the needs of the user evolve and that they are maintained to ensure safety and effectiveness over time (6).

### Good practice statements for assistive products

Financing and procurement policies should be implemented to ensure that assistive products are available to everyone who needs them.

Adequate training should be offered to the user, and care provider when appropriate, when assistive products are provided.

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<sup>1</sup> A conservative estimate based on data on the prevalence of disability, which do not fully capture the needs for assistive products by the older population.

Access to appropriate assistive products is limited in western Uganda, as are the rehabilitation services that provide them and the necessary training in their use. The vast geographical spread of districts, inadequate infrastructure and low family incomes further hinder acquisition of the products and the required training. Without appropriate assistive products, such as wheelchairs, children with significantly restricted mobility may be unable to participate in their communities and schools and find themselves dependent on their family or carers for basic needs. Some children, such as those with severe cerebral palsy, have more complex needs and require specialized seating to obtain the support and stability they require. The Motivation Charitable Trust, with the Ministry of Health and several wheelchair service centres in Uganda, provide basic services consistent with WHO's *Guidelines on the provision of manual wheelchairs in less resourced settings* (107). The Trust provides services for children with cerebral palsy and their parents or carers, which consist not only of appropriate wheelchairs but also the knowledge and skills to maximize their impact. The right training can facilitate function, enable better communication and improve behaviour, all of which can make it easier for the children to be included and to participate in meaningful activities.

## Box 3

### Provision of appropriate assistive products and training in their use

### Masika's story

Masika is an 11-year-old girl with cerebral palsy who lives in Kasese, Uganda. She relies on a wheelchair both to move and for postural support, as her condition makes it difficult for her to sit comfortably and breathe properly. For six years, Masika had been using a donated adult wheelchair. As it fitted her poorly, she developed sores and would often slip down and cough as she struggled to breathe. It would take Masika's mother over two hours to push the wheelchair over rough terrain to a parent support group, and, even when at home, her daughter frequently required repositioning, disrupting her work. Masika was provided with a new, rough-terrain wheelchair by the Motivation Charitable Trust in 2014. The new chair accommodates her complex postural needs, making her happier and safer and allowing her mother to reach the parental support group in a quarter of the time.





# 4. Dissemination and implementation

The goal of these evidence-based, policy-level recommendations is to improve access to high-quality, affordable rehabilitation services for everyone who needs them. For this goal to be realized, the recommendations must be disseminated and implemented.

## 4.1 Dissemination

Once published, the recommendations will be disseminated through a broad network of stakeholders, including WHO regional and country offices, ministries of health and other relevant government ministries, WHO collaborators, including nongovernmental and international organizations, professional and research networks, other United Nations agencies, funding bodies and organizations for disabled people. Dissemination will be facilitated by publication of summaries of the recommendations in content-related journals and promotion through media initiatives.

## 4.2 Implementation

Implementation of these recommendations will require strong government commitment and the support of relevant stakeholders. While the resource requirements for implementation will vary from country to country, a budget that covers both material and human resources, informed through a thorough situation analysis, will ensure successful strategic implementation.

Application of the recommendations for strengthening rehabilitation in health systems will require action by and may have implications for numerous stakeholders within and beyond the health sector. Implementation may involve development or revision of policies, structural reorganization or administrative changes and should therefore be based on participatory, consensus-driven planning. Especially for the conditional recommendations, country specificities should be taken into account; an accurate diagnosis of the situation, with identification of the challenges and opportunities, is necessary to guide effective implementation. Aligning implementation plans with broader national health strategies is crucial for ensuring their success. Furthermore, implementation plans should be informed by the views of relevant stakeholders. Establishing a government-led planning committee for implementation can be useful in this regard and for encouraging the commitment of different stakeholders. Such a committee could include:

- representatives of the ministries of health, education and social affairs and any other ministries particularly relevant to rehabilitation in the country;
- any rehabilitation focal point within the government;
- rehabilitation service providers, including representatives of nongovernmental and international organizations engaged in rehabilitation service delivery or development in the country; and
- representatives of minority user groups, such as people with disabilities and indigenous populations.

An example of the scaling-up of rehabilitation services is given in Box 4.

## Box 4

### Scaling up rehabilitation in Tajikistan

In 2010, a polio outbreak in Tajikistan that affected 712 people alerted the Government to the urgency of scaling up rehabilitation services. While rehabilitation outreach programmes were mobilized to address the immediate needs of the people affected by the outbreak, the Government, in partnership with WHO, undertook a national situation analysis of rehabilitation in Tajikistan. The analysis revealed several areas for action, including the development and enforcement of legislation, human resource development in line with international standards and identification of appropriate decentralized service delivery models. The situation analysis constituted the first phase of development of the national rehabilitation policy, systems and services and human resource development. A national programme based on the findings of the situation analysis and current health and population data was subsequently prepared in consultation with 22 ministries, state agencies and committees, along with national and international nongovernmental organizations, United Nations agencies, development partners, donor agencies and disabled people's organizations. A steering committee operated under the leadership of the Ministry of Health and Social Protection.

The national programme formulated specific indicators for development priorities, such as providing professional training to 250 rehabilitation professionals by 2020 and integrating rehabilitation into in- and outpatient health care services. The indicators are measured according to an action plan in which implementers and financial sources are identified, with a progressive timeframe for activities. The programme set ambitious yet attainable targets and monitoring mechanisms for its implementation. A rehabilitation working group will play an important role in ensuring timely operationalization of the programme.

“The national programme for the period 2016–2020 will improve the quality of health care and rehabilitation services, prepare specialists in this area, strengthen technical infrastructure and achieve sustainable improvement of population health.”

**Dr Saida Umarzoda**

First Deputy Minister of Health and Social Protection of the Population of the Republic of Tajikistan

## Barriers to implementation of the recommendations for rehabilitation service delivery and financing

When developing an implementation plan, several barriers may need to be addressed.

### 1. Often, limited knowledge and understanding of rehabilitation by policy-makers

In some settings, the concept of rehabilitation is novel and poorly understood by policy-makers and many others in the health and social sectors. Rehabilitation may be better understood in certain user groups, among people with certain health conditions or in certain settings, but not comprehensively. Policy dialogue with government leaders and decision-makers should include clear communication of what rehabilitation is, its role and its benefits for health, society and the economy. Some of the key messages to be relayed are as follows.

- Rehabilitation is an essential health strategy, with prevention, promotion, treatment and palliation, and is necessary for the health of many people (6, p. 95, 49,50).
- Rehabilitation helps build human capital and supports people in returning to and participating effectively in education, work and family and community roles (30).
- Effective rehabilitation can speed recovery, prevent hospital readmission and support people in remaining independent for longer (15,31,32,34–37). The economic advantages that this generates create a strong case for investment (42).

Support in preparing and carrying out policy dialogues can be sought from WHO if required. Garnering the support of rehabilitation stakeholders, including nongovernmental and international organizations, rehabilitation service providers and users and research institutes, to advocate for rehabilitation with consistent messages can further enhance government recognition and understanding of rehabilitation.

## **2. Limited finances available to invest in rehabilitation**

The effect of limited financial resources on implementation of the recommendations for rehabilitation service delivery and financing will depend on the existing services and the budget, if any, already allocated for rehabilitation. Where rehabilitation services are poorly developed or inexistent, however, establishing the systems, workforce and infrastructure required to implement the recommendations calls for careful short-, medium- and long-term financial planning. Factors such as difficult geographical access, poverty and illiteracy can increase the financial investment required to ensure equitable service delivery (108). Targets should therefore be set for implementation of the recommendations that reflect both their priority and the financial resources available. Unrealistic targets can result in unsustainable strategies that compromise long-term outcomes.

When financial resource are limited, efficiency is paramount. Ensuring system capacity to plan, coordinate and carry strategies forward is critical in this regard; strong systems allow government and private resources to go further. Maximizing partnerships of organizations in service delivery and rehabilitation workforce training is one means of ensuring that financial resources are well used and distributed.

## **3. Lack of or inadequate organizational and administrative structures for rehabilitation**

Most implementation activities are operated through an organization and administrative structure, which can strongly impact its effectiveness and efficiency. Often, these structures and systems will require strengthening concurrently with implementation, in accordance with the country situation. They can be strengthened by naming focal points for rehabilitation within the ministry of health, who can promote strong governance and accountability and ensure continuing commitment to national plans and strategies. Developing or strengthening communication and collaboration among the various levels of service delivery, particularly in highly decentralized health systems, can further promote efficiency, sustainability and equity in implementation.

The scope and nature of the recommendations for rehabilitation service delivery and financing may require various packages of activities at different levels of the health system. Government leadership is necessary to ensure careful strategic planning of activities, with a practical timeline that can be adjusted as necessary during implementation. The sequences and timelines set for various activities should take into account absorption capacity; for example, if training for a multi-disciplinary rehabilitation workforce is scaled up without making sufficient positions available or without investment in professional development and retention incentives, rates of attrition may increase.

In many countries, obstructive, ineffective legislation and policy for rehabilitation can limit implementation of the recommendations. Redressing such a situation is a relatively low-cost step with far-reaching implications for implementation. Structures for monitoring implementation can identify results that fuel ongoing commitment and investment in scaling-up initiatives and are also useful for detecting the external impact of the recommendations on other aspects of health care (69).

#### **4. Insufficient number of rehabilitation professionals**

A rehabilitation workforce is integral to service delivery, yet establishing a workforce adequate in number, skills and equitable distribution is a considerable challenge in many countries. Several mechanisms can be used in building a workforce for rehabilitation:

- strengthening training institutes for rehabilitation workers;
- government scholarships for rehabilitation personnel;
- increasing the number of rehabilitation posts;
- mandating the work setting after graduation (e.g. graduates are required to work in a rural setting for a prescribed period);
- providing incentives to retain skilled rehabilitation professionals; and
- recruiting internationally.

Where rehabilitation services and infrastructure are poorly developed, the rehabilitation workforce tends to lack support and to work in isolation from professional networks, which can negatively affect service quality and contribute to higher rates of attrition. Establishment of national associations for groups of rehabilitation professionals can help strengthen standards and professional identity and broaden the opportunities for increasing skills. Technical expertise within international organizations of rehabilitation professionals can further strengthen the workforce and training programmes.

#### **5. Lack of information on the situation of rehabilitation in the country**

Implementation plans are best informed by a reliable assessment of the situation of rehabilitation in the country (or province). Comprehensive understanding of the health system and the rehabilitation capacity in a country, province or district is a critical first step in planning implementation. A national rehabilitation systems assessment tool is available from WHO<sup>1</sup>, and technical assistance can be requested from the Secretariat if needed. Information can be drawn from numerous sources, including WHO statistics for the burden of disease, interviews with stakeholders, administrative records and rehabilitation training institutes and associations.

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<sup>1</sup> [www.who.int/disabilities/care/en/](http://www.who.int/disabilities/care/en/)

## 5. Research gaps and priorities

The review of evidence undertaken in preparing these recommendations showed that more high-quality research is required on rehabilitation. To this end, countries, particularly low- and middle-income countries for which there is a notable scarcity of data, should strengthen their information systems and increase investment in research.

The priorities for research include:

- system-level research on rehabilitation, including the types and impacts of different service delivery models, governance structures and financial allocation and distribution;
- cost-benefit analysis of rehabilitation;
- rehabilitation workforce development, including approaches to training, distribution and scaling-up;
- the rehabilitation needs of populations throughout the lifespan and health conditions and impairment;
- cultural and contextual considerations for rehabilitation service delivery;
- facilitators and barriers to accessing rehabilitation; and
- development of a standardised measure of the impact of rehabilitation.



## 6. Monitoring and evaluation of impact

**Table 1. Proposed indicators for monitoring implementation of the recommendations**

Recommendation	Indicator
<b>A.</b> Rehabilitation services should be integrated into health systems.	The ministry for health is the responsible agent for rehabilitation services
<b>B.</b> Rehabilitation services should be integrated in and between the primary, secondary and tertiary levels of the health system.	% Tertiary hospitals that provide rehabilitation services % Secondary hospitals that provide rehabilitation services There are rehabilitation services provided at the primary level
<b>C.</b> Multidisciplinary rehabilitation should be provided to those who need it.	Three or more different types of rehabilitation professionals provide services in the country
<b>D.</b> Both community and hospital rehabilitation services should be available.	As for service delivery recommendation B
<b>E.</b> Hospitals should include specialized rehabilitation units for inpatients with complex needs.	Percentage of hospitals that have specialized inpatient rehabilitation units
<b>F.</b> Financial resources should be allocated to rehabilitation services to implement and sustain the recommendations on service delivery.	There is a specific budget line for rehabilitation in the health budget
<b>G.</b> Where health insurance exists or is to become available, it should cover rehabilitation services.	Percentage of health insurance policies that cover rehabilitation services

## 7. Review and updating of recommendations

These recommendations will be reviewed and updated as required five years after their publication. The Secretariat will follow research in the field and, should there be significant changes in the evidence base that have implications for the recommendations, will undertake a review.

# Glossary of terms

## Assistive products

Any external product, including devices, equipment, instruments and software, specially produced or generally available, the primary purpose of which is to maintain or improve an individual's functioning and independence and thereby promote well-being. Assistive products are also used to prevent impairment and secondary health conditions.

## Disability

These recommendations follow the approach of the International Classification of Functioning, Disability and Health (109), in which "disability" is understood to be an umbrella term for impairments, activity limitations and participation restrictions resulting from the interaction between people with health conditions and the environmental barriers they encounter (6).

## Health condition

An umbrella term covering acute and chronic disease, disorders, injury or trauma. Health conditions may also include other circumstances, such as pregnancy, ageing, stress, congenital anomaly or genetic predisposition (109).

## Impairment

Loss of or abnormality in a body structure or physiological function (including mental function), where "abnormality" is used to mean significant variation from established statistical norms (109).

## Integrated rehabilitation service delivery

Management and delivery of rehabilitation services such that clients receive a continuum of coordinated rehabilitation, according to their needs and at different levels of the health system (modified from the definition of integrated health service delivery in reference 110).

## Multidisciplinary rehabilitation

In the context of these recommendations, multi-disciplinary rehabilitation refers to rehabilitation provided by two or more types of rehabilitation professional.

## People-centred care

An approach to care in which individuals, carers, families and communities are consciously adopted as participants in and beneficiaries of trusted health systems that respond to their needs and preferences in humane, holistic ways. People-centred care also requires that people have the education and support they require to make decisions and participate in their own care. It is organized around the health needs and expectations of people rather than diseases (51).

## Rehabilitation

A set of interventions designed to optimize functioning and reduce disability in individuals with health conditions in interaction with their environment. Health condition refers to disease (acute or chronic), disorder, injury or trauma. A health condition may also include other circumstances such as pregnancy, ageing, stress, congenital anomaly, or genetic predisposition (6,109).

### Rehabilitation outcomes

Rehabilitation outcomes are changes in the functioning of an individual over time that are attributable to rehabilitation interventions. They may include fewer hospital admissions, greater independence, reduced burden of care, return to roles or occupations that is relevant to their age, gender and context (e.g. home care, school, work) and better quality of life (6).

### Universal health coverage

Universal health coverage is defined as “ensuring that all people can use the promotive, preventive, curative, rehabilitative and palliative health services they need, of sufficient quality to be effective, while also ensuring that the use of these services does not expose the user to financial hardship” (94).

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# Annex 1. Methods

## 1. Groups involved in developing the recommendations

The WHO recommendation development process requires the input of three groups to produce rigorous, well-defined guidelines. The groups and their roles are summarized below.

### **Secretariat**

The Secretariat comprised WHO staff in the departments of Disability and Rehabilitation, Health System Strengthening, Mental Health and Intellectual Disability, Ageing, Noncommunicable Diseases, Hearing Impairment, Visual Impairment and Disasters. This group was involved in initial scoping of the recommendations, drafting research questions and selecting and organizing the Guideline Development Group.

The members of the Secretariat are listed in Annex 3.

### **Guideline Development Group**

The Guideline Development Group comprised 10 multi-disciplinary experts, balanced according to gender and geography, who provided technical expertise in appraising the evidence and developing the recommendations. They also reviewed drafts of the recommendations and approved their finalization.

The members of the Guideline Development Group are listed in Annex 3.

### **External Review Group**

The External Review Group comprised people with an interest in strengthening rehabilitation in health systems. It was a large, diverse group, representing a variety of stakeholders, including professional rehabilitation organizations and nongovernmental and international organizations. Advisers from each of the WHO regions were also consulted.

A core group of external reviewers was consulted early in the process and provided valuable feedback on the scope of the recommendations, i.e. their purpose and target audience, and on conceptual issues, definitions and exclusion and inclusion criteria.

The members of the External Review Group are listed in Annex 3.

## 2. Identification of research questions and outcomes

The Secretariat, with the Guideline Development Group, drafted broad research questions within the six elements of a health system: leadership and governance, service delivery, workforce, assistive devices and technology, finance and information systems. The questions were sent to various research groups for further development and structured according to the PICO format: population (P), intervention (I), comparison (C) and outcome (O).

Given the objective of these recommendations, the outcomes of interest are aligned with those of universal health coverage – better quality, equitable access and affordability – with the subsequent outcomes of greater service use, people-centred care and better health

(including rehabilitation) outcomes. These outcomes are related and interact; not every PICO question addressed all outcomes directly.

### 3. Questions that guided the evidence review

The questions used to find evidence for the recommendations were also based on the PICO format. The questions are listed below, the population being any person who requires rehabilitation services. The outcomes, unless stated otherwise, include those listed under “Identification of research questions and outcomes” in section 2. Not all outcomes are applicable to each PICO question.

#### PICO questions used to conduct evidence reviews for recommendations

- A. Should rehabilitation services be integrated into the health system (I) or into the social or welfare system or equivalent (C)?
- B. Should rehabilitation services be integrated into primary, secondary and tertiary levels of the health system (I) or integrated only into selected levels of the health system (C)?
- C. Should a multi-disciplinary (I) or single-disciplinary (C) rehabilitation workforce be available?
- D. Should rehabilitation services be available in both community and hospital settings (I) or only in community or only in hospital settings?
- E. Should rehabilitation services for people with complex needs (P) be provided in specialized hospitals and units (I) or only in general wards or non-specialized units (C)?
- F. Should financial resources be allocated to rehabilitation (I) or not (C)?
- G. Should health insurance cover rehabilitation services (I) or not (C)?

### 4. Retrieval of evidence

WHO has a clear, defined process for retrieving evidence for recommendations, which involves formulating PICO questions, conducting systematic reviews and quality appraisal (1). Compliance with this process is imperative to ensure that the recommendations are based on a transparent, systematic, evidence-based process. The research groups commissioned to conduct systematic reviews to answer the PICO questions retrieved evidence from the databases of medical, health and policy-related publications, as well as the “grey literature”. Evidence to answer all the PICO questions was retrieved in one literature search with comprehensive search terms, which excluded only infants aged 0–12 months and the health outcomes morbid obesity, pregnancy and addiction. The records were subsequently separated according to question. The search terms and results trees are shown at the end of this Annex, and the full reports from the commissioned institutions are available on the WHO Disability and Rehabilitation webpage at [http://www.who.int/disabilities/rehabilitation\\_guidelines/en/](http://www.who.int/disabilities/rehabilitation_guidelines/en/).

The Guideline Development Group decided to further strengthen the database by adding indirect evidence, including information provided by members of the Group. Furthermore, all the references in chapters 3 (General health care) and 4 (Rehabilitation) of the *World report on disability* (3) were screened for relevance and appraised in the same way as the literature identified in the searches conducted by the institutions (as described below). The indirect evidence is included in the reference list under each evidence-to-decision table in Annex 2. The exclusion and inclusion criteria, including the date range and search terms, were varied to capture the best evidence on service delivery and financing. A specific effort was made to include literature from low- and middle-income countries to ensure that outcomes in these contexts were captured. The search strategies used to retrieve the evidence were described by

the commissioned research groups in mid-term and final reports to WHO, which facilitated the iterative process among the research groups, the Secretariat and the Guideline Development Group, ensuring clear communication and timely identification of challenges and solutions.

## 5. Appraisal of the evidence

### 5.1 Grading of recommendations, assessment, development and evaluation (GRADE)

The evidence collected in the systematic literature reviews was appraised by the standard WHO procedure, applying the GRADE approach. This allows assessment of the certainty of the evidence on a scale of “high”, “moderate”, “low” and “very low” on the basis of criteria for study design, consistency and directness of results, precision and bias. The assessment of the certainty of evidence relates was conducted only for the evidence identified in the systematic literature reviews and was not influenced by the additional indirect evidence from other sources, including the Guideline Development Group. This is significant, given the scarcity of high-quality evidence on system-level outcomes of interest in these recommendations. “High-quality evidence” was considered in GRADE as that for which the Group had high confidence in the estimates of effects and was usually strongest for the results of randomized controlled trials. While this assessment contributes to the strength of a recommendation, other factors were also considered. Further details of the rating of the quality of evidence and allocation of strength to recommendations are given in section 1.

### 5.2 Review of values, preferences, acceptability and feasibility of interventions

The GRADE method includes consideration of the feasibility, acceptability, value and preferences of outcomes and interventions in making recommendations. This information was acquired for service delivery and financing in a mixed-methods systematic review and a stakeholder survey.

#### **Systematic literature review**

Evidence on the values, preferences, acceptability and feasibility of interventions from the perspective of service users was reviewed. Quantitative, qualitative and other studies were included. The study participants included service users, health professionals and policy-makers. Medical and rehabilitation databases and the Health Economic Evaluation Database were searched. Retrieved articles were screened and analysed for each PICO question. No evidence was found on values, preferences, acceptability and feasibility with regard to financing interventions. Details of the evidence retrieval and results are given above. Application of the information in making each recommendation is shown in the evidence-to-decision tables in Annex 2.

#### **Stakeholder survey**

An online, self-administered questionnaire was designed to capture stakeholders’ perceptions of the value, feasibility and acceptability of the interventions and outcomes in the PICO questions (3). The survey was disseminated by a number of international organizations in the six WHO regions during June–July 2014. Eligible individuals included rehabilitation service users, health care professionals, administrators and policy-makers. The survey questions were based on three categories: value assigned to outcomes, feasibility of interventions and acceptability of interventions. The answers were selected from a nine-point Likert scale, with space for narrative comments on each of the three categories of question. Age, gender, organization,

region, representation and education were recorded in the survey. Further details of the method of the survey and its limitations are given in reference (3).

The data were analysed by dichotomizing the results for values, acceptability and feasibility into “favourable” (values 7–9) and “unfavourable” (remaining values) and a descriptive analysis in Stata. Application of the information to each recommendation can be seen in the evidence-to-decision tables in Annex 2.

## 6. Formulation of recommendations

Recommendations were formulated from the evidence synthesized by the GRADE approach and by expert consultation in the Guideline Development Group. The summaries of evidence for answering each PICO question, the assessments of quality, the balance of benefits and harm, values and preferences, acceptability and feasibility, and resource implications were considered together. The outcomes of the recommendations were considered along the life course and for various health conditions. The collated information was sent to the members of the Guideline Development Group, who were subsequently convened at WHO headquarters in Geneva or in a teleconference for a technical consultation, where the documents were reviewed systematically and discussed to finalize the recommendations and their strength. The certainty of the evidence was determined by the research institutions that conducted the literature reviews and graded the evidence. Decisions on the direction of the recommendations were achieved by consensus; when there was disagreement about the strength of a recommendation, guidance was sought from the methodologists and from Guideline Review Committee. The strength of the recommendation was determined on the basis of the assessment of benefits and harm and considerations of implementation.

## 7. Document preparation and peer review

Before the final technical consultation, in March 2016, the Guideline Development Group received a draft of the recommendations, prepared by the Secretariat. Members were asked to return comments on the draft and any additional information, which were integrated into the next draft to the extent possible and presented to the Guideline Development Group at its final consultation for further discussion. Further modifications were made after this consultation, and the updated draft was again sent to the Group and to the External Review Group before submission to the Guideline Review Committee.

## References

1. WHO handbook for guideline development, 2nd ed. Geneva: World Health Organization; 2014.
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## Search terms and results trees

### Service delivery: systematic literature review for PICO questions A–E

#### Search terms

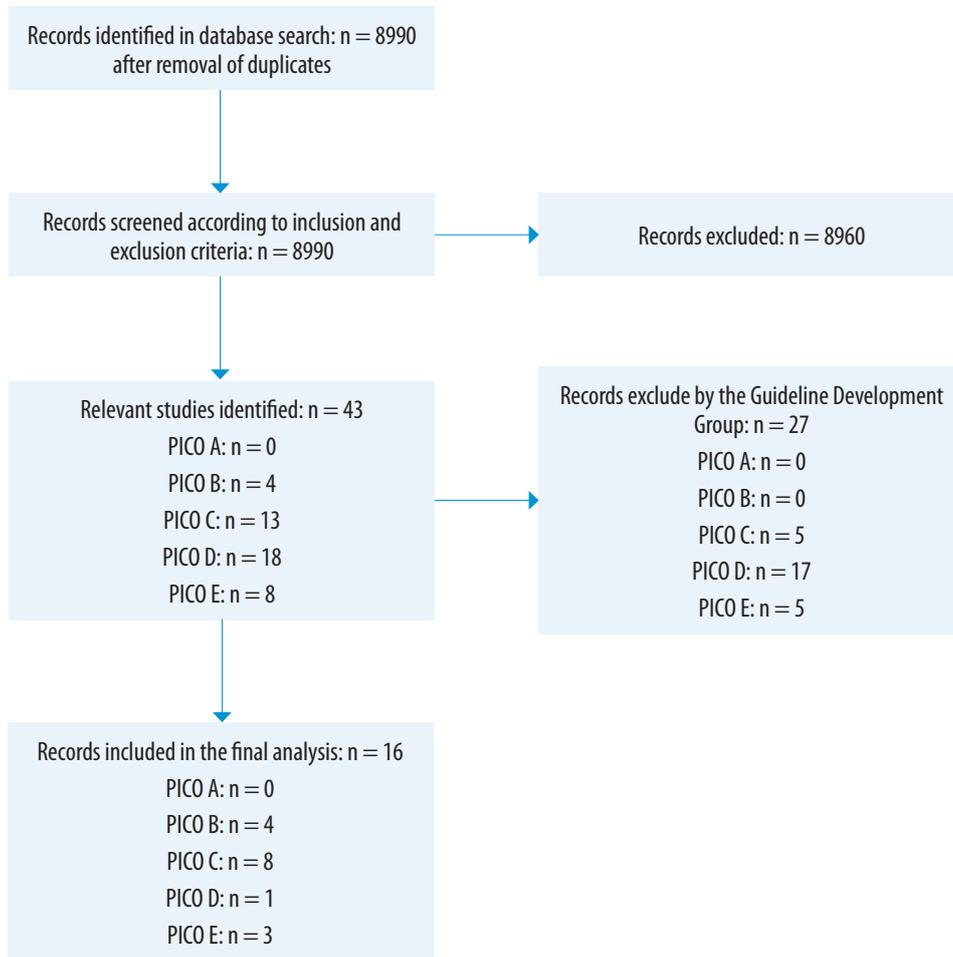
The search terms used for evidence retrieval are available upon request.

#### Inclusion and exclusion criteria

The following inclusion and exclusion criteria were used for the evidence identified for all five service delivery questions.

	Include	Exclude
<b>Population</b>	All physical and mental disabilities Low-, middle- and high-income countries	Infants (0–12 months) Morbid obesity, pregnancy, palliative care, end-of-life care and addictions
<b>Intervention</b>	Rehabilitation services: rehabilitation settings: hospital, community, long-term care and hospices Catchment area: local, regional or national (federal) Location: rural or urban Provider affiliation: independent or university-affiliated Levels of health care: primary, secondary and tertiary Phases of health care: acute, sub-acute, post-acute and long-term. Models of rehabilitation in acute care were classified according to the European Union of Medical Specialists section on Physical and Rehabilitation Medicine: beds for acute rehabilitation in hospitals, mobile rehabilitation team, rehabilitation consultation in wards for acute conditions and rehabilitation centre for acute conditions. Levels of complexity in rehabilitation: local general rehabilitation, district specialist rehabilitation, tertiary specialized rehabilitation Models of service delivery: inpatients, outpatients, day hospital, home and community Disciplines: single, multiple, inter, trans	Yes
<b>Comparisons</b>	PICO A. Rehabilitation services integrated into the health services or into social or welfare services PICO B. Integrated and decentralized services or centralized services PICO C. Multi-disciplinary rehabilitation (by two or more disciplines) or by a single discipline PICO D. Rehabilitation services in the community or in hospitals, clinics or other facilities PICO E. Specialized hospitals and units for rehabilitation for complex conditions or general wards or non-specialized units	
<b>Outcome</b>	Access to rehabilitation services Use of rehabilitation services and continuity of care Rehabilitation outcomes (e.g. prevention or slowing of loss of function, improvement or restoration of function, compensation for lost function) Health outcomes (e.g. mortality, morbidity and quality of life)	
<b>Study types</b>	Systematic reviews and meta-analyses Randomized controlled trials Non-randomized trials with a before-and-after measure Observational epidemiological studies with a control group (cohort, case–control or cross-sectional studies) Studies with no control group: administrative databases or analytical studies with subgroup analyses Mixed methods	Case series Letters Commentaries Opinion pieces

### Results tree: Rehabilitation service delivery literature search by commissioned institution



## Financing: systematic literature review for PICO questions F–G

### Search terms

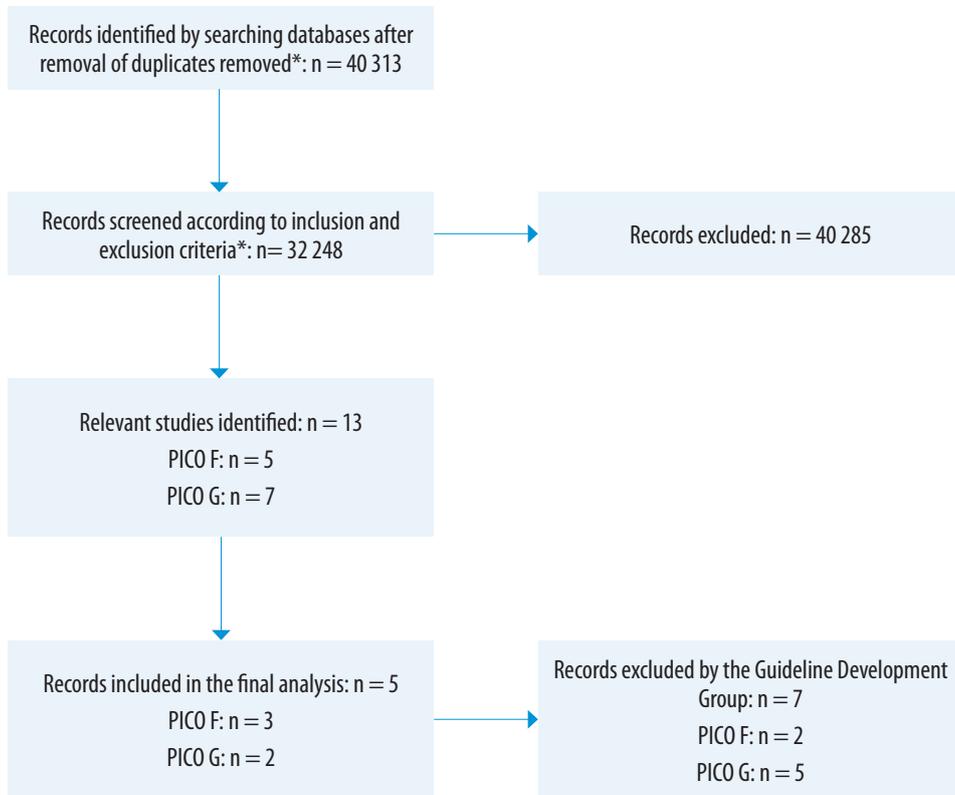
The search terms used for evidence retrieval are available upon request.

### Inclusion criteria

No exclusion criteria were used for this literature search.

	Inclusion criteria
<b>Population</b>	People with physical or mental disability Low-, middle- and high-income countries
<b>Intervention</b>	PICO F: Allocation or redistribution of financial resources PICO G: Health insurance coverage of rehabilitation services
<b>Comparisons</b>	PICO F: Finance as usual PICO G: Health insurance that does not cover rehabilitation services
<b>Outcome</b>	Access to rehabilitation services Use of rehabilitation services Socio-economic outcomes for individuals (e.g. poverty) Rehabilitation outcomes (e.g. prevention or slowing of loss of function, improvement or restoration of function, compensation of lost function) Health outcomes (e.g. mortality, morbidity and quality of life) Efficiency (e.g. per unit cost, staffing ratio) Effectiveness (e.g. treatment outcome, cost–effectiveness)
<b>Study design</b>	Systematic reviews Randomized controlled trials Non-randomized trials with a before-and-after measure Observational epidemiological studies with a control group (cohort, case–control or cross-sectional studies) Studies with no control group: administrative databases or analytical studies with subgroup analyses Mixed methods

**Results tree: Literature search on rehabilitation financing performed by commissioned institutions**



\* The literature search originally included five additional PICO questions that were not used in this publication. The numbers of records identified in the database search and screened according to the inclusion and exclusion criteria include the records on all seven PICOs.

## Values and preferences, acceptability and feasibility: systematic literature review

### Search terms

The search terms used for evidence retrieval are available upon request.

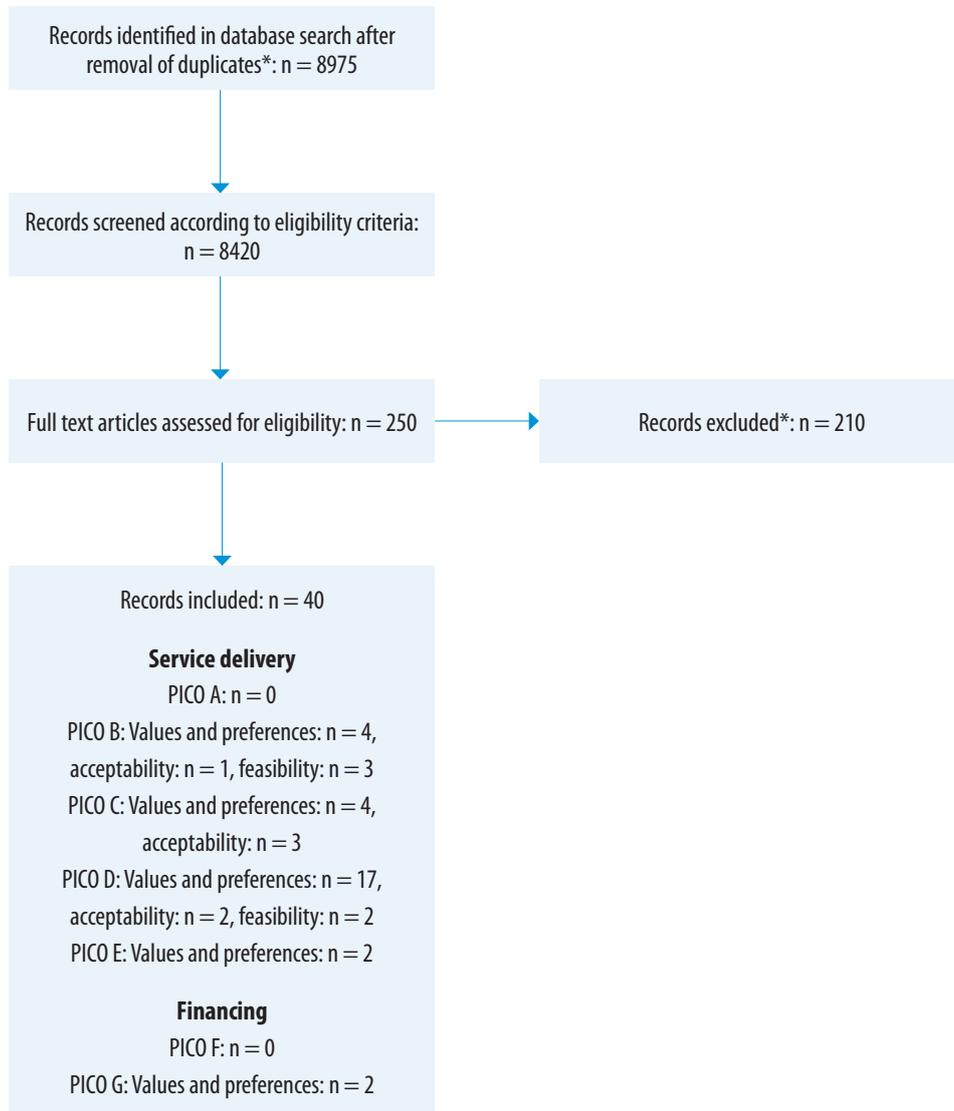
### Inclusion and exclusion criteria

	Include	Exclude
<b>Types of study</b>	Quantitative studies, including surveys Qualitative studies, including individual interviews and focus groups Other study designs for specific assessment of feasibility or acceptability of rehabilitation interventions Other study designs for specific assessment of values and preferences for rehabilitation interventions, including: time trade-off, probability trade-off, treatment trade-off, standard gamble, visual analogue scales and willingness to pay Decision aids Decision analyses	Studies on topics other than feasibility, acceptability or preferences of rehabilitation interventions specified in the PICO questions on service delivery or financing
<b>Study participants</b>	People with disability (including all physical and mental disabilities) User of rehabilitation services Provider of care to people with disability Health professionals: rehabilitation personnel Policy-makers	
<b>Interventions</b>	Rehabilitation in the community Rehabilitation in hospitals, clinics or other facilities Centralized rehabilitation services Multi-disciplinary rehabilitation Reductionist or holistic approach Specialized hospitals and units for rehabilitation for complex conditions Rehabilitation for complex conditions in general wards or non-specialized units Rehabilitation services integrated into health service Rehabilitation services integrated into social or welfare services Rehabilitation services that require user fees Rehabilitation services that do not require user fees Rehabilitation services funded by both the public and the private sectors Privately funded rehabilitation services Publicly funded rehabilitation services Rehabilitation services that provide free care or subsidized care for the poor Rehabilitation services that do not provide free care or subsidized care for the poor Health insurance covers rehabilitation services Health insurance does not cover rehabilitation services Integrating rehabilitation services Separate or segregated rehabilitation services	

### Databases

Pubmed, Cochrane Library, EMBASE, MEDLINE complete, ProQuest Dissertation and Theses Database, PsychINFO via EBSCOhost, Centre for Reviews and Dissemination and NHS Economic Evaluation Database, REHABDATA, PEDRo, OTseeker, Health Economic Evaluation Database

**Results tree: literature review on values and preferences, acceptability and feasibility**



\* Records excluded included those that did not meet the eligibility criteria and those associated with PICO questions that were not included in the final guideline.

# Annex 2. Evidence-to-decision tables

A: Rehabilitation services should be integrated into health systems		
Question	Decision	Explanation
<b>Problem</b> Is the problem a priority?	<input type="checkbox"/> Don't know <input type="checkbox"/> Varies <input type="checkbox"/> No <input type="checkbox"/> Probably no <input type="checkbox"/> Probably yes <input checked="" type="checkbox"/> Yes	The position of rehabilitation in government ministries was deemed a priority on the basis of the impact it has on use of rehabilitation as a health strategy and on the delivery of services. Fragmentation of rehabilitation in government ministries was described in the <i>World report on disability</i> as a barrier to service delivery; it can compromise coordination and administration and act as a barrier to the implementation of policies for rehabilitation (1). It was reported that sharing of the responsibility for rehabilitation by multiple ministries results in services that are often poorly integrated into the overall health system. Differences in the positioning of rehabilitation in government structures require attention.
<b>Benefits of and harm due to the option</b> Is there important uncertainty about or variability in how much people value the main outcome?	<input type="checkbox"/> Important uncertainty or variability <input type="checkbox"/> Possibility of uncertainty or variability <input type="checkbox"/> Probably no important uncertainty or variability <input checked="" type="checkbox"/> No important uncertainty or variability	In the survey of stakeholder perceptions, 64.2% of responders rated affordability as critical, 80.11% rated increasing access as critical, and 76.14% rated increasing use as critical (2). The Guideline Development Group, which had broad experience of rehabilitation in different countries, reached consensus that there is no important uncertainty in the main outcome.
What is the overall certainty about the evidence of effects?	<input checked="" type="checkbox"/> No included studies available to the panel <input type="checkbox"/> Very low <input type="checkbox"/> Low <input type="checkbox"/> Moderate <input type="checkbox"/> High	No studies that addressed this PICO question were identified. The recommendation was based on the expert consensus of the Guideline Development Group, supported by indirect evidence (1,3).
How substantial are the desirable anticipated effects?	<input checked="" type="checkbox"/> Don't know <input type="checkbox"/> Varies <input type="checkbox"/> Trivial <input type="checkbox"/> Small <input type="checkbox"/> Moderate <input type="checkbox"/> Large	The desirable anticipated benefits of integrating rehabilitation into health systems were considered to be better coordination with medical services, better accountability and quality assurance and sustainability (1,4). The systematic literature review did not identify evidence on this PICO question, and the Guideline Development Group could not specify the size of the anticipated desirable effects for the population of interest. Nevertheless, the <i>World report on disability</i> (1) stresses the desirability of a designated agency for the administration, coordination and monitoring of rehabilitation.

A: Rehabilitation services should be integrated into health systems		
Question	Decision	Explanation
Benefits of and harm due to the option	<p>How substantial are the undesirable anticipated effects?</p> <p> <input checked="" type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Large  <input type="checkbox"/> Moderate  <input type="checkbox"/> Small  <input type="checkbox"/> Trivial                 </p>	<p>The systematic literature review did not identify evidence on this PICO question, and the Guideline Development Group could not specify the size of the anticipated undesirable effects. On the basis of their expert knowledge and experience, the Group could not determine any significant harm to the population of interest of implementing the intervention.</p>
	<p>Does the balance between desirable effects and undesirable effects favour the option or the comparison?</p> <p> <input checked="" type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Favours the comparison  <input type="checkbox"/> Probably favours the comparison  <input type="checkbox"/> Does not favour either the option or the comparison  <input type="checkbox"/> Probably favours the option  <input type="checkbox"/> Favours the option                 </p>	<p>As the size of the desirable and undesirable effects could not be determined, the Group could not determine whether the balance leans towards the option or the comparison.</p> <p>The <i>World report on disability</i> (p. 104) cites undesirable effects of not having a responsible agency for the administration, coordination and monitoring of rehabilitation due to fragmentation and poor integration of services in the overall system (1).</p>
Resources	<p>How large are the resource requirements?</p> <p> <input checked="" type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Large costs  <input type="checkbox"/> Moderate costs  <input type="checkbox"/> Negligible costs or savings  <input type="checkbox"/> Moderate costs  <input type="checkbox"/> Moderate savings  <input type="checkbox"/> Large savings                 </p>	<p>No evidence was identified in the systematic review on the resources required to implement the intervention. It can be assumed that it would vary considerably depending on the context.</p>
	<p>Does the cost-effectiveness of the intervention favour the option or the comparison?</p> <p> <input checked="" type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Favours the comparison  <input type="checkbox"/> Probably favours the comparison  <input type="checkbox"/> Does not favour either the option or the comparison  <input type="checkbox"/> Probably favours the option  <input type="checkbox"/> Favours the option                 </p>	<p>No evidence was found in the systematic literature review to determine the cost-effectiveness of the intervention or of the comparison. The Guideline Development Group noted that the intervention would be more cost-effective in the long term if it had benefits (better administration, coordination and monitoring). This conclusion is supported by indirect evidence, including policy documents and reports from various countries.</p>

A: Rehabilitation services should be integrated into health systems		
Question	Decision	Explanation
<b>Equity</b> What would be the impact on health equity?	<input checked="" type="checkbox"/> Don't know <input type="checkbox"/> Varies <input type="checkbox"/> Reduced <input type="checkbox"/> Probably reduced <input type="checkbox"/> Probably no impact <input type="checkbox"/> Probably increased <input type="checkbox"/> Increased	No evidence was identified in the systematic literature review on the impact of the intervention on health equity. It is probable, however, that, as rehabilitation is included in the concept of universal health coverage, now target 3.8 of the Sustainable Development Goals (5), its integration into health systems would promote equity by its contribution towards achievement of that goal.
<b>Acceptability</b> Is the option acceptable to key stakeholders?	<input type="checkbox"/> Don't know <input checked="" type="checkbox"/> Varies <input type="checkbox"/> No <input type="checkbox"/> Probably no <input type="checkbox"/> Probably yes <input type="checkbox"/> Yes	The systematic literature review on values, preferences, acceptability and feasibility provided no evidence on the acceptability of the intervention. In the survey of stakeholder perceptions, 73.41% of responders considered that the intervention was definitely acceptable (2). Furthermore, the <i>World report on disability</i> describes the issues that arise when there is no agency responsible for the administration, coordination and monitoring of rehabilitation (1). As the intervention is designed to address these issues directly, it is likely to be acceptable to key stakeholders.
<b>Feasibility</b> Is implementation of the option feasible?	<input type="checkbox"/> Don't know <input checked="" type="checkbox"/> Varies <input type="checkbox"/> No <input type="checkbox"/> Probably no <input type="checkbox"/> Probably yes <input type="checkbox"/> Yes	The systematic literature review on values, preferences, acceptability and feasibility revealed no evidence on the feasibility of the intervention. In the survey of stakeholder perceptions, 61.49% of survey responders considered the intervention to be definitely feasible (2). The feasibility of implementing the intervention has already been demonstrated in several instances, typically in high-income countries.

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B: Rehabilitation services should be integrated into and between primary, secondary and tertiary levels of health systems		
Question	Decision	Explanation
<b>Problem</b>	<p>Is the problem a priority?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> No  <input type="checkbox"/> Probably no  <input type="checkbox"/> Probably yes  <input checked="" type="checkbox"/> Yes</p>	<p>Rehabilitation services must be available in and among all levels of the health system in order to provide services along the continuum of care. Services at the primary level of the health system are an important gateway to accessing rehabilitation, especially for people living in rural and remote areas, as secondary and tertiary services are usually located in urban centres. Primary-level services can also ensure early identification of health conditions and management of complex and chronic conditions (1,2). When rehabilitation services are not integrated into secondary and tertiary levels of the health system, people with acute or complex rehabilitation needs or who are being treated as inpatients may not receive the rehabilitation services they need (3–11).</p> <p>The high prevalence of this problem in low- and middle-income countries in particular makes it a priority.</p>
<b>Benefits of and harm due to the option</b>	<p>Is there important uncertainty about or variability in how much people value the main outcome?</p> <p><input type="checkbox"/> Important uncertainty or variability  <input type="checkbox"/> Possibility of uncertainty or variability  <input type="checkbox"/> Probably no important uncertainty or variability  <input checked="" type="checkbox"/> No important uncertainty or variability</p> <p>What is the overall certainty about the evidence of effects?</p> <p><input type="checkbox"/> No included studies  <input checked="" type="checkbox"/> Very low  <input type="checkbox"/> Low  <input type="checkbox"/> Moderate  <input type="checkbox"/> High</p> <p>How substantial are the desirable anticipated effects?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Trivial  <input type="checkbox"/> Small  <input checked="" type="checkbox"/> Moderate  <input type="checkbox"/> Large</p> <p>How substantial are the undesirable anticipated effects?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Large  <input type="checkbox"/> Moderate  <input type="checkbox"/> Small  <input checked="" type="checkbox"/> Trivial</p>	<p>In the survey of stakeholder perceptions, 64.2% of the responders rated affordability as critical, 80.11% rated increasing access as critical, and 76.14% rated increasing use as critical (12). Furthermore, the consensus of the Guideline Development Group was that there is no important uncertainty in the variability of the main outcome.</p> <p>The evidence identified in the systematic literature review was rated as of very low quality according to GRADE (13–16). The intervention is, however, strongly supported by indirect evidence known to the Guideline Development Group (1–11).</p> <p>The <i>World report on disability</i> (2) indicates that integrating rehabilitation into various levels of the health system helps coordination of service delivery, improves the availability, accessibility and affordability of services and improves patients' experience. On this basis and further indirect evidence, the Guideline Development Group concluded that the size of the desirable effects of the intervention was moderate.</p> <p>No evidence was found of undesirable effects of the intervention for the population of interest. Consideration should, however, be given to the capacity of the workforce to function at different levels, according to both their skills and their competence, the number of rehabilitation professionals available and their geographical distribution.</p>

## B: Rehabilitation services should be integrated into and between primary, secondary and tertiary levels of health systems

Question	Decision	Explanation
Benefits of and harm due to the option	<p>Does the balance between desirable effects and undesirable effects favour the option or the comparison?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Favours the comparison  <input type="checkbox"/> Probably favours the comparison  <input type="checkbox"/> Does not favour either the option or the comparison  <input type="checkbox"/> Probably favours the option  <input checked="" type="checkbox"/> Favours the option</p>	<p>In view of the moderate anticipated benefits and trivial harm of the intervention, the Guideline Development Group concluded that the balance between desirable and undesirable effects favours the option.</p>
Resource use	<p>How large are the resource requirements (costs)?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Large costs  <input type="checkbox"/> Moderate costs  <input type="checkbox"/> Negligible costs or savings  <input checked="" type="checkbox"/> Moderate savings (long-term)  <input type="checkbox"/> Large savings</p> <p>What is the certainty of the evidence of resource requirements?</p> <p><input type="checkbox"/> No included studies  <input checked="" type="checkbox"/> Very low  <input type="checkbox"/> Low  <input type="checkbox"/> Moderate  <input type="checkbox"/> High</p>	<p>No evidence was identified in the systematic literature review on the resource requirements for implementing the intervention. The initial costs will depend on the existing degree of integration of rehabilitation services into primary, secondary and tertiary levels of the health system.</p> <p>Costs may be incurred in workforce training, development of infrastructure and establishment of coordination systems (such as referral systems). Substantial indirect evidence (3, 17–21) led the Guideline Development Group to anticipate long-term cost savings within the health system and at service level as services become more efficient and the benefits of rehabilitation are realized, including greater productivity, faster recovery and fewer hospital readmissions.</p> <p>No evidence was identified in the systematic literature review on the resource requirements for implementing the intervention. Indirect evidence was available of the cost of integrating rehabilitation into the three levels of the health system in high-income settings.</p>
Equity	<p>Does the cost-effectiveness of the intervention favour the option or the comparison?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Favours the comparison  <input type="checkbox"/> Probably favours the comparison  <input type="checkbox"/> Does not favour either the option or the comparison  <input checked="" type="checkbox"/> Probably favours the option  <input type="checkbox"/> Favours the option</p> <p>What would be the impact on health equity?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Reduced  <input type="checkbox"/> Probably reduced  <input type="checkbox"/> Probably no impact  <input checked="" type="checkbox"/> Probably increased  <input type="checkbox"/> Increased</p>	<p>The <i>World report on disability</i> (2, p. 102) reported that unmet rehabilitation needs have broad financial implications for individuals, families and communities. Further indirect evidence demonstrates the cost-benefit relation of rehabilitation for health systems in regard to prevention (at primary level) and faster recovery and lower hospital readmission rates (at secondary and tertiary levels) (19, 22–24). As the systematic review did not reveal direct evidence on the cost-effectiveness of rehabilitation, the Guideline Development Group rated the intervention as probably favourable for the option.</p> <p>The improvements in access to services that would arise if rehabilitation were integrated into and among primary, secondary and tertiary levels of care (25) indicate that equity would increase with implementation of the intervention, particularly in geographically isolated areas, where the availability of rehabilitation at the primary levels of care is fundamental to equitable access (2). As the systematic literature review did not provide direct evidence on equity, the Guideline Development Group rated the intervention as one that would probably increase equity.</p>

**B: Rehabilitation services should be integrated into and between primary, secondary and tertiary levels of health systems**

Question	Decision	Explanation
<b>Acceptability</b> Is the option acceptable to key stakeholders?	<input type="checkbox"/> Don't know <input checked="" type="checkbox"/> Varies <input type="checkbox"/> No <input type="checkbox"/> Probably no <input type="checkbox"/> Probably yes <input type="checkbox"/> Yes	<p>The systematic literature review on values, preferences, acceptability and feasibility identified one study (26) that suggested that users are likely to find integrated rehabilitation services acceptable.</p> <p>In the survey of stakeholder perceptions, 71.20% of responders considered that the intervention was definitely acceptable (12). Service users will thus probably find the intervention acceptable, while the opinions of health professionals and policy-makers may vary.</p> <p>Substantial indirect evidence suggests that inclusion of rehabilitation into and among different levels of the health system has been found to be acceptable in practice in various countries. Furthermore, the intervention is aligned with objective 2 of the <i>WHO global disability action plan 2014–2021</i> (27), which was endorsed at the Sixty-seventh World Health Assembly, and in the <i>WHO global strategy on people-centred and integrated health services</i> (1).</p>
<b>Feasibility</b> Is implementation of the option feasible?	<input type="checkbox"/> Don't know <input type="checkbox"/> Varies <input type="checkbox"/> No <input type="checkbox"/> Probably no <input checked="" type="checkbox"/> Probably yes <input type="checkbox"/> Yes	<p>The systematic literature review identified three studies (26,28,29) on the feasibility of the intervention, all of which found its implementation feasible.</p> <p>In the survey of stakeholder perceptions, 60.57% of responders considered the intervention definitely feasible (12).</p> <p>The feasibility of implementing the intervention will depend on numerous factors, including the geographical distribution of the population and of health services, the existing degree of integration of rehabilitation into the different levels of the health system and the extent of coordination among them. Nevertheless, substantial indirect evidence on the inclusion of rehabilitation into and among different levels of the health system shows that it has been feasible in many countries.</p>

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C: A multi-disciplinary rehabilitation workforce should be available		
Question	Decision	Explanation
<b>Problem</b>	<p>Is the problem a priority?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> No  <input type="checkbox"/> Probably no  <input type="checkbox"/> Probably yes  <input checked="" type="checkbox"/> Yes</p>	<p>Rehabilitation workforces are largely underdeveloped in many countries, especially low- and middle-income settings (1), with resulting limitations in expertise. Professionals should extend the scope of their practice in order to address people's varying needs. Lack of or inadequate availability of multi-disciplinary rehabilitation services ultimately limits the quality of care and can compromise people's health outcomes (2). In view of the impact that multi-disciplinary care has on the quality of care and the current underdeveloped rehabilitation workforce in many settings, this problem was considered to be a priority.</p>
	<p>Is there important uncertainty about or variability in how much people value the main outcome?</p> <p><input type="checkbox"/> Important uncertainty or variability  <input type="checkbox"/> Possibility of uncertainty or variability  <input type="checkbox"/> Probably no important uncertainty or variability  <input checked="" type="checkbox"/> No important uncertainty or variability</p>	<p>In the survey of stakeholder perceptions, 64.2% of the responders rated affordability as critical, 80.11% rated increasing access as critical, and 76.14% rated increasing use as critical (3).                      The consensus of the Guideline Development Group was that there is no important uncertainty in the variability of the main outcome.</p>
<b>Benefits of and harm due to the option</b>	<p>What is the overall certainty about the evidence of effects?</p> <p><input type="checkbox"/> No included studies  <input type="checkbox"/> Very low  <input type="checkbox"/> Low  <input type="checkbox"/> Moderate  <input checked="" type="checkbox"/> High</p>	<p>The evidence identified in the systematic literature review (4–11) was of high quality according to GRADE.</p>
	<p>How substantial are the desirable anticipated effects?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Trivial  <input type="checkbox"/> Small  <input type="checkbox"/> Moderate  <input checked="" type="checkbox"/> Large</p>	<p>The size of the desirable anticipated effects of the intervention for the population of interest, reflected in the quality of care and health outcomes, is large, as determined from both evidence identified in the systematic literature review and indirect evidence (12–14).</p>
	<p>How substantial are the undesirable anticipated effects?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Large  <input type="checkbox"/> Moderate  <input type="checkbox"/> Small  <input checked="" type="checkbox"/> Trivial</p>	<p>The size of the undesirable anticipated effects of the intervention for the population of interest is trivial, as determined from both evidence identified in the systematic literature review (4–11) and indirect evidence (12–14).</p>

C: A multi-disciplinary rehabilitation workforce should be available		
Question	Decision	Explanation
Benefits of and harm due to the option	<p>Does the balance between desirable effects and undesirable effects favour the option or the comparison?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Favours the comparison  <input type="checkbox"/> Probably favours the comparison  <input type="checkbox"/> Does not favour either the option or the comparison  <input type="checkbox"/> Probably favours the option  <input checked="" type="checkbox"/> Favours the option</p>	<p>In view of the large anticipated benefits and the trivial harm of the intervention, the Guideline Development Group considered that the balance between desirable and undesirable effects favoured the option.</p>
Resource use	<p>How large are the resource requirements?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Large resources  <input checked="" type="checkbox"/> Moderate resources  <input type="checkbox"/> Negligible resources or savings  <input type="checkbox"/> Moderate savings  <input type="checkbox"/> Large savings</p>	<p>The resources required to implement the intervention would include workforce training, equipment costs and supportive information technology. Studies showed moderate resource requirements (5) and long-term cost savings associated with benefits such as prevention, fewer hospital readmissions and increased productivity (1,15–17).</p>
Equity	<p>Does the cost-effectiveness of the intervention favour the option or the comparison?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Favours the comparison  <input type="checkbox"/> Probably favours the comparison  <input type="checkbox"/> Does not favour either the option or the comparison  <input checked="" type="checkbox"/> Probably favours the option  <input type="checkbox"/> Favours the option</p>	<p>The Guideline Development Group found that the cost-effectiveness of the intervention probably favours the option. The conclusion was based on studies of cost-effectiveness (predominantly cohort design) and efficiency that reflect the long-term cost savings associated with multi-disciplinary rehabilitation (1,15–18).</p>
Equity	<p>What would be the impact on health equity?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Reduced  <input type="checkbox"/> Probably reduced  <input type="checkbox"/> Probably no impact  <input checked="" type="checkbox"/> Probably increased  <input type="checkbox"/> Increased</p>	<p>The impact of the availability of multiple rehabilitation professions on health equity would depend on how resources were mobilized to establish the workforce required. If resources are drawn away from mid-level or unspecialized professionals to invest in a multi-disciplinary professional workforce, equity might be compromised (quality of care would improve, but access would decrease); however, if additional investment is made to expand the rehabilitation workforce, equity would increase.</p>
Acceptability	<p>Is the option acceptable to key stakeholders?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> No  <input type="checkbox"/> Probably no  <input type="checkbox"/> Probably yes  <input checked="" type="checkbox"/> Yes</p>	<p>The systematic literature review on values, preferences, acceptability and feasibility identified three studies (19–21) that suggested that rehabilitation users are likely to find multi-disciplinary rehabilitation services acceptable. In the survey of stakeholder perceptions, 76.30% of the responders considered the intervention to be definitely acceptable (3). If the cost-benefit balance of providing multi-disciplinary rehabilitation accrued to payers, it would be highly acceptable. If the cost savings accrued to another sector, some payers might find it less acceptable.</p>

**C: A multi-disciplinary rehabilitation workforce should be available**

Question	Decision	Explanation
Is implementation of the option feasible?  <b>Feasibility</b>	<input type="checkbox"/> Don't know <input type="checkbox"/> Varies <input type="checkbox"/> No <input type="checkbox"/> Probably no <input type="checkbox"/> Probably yes <input checked="" type="checkbox"/> Yes	In the survey of stakeholder perceptions, 73.14% of the responders considered the intervention to be definitely feasible (3). As the provision of multi-disciplinary rehabilitation relies on the availability of professionals in two or more specialties, the feasibility of implementing the intervention will depend on the capacity of the rehabilitation workforce in the country and in various settings. There is substantial evidence of the implementation of multi-disciplinary rehabilitation in different settings and for different patient groups (4–11).

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D: Both community and hospital rehabilitation services should be made available		
Question	Decision	Explanation
<b>Problem</b>	<p>Is the problem a priority?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> No  <input type="checkbox"/> Probably no  <input type="checkbox"/> Probably yes  <input checked="" type="checkbox"/> Yes</p>	<p>Where rehabilitation services are provided can have a profound impact on accessibility and use, especially for people in rural and remote areas (1). Several studies in southern Africa showed a substantial gap between those who require rehabilitation and those who receive it (2–5). This finding, supported by indirect evidence (1,6), indicates that this intervention is a high priority.</p>
	<p>Is there important uncertainty about or variability in how much people value the main outcome?</p> <p><input type="checkbox"/> Important uncertainty or variability  <input type="checkbox"/> Possibility of uncertainty or variability  <input type="checkbox"/> Probably no important uncertainty or variability  <input checked="" type="checkbox"/> No important uncertainty or variability</p>	<p>In the survey of stakeholder perceptions, 64.2% of responders rated affordability as critical, 80.11% rated increasing access as critical, and 76.14% rated increasing use as critical (7).  The consensus of the Guideline Development Group was that there is no important uncertainty in the variability of the main outcome.</p>
<b>Benefits of and harm due to the option</b>	<p>What is the overall certainty about the evidence of effects?</p> <p><input type="checkbox"/> No included studies  <input type="checkbox"/> Very low  <input type="checkbox"/> Low  <input checked="" type="checkbox"/> Moderate  <input type="checkbox"/> High</p>	<p>There is indirect evidence of moderate quality for providing rehabilitation services in both community and hospital settings (8–23).</p>
	<p>How substantial are the desirable anticipated effects?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Trivial  <input type="checkbox"/> Small  <input checked="" type="checkbox"/> Moderate  <input type="checkbox"/> Large</p>	<p>One of the primary anticipated desirable effects of providing rehabilitation services in both community and hospital settings is better access to services and subsequently increased use. The size of the effect will depend on the geographical distribution of the population and their health needs.  While no studies were identified in the systematic literature review on the effects of providing rehabilitation in both community and hospital settings (but rather each individually), there is indirect evidence (8–20) that the anticipated desirable effects of the intervention for the population of interest are moderate.</p>
	<p>How substantial are the undesirable anticipated effects?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Large  <input type="checkbox"/> Moderate  <input type="checkbox"/> Small  <input checked="" type="checkbox"/> Trivial</p>	<p>No evidence was identified in the systematic literature review on undesirable effects of providing rehabilitation in both community and hospital settings. The Guideline Development Group did not anticipate any potential harm of the intervention for the population of interest.</p>

D: Both community and hospital rehabilitation services should be made available		
Question	Decision	Explanation
Benefits of and harm due to the option	<p>Does the balance between desirable effects and undesirable effects favour the option or the comparison?</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Don't know</li> <li><input type="checkbox"/> Varies</li> <li><input type="checkbox"/> Favours the comparison</li> <li><input type="checkbox"/> Probably favours the comparison</li> <li><input type="checkbox"/> Does not favour either the option or the comparison</li> <li><input type="checkbox"/> Probably favours the option</li> <li><input checked="" type="checkbox"/> Favours the option</li> </ul>	<p>In view of the moderate anticipated benefits and trivial harm of the intervention, the Guideline Development Group considered that the balance between desirable and undesirable effects favoured the option.</p>
Resource use	<p>How large are the resource requirements (costs)?</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Don't know</li> <li><input type="checkbox"/> Varies</li> <li><input type="checkbox"/> Large costs</li> <li><input type="checkbox"/> Moderate costs</li> <li><input type="checkbox"/> Negligible costs or savings</li> <li><input checked="" type="checkbox"/> Moderate savings</li> <li><input type="checkbox"/> Large savings</li> </ul>	<p>The resource requirements of implementing the intervention will depend considerably on the existing degree of development of rehabilitation services in community and hospital settings and the investment required to build the necessary workforce capacity and infrastructure to operationalize the intervention effectively. Indirect evidence, including cost evaluations, show long-term cost savings associated with providing rehabilitation services.</p>
Equity	<p>Does the cost-effectiveness of the intervention favour the option or the comparison?</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Don't know</li> <li><input type="checkbox"/> Varies</li> <li><input type="checkbox"/> Favours the comparison</li> <li><input type="checkbox"/> Probably favours the comparison</li> <li><input type="checkbox"/> Does not favour either the option or the comparison</li> <li><input type="checkbox"/> Probably favours the option</li> <li><input checked="" type="checkbox"/> Favours the option</li> </ul> <p>What would be the impact on health equity?</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Don't know</li> <li><input type="checkbox"/> Varies</li> <li><input type="checkbox"/> Reduced</li> <li><input type="checkbox"/> Probably reduced</li> <li><input type="checkbox"/> Probably no impact</li> <li><input checked="" type="checkbox"/> Probably increased</li> <li><input type="checkbox"/> Increased</li> </ul>	<p>As stated above, the cost of implementing the intervention depend on the status of rehabilitation service delivery; therefore, the cost-effectiveness in the short to medium term will be variable. Indirect evidence shows that, in the long term, providing rehabilitation services in the community and in hospitals is cost-effective (24,25). Therefore, the Guideline Development Group considered that the cost-effectiveness of the intervention favours the option.</p> <p>The intervention would result in increased access to services and therefore promote equity; however, as no studies were identified in the systematic literature review of the impact of community- and hospital-based services jointly and no comparisons of the intervention with the comparison, the Guideline Development Group considered that the intervention would probably increase equity.</p>

### D: Both community and hospital rehabilitation services should be made available

Question	Decision	Explanation
<b>Acceptability</b> Is the option acceptable to key stakeholders?	<input type="checkbox"/> Don't know <input type="checkbox"/> Varies <input type="checkbox"/> No <input type="checkbox"/> Probably no <input type="checkbox"/> Probably yes <input checked="" type="checkbox"/> Yes	<p>The systematic literature review on values, preferences, acceptability and feasibility identified two studies (26,27) that suggest that rehabilitation service users are likely to find their provision in both community and hospital settings definitely acceptable.</p> <p>This PICO question was not included in the survey of stakeholder perceptions, but 79.19% of survey respondents considered community rehabilitation services definitely acceptable (7).</p> <p>Furthermore, the intervention is aligned with objective 2 of the <i>WHO global disability action plan 2014–2021</i> (6), which was endorsed at the Sixty-seventh World Health Assembly, and with the <i>WHO global strategy on people-centred and integrated health services</i> (28).</p>
<b>Feasibility</b> Is implementation of the option feasible?	<input type="checkbox"/> Don't know <input type="checkbox"/> Varies <input type="checkbox"/> No <input type="checkbox"/> Probably no <input type="checkbox"/> Probably yes <input checked="" type="checkbox"/> Yes	<p>The systematic literature review identified two studies (10,27) that demonstrate the feasibility of providing rehabilitation services in both community and hospital settings.</p> <p>This PICO question was not included in the survey of stakeholder perceptions, but 74.86% of respondent considered community rehabilitation services definitely acceptable (7).</p> <p>The feasibility of implementing the intervention will depend on numerous factors, including the existing status of rehabilitation services in community and hospital settings. Ample indirect evidence, however, demonstrates the feasibility of providing rehabilitation in both community and hospital settings (29).</p>

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E: Hospitals should include specialized rehabilitation units to provide inpatient rehabilitation		
Question	Decision	Explanation
<b>Problem</b>	<p>Is the problem a priority?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> No  <input type="checkbox"/> Probably no  <input type="checkbox"/> Probably yes  <input checked="" type="checkbox"/> Yes</p>	<p>People with complex health needs who are managed in specialized units often benefit from early rehabilitation, which can minimize deconditioning, prevent complications and maximize functional outcomes. Some people with complex rehabilitation needs require intensive, specialized rehabilitation in hospital in order to achieve optimal outcomes (1–8).</p>
	<p>Is there large uncertainty about or variation in how much people value the main outcome?</p> <p><input type="checkbox"/> Important uncertainty or variability  <input type="checkbox"/> Possibility of uncertainty or variability  <input type="checkbox"/> Probably no important uncertainty or variability  <input checked="" type="checkbox"/> No important uncertainty or variability</p>	<p>In the survey of stakeholder perceptions, 64.2% of responders rated affordability as critical, 80.11% rated increasing access as critical, and 76.14% rated increasing use as critical (9).  The consensus of the Guideline Development Group was that there is no important uncertainty in the variability of the main outcome.</p>
<b>Benefits of and harm due to the option</b>	<p>What is the overall certainty about the evidence of effects?</p> <p><input type="checkbox"/> No included studies  <input type="checkbox"/> Very low  <input type="checkbox"/> Low  <input type="checkbox"/> Moderate  <input checked="" type="checkbox"/> High</p>	<p>In view of the quality of the combined evidence identified in the systematic literature review (3–5), the Guideline Development Group found that there is high certainty about the evidence of effects.</p>
	<p>How substantial are the desirable anticipated effects?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Trivial  <input type="checkbox"/> Small  <input type="checkbox"/> Moderate  <input checked="" type="checkbox"/> Large</p>	<p>The desirable anticipated effects include positive health outcomes, such as reduced mortality, and improved functional status and independence (7). The Guideline Development Group concluded that the evidence (1–8) indicated that effects were large.  Furthermore, the intervention is aligned with objective 2 of the <i>WHO global disability action plan 2014–2021</i> (9), which was endorsed at the Sixty-seventh World Health Assembly, and with the <i>WHO global strategy on people-centred and integrated health services</i> (11).</p>
	<p>How substantial are the undesirable anticipated effects?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Large  <input type="checkbox"/> Moderate  <input type="checkbox"/> Small  <input checked="" type="checkbox"/> Trivial</p>	<p>The evidence did not reveal any undesirable effects of the intervention, and the Guideline Development Group could not determine any potential harm.</p>

E: Hospitals should include specialized rehabilitation units to provide inpatient rehabilitation		
Question	Decision	Explanation
Benefits of and harm due to the option	<p>Does the balance between desirable effects and undesirable effects favour the option of the comparison?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Favours the comparison  <input type="checkbox"/> Probably favours the comparison  <input type="checkbox"/> Does not favour either the option or the comparison  <input type="checkbox"/> Probably favours the option  <input checked="" type="checkbox"/> Favours the option</p>	<p>In view of the large anticipated benefits and trivial harm of the intervention, the Guideline Development Group considered that the balance between desirable and undesirable effects of the intervention favoured the option.</p>
	<p>How large are the resource requirements?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Large costs  <input type="checkbox"/> Moderate costs  <input checked="" type="checkbox"/> Negligible costs or savings  <input type="checkbox"/> Moderate costs  <input type="checkbox"/> Moderate savings  <input type="checkbox"/> Large savings</p>	<p>Most of the resources required for implementing the intervention are for equipment, workforce training and administrative costs. These would depend on the current status of specialized rehabilitation units in hospitals.</p> <p>Indirect evidence for cost-effectiveness, including cost evaluations, indicates large long-term savings (12,13). The Guideline Development Group therefore concluded that the resource requirements would result in negligible long-term costs or savings at system level.</p>
Resource use	<p>What is the certainty of the evidence of resource requirements?</p> <p><input type="checkbox"/> No included studies  <input type="checkbox"/> Very low  <input checked="" type="checkbox"/> Low  <input type="checkbox"/> Moderate  <input type="checkbox"/> High</p>	<p>The studies identified in the systematic literature review provided low-quality evidence on resource requirements.</p>
	<p>Does the cost-effectiveness of the intervention favour the option or the comparison?</p> <p><input checked="" type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Favours the comparison  <input type="checkbox"/> Probably favours the comparison  <input type="checkbox"/> Does not favour either the option or the comparison  <input type="checkbox"/> Probably favours the option  <input type="checkbox"/> Favours the option</p>	<p>None of the studies identified in the systematic literature review directly considered cost-effectiveness; however, indirect evidence suggests that cost savings could be substantial in the long term (12,13).</p>

### E: Hospitals should include specialized rehabilitation units to provide inpatient rehabilitation

Question	Decision	Explanation
<b>Equity</b> What would be the impact on health equity?	<input type="checkbox"/> Don't know <input type="checkbox"/> Varies <input type="checkbox"/> Reduced <input type="checkbox"/> Probably reduced <input type="checkbox"/> Probably no impact <input checked="" type="checkbox"/> Probably increased <input type="checkbox"/> Increased	<p>The intervention would increase the availability of rehabilitation services in hospitals, which, depending on how the required resources were mobilized, would contribute to universal coverage and hence promote equity. If resources were drawn away from service delivery in the community or in other rehabilitation services in hospitals, equity might be compromised. The Guideline Development Group considered that equity would probably increase with implementation of the intervention.</p>
<b>Acceptability</b> Is the option acceptable to key stakeholders?	<input type="checkbox"/> Don't know <input type="checkbox"/> Varies <input type="checkbox"/> No <input type="checkbox"/> Probably no <input type="checkbox"/> Probably yes <input checked="" type="checkbox"/> Yes	<p>The systematic literature review on values, preferences, acceptability and feasibility did not identify any studies on the acceptability of this intervention.</p> <p>In the survey of stakeholder perceptions, 68.21% of the responders considered the intervention to be definitely acceptable (9). Furthermore, the intervention is aligned with objective 2 of the <i>WHO global disability action plan 2014–2021</i> (9), which was endorsed at the Sixty-seventh World Health Assembly, and with the <i>WHO global strategy on people-centred and integrated health services</i> (11).</p>
<b>Feasibility</b> Is implementation of the option feasible?	<input type="checkbox"/> Don't know <input type="checkbox"/> Varies <input type="checkbox"/> No <input type="checkbox"/> Probably no <input type="checkbox"/> Probably yes <input checked="" type="checkbox"/> Yes	<p>The systematic literature review did not identify any studies on the feasibility of implementing this intervention.</p> <p>In the survey of stakeholder perceptions, 66.86% of the responders considered implementation of the intervention to be definitely feasible (9).</p> <p>The feasibility of implementing the intervention will depend on numerous factors, including the current status of rehabilitation services in hospitals and the geographical location of these services with respect to the population that needs them.</p>

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F: Financial resources should be allocated to implement and sustain the recommendation on rehabilitation service delivery		
Question	Decision	Explanation
<b>Problem</b>	<p>Is the problem a priority?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> No  <input type="checkbox"/> Probably no  <input type="checkbox"/> Probably yes  <input checked="" type="checkbox"/> Yes</p>	<p>In many settings, access to rehabilitation services is strongly hindered, either because they do not exist or because the existing services cannot meet the needs of the population (1). <i>The World report on disability (1)</i> and the <i>WHO global disability action plan 2014–2021 (2)</i> state that specific allocation of resources can extend and strengthen rehabilitation services.</p> <p>In view of the substantial impact of financial investment on the development of services, the Guidelines Development Group considered resource allocation a priority.</p>
	<p>Is there large uncertainty about or variation in how much people value the main outcome?</p> <p><input type="checkbox"/> Important uncertainty or variability  <input type="checkbox"/> Possibility of uncertainty or variability  <input type="checkbox"/> Probably no important uncertainty or variability  <input checked="" type="checkbox"/> No important uncertainty or variability</p>	<p>In the survey of stakeholder perceptions, 64.2% of the responders rated affordability as critical, 80.11% rated increasing access as critical, and 76.14% rated increasing use as critical (3).  The consensus of the Guideline Development Group was that there is no large uncertainty about or variation in how much people value the main outcome.</p>
<b>Benefits of and harm due to the option</b>	<p>What is the overall certainty about the evidence of effects?</p> <p><input type="checkbox"/> No included studies available to the panel  <input checked="" type="checkbox"/> Very low  <input type="checkbox"/> Low  <input type="checkbox"/> Moderate  <input type="checkbox"/> High</p>	<p>The evidence identified in the systematic literature review (4–6) was of very low quality. The Guideline Development Group concluded that economic evaluations and indirect evidence (7–19) increased the certainty of the evidence of effects.</p>
	<p>How substantial are the desirable anticipated effects?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Trivial  <input type="checkbox"/> Small  <input checked="" type="checkbox"/> Moderate  <input type="checkbox"/> Large</p>	<p>The anticipated desirable effects of allocating finances to rehabilitation include increased investment, allowing growth and extension of services. The systematic literature review conducted by Brusco et al. (5) (within the scope of services to which these recommendations refer) and indirect evidence (7–20) indicate that the desirable effects of the intervention are moderate.</p>
	<p>How substantial are the undesirable anticipated effects?</p> <p><input checked="" type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Trivial  <input type="checkbox"/> Small  <input type="checkbox"/> Moderate  <input type="checkbox"/> Large</p>	<p>The Guideline Development Group was unaware of any undesirable effects of or harm due to the intervention for the population of interest.</p>

## F: Financial resources should be allocated to implement and sustain the recommendation on rehabilitation service delivery

Question	Decision	Explanation
<b>Benefits of and harm due to the option</b> Does the balance between desirable effects and undesirable effects favour the option or the comparison?	<input type="checkbox"/> Don't know <input type="checkbox"/> Varies <input type="checkbox"/> Favours the comparison <input type="checkbox"/> Probably favours the comparison <input type="checkbox"/> Does not favour either the option or the comparison <input checked="" type="checkbox"/> Probably favours the option <input type="checkbox"/> Favours the option	In view of the moderate anticipated benefits and unknown harm of the intervention, the Guideline Development Group considered that the balance between desirable and undesirable effects favoured the option. Furthermore, the population of interest would experience substantial harm if the intervention were not implemented.
<b>Equity</b> What would be the impact on health equity?	<input type="checkbox"/> Don't know <input type="checkbox"/> Varies <input type="checkbox"/> Reduced <input type="checkbox"/> Probably reduced <input type="checkbox"/> Probably no impact <input checked="" type="checkbox"/> Probably increased <input type="checkbox"/> Increased	Allocation of financial resources to rehabilitation would increase service capacity and increase accessibility for the population, which would inherently result in more equitable service provision (1,21). Although the studies identified in the systematic literature review did not directly address the impact of the intervention on equity, the Guideline Development Group concluded that it would probably increase equity.
<b>Acceptability</b> Is the option acceptable to key stakeholders?	<input type="checkbox"/> Don't know <input type="checkbox"/> Varies <input type="checkbox"/> No <input type="checkbox"/> Probably no <input type="checkbox"/> Probably yes <input checked="" type="checkbox"/> Yes	<p>The systematic literature review on values, preferences, acceptability and feasibility did not identify any studies on the acceptability of this intervention.</p> <p>The survey of stakeholder perceptions did not include this PICO question.</p> <p>The acceptability of the intervention is supported by the <i>World report on disability (1)</i>, its alignment with objective 2 of the <i>WHO global disability action plan 2014–2021 (2)</i> and its adoption in numerous (mainly high-income) countries.</p>
<b>Feasibility</b> Is implementation of the option feasible?	<input type="checkbox"/> Don't know <input type="checkbox"/> Varies <input type="checkbox"/> No <input type="checkbox"/> Probably no <input checked="" type="checkbox"/> Probably yes <input type="checkbox"/> Yes	<p>The systematic literature review did not identify any studies on the feasibility of this intervention.</p> <p>The survey of stakeholder perceptions did not include this PICO question.</p> <p>The evidence found in the systematic literature review (4–6) and indirect evidence (7–19) indicate the feasibility of implementing the intervention, as does its adoption by numerous (mainly high-income) countries. The feasibility of implementing the intervention will, however, depend on the revenue available for allocation.</p>

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G: Where health insurance exists or is to be implemented, it should cover rehabilitation services		
Question	Decision	Explanation
<b>Problem</b>	<p>Is the problem a priority?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> No  <input type="checkbox"/> Probably no  <input type="checkbox"/> Probably yes  <input checked="" type="checkbox"/> Yes</p>	<p>The cost of rehabilitation can present a barrier to access and use of services. The inclusion of rehabilitation in coverage by health insurance can overcome this barrier (7). In view of the risks in terms of health outcomes and the subsequent financial and social impacts associated with not being able to afford services (2–5), this issue is a priority.</p>
<b>Benefits of and harm due to the option</b>	<p>Is there important uncertainty about or variability in how much people value the main outcome?</p> <p><input type="checkbox"/> Important uncertainty or variability  <input type="checkbox"/> Possibility of uncertainty or variability  <input type="checkbox"/> Probably no important uncertainty or variability  <input checked="" type="checkbox"/> No important uncertainty or variability</p> <p>What is the overall certainty about the evidence of effects?</p> <p><input type="checkbox"/> No included studies available to the panel  <input checked="" type="checkbox"/> Very low  <input type="checkbox"/> Low  <input type="checkbox"/> Moderate  <input type="checkbox"/> High</p> <p>How substantial are the desirable anticipated effects?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Trivial  <input type="checkbox"/> Small  <input checked="" type="checkbox"/> Moderate  <input type="checkbox"/> Large</p> <p>How substantial are the undesirable anticipated effects?</p> <p><input checked="" type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Large  <input type="checkbox"/> Moderate  <input type="checkbox"/> Small  <input type="checkbox"/> Trivial</p>	<p>In the survey of stakeholder perceptions, 80.1% of responders rated increasing access as critical, and 76.14% rated increasing use as critical (6).  The consensus of the Guideline Development Group was that there is no important uncertainty in the variability of the main outcome.</p> <p>The evidence identified in the systematic literature review was of very low quality.</p> <p>The available evidence shows that the desirable anticipated effects of the intervention, including reduced financial barriers to rehabilitation services where health insurance is available, are moderate (5,7).</p> <p>The Guideline Development Group was unaware of any undesirable effects of or harm caused by the intervention for the population of interest.</p>

G: Where health insurance exists or is to be implemented, it should cover rehabilitation services		
Question	Decision	Explanation
Benefits of and harm due to the option	<p>Does the balance between desirable effects and undesirable effects favour the option of the comparison?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Favours the comparison  <input type="checkbox"/> Probably favours the comparison  <input type="checkbox"/> Does not favour either the option or the comparison  <input checked="" type="checkbox"/> Probably favours the option  <input type="checkbox"/> Favours the option</p>	<p>In view of the moderate anticipated benefits and the unknown harm of the intervention, the Guideline Development Group considered that the balance between desirable and undesirable effects favoured the option. Furthermore, the financial barriers that would remain if the intervention were <i>not</i> implemented constitute a known harm for the population of interest (7).</p>
	<p>How large are the resource requirements?</p> <p><input type="checkbox"/> Don't know  <input checked="" type="checkbox"/> Varies  <input type="checkbox"/> Large costs  <input type="checkbox"/> Moderate costs  <input type="checkbox"/> Negligible costs or savings  <input type="checkbox"/> Moderate costs  <input type="checkbox"/> Moderate savings  <input type="checkbox"/> Large savings</p>	<p>The intervention could result in large cost savings for the working-age population. Therefore, savings may be made in various sectors and not only the health sector.</p> <p>The long-term cost savings at system level associated with rehabilitation would be promoted through the intervention and would also apply to the insurance industry, especially in regard to prevention.</p>
Resource use	<p>How certain is the evidence of resource requirements?</p> <p><input type="checkbox"/> No included studies available to the panel  <input checked="" type="checkbox"/> Very low  <input type="checkbox"/> Low  <input type="checkbox"/> Moderate  <input type="checkbox"/> High</p>	<p>The quality of the evidence identified in the systematic literature review on resource requirements was very low (5,7).</p>
	<p>Does the cost-effectiveness of the intervention favour the option or the comparison?</p> <p><input type="checkbox"/> Don't know  <input type="checkbox"/> Varies  <input type="checkbox"/> Favours the comparison  <input type="checkbox"/> Probably favours the comparison  <input type="checkbox"/> Does not favour either the option or the comparison  <input checked="" type="checkbox"/> Probably favours the option  <input type="checkbox"/> Favours the option</p>	<p>The systematic literature review provided limited evidence for the cost-effectiveness of the intervention; however, in combination with substantial indirect evidence (8-13), including health economic studies, that show long-term cost savings or benefits associated with the intervention at service level, these findings led the Guideline Development Group to conclude that the cost-effectiveness of the intervention probably favours the option.</p>

## G: Where health insurance exists or is to be implemented, it should cover rehabilitation services

Question	Decision	Explanation
<b>Equity</b> What would be the impact on health equity?	<input type="checkbox"/> Don't know <input type="checkbox"/> Varies <input type="checkbox"/> Reduced <input type="checkbox"/> Probably reduced <input type="checkbox"/> Probably no impact <input checked="" type="checkbox"/> Probably increased <input type="checkbox"/> Increased	As the intervention makes rehabilitation services affordable, it promotes equity. The evidence identified in the systematic literature review did not directly address the impact of the intervention on equity; however, the Guideline Development Group concluded that it would probably increase equity.
<b>Acceptability</b> Is the option acceptable to key stakeholders?	<input type="checkbox"/> Don't know <input type="checkbox"/> Varies <input type="checkbox"/> No <input type="checkbox"/> Probably no <input checked="" type="checkbox"/> Probably yes <input type="checkbox"/> Yes	<p>The systematic literature review did not identify any studies on the acceptability of this intervention.</p> <p>In the survey of stakeholder perceptions, 61.27% of responders considered the intervention to be definitely acceptable (6).</p> <p>The acceptability of the intervention is supported by the <i>World report on disability (1)</i>, its alignment with objective 2 of the <i>WHO global disability action plan 2014–2021 (14)</i> and adoption by numerous (mainly high-income) countries.</p>
<b>Feasibility</b> Is implementation of the option feasible?	<input type="checkbox"/> Don't know <input type="checkbox"/> Varies <input type="checkbox"/> No <input type="checkbox"/> Probably no <input checked="" type="checkbox"/> Probably yes <input type="checkbox"/> Yes	<p>The systematic literature review did not identify any studies on the feasibility of this intervention.</p> <p>In the survey of stakeholder perceptions, 54% of responders considered the intervention to be definitely feasible (6).</p> <p>The feasibility of the intervention is also indicated by the fact that rehabilitation is covered in many health insurance schemes.</p>

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## Annex 4. Declarations of Interest

All members of the Guideline Development Group completed WHO declaration of interest forms. Forms on which a member declared a potential conflict of interest were reviewed by the Secretariat to determine whether participation was appropriate or if the nature of the participation should be amended. Three members declared potential conflicts of interest related to research support: Christoph Gutenbrunner declared involvement with German Pension Insurance research projects (no monetary value); Gwynnyth Llewellyn declared income (AUD 185 000) in 2011 for involvement in disability research and declared having worked on a position paper on the health rehabilitation workforce in the Pacific; and Vibha Krishnamurthy declared a research grant to Unmeed Child Development Center for the development of an international guide to monitoring and supporting child development. Lynne Turner-Stokes declared a potential conflict of interest related to her positions as a consultant physician in rehabilitation medicine and as Director of the Regional Rehabilitation Unit at Kings College London. Frances Simmonds likewise declared her position as Director of the Australian Rehabilitation Outcomes Centre and also declared that her university held intellectual property rights to a case-mix classification system (AN-SNAP). None of these declarations was considered to exclude participation in the Guideline Development Group or justify amending the nature of their participation.

Name	Affiliation	Conflict of interest declared	Considered to be in conflict with participation in guideline development
Linamara Battistella	Medical School, University of São Paulo	No	No
Christoph Gutenbrunner	International Society of Physical and Rehabilitation Medicine	Yes	No
Mohamed El Khadiri	Disabled People's Organization, Morocco	No	No
Vibha Krishnamurthy	Ummeed Child Development Center	Yes	No
Gwynnyth Llewellyn	University of Sydney	Yes	No
Ipul Powaseu	Pacific Adventist University	No	No
Frances Simmonds	University of Wollongong	Yes	No
Claude Tardif	International Committee of the Red Cross	No	No
Lynne Turner-Stokes	Cicely Saunders Institute	Yes	No
Qiu Zhuoying	China Rehabilitation Research Center and Co-chair of WHO Family International Classifications Collaborating Center China	No	No









# REHABILITATION

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