Package of interventions for Rehabilitation

Module 1

Introduction

World Health Organization

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Package of interventions for rehabilitation. Module 1. Introduction

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Preface

Rehabilitation is one of the essential health services included in WHO's definition of universal health coverage. It is effective in shortening recovery time, preventing complications related to acute and chronic conditions, and improving physical and mental functioning and well-being. Rehabilitation can enable people to return to and engage in work, community and family life, and help to reduce social isolation. Furthermore, rehabilitation empowers people to manage their health conditions.

Globally, one in three people need rehabilitation at some point in their lives, as the result of congenital, acute or chronic health conditions. With the rising prevalence of noncommunicable diseases, ageing populations, and improved survival from injuries, the need for rehabilitation services is expected to increase significantly.

Although WHO recognized rehabilitation as an essential health service more than four decades ago, there continues to be a large unmet need for rehabilitation, particular in many low- and middle-income countries. Low investment and awareness persist, driven by pervasive misconceptions that rehabilitation is too costly, or simply unfeasible to deliver in low-resource settings. As this document shows, a number of effective interventions for a range of health conditions can be applied in such settings.

The WHO *Package of interventions for rehabilitation* outlines the most essential rehabilitation interventions for 20 health conditions that have high prevalence and high levels of associated disability. It also includes information on the workforce needs, and the assistive products, equipment and consumables required to deliver these interventions. As such, this document presents an indispensable resource for countries when planning for and budgeting the integration of rehabilitation services into their health systems.

More than 700 rehabilitation experts, drawn from 90 countries, contributed to the development of this resource. The large and enthusiastic participation from experts from around the world underscores the urgent need to enable people to access rehabilitation as quickly as possible. The WHO *Package of interventions for rehabilitation* marks an important step towards including rehabilitation in packages of care as part of universal health coverage, and in realizing the vision of the Rehabilitation 2030 Initiative, where every individual has access to the quality rehabilitation they need.

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Technical contribution and review

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WHO headquarters

From WHO Sensory Functions, Disability and Rehabilitation Unit: Shelly Chadha (Hearing programme), Wouter de Groote (Rehabilitation programme, Kaloyan Kamenov (Disability programme), Stuart Keel (Vision programme), Pauline Kleinitz (Rehabilitation programme), Qhayiya Magaqa (Rehabilitation programme), Elanie Marks (Rehabilitation programme), Jody-Anne Mills (Rehabilitation programme), Pete Skelton (Rehabilitation programme), and Abena Tannor (Rehabilitation programme). From WHO Health Product Policy and Standards Unit: Bernadette Capello (Essential Medicine List Team), Benedikt Huttner (Essential Medicine List Team), Lorenzo Moja (Essential Medicine List Team), Giulia Oggero (Assistive technology), Louise Puli (Assistive technology), Emma Tebbutt (Assistive technology). From WHO Mental Health and Substance Use Department: Devorah Kestel, Chiara Servili (Brain Health Unit), Vanessa Cavallera (Brain Health Unit), Tarun Dua (Brain Health Unit), Fahmy Hanna (Mental Health Unit), Nicoline Schiess (Brain Health Unit), Katrin Seeher (Brain Health Unit), Mark van Ommeren (Mental Health Unit), Marieke van Regteren Altena (Brain Health Unit). From WHO Ageing and Health Unit: Andrew Briggs, Matteo Cessari, Yuka Sumi. From WHO Management-Screening, Diagnosis and Treatment of Noncommunicable Disease Unit: Andre Ilbawi, Elena Fidarova, Taskeen Khan, Sarah Rylance, and Slim Slama; From WHO Quality Assurance, Norms and Standard Unit: Susan Norris, Rebecca Thomas Bosco. From WHO Classification and Terminologies Unit: Robert Jakob, Nenad Konstanjsek. From WHO Clinical Services and Systems Unit: John Fogarty, Teri Reynolds. From WHO Analytics and Delivery for Impact Unit: Melanie Bertram, Robert Jakob, Nenad Kostanjsek.

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Professional associations

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Nongovernmental organizations

The Christoffel-Blindenmission (CBM) International; Humanity & Inclusion (HI); International Committee of the Red Cross (ICRC); International Disability and Development Consortium (IDDC); Italian Association Amici di Raoul Follereau (AIFO); Rehabilitation International (RI).

Disease-specific associations

African Spinal Cord Injury Network (AFSCIN); Alzheimer's Disease International (ADI); Childhood Cancer International (CCI); Dementia Alliance International (DAI); European Federation of Neurological Associations (EFNA); European Respiratory Society (ERS); European Society of Gynaecological Oncology (ESGO); Global Alliance for Musculoskeletal Health (G-MUSC); International Alliance of Academics of Childhood Disability (IAACD); International Association for Child and Adolescent Psychiatry and Allied Professions (IACAPAP); International Association for the Scientific Study of Intellectual and Developmental Disabilities (IASSIDD); International Council of Cardiovascular Prevention and Rehabilitation (ICCPR); International Psycho-Oncology Society (IPOS); International Spinal Cord Society (ISCoS); Multinational Association of Supportive Care in Cancer (MASCC); Union for International Cancer Control (UICC); World Association for Psychosocial Rehabilitation (WAPR); World Federation for Neurorehabilitation (WFNR); World Psychiatric Association (WPA); World Stroke Organization (WSO).

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Executive summary

In its Thirteenth General Programme of Work 2019–2023, the World Health Organization (WHO) defines the achievement of universal health coverage as a strategic priority goal to address Sustainable Development Goal 3. Rehabilitation is an essential health strategy to which people in need should have access without being exposed to financial hardship. It is a fundamental health service for people with a wide range of health conditions, throughout all stages of the life course, and during all phases of acute, subacute and long-term care. However, despite the growing need for rehabilitation, there remains a lack of awareness about its role and importance within health services and the magnitude of unmet needs, particularly in low- and middle-income countries.

WHO's Rehabilitation 2030 Initiative identified 10 areas for concerted action to reduce the unmet needs for rehabilitation. Incorporating rehabilitation into universal health coverage is one of the areas targeted to increase access to rehabilitation for all people in need. The *Package of interventions for rehabilitation* is a resource developed to support ministries of health and other target users, such as service planners, service providers, academics and researchers. It provides information on essential interventions for people with health conditions requiring the highest needs for rehabilitation across different disease areas. It further describes the required time for the delivery of interventions, the required related materials (e.g. assistive products, equipment, consumables), and human (workforce) resources. Interventions selected for inclusion address problems in functioning relevant to many people living with a health condition; they were considered cost-effective, and feasible to deliver in low- and middle-resource contexts, even if implementation requires strengthening the rehabilitation workforce in these countries. The *Package of interventions for rehabilitation* can be used for the planning and budgeting of rehabilitation services, developing curricula and training materials, and identifying research gaps for defining research agendas.

The *Package of interventions for rehabilitation* was developed for 20 health conditions which are categorized under seven disease areas:

Musculoskeletal conditions: low back pain, osteoarthritis, rheumatoid arthritis, sarcopenia, fractures of the extremities, amputations.

Neurological conditions: stroke, Parkinson disease, cerebral palsy, traumatic brain injury, spinal cord injury, dementia.

Cardiopulmonary conditions: ischaemic heart disease, chronic obstructive pulmonary disease.

Neurodevelopmental disorders: autism spectrum disorder, disorders of intellectual development.

Sensory conditions: vision impairment, hearing loss.

Malignant neoplasm: cancers.

Mental health conditions: schizophrenia.

The health conditions included in the *Package of interventions for rehabilitation* correspond to those in the International Classification of Diseases; the functioning domains to the International Classification of Functioning Disability and Health; and the interventions to the International Classification of Health Interventions.

Development of the *Package of interventions for rehabilitation* was supervised by WHO's Guideline Review Committee. Technical working groups identified interventions from high-quality clinical practice guidelines and Cochrane systematic reviews. Development groups selected the interventions to be included and the descriptions of related resources; a final review was conducted by peer review groups. Members of the working groups represented a wide range of stakeholder organizations relevant to rehabilitation.

The *Package of interventions for rehabilitation* is an important tool for planning the implementation of rehabilitation in health systems and for strengthening the rehabilitation workforce. As such, it complements WHO's *Rehabilitation in health systems – guide for action* and the *Rehabilitation competency framework*. For dissemination of the *Package of interventions for rehabilitation*, and to support its adaptation and implementation by WHO Member States, WHO will partner with ministries of health, nongovernmental organizations, and professional associations for specific health conditions.

1. Background

1.1 Rehabilitation and universal health coverage

In 2015, the 2030 Agenda for Sustainable Development was adopted by the United Nations General Assembly with the overall goal to end poverty, protect the planet, and ensure prosperity for all *(1)*. Among the 17 Sustainable Development Goals (SDGs), SDG 3 specifically addresses health with the aim to "ensure healthy lives and promote well-being for all ages". Actions addressing SDG3 should ensure that everyone, not only the wealthiest, has access to the highest standard of health and health care *(2)*. Furthermore, SDG3 calls for the achievement of universal health coverage (UHC), defined as "all people receiving quality health services that meet their needs without being exposed to financial hardship in paying for the services" (Box 1) *(3)*. Therefore, the range of services considered must extend beyond those addressing treatment and cure to also include prevention, promotion, rehabilitation, and palliative care *(3)*. In its Thirteenth General Programme of Work 2019–2023 (GPW 13) *(4)*, the World Health Organization (WHO) defined the achievement of UHC as a strategic priority goal to address SDG3. Within GPW 13, WHO will support countries by providing evidence-based solutions to increase access to health services while ensuring the highest possible quality and emphasizing patient safety.

Box 1. Universal health coverage

"Universal health coverage (UHC) is defined as all people receiving quality health services that meet their needs without being exposed to financial hardship in paying for the services. UHC means every individual and community receive the full spectrum of care they need, from health promotion to prevention, treatment, rehabilitation, and palliative care."

Rehabilitation is an essential health strategy and, as such, is a fundamental health service for people with a wide range of health conditions, throughout all stages of their life course, and during all phases of acute, subacute and long-term care. Whereas conditions that are particularly relevant to children with developmental issues (e.g. autism spectrum disorders, disorders of intellectual development, cerebral palsy) are referred to under the term "habilitation", "rehabilitation" is used in the PIR to encompass both rehabilitation and habilitation.

Rehabilitation addresses the impact of a health condition on a person's life by focusing primarily on improving functioning and reducing disability. The core task of rehabilitation is to address the problems in functioning that have arisen in relation to a disease, injury, or the ageing process, in the context of the individual person. This can be achieved by providing interventions to support functioning and independence. These are referred to as functioning interventions and include

interventions to educate and empower people to manage their own health conditions, adapt to their situation, and remain as independent and as active as possible. Functioning interventions further address the needs of carers and family members who play an essential role in helping to achieve and maintain optimal functioning levels in people with health conditions (Box 2).

Through functioning interventions, rehabilitation enables people with health conditions to achieve and maintain greater participation in meaningful areas of life, such as education, employment and social and community life, with far-reaching health, social and economic benefits.

Box 2. Interventions for rehabilitation

Rehabilitation provides sets of interventions designed to optimize functioning and reduce disability in individuals with health conditions, in interaction with their environment. Interventions for rehabilitation comprise those that target specific aspects of functioning (body functions, body structures, activities and participation) and aspects that have an impact of an individual's functioning (environmental functions and personal factors). These are referred to as ***functioning interventions*** and include, for example, muscle-strengthening exercises, language training, breathing exercises, training of activities of daily living, social skills or communication skills, provision and training in the use of assistive products and environmental modifications. Functioning interventions also address the self-management skills of the people living with the health condition (e.g. education and advice on the self-management of the health condition or self-directed exercises), and carer and family skills (e.g. carer and family training on care-related techniques and tasks).

However, despite the growing need for rehabilitation, there is still a lack of awareness about its role and the magnitude of unmet needs, particularly in low- and middle-income countries *(5)*. To catalyse action for rehabilitation, WHO launched the Rehabilitation 2030 Initiative in 2017. Rehabilitation 2030 draws attention to the increasing need for rehabilitation, highlights the role of rehabilitation in achieving the SDGs and UHC, and calls for coordinated and concerted global action towards strengthening rehabilitation in health systems *(6)*.

1.2 Responding to Rehabilitation 2030: a call for action

WHO's Rehabilitation 2030 Initiative identified 10 areas for concerted action to reduce the unmet needs for rehabilitation. Some of the actions outlined target specifically the strengthening of rehabilitation leadership, planning and integration across health sectors; developing a strong and multidisciplinary rehabilitation workforce; and incorporating rehabilitation into UHC. Prior to the *Package of interventions for rehabilitation* (PIR), WHO's *Rehabilitation in health systems – guide for action (7)* assists governments in situation assessment and strategic planning, and the *Rehabilitation competency framework (8)* helps countries ensure that rehabilitation workers have the necessary competencies to deliver the quality rehabilitation services needed by the population. Furthermore, the *Routine health information systems – rehabilitation toolkit (9)* guides the data collection and supports the integration of rehabilitation into facility-level reporting.

1.3 Purpose and target audience

The PIR was developed to support countries in planning, budgeting, and integrating rehabilitation into their health system by providing information on essential interventions, their availability at service delivery levels, and the materials and human resources required for delivery. The PIR complements the *Rehabilitation in health systems: guide for action* and the *Rehabilitation competency framework (7, 8)* and thereby contributes to supporting countries in strengthening rehabilitation in their health systems.

The primary audience for the PIR is ministries of health and other relevant ministries involved in planning and budgeting health services. Other potential end-users of the PIR include service planners and providers, academics, researchers, and donors and development agencies.

2. Scope of the Package of interventions for rehabilitation

The PIR addresses 20 health conditions categorized under different disease areas (Box 3). For each of the 20 health conditions, information is provided in seven disease-area-specific modules on:

- essential interventions for rehabilitation;
- time required to deliver an intervention session;
- material resources required for the delivery of the interventions;
- the rehabilitation workers best suited to provide the interventions.

Information on the underlying evidence that has informed the selection of interventions is available with supplementary files for each of the modules.

2.1 Health conditions

While there are many health conditions amenable to rehabilitation that have not been included in the PIR, those selected have the highest needs for rehabilitation as they have the highest prevalence and/or are associated with the highest levels of disability.

The selection further considers the need for rehabilitation at all stages of the life course: from birth-related to age-related diseases, and age-independent conditions, such as injuries or cancer.

Box 3. Health conditions included in the *Package of interventions for rehabilitation*

Disease area	Health condition
Musculoskeletal conditions	Low back pain
	Osteoarthritis
	Rheumatoid arthritis
	Sarcopenia
	Fractures
	Amputation
Neurological conditions	Stroke
	Parkinson disease
	Dementia
	Cerebral palsy
	Traumatic brain injury
	Spinal cord injury
Cardiopulmonary conditions	Ischemic heart disease
	Chronic obstructive pulmonary disease
Neurodevelopmental disorders	Autism spectrum disorder
	Disorders of intellectual development
Sensory impairments	Vision impairment
	Hearing loss
Malignant neoplasm	Cancer
Mental health	Schizophrenia

2.2 Description of interventions in the *Package of interventions for rehabilitation*

The list of interventions available for the specific health conditions is not intended to be exhaustive or exclusive; rather it represents those that are considered essential and feasible to implement in most low- and middle-resource settings. An intervention is defined as "essential" if:

- it is supported by evidence (this includes expert opinion being accepted if evidence from the clinical practice guidelines (CPGs) or Cochrane systematic reviews was not available but all other criteria were fulfilled);
- it benefits many people (i.e. the intervention targets a problem in functioning frequently associated with the health condition);
- its effectiveness is considered as high; or
- the cost–benefit ratio favours benefits above costs.

Functioning interventions optimize aspects of functioning that are impaired (in the context of an individual's body functions and body structures); limited (in the context of activities); or restricted (in the context of participation). Other interventions included in the PIR aim to prevent secondary conditions that are typically seen and that relate to an underlying health condition. These interventions are presented under *Prevention and treatment of secondary conditions*.

Functioning interventions comprise those that are pharmacological (i.e. the intervention involves the provision of medicines) or non-pharmacological (Box 4). Pharmacological interventions are considered for rehabilitation only when targeting impairments in functioning that are caused by a health condition (e.g. spasticity in people with spinal cord injury, or pain with osteoarthritis). Medicines that target the cause, and aim to cure or modify the progression of a health condition, are not considered as interventions for rehabilitation. Some of the medicines included in the PIR have been evaluated and are listed in the *WHO model list of essential medicines (10)* for the indication(s) concerned. Others included in the PIR, but not listed in the model list (either due to pending evaluation or because listing was not recommended) were suggested for inclusion by the development groups according to the selection criteria.

Non-pharmacological interventions are preventive, promotive, restorative or compensatory; they can be further subdivided into the following categories:

- therapeutic techniques and procedures, exercises and training
- physical modalities
- assistive products
- environmental modifications
- self-management interventions (for people living with a health condition and also for their carers and family members).

The selection of interventions to be delivered to an individual is based on initial assessment. Both the information on interventions and the related assessments are provided in the PIR. While additional information on pre-existing comorbidities or problems in functioning (e.g. physical, cognitive, hearing loss or visual impairment in older persons) is critical for the planning of an individual's rehabilitation programme, information on screening or assessment of particular aspects is not provided.

Although the PIR includes sets of essential interventions that should be available for persons requiring rehabilitation, not everyone referred will need to always have access to the full set.

Box 4. Overview of functioning interventions

Intervention type	Intervention category	Example
Pharmacological	Medicines	Analgesics
Non-Pharmacological	Therapeutic techniques and procedures, exercises and training	Manual therapy, cognitive behavioural therapy, range of motion exercises, communication skills training
	Physical modalities	Neuromuscular electrical stimulation
	Assistive products	Provision and training in the use of assistive products for self-care
	Environmental modifications	Installation of ramps, lighting control
	Self-management interventions	Education and advice on self-directed training
		Carer and family training and support

Rehabilitation plans are tailored to an individual's needs and based on initial assessment, goals and preferences; they will therefore differ for each person and along their continuum of care.

Ideally, and particularly for people with more complex health conditions, rehabilitation should be delivered by multidisciplinary teams in appropriate facilities. However, the PIR provides interventions that can be delivered in any setting, including primary care and community settings; this facilitates their accessibility to all people in need when multidisciplinary rehabilitation is unavailable.

The PIR organizes interventions according to functioning domains (Box 5) which combine the essential interventions that relate to a broader functioning domain, such as "Speech, language and communication" or "Motor functions and mobility". Within these domains, specific interventions are further organized according to their target, for example, "Provision and training in the use of assistive products for communication" to improve "Communication"; "Muscle strengthening exercises" to improve "Muscle power functions"; or "Range of motion exercises" to improve "Joint mobility". While the functioning domains that address body functions tend to relate to specific health conditions, and respectively to disease areas, those that address activities and participation are relevant to most of the health conditions, respectively to most of the disease areas, included in the PIR. For example, limitations in performing activities of daily living, vocational activities, or restrictions in participation in community and social life, are relevant to people living with stroke, as well as to people living with chronic obstructive pulmonary conditions, sensory impairments, or schizophrenia. The domains "Self-management" and "Carer and family support" do not address aspects of functioning directly; however, they impact functioning indirectly by improving the behaviours of the person with the health condition, and the care and well-being of carers and family members and are therefore also considered functioning domains.

The organization of interventions according to functioning domains may help service planners identify "cross-cutting" functioning domains that are relevant to many people with different health conditions; they may also assist people from different occupations to find information relating to their specific areas of work.

Box 5. Functioning domains in the *Package of interventions for rehabilitation*

- Mental/Cognitive functions
- Behaviours
- Vision
- Hearing and vestibular functions
- Speech, language and communication
- Dysphagia management
- Nutrition
- Pain management
- Bowel and bladder management
- Sexual functions and intimate relationships
- Respiration functions
- Skin care
- Cardiovascular and immunological functions
- Motor functions and mobility
- Exercise and fitness
- Activities of daily living
- Interpersonal interactions and relationships
- Education and vocation
- Community and social life
- Lifestyle modification
- Self-management
- Carer and family support

2.3 Time required to deliver the intervention

In addition to presenting the types of interventions described above, the PIR also considers the time that is required to deliver the interventions. This "required time" is suggested as an average time (in minutes) for the delivery of one unit of an intervention. In practice, the required time may be less or more, depending on different factors, such as the specific needs of the person receiving the intervention, the efficiency of the worker delivering it, and their environment (such as the availability and use of technology and service systems).

2.4 Material resources

The PIR provides information on material resources to be used for the planning and implementation of rehabilitation services at health facilities and for the budgeting of rehabilitation benefit packages. Material resources comprise assistive products, equipment and consumables. The resources described for the selected interventions are not intended to be exhaustive. Rather they should form a list of minimum essential items that should be available in settings that provide rehabilitation services, and furthermore to provide information on assistive products available for prescription to the people in need.

2.5 Workforce in rehabilitation

Along with providing details on the time and material resource requirements, the PIR also suggests the rehabilitation specialists (Box 6) that would typically be considered best qualified to deliver each intervention. These rehabilitation specialists are usually university- or tertiary-qualified, practice autonomously (by international standards), and deliver care that aims to optimize functioning and reduce disability. They are also generally responsible for supervising, training, mentoring and supporting non-specialists in the delivery of rehabilitation when appropriate. While supporting the delivery of rehabilitation in many settings, non-specialists, namely technicians, assistants, and other mid-level cadres, have not been included in the

PIR: the global diversity of their training and scopes of practice makes assignment to specific interventions unfeasible.

Box 6. Rehabilitation specialists

- Audiologist
- Dietitian and nutritionist
- Nursing professional (incl. psychiatric nurses)
- Occupational therapist
- Ophthalmologist
- Optometrist
- Physiotherapist
- Psychologist
- Prosthetist and orthotist
- Social worker and counselling professional
- Special educator
- Specialist medical practitioner/physical and rehabilitation medicine (PRM) physician
- Speech and language pathologist/therapist

As the availability and education of rehabilitation specialists may vary between countries, the PIR lists all specialists (occupations) that may be relevant to an intervention. This information is intended to be interpreted within each country context and, in countries where rehabilitation workers are still emerging, to guide task allocation to ensure the greatest possible delivery of the interventions. The list of occupations assigned to an intervention should not be viewed as prescriptive.

3. How to use the Package of interventions for rehabilitation

The PIR has been developed to support the implementation of rehabilitation in all resource contexts, with a specific focus on low- and middle-income countries. The information provided in the PIR is intended to support not only different target users in planning, budgeting and integrating rehabilitation into health systems, but also the strengthening of the rehabilitation workforce, and the development of research strategies.

3.1 Planning of integrating rehabilitation into health systems

The planning of rehabilitation services is relevant at different levels and for different stakeholders. At the national level, the PIR can inform the development of rehabilitation benefit packages in the context of a country's strategic plan; it provides an overview of interventions which should be made accessible to people living with specific health conditions. Decision-makers can use the information provided together with the details on required material resources, workforce, and availability of service delivery levels, to design and develop rehabilitation benefit packages according to a country's needs and situation.

At the district level, service planners can use the PIR to guide decisions regarding which interventions should be integrated into rehabilitation programmes at the different service delivery levels. These programmes may vary in terms of the comprehensiveness of interventions.

At the facility level, the PIR can be used by programme managers and service providers to plan the delivery of the interventions within the facility, taking into account the information on required materials and human resources.

Using the PIR enables progressive realization. In less resourced settings, implementing rehabilitation into packages of care can start with the selection of a limited number of interventions from the PIR. Over time, and when resources increase, the packages of care can be complemented by the addition of further interventions.

The PIR provides information at all levels for calculating costs related to the interventions including for material resources and the workforce.

3.2 Planning of integration of interventions for rehabilitation at service delivery levels

The PIR does not provide recommendations on the availability of specific interventions at the different service delivery levels as this might be very country and context specific. However, service planners can use the PIR to guide decision-making regarding which interventions

should be available at the different service delivery levels. For the same health conditions, these packages may differ for the different service delivery levels and need to consider country and context specific considerations.

The different levels of health service delivery are usually described as "primary", "secondary" and "tertiary". However, in accordance with other WHO service delivery guidance, and with categories to be used in WHO's UHC Compendium *(11)*, the levels are described as "General outpatient services", "First referral level", and "Second referral level" (Box 7).

A. *General outpatient services*: refers to rehabilitation services that are integrated into primary health care and include the services and professionals that act as a first point of contact in the health system. Importantly, interventions for rehabilitation delivered in the community (e.g. at a person's home, in schools or care homes for older people) fall under general outpatient services that include outreach services provided by the workforce of a general outpatient service, such as a physiotherapy or occupational therapy practice.

B. *First referral level*: refers to rehabilitation services integrated into medical specialties in secondary health care where people with less complex needs may access rehabilitation for a short period of time during an acute and subacute phase of care.

C. *Second referral level*: refers to rehabilitation services at tertiary care that are multiprofessional, specialized and of high intensity and are predominantly for people with complex rehabilitation needs during the acute and subacute phases of care.

Box 7. Rehabilitation at service delivery levels

Service delivery level	Relevant description	Examples for rehabilitation
A. General outpatient services (clinic setting or outreach)	General outpatient services in clinic setting	• Outpatient physiotherapy, occupational therapy or speech and language therapy clinics • Occupational therapy service integrated into e.g. general practitioner facility
	Periodic schedulable services delivered by skilled health worker in home, schools, workplace, or public space	
B. First referral level (district hospital)	Outpatient services at first referral level	• Physiotherapy services integrated in acute cardiac in-patient clinic • Outpatient prosthetic workshop available at district hospital
	Emergency unit services at first referral level	
	Inpatient services at first referral level	
C. Second referral level and above (regional and national hospitals)	Advanced outpatient services at second referral level and above	• Specialized multiprofessional inpatient rehabilitation clinics for complex conditions • Specialized multiprofessional outpatient rehabilitation day clinic
	Advanced emergency unit services at second referral level and above	
	Advanced inpatient services at second referral level and above	

Access to service delivery levels may vary along the continuum of care. For health conditions with acute onset and severe decline in functioning, rehabilitation may start at the first referral level, followed by a specialized rehabilitation programme during subacute care at the second referral level, and then out-patient rehabilitation in the more chronic and long-term phase at

a general outpatient service. For more chronic health conditions with slower progression, rehabilitation will likely be delivered at general outpatient services (e.g. speech and language therapy practice in a child with autism spectrum disorders), with sporadic referrals to first or second levels for highly specialized interventions or multidisciplinary programmes.

Access to rehabilitation at the general outpatient services level will facilitate rehabilitation close to a person's home or in their community; access at the first referral level will integrate rehabilitation into the acute care of people with more complex conditions that require in-patient care; access at the second referral level may support intensive (multidisciplinary) inpatient or outpatient rehabilitation programmes that are useful for people with more complex conditions during acute and subacute care.

3.3 Workforce training and education

The information provided in the PIR can be used for training and education, and to guide rehabilitation workers in the knowledge and skills needed to implement interventions efficiently and safely according to the needs of an individual (e.g. skills in applying specific techniques or physical modalities). The materials for training and education used together with the *Rehabilitation competency framework* can contribute to strengthening the rehabilitation workforce.

3.4 Overview of other WHO products relevant to the use of the *Package of interventions for rehabilitation*

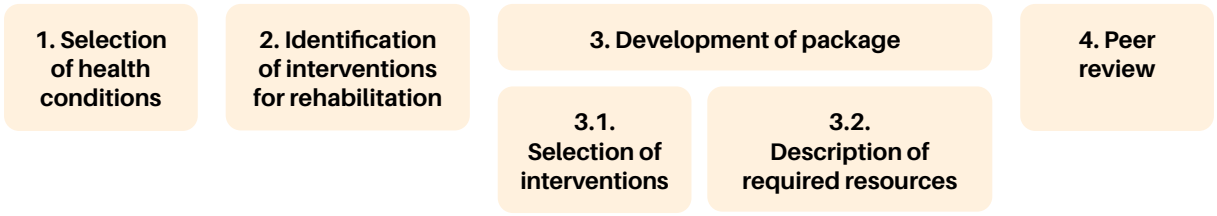
Several other WHO products and tools may be used together with the PIR. Products that are specific to a health condition are listed in the relevant modules in the PIR. Examples of these WHO products include:

- *Rehabilitation in health systems: guide for action (7)*
- *Rehabilitation competency framework (8)*
- *Routine health information system – rehabilitation toolkit (9)*
- *Assistive product specifications and how to use them (12)*
- *WHO standards for prosthetics and orthotics (13)*
- *WHO priority assistive products list (14)*
- *Wheelchair service training of trainers package (15)*
- *WHO model list of essential medicines (10)*
- *WHO list of priority medical devices for management of cardiovascular diseases and diabetes (16)*
- *Strategizing national health in the 21st century: a handbook (17)*
- *Operational framework for primary health care (18)*

4. Methods

The methodology of the PIR was developed under the supervision of the WHO Guideline Review Committee Secretariat. A stepwise approach was followed (see Fig. 1) with the involvement of a broad range of stakeholder organizations and individual experts in rehabilitation from different working groups. All members of the working groups declared potential conflicts of interest, which were evaluated by the WHO Rehabilitation Programme. Only candidates without an identified conflict of interest were selected to become a working group member.

Fig. 1: Steps for the development of the Package of interventions for rehabilitation



The steps taken to develop the *Package of interventions for rehabilitation* involved the following:

Step 1. Selecting the health conditions for the rehabilitation packages. The health conditions were categorized under different disease areas (musculoskeletal, neurological, cardiopulmonary, neoplasm, mental health, neurodevelopmental and sensory impairments). Criteria for selection were: i) prevalence rates; ii) associated levels of disability using information on disability weights from the Global Burden of Disease Study 2016 *(19)*; iii) expert opinion; and iv) a limit of 20 health conditions.

Step 2. Identifying the interventions for rehabilitation. Interventions were identified from high-quality CPGs as the primary source of evidence and Cochrane systematic reviews as the additional source. Information on the quality of the evidence and strength of recommendations related to the interventions presented, among other factors, important information to inform the selection of intervention in the next step. Data for specific health conditions were extracted by the technical working groups and Cochrane Rehabilitation.

Step 3. Development of the package which involved:

Step 3.1. Selecting the essential interventions to be included in the PIR, based on expert consensus.

Step 3.2. Agreeing a description of resources required for the provision of the selected interventions by development groups for specific health conditions.

Step 4. Peer review of the draft packages by peer review groups for specific health conditions.

In Step 2, the identification of high-quality CPGs was based on the quality evaluation of all CPGs that were identified through a systematic literature search. The AGREE II tool *(20)* was used for the evaluation. For the CPGs to be considered of high quality, specific minimal criteria for selected items had to be fulfilled. If more than five high-quality CPGs were identified, members of the development groups discussed reselection, taking into account timeliness, comprehensiveness and multiprofessionalism.

In Step 3.1, selection of essential interventions to be included in the PIR was guided by the following criteria: (i) evidence on the effectiveness of the intervention must be sufficient, based on the quality of evidence and the strength of the recommendation or expert opinion of the development group; (ii) the intervention must be considered beneficial to many people with a specific health condition; (iii) the benefit of the intervention must be considered as high and favourable in terms of costs involved; and (iv) the delivery of the intervention must be considered as necessary and feasible in low- and middle-resource settings. Interventions were selected for inclusion in the PIR only when members of the development group had reached consensus (agreement among the majority of the members of the development group).

In Step 3.2, the development group agreed on the description of the additional information on material resources and required time. Occupations in rehabilitation considered relevant to the interventions were decided by the WHO Rehabilitation Programme team.

In Step 4, peer review groups reviewed the draft packages and provided feedback and recommendations for potential revisions. Relevant topics were discussed among members of the development and peer review groups and final recommendations for revision agreed.

Additional details for Step 2 and Step 3 of the development process, can be found in Annex 1. The final list of guidelines and systematic reviews used to inform the selection to be included in the PIR is available for each specific health condition in the supplementary materials of the disease-specific modules.

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Annex. Selection of guidelines and systematic reviews, data extraction and selection of interventions

This Annex outlines the methods used for identifying the clinical practice guidelines (CPGs) and Cochrane systematic reviews for the *Package of interventions for rehabilitation* (PIR), as well as for agreeing the selection of interventions to be included.

1) Search and selection strategy for, and data extraction from, high-quality clinical practice guidelines for specific health conditions

Literature search

a) Academic databases

Systematic literature searches were performed and search strategies defined according to each consulted database. The following general search terms were used: "Health condition" **AND** "Rehabilitation" **AND** "Guideline" (using MeSH terms for each health condition). If these were unavailable, others were added so that a spectrum of commonly-used terms was covered. Searches were limited to guidelines published during the past 10 years and those written in the English language. If a member of the technical working group was of a mother tongue other than English, this language may have also been included. As a minimum standard set, the following databases were consulted:

- PubMed
- Embase
- CINAHL
- PEDro.

With academic databases, the following filters were defined for the search strategy:

- Article type: Guidelines, Practice guidelines, Clinical guidelines
- Language: English
- Publication date: Guidelines not older than 10 years.

b) Search engine

The internet engine "Google Scholar" was used systematically for the searches using the advanced search option. The search terms and filters were the same as those used for the academic databases. Screening for titles and abstracts was performed for the first 250 results only; most of the relevant guidelines were expected to fall within this parameter.

c) Guideline databases (the following list may be extended)

A hand search was performed in specific databases for guidelines:

- Guidelines International Network
- National Guideline Clearinghouse (United States of America)
- National Institute for Clinical Excellence (NICE) (England and Wales)
- Australian National Health and Medical Research Council clinical practice guidelines
- Scottish Intercollegiate Guidelines Network (SIGN)
- Canadian Medical Association Infobase of Clinical Practice Guidelines
- Agence nationale d'accréditation et d'évaluation en santé (France)
- New Zealand Guidelines Group
- eGuidelines.

Search terms and filters were adapted according to the search options in the guideline databases.

d) Professional rehabilitation society websites

The websites of professional rehabilitation societies were hand searched for guidelines on specific health conditions. Search terms were adapted according to the search options.

Guidelines selection strategy

The selection of CPGs followed a three-step process. In each step, criteria for inclusion or exclusion were applied.

i) *Title and abstract screening*

Two researchers independently screened titles and abstracts. Guidelines for children, young people and adults were included in the screening.

The following criteria were applied to identify guidelines for exclusion:

The identified literature:

- was not a guideline;
- did not report on rehabilitation;
- was older than 10 years;
- was developed for health conditions other than the targeted health condition.

WHO provided a form for documenting the results of the screening of the title and abstracts to the technical working groups. Two researchers performed title and abstract screening independently and determined the inclusion/exclusion of CPGs from the search results. The decision to either include or exclude a CPG was made by both researchers after comparison. Any difference in decisions was followed by further discussion to reach consensus. If this was not possible, a third member of the technical working group or the methods expert was consulted until consensus was achieved. All included CPGs were then subjected to full text screening.

ii) *Full text screening*

The same criteria as used for title and abstract screening were applied for the full text screening. Two researchers independently screened the guidelines.

A guideline was excluded if:

- a conflict of interest was identified;
- information on the strength of the recommendation was not provided; or
- the quality of the guideline was not evaluated as "high".

The Appraisal of Guidelines for Research and Evaluation (AGREE II) tool *(1)* was used to evaluate the quality of the CPGs. The AGREE tool consists of 23 items organized in six domains. Three researchers selected nine items (4, 7, 8, 10, 12, 13, 15, 22 and 23) through a consensus-finding process that were considered most important to identify high-quality CPGs to be used for the development of the PIR.

A guideline was excluded if:

- the average score of the two researchers in any of item numbers: 4, 8, 12, or 22 was below 3; or
- the sum of the average score of the two researchers for all nine items was less than 45.

After evaluating the guideline using the AGREE II tool, if the rating of an item differed significantly (i.e. by more than 2 points) between the two researchers, consensus then had to be reached through discussion of the results. If no agreement could be found, the methods expert was consulted.

All selected items that fulfilled the AGREE II criteria progressed to "c", as set out below.

iii) *Final selection of the clinical practice guidelines*

The final selection of CPGs aimed to achieve a manageable number (e.g. 3–5) for data extraction. If guidelines were identified for children, young people, adults, or subgroups of a specific health condition, selection was performed for each group individually (the total number of included guidelines may then have exceeded five). The following criteria were applied for selection:

- Multiprofessional CPGs (covering various rehabilitation professions) were preferred; however, if only profession-specific guidelines were available, these were considered.
- General CPGs (addressing multiple rehabilitation topics) were preferred; however, if only topic-specific guidelines (i.e. covering only one topic) were available, these were considered.
- Quality of the guidelines: CPGs with a higher AGREE II score were preferred.
- Timeliness of the CPGs: the most recent CPGs were preferred.
- International perspective: CPGs that had been developed on an international level were preferred.

The final number of CPGs to be included was decided based on the available information from each CPG and after discussion among members of the technical working groups.

The WHO Rehabilitation Programme provided the technical working groups with a form to document the selection of CPGs based on full text screening.

Data extraction

Data referring to the following domains were extracted:

- information on the guideline;
- reference to the recommendation;
- content of the recommendation; and
- strength of the recommendation and quality of the related evidence.

The WHO Rehabilitation Programme provided each technical working group with a form for the data extraction to ensure a standardized data collection.

2) Search and selection strategy for, and data extraction from, Cochrane systematic reviews

Search strategy

Cochrane systematic reviews were identified using an "advanced search" of the Cochrane library. The search terms "Health condition" **AND** "Rehabilitation" were searched under "Title, Abstract, Keyword".

The following limits were defined for the search strategy in the Cochrane library:

- Content type: Cochrane reviews
- Cochrane Library publication date: any time during the past eight years
- Search word variations: Yes.

The two researchers performed screening of titles and abstracts independently. The following criteria for inclusion were applied:

- The Cochrane systematic review was not more than eight years old.
- The Cochrane systematic review was conducted specifically for the targeted health condition.
- The interventions represented rehabilitation.

The results of the two researchers were compared and, where necessary, discussed so that consensus on the selection was reached.

The WHO Rehabilitation Programme provided Cochrane Rehabilitation with a form to document the selection process based on title and abstract and full text screening.

Data extraction

The following data were extracted from the Cochrane systematic reviews:

- Population
- Intervention and control
- Setting
- Outcome
- Corresponding risk or relative effect (including 95% confidence interval)
- Number of studies and participants included
- Summary of main results/Implications for practice (text)
- Quality of evidence (GRADE)
- Adverse events.

The WHO Rehabilitation Programme provided Cochrane Rehabilitation with a form for the data extraction to ensure a standardized data collection.

3) Synthesis of information identified from clinical practice guidelines and Cochrane systematic reviews

The WHO Rehabilitation Programme prepared the data for data synthesis from the different CPGs and Cochrane systematic reviews. Extracted intervention targets were therefore linked to International Classification of Functioning Disability and Health (ICF) categories by applying existing linking rules *(2)*. Targets, related interventions and additional information from all sources were then organized according to the ICF categories. This synthesis of all information provided an overview on the following information:

- Types of interventions addressing specific targets identified from the different sources.
- Strength of recommendation and quality of evidence for interventions identified from CPGs.
- Quality of evidence for interventions identified from Cochrane systematic reviews.

This overview summarized the available evidence on interventions and facilitated the identification of matching and contradictory recommendations between the different CPGs and Cochrane systematic reviews. It further provided information for identifying the gaps in available evidence. The overview was presented to the development groups for a final selection of interventions to be included in the PIR.

4) Selection of interventions to be included in the *Package of interventions for rehabilitation*

To decide on the interventions to be included in the PIR, a two-round Delphi process was conducted among the members of the development groups for specific health conditions. The first round was carried out electronically and anonymously. Each member of a development group individually evaluated the identified interventions based on the strength and quality of the recommendations and the comparison with evidence from the Cochrane systematic reviews (if applicable). The members then decided on which interventions to include in the PIR.

For the second round, the results were presented to and discussed among the members of the development groups during a web conference to achieve final consensus on the selection. Consensus was defined as an agreement among the majority of members of the development group. The WHO Rehabilitation Programme moderated the group discussion. The members of the development groups then had to propose which essential interventions were lacking from the selected list. The proposed "expert-opinion-based" interventions were again presented to and discussed among the development group and only included in the PIR if consensus was achieved.

5) Description of information related to the selected interventions

All interventions included in the PIR were compiled in a list. For each intervention, descriptions relating to the following areas were created:

- the assistive products (if required);
- the equipment (if required);
- the consumables (if required); and
- the assignment to service delivery levels.

The WHO Rehabilitation Programme guided development group members in preparing the descriptions.

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