Package of interventions for Rehabilitation

Module 6

Sensory conditions

World Health Organization

Package of interventions for rehabilitation

Module 6
Sensory conditions

World Health Organization

Package of interventions for rehabilitation. Module 6. Sensory conditions

(Package of interventions for rehabilitation. Module 1. Introduction – Module 2. Musculoskeletal conditions – Module 3. Neurological conditions – Module 4. Cardiopulmonary conditions – Module 5. Neurodevelopmental disorders – Module 6. Sensory conditions – Module 7. Malignant neoplasm – Module 8. Mental health conditions)

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Contents

1 Package of interventions for rehabilitation for vision impairment

1.1 About vision impairment

The visual system encompasses the eyes, optic nerves, and pathways to and between different structures in the brain. A vision impairment occurs when an eye, or health, condition affects the visual system and one or more of its vision functions (e.g. visual acuity, visual field, colour vision, contrast sensitivity) *(1)*.

In 2020, it was estimated that approximately 60 million adults globally had moderate or severe distance vision impairment or blindness that was irreversible and that required rehabilitation *(2)*. The main eye conditions causing irreversible vision impairment and blindness in adults, and addressed by vision rehabilitation, are glaucoma, macular disease, corneal opacities and diabetic retinopathy. Vision impairment can also be caused by health conditions such as stroke and brain injuries. The main conditions in children and young adults include congenital and genetic conditions, acquired eye conditions, and cerebral vision impairment *(1)*.

The prevalence of vision impairment in many low- and middle-income regions is estimated to be four times higher than in high-income regions *(3)*, while 80% of vision impairment occurs in persons aged 50 years or older *(4)*. The change in population demographics, and subsequent rise in the number of people with irreversible vision impairment, will see an increasing demand for vision rehabilitation services.

Vision impairment has serious consequences for the individual across the life course. Young children with early onset severe vision impairment can experience delayed motor, language, emotional, social and cognitive development, with lifelong consequences. School-age children with vision impairment can also experience lower levels of educational achievement *(5, 6)*. However, many of these consequences can be mitigated by timely access to quality eye care and rehabilitation.

Vision impairment severely impacts quality of life among adult populations *(7)*. Adults with vision impairment often have lower rates of workforce participation and productivity *(8, 9)* and higher rates of depression and anxiety *(10)*. In the case of older adults, vision impairment can contribute to social isolation, difficulty walking, a higher risk of falls and fractures, and a greater likelihood of early entry into nursing or care homes *(1)*.

Role of vision rehabilitation

A broad range of effective interventions for vision rehabilitation are available; these include the provision of optical, non-optical and electronic assistive products, environmental modification (e.g. improved lighting), and orientation and mobility training. These interventions can help to achieve and maintain optimal levels of functioning among people with irreversible vision

impairment and blindness, enabling them to participate more in community life, education and employment.

Target population for the Package of interventions for rehabilitation for vision impairment

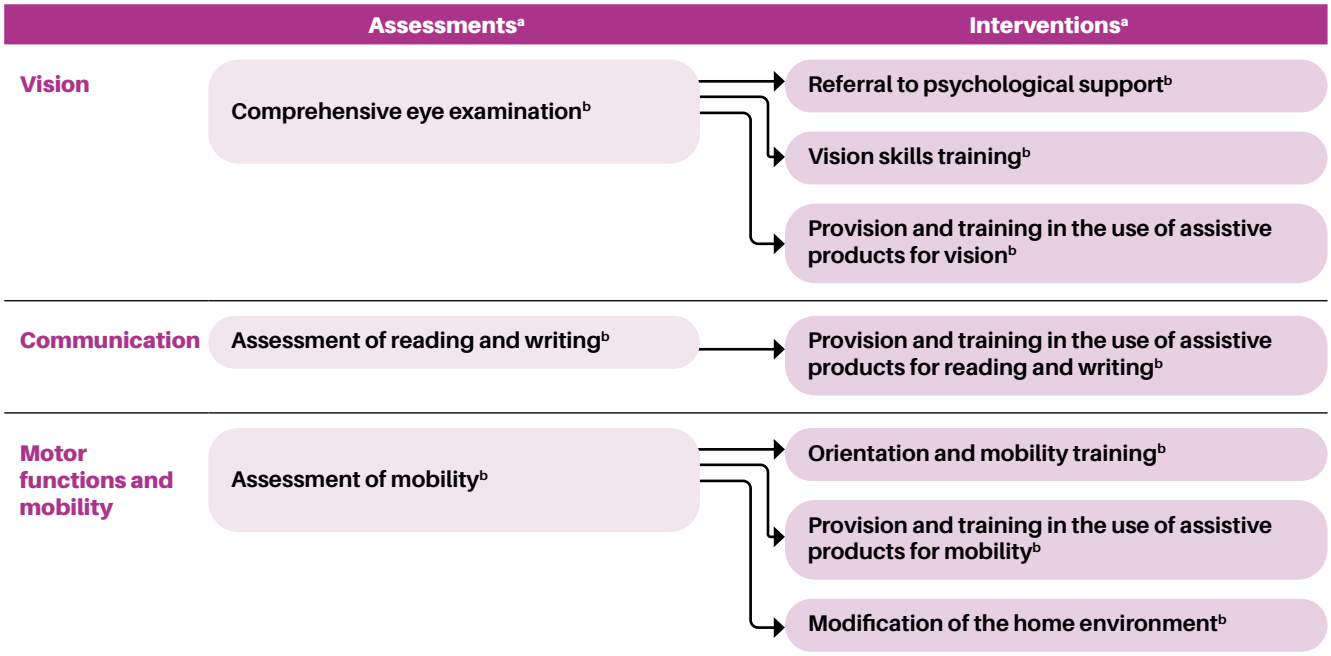
This *Package of interventions of rehabilitation for vision impairment* is intended to be used for children, adolescents and adults with impairments in visual functions (International Classification of Diseases, 11th revision (ICD-11): 9D40 Impairment of visual acuity; 9D41 Impairment of visual field; 9D42 Patterns of visual field impairment; 9D43 Impairment of contrast vision; 9D44 Impairment of colour vision; 9D45 Impairment of light sensitivity; 9D46 Impairment of binocular functions) and vision impairments (ICD-11: 9D90 Vision impairment including blindness; 9D91 Near vision deficits; 9D92 Specific vision dysfunctions; 9D93 Complex vision-related dysfunctions).

Important links to other WHO products relevant for the care of people with vision impairment:

- *World report on vision (1).*
- *Eye care in health systems: guide for action (11).*
- *Eye care indicator menu (ECIM): a tool for monitoring strategies and actions for eye care provision (12).*
- *Package of eye care interventions (13).*
- *Eye care competency framework (14).*

1.2 Content of the Package of interventions for rehabilitation in vision impairment

Overview of the interventions for vision rehabilitation



[a] See Annex 1 for definitions of assessments and interventions.

[b] People with vision impairment from early childhood to later adulthood.

Overview of the resources required for vision rehabilitation

Functioning interventions

	Intervention	Session time (mins)	Material resources			Occupations (rehabilitation specialists)
			Assistive products	Equipment	Consumables	
Vision	**Target: Seeing functions**					
	Comprehensive eye examination	30	–	• Autorefractor • Colour vision test chart • Contrast sensitivity test chart • Cross cylinder • Direct/indirect ophthalmoscope • Light box • Retinoscope • Slit lamp • Tonometer • Torch • Trial frame (adult and children) • Trial lens set • Visual acuity charts – distance and near (adult and pediatric) • Visual field tests (standard automated perimeter, amsler grid chart)	• Mydriatic/dilating drops • Topical anaesthetic • Fluorescein strips	• Specialist medical practitioner (general ophthalmologist) • Optometrist, orthoptist, and ophthalmic optician
	Vision skills training	20	–	• Computer/tablets with software • Reading materials and pictures	–	• Optometrist, orthoptist, and ophthalmic optician • Specialist medical practitioner (general ophthalmologist) • Occupational therapist
	Provision and training in the use of assistive products for vision (incl. optical assistive products)	30	• Magnifiers (spectacles, handheld, stand, illuminated, dome) • Telescopes in different powers • Spectacles: low vision, short distance, long distance, filters and protection • Alarm signallers with light/ sound/ vibration • Personal digital assistant (PDA) • Personal emergency alarm systems	–	–	• Optometrist, orthoptist, and ophthalmic optician • Specialist medical practitioner (general ophthalmologist)

	Intervention	Session time (mins)	Material resources			Occupations (rehabilitation specialists)
			Assistive products	Equipment	Consumables	
Communication	**Target: Reading and writing**					
	Assessment of reading and writing	30	–	• Braille books, Braille writers and paper • Computer/tablets with software • Reading materials and pictures	–	• Optometrist, orthoptist, and ophthalmic optician • Specialist medical practitioner (general ophthalmologist)
	Provision and training in the use of assistive products for reading and writing	30	**Non-optical assistive products:** • Audiobooks (audio players with DAISY capability) • Braille books, Braille writers and paper • Communication boards/books/cards **Electronic assistive product:** • Digital magnifiers • Screen readers • Simplified mobile phones • Video communication devices • Keyboard and mouse emulation software • Recorders • Braille displays • Talking/tactile watches • Closed captioning displays • Communication software • Deafblind communicators • Gesture to voice technology	–	–	• Occupational therapist • Optometrist, orthoptist, and ophthalmic opticians • Specialist medical practitioner (general ophthalmologist)

	Intervention	Session time (mins)	Material resources			Occupations (rehabilitation specialists)
			Assistive products	Equipment	Consumables	
Motor functions and mobility	**Target: Mobility**					
	Assessment of mobility	30	–	• Modified walkers (walking frames, walkers) • Various types of canes/sticks	–	• Occupational therapist • Physiotherapist
	Orientation and mobility training	60	–	• Modified walkers (walking frames, walkers) • Various types of canes/sticks	• Information materials (e.g. flyers, brochures)	• Occupational therapist • Physiotherapist
	Provision and training in the use of assistive products for mobility	30	• Electronic navigation systems: global positioning system (GPS) locators • Fall detectors • Modified walkers (walking frames, walkers) • Standing frames (adjustable) • Various types of canes/sticks	–	–	• Occupational therapist • Physiotherapist
	Modification of the home environment	60	• Handrails/grab bars	–	• Information materials (e.g. flyers, brochures)	• Optometrist, orthoptist, and ophthalmic optician • Specialist medical practitioner (general ophthalmologist) • Occupational therapist • Physiotherapist

DAISY: digital accessible information system.

Summary of the required material resources and workforce

Material resources

Assistive products (for prescription)	Equipment (for service facilities)	Consumables (for service facilities)
Optical assistive products • Magnifiers (spectacles, handheld, stand, illuminated, dome) • Telescopes in different powers • Spectacles: low vision, short distance, long distance, filters and protection **Non-optical assistive products** • Audiobooks (audio players with DAISY capability) • Braille books, Braille writers and paper • Communication boards/books/cards **Electronic assistive product** • Digital magnifiers • Screen readers • Simplified mobile phones • Video communication devices • Keyboard and mouse emulation software • Recorders • Braille displays • Talking/tactile watches • Alarm signallers with light/sound/vibration • Personal digital assistant (PDA) • Personal emergency alarm systems • Closed captioning displays • Communication software • Deafblind communicators • Gesture to voice technology **Products for mobility** • Electronic navigation systems: global positioning system (GPS) locators • Fall detectors • Handrails/grab bars • Modified walkers (walking frames, walkers) • Standing frames (adjustable) • Various types of canes/sticks	**Specific for assessment** • Autorefractor • Colour vision test chart • Contrast sensitivity test chart • Cross cylinder • Direct/indirect ophthalmoscope • Light box • Retinoscope • Slit lamp • Tonometer • Torch • Trial frame (adult and children) • Trial lens set • Visual acuity charts – distance and near (adult and pediatric) • Visual field tests (standard automated perimeter, amsler grid chart) **For intervention** • Computer/tablets with software • Reading materials and pictures • Braille books, Braille writers and paper • Modified walkers (walking frames, walkers) • Various types of canes/sticks	• Mydriatic/dilating drops • Topical anaesthetics • Fluorescein strips • Information materials (e.g. flyers, brochures)

DAISY: digital accessible information system.

Workforce

Overview of rehabilitation specialists qualified to deliver interventions for vision rehabilitation (in alphabetical order)

- Occupational therapists
- Optometrists, orthoptists, ophthalmic opticians
- Physiotherapists
- Specialist medical practitioners (general ophthalmologists)

1.3 Members of the working groups

The following experts have contributed to the development of the *Package of interventions for vision rehabilitation* along the different development steps and using the listed clinical practice guidelines and Cochrane systematic reviews. See Annex 2 for a summary of declarations of interest.

Members of the technical working group

Mary Lou JACKSON (Ophthalmologist, Canada); Ruth VAN NISPEN (Ophthalmologist, Netherlands (Kingdom of the)); Gianni VIRGILI (Ophthalmologist, Italy); Sumrana YASMIN (Public health expert, Pakistan).

Members of the development group

Anne EBRI (Optometrist, Nigeria); Andrew Jonathan JACKSON (Optometrist, Ireland); Mary Lou JACKSON (Ophthalmologist, Canada); Late Hasan MINTO (Public health expert, Pakistan); Ruth VAN NISPEN (Ophthalmologist, Netherlands (Kingdom of the)); Gianni VIRGILI (Ophthalmologist, Italy); Sumrana YASMIN (Public health expert, Pakistan).

Members of the peer review group

Colleen Erin McGRATH (Occupational therapist, Canada); Jill KEEFE (Vision rehabilitation expert, Australia); Jugnoo SANGEETA RAHI (Ophthalmologist, United Kingdom of Great Britain and Northern Ireland); R D RAVINDRAN (Ophthalmologist, India); Serge RESNIKOFF (Public health expert, France); David YORSTON (Ophthalmologist, United Kingdom).

Stuart KEEL (WHO technical officer, Vision Programme, WHO Sensory functions, Disability and Rehabilitation Unit) supervised and guided the development of the *Package of interventions for rehabilitation for vision impairment*.

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13. Package of eye care interventions. Geneva: World Health Organization; 2022 (https://apps.who.int/iris/handle/10665/354256, accessed December 2022).
14. Eye care competency framework. Geneva: World Health Organization; 2022 (https://apps.who.int/iris/handle/10665/354241, accessed December 2022).

2 Package of interventions for rehabilitation for hearing loss

2.1 About hearing loss

A person who is not able to hear as well as someone with normal hearing – that is with hearing thresholds of 20 dB or better in both ears – is said to have hearing loss. Hearing loss may be mild, moderate, severe, or profound. It can affect one ear or both ears and leads to difficulty in hearing conversational speech or loud sounds. The term "hard of hearing" refers to people with hearing loss ranging from mild to severe. People who are hard of hearing usually communicate through spoken language and can benefit from hearing aids, cochlear implants, or other assistive devices as well as captioning. "Deaf" people mostly have profound hearing loss, which implies they have very little or no hearing, and often use sign language for communication *(1)*.

Although these factors can be encountered at different periods across the life span, individuals are most susceptible to the effects of hearing loss during critical periods in life: during the prenatal period, due to genetic factors or infections; during the perinatal period, due to birth asphyxia, hyperbilirubinemia, low birth weight, or other perinatal morbidities; during childhood and adolescence, due to chronic ear infections, collection of fluid in the ear, or meningitis and other infections; or during adulthood and older age, due to chronic diseases, smoking, otosclerosis, age-related sensorineural degeneration, or sudden sensorineural hearing loss. Independent from specific periods across the life course, hearing loss can be caused by cerumen impaction, traumas, loud noise/loud sounds, ototoxic medicines or work-related ototoxic chemicals, nutritional deficiencies or viral infections and other ear conditions *(1)*.

When unaddressed, hearing loss impacts many aspects of life at individual level, such as communication and speech, cognition, education and employment. In developing countries, children with hearing loss and deafness often do not receive schooling. Adults with hearing loss also have a far higher unemployment rate; among those who are employed, a higher percentage of people with hearing loss are in the lower grades of employment compared with the general workforce. These restrictions to integration into meaningful activities contribute to social isolation, loneliness and stigmatization *(1)*.

Role of rehabilitation in hearing loss

It is estimated that in 2019, 403 million people worldwide were living with hearing loss and associated problems in functioning that could benefit from rehabilitation *(2)*. It is anticipated that the need for hearing rehabilitation will grow significantly in the coming years, and that by 2050 there could be more than 700 million people in need of such services *(3)*.

Rehabilitation helps people with hearing loss to achieve and maintain their optimal levels of functioning across their lifespan. Interventions for rehabilitation include the provision

of, and training in the use of, hearing technologies (hearing aids, cochlear implants and middle ear implants), speech and language therapy to enhance perceptive skills and develop communication and linguistic abilities; rehabilitation also includes training in the use of sign language and other means of sensory substitution, such as speech reading, use of print on palm or Tadoma, signed communication. In addition, the provision of hearing assistive technology, and services (frequency modulation and loop systems, alerting devices, telecommunication devices, captioning services and sign language interpretation) can further improve access to communication and education for people with hearing loss *(1)*.

Target population for the Package of interventions for rehabilitation for hearing loss

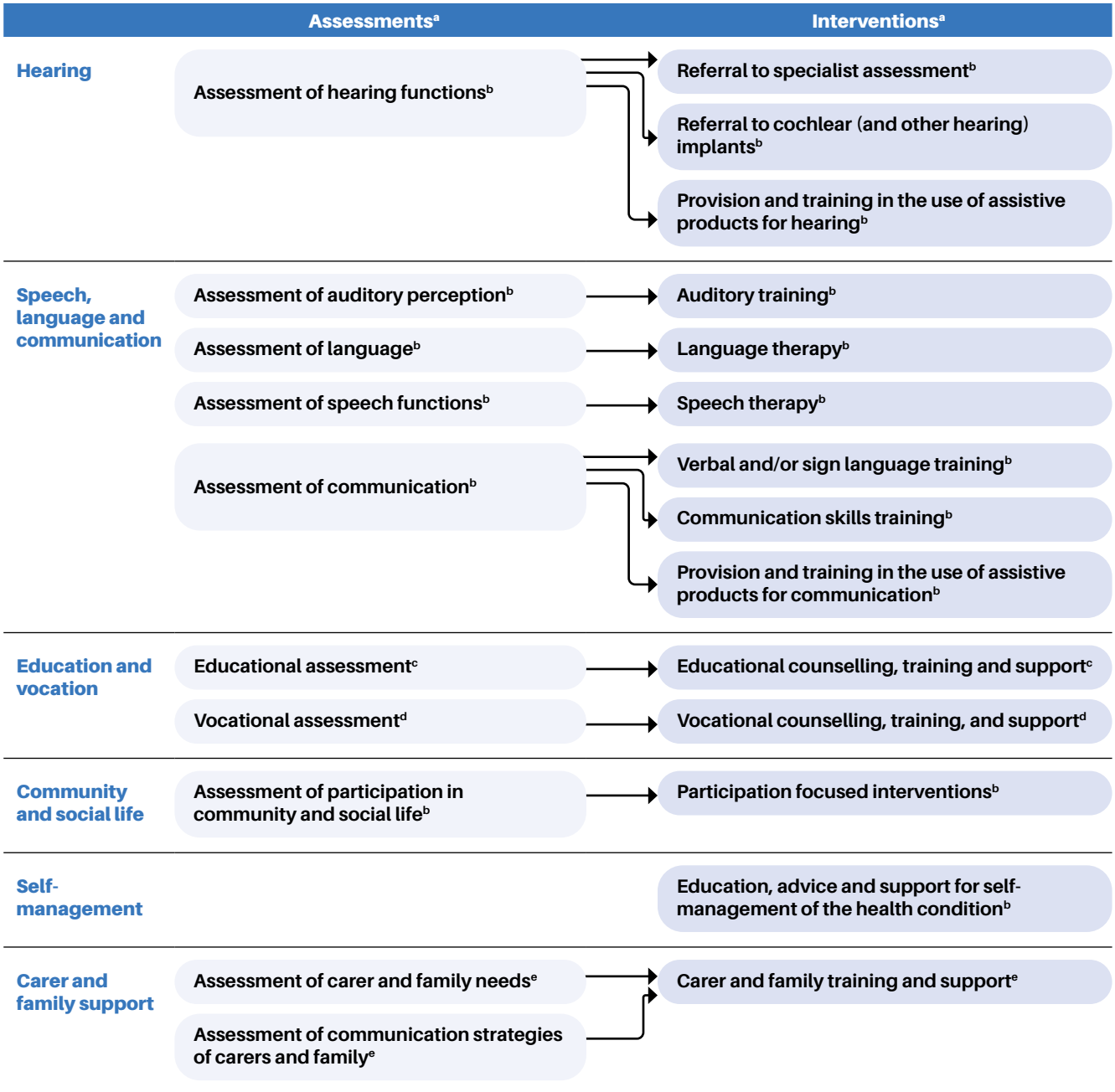
This *Package of interventions of rehabilitation for hearing loss* is intended to be used for children, adolescents and adults with congenital (ICD-11: AB50 Congenital hearing impairment), acquired (ICD-11: AB51 Acquired hearing impairment) and other types (AB52 Deafness not otherwise specified; AB53 Ototoxic hearing loss; AB54 Presbycusis; AB55 Sudden idiopathic hearing loss; AB56 Hereditary hearing loss; AB57 Auditory synaptopathy or neuropathy) of hearing impairment.

Important links to other WHO products relevant for the care of people with hearing loss:

- *World report on hearing (3).*
- *Hearing screening: considerations for implementation (4).*
- *Primary ear and hearing care training resource (5).*
- *Preferred profile for hearing aid technology (6).*
- *WHO hearWHO application for hearing testing (7).*

2.2 Content of the Package of interventions for rehabilitation for hearing loss

Overview of the interventions for rehabilitation in people with hearing loss



[a] See Annex 1 for definitions of assessments and interventions.

[b] People (all ages) with prelingual or postlingual hearing loss.

[c] Children and adolescents with prelingual or postlingual hearing loss.

[d] Adolescents and adults with prelingual or postlingual hearing loss.

[e] Carers and family members of people (all ages) with prelingual or postlingual hearing loss.

Overview of the resources required for rehabilitation in people with hearing loss

Functioning interventions

	Intervention	Session time (mins)	Material resources			Occupations (rehabilitation specialists)
			Assistive products	Equipment	Consumables	
Hearing	Target: Hearing functions					
	Assessment of hearing functions	45	–	• Audiometer (incl. microphone, audioplayer, insert earphones, headphones, loud-speakers, bone vibrator) • Tympanometer • Otoscope • Diagnostic otoacoustic emission equipment • Diagnostic auditory evoked potential (incl. frequency specific stimuli) • Computer/tablets with software • Visual reinforcement equipment • Toys	• Alcohol wipes • Disinfectants • Tips for tympanometry, otoacoustic emission, insert earphones • Specula • Electrodes • Gel • Batteries	• Audiologist
	Referral to specialist assessment	5	–	–	–	• Audiologist
	Referral to cochlear (and other hearing) **implant**	5	–	–	–	• Audiologist

	Intervention	Session time (mins)	Material resources			Occupations (rehabilitation specialists)
			Assistive products	Equipment	Consumables	
Hearing	**Provision and training in the use of assistive products for hearing**	45	• Hearing aids digital (incl. hearing aids, ear inserts or customs earmolds, batteries and chargers) • Alarm signallers with light/ sound/vibration • Personal remote microphone systems (incl. transmitter with microphone, receiver with direct audio input, receiver with induction loop) • Captioning system • Bluetooth personal microphones and streamers • Video communication devices • Consumables and accessories needed for cochlear and other hearing implant	• Hearing aid and implantable devices programming software and interface • Hearing aid verification equipment • Earmold impression taking equipment (e.g. impression syringes) • Computer/tablets with software • Reading materials and pictures • Toys	• Earmold impression materials and tubes • Disinfection materials	• Audiologist • Speech and language therapist/pathologist
Speech, language and communication	**Target: Auditory perception**					
	Assessment of auditory perception	45	–	• Speech test materials (e.g. CDs) • Audiometer	–	• Audiologist • Speech and language therapist/pathologist
	Auditory training	30	–	• Computer/tablets with software • Reading materials and pictures • (Sound-making) toys	–	• Audiologist • Speech and language therapist/pathologist
	Target: Cognitive functions of language					
	Assessment of language	45	–	• Communication boards/books/ cards • Simplified mobile phones • Communication software • Reading materials and pictures • Pointers	–	• Audiologist • Speech and language therapist/pathologist

	Intervention	Session time (mins)	Material resources			Occupations (rehabilitation specialists)
			Assistive products	Equipment	Consumables	
Speech, language and communication	**Language therapy**	45	–	• Computer/tablets with (communication) software • Communication boards/books/cards • Timer • Reading materials and pictures • Everyday objects/(sound-making) toys	–	• Speech and language therapist/pathologist
	Target: Speech functions					
	Assessment of speech functions	45	–	• Computer/tablets with (communication) software • Recorders (video and audio) • Timer • Mirror • Reading materials and pictures • Everyday objects/toys	• Gloves • Straws • Tongue depressor • Tissues • Face masks	• Audiologist • Speech and language therapist/pathologist
	Speech therapy	45	• Communication boards/books/cards • Simplified mobile phones • Communication software • Recorders	• Reading materials and pictures • (Sound-making) toys • Timer • Mirror • Metronome	• Gloves • Straws • Tongue depressor • Tissues • Face masks	• Speech and language therapist/pathologist
	Target: Communication					
	Assessment of communication	30	–	• Communication boards/books/cards • Simplified mobile phones • Communication software • Reading materials and pictures • (Sound-making) toys • Pointers	–	• Audiologist • Occupational therapist • Speech and language therapist/pathologist

	Intervention	Session time (mins)	Material resources			Occupations (rehabilitation specialists)
			Assistive products	Equipment	Consumables	
Speech, language and communication	**Verbal and/or sign language training**	45	–	• Computer/tablets with software • Video recording device • Therapeutic teaching materials (e.g. therapy programmes, reading materials and pictures, toys) • White board	–	• Special educator • Speech and language therapist/pathologist
	Communication skills training	45	–	• Computer/tablets with (communication) software • Communication boards/books/cards • Recorders (video and audio) • Simplified mobile phones • Reading materials and pictures, toys • Whiteboard • Pointers	–	• Occupational therapist • Special educator • Speech and language therapist/pathologist
	Provision and training in the use of assistive products for communication	45	• Communication boards/books/cards • Simplified mobile phones • Communication software • Recorders	–	–	• Occupational therapist • Speech and language therapist/pathologist
Education and vocation	**Target: Education**					
	Educational assessment	60	–	• School-related tools and equipment	–	• Occupational therapist • Social work and counselling professional • Special educator • Speech and language therapist/pathologist
	Educational counselling, training and support	60	–	• School-related tools and equipment	–	• Occupational therapist • Social work and counselling professional • Special educator • Speech and language therapist/pathologist

	Intervention	Session time (mins)	Material resources			Occupations (rehabilitation specialists)
			Assistive products	Equipment	Consumables	
Education and vocation	**Target: Vocation**					
	Vocational assessment	90	–	• Work-related tools and equipment	–	• Occupational therapist • Social work and counselling professional • Special educator • Speech and language therapist/pathologist
	Vocational counselling, training and support	60	–	• Work-related tools and equipment	–	• Occupational therapist • Social work and counselling professional • Special educator • Speech and language therapist/pathologist
Community and social life	**Target: Participation in community and social life**					
	Assessment of participation in community and social life	20	–	–	–	• Audiologist • Occupational therapist • Social work and counselling professional
	Participation focused interventions	60	–	• Equipment for sport and recreational activities	–	• Occupational therapist • Social work and counselling professional
Self-management	**Target: Self-management**					
	Education, advice and support for the self-management of the health condition	45	–	–	• Information materials (e.g. flyers, brochures)	• Audiologist • Occupational therapist • Social work and counselling professional • Peer counsellor

	Intervention	Session time (mins)	Material resources			Occupations (rehabilitation specialists)
			Assistive products	Equipment	Consumables	
Carer and family support	**Target: Carer and family support**					
	Assessment of carer and family needs	30	–	–	–	• Audiologist • Occupational therapist • Social work and counselling professional • Speech and language therapist/pathologist
	Assessment of communication strategies of carers and family	30	–	• Video recording device	–	• Audiologist • Occupational therapist • Social work and counselling professional • Speech and language therapist/pathologist
	Caregiver and family training and support (incl. peer support)	45	–	–	• Information materials (e.g. flyers, brochures)	• Audiologist • Occupational therapist • Peer counsellor • Social work and counselling professional • Speech and language therapist/pathologist

Summary of the required material resources and workforce

Material resources

Assistive products (for prescription)	Equipment (for service facilities)	Consumables (for service facilities)
Products for hearing • Alarm signallers with light/sound/vibration • Captioning system • Consumables and accessories needed for cochlear and other hearing implant • Hearing aids digital (incl. hearing aids, ear inserts, or customs earmolds, batteries and chargers) **Products for communication** • Bluetooth personal microphones and streamers • Communication boards/books/cards • Communication software • Personal remote microphone systems (incl. transmitter with microphone, receiver with direct audio input, receiver with induction loop) • Recorders • Simplified mobile phones • Video communication devices	**Specific for assessment** • Audiometer • Audiometer (incl. microphone, audioplayer, insert earphones, headphones, loud-speakers, bone vibrator) • Diagnostic auditory evoked potential (incl. frequency specific stimuli) • Diagnostic otoacoustic emission equipment • Otoscope • Speech test materials (e.g. CDs) • Tympanometer • Visual reinforcement equipment **For intervention** • Communication boards/books/cards • Communication software • Computer/tablets with software • Earmold impression taking equipment (e.g. impression syringes) • Hearing aid and implantable devices programming software and interface • Hearing aid verification equipment • Metronome • Mirror • Pointers • Reading materials and pictures • Recorders • Simplified mobile phones • (Sound-making) toys • Timer • Video recording device • White board • Therapeutic teaching materials (e.g. therapy programmes, reading materials and pictures, toys) • Equipment for sport and recreational activities • School-related tools and equipment • Work-related tools and equipment	• Alcohol wipes • Batteries • Disinfection materials • Earmold impression materials and tubes • Electrodes • Face masks • Gel • Gloves • Information materials (e.g. flyers, brochures) • Specula • Straws • Tips for tympanometry, otoacoustic emission, insert earphones • Tissues • Tongue depressor

Workforce

Overview of rehabilitation specialists qualified to deliver interventions for rehabilitation for hearing loss (in alphabetical order)

- Audiologists
- Occupational therapists
- Social work and counselling professionals
- Special educators
- Speech and language therapists/pathologists

2.3 Members of the working groups

The following experts have contributed to the development of the *Package of interventions for rehabilitation for hearing loss* along the different development steps and using the listed clinical practice guidelines and Cochrane systematic reviews. See Annex 2 for a summary of declarations of interest.

Members of the technical working group

Louise HICKSON (Audiologist, Australia); Linda HOOD (Audiologist, United States of America (USA)); Sheila PRATT (Audiologist, USA); Lena WONG (Audiologist, Hong Kong Special Administrative Region (SAR), China).

Members of the development group

Lilly CHENG (Speech and language pathologist, USA); Victor De ANDRADE (Speech and language pathologist, Audiologist, South Africa); N DEVI (Speech and language pathologist, Audiologist; India); Limir LAVIE (Audiologist, Israel); Katrin NEUMANN (Pediatric Audiologist, Phoniatrician, Otolaryngologist, Germany); Areti OKALIDOU (Speech and language pathologist, Greece); Sara LOWRIGHT (Speech and language pathologist, United Kingdom); Sheila PRATT (Audiologist, USA); Hubert RAMOS (Audiologist, Philippines); Shaza SALEH (Audiologist, Saudi Arabia); Snigdha SARKAR (Consumer representative, India); Bowen TANG (Consumer representative, Canada).

Members of the peer review group

Ghada BINKHAMIS (Audiologist, Saudi Arabia); Jackie CLARK (Audiologist, USA); Janet DES GEORGES (Consumer representative, USA); Jill DUNCAN (Listening and spoken language therapist, Teacher of the deaf, Australia); Dagmar HERRMANNOVA (Speech and language therapist, Teacher for people with complex needs, Czech Republic); Ulrika LÖFKVIST (Speech and language pathologist, Sweden); MEGHA (Audiologist, India); Nabeelah NAGDEE (Speech and language therapist, Audiologist, South Africa); Daniel PACCIORETTI (Audiologist, Canada); Sameer POOTHERI (Audiologist, India); Karen REICHMUTH (Speech and language therapist, Germany); Mohamed SHABANA (Audiologist, Egypt); Johanna SHEPHERD (Speech and language pathologist, Poland); Trudy SMITH (Listening and spoken language therapist, Auditory verbal therapist, Australia); Ruth WARWICK (Consumer representative, Canada).

Shelly CHADHA (WHO technical officer, Hearing Programme, WHO Sensory functions, Disability and Rehabilitation Unit) accompanied the development of the *Package of interventions for rehabilitation for hearing loss* and provided valuable support and feedback along the process.

2.4 References

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Annex 1. Glossary of assessments and interventions

For each assessment and intervention included in the *Package of interventions for rehabilitation*, short descriptions are provided to help understand each specific action.

A1.1 Assessments

Assessment	Description of the assessment
Assessment of auditory perception	Auditory perception is the ability to interpret auditory information and comprises functions involved in discriminating sounds, tones, pitches and other acoustic stimuli. The assessment of auditory perception (including initial screening to determine the need for comprehensive assessment) uses standardized tests to determine the presence and/or severity of impairment in auditory perception, ascertain their impact on functioning, and inform rehabilitation planning, including the need for follow-up.
Assessment of carer and family needs	The role of carer often presents a huge burden that may result in overstrain and health issues. The assessment of carer and family needs uses interviewing and standardized self-reported questionnaires to determine the physical, mental and emotional needs, and the person's knowledge and skills to provide care. It also assesses the need for referral to comprehensive assessment and treatment if required.
Assessment of communication	Communication is performed by using words, sounds, signs or behaviours to express or exchange information, and is learned from early childhood. Difficulties in communication can relate to problems with understanding and expressing language, impairments in hearing, speech or vocal functions, and also to psychological issues. The assessment of communication (including initial screening to determine the need for comprehensive assessment) uses observation, interviewing, standardized self-reported questionnaires or communication tests to determine the presence and/or severity of impairment in communication functions, ascertain their impact on functioning, and inform care planning, including the need for referral or follow-up.
Assessment of communication strategies of carers and family	The quality of the communication between a person in the rehabilitation process and their family and carers depends on the successful utilization of strategies to overcome the difficulties related to communication (e.g. due to hearing loss, problems with behaviours). Such strategies may include, for example, the use of assistive products, sign language or specific behavioural techniques. Assessment of the communication strategies uses observation and interviewing to determine the presence and severity of problems with communication, ascertain their impact on the functioning of the person with hearing loss or other communication difficulties, and the needs of the family and carers, and inform the rehabilitation planning.
Assessment of hearing functions	Hearing loss (mild, moderate, severe or profound) can affect one ear or both ears, and leads to difficulty in hearing conversational speech or loud sounds. Hearing functions comprise sound detection, sound and speech discrimination, or localization of sound sources. The assessment of hearing functions uses interviewing and measurement to determine the presence and severity of impairments in hearing functions, ascertain their impact on functioning, and inform rehabilitation planning, including the need for referral and follow-up.

Assessment	Description of the assessment
Assessment of language	The use of language involves the capacity to understand and express spoken, written or other forms of language. This capacity is developed in the early ages of development. Problems with using language include, among other factors, the lack of development of oral language due to hearing loss, for example, but also different types of impairments due to brain damage (e.g. aphasia). The assessment of language (including initial screening to determine the need for comprehensive assessment) uses observation, interviewing, standardized self-reported questionnaires or standardized tests to determine the presence and/or severity of problems with using language, ascertain their impact on functioning, and inform care planning, including the need for referral or follow-up.
Assessment of mobility	Mobility comprises several activities, such as transferring, or changing body position, and moving around indoors and outdoors either by walking, with the help of an assistive product (e.g. a wheelchair), or using different means of transportation. Thus, for the assessment (including initial screening) of mobility, the activities most relevant for the individual are selected. The assessment of mobility (including initial screening to determine the need for comprehensive assessment) uses interviewing, observation and standardized tests to determine the presence and/or severity of limitations in mobility and related fall risk, ascertain their impact on functioning, and inform care planning, including the need for referral or follow-up.
Assessment of participation in community and social life	Community and social life performance refers to the person's level of participation in various social and community life activities (e.g. sport, recreation and leisure, religion and spirituality, or political life). The assessment of participation in community and social life uses interviewing and standardized self-reported questionnaires to determine the presence and/or severity of restrictions in participation, and inform care planning, including the need for referral or follow-up.
Assessment of reading and writing	Reading and writing are essential activities not only for communication, but also for other purposes when the capacity to receive and produce written messages is required. The assessment of reading and writing (including initial screening to determine the need for comprehensive assessment) uses observation, interviewing or standardized tests to determine the presence and/or severity of limitations in reading and writing, ascertain their impact on functioning, and inform care planning, including the need for referral or follow-up.
Assessment of speech functions	Speech impairments may include problems with speech fluency and rhythm, articulation and coordination of speech due to brain damage (e.g. stuttering, dysarthria or speech apraxia), hearing loss or developmental disorders. The assessment of speech functions (including initial screening to determine the need for comprehensive assessment) uses observation, interviewing, standardized self-reported questionnaires or standardized tests to determine the presence and/or severity of impairments in speech functions, ascertain their impact on functioning, and inform care planning, including the need for referral or follow-up.
Comprehensive eye examination	A vision impairment occurs when a health condition affects the visual system and one or more of its vision functions (e.g. visual acuity, visual field, colour vision or contrast sensitivity). A comprehensive eye examination includes specific eye examinations (such as visual acuity, refraction, tonometry, visual field or ophthalmoscopy) that may occur in the context of a general or disease-specific examination.
Educational assessment	Educational assessment aims to describe a person's capacity to participate in educational activities (school readiness, skills and competencies related to learning and applying knowledge) and/or a person's performance at school or university. During the educational assessment, information is collected on the individual's capacity and/or performance to complete expected or assigned tasks, organize themselves, work cooperatively with classmates, and take directions from teachers. The educational assessment (including initial screening to determine the need for comprehensive assessment) uses interviewing, standardized self-reported questionnaires, observation or specific tests to determine the capacity to participate in educational activities and/or the presence and/or severity of difficulties at kindergarten/school/university, ascertain their impact on functioning, and inform care planning, including the need for referral or follow-up.

Assessment	Description of the assessment
Vocational assessment	Vocational assessment aims to describe a person's vocational goals, capacity to work (general work readiness, skills and competencies for specific occupations) and/or a person's occupational performance at the current workplace. During the vocational assessment, information is collected on the individual's capacity and/or performance to complete expected or assigned tasks, organize themselves, work cooperatively with colleagues, take directions from supervisors, or supervise others. The vocational assessment (including initial screening to determine the need for comprehensive assessment) uses interviewing, standardized self-reported questionnaires, observation or specific tests to determine the capacity to work and/or the presence and/or severity of difficulties at work, ascertain their impact on functioning, and inform care planning, including the need for referral or follow-up.

A1.2 Interventions

Intervention	Description of the intervention
Auditory training	Auditory training uses techniques that aim to enhance listening skills and improve speech understanding – pre-conditions to successful communication. During auditory training, participants are provided with auditory stimuli and are involved in (focused) listening activities. Auditory training trains the cognitive processes that play a role in listening and is important for individuals with hearing loss who have been equipped with hearing aids or cochlear implants.
Carer and family training and support	Carer and family training and support entail providing education and advice about the health condition, strategies and tasks relevant for the care and support of the person in the rehabilitation process. Training and support also aim to equip carers and families with knowledge, skills and resources to cope with their role successfully without developing health issues themselves. Carer and family training and support during the rehabilitation of the person in need comprises provision of information, resources, individual counselling, or support groups also involving peer counsellors.
Communication skills training	Difficulties in communication can relate to problems with understanding and expressing language, impairments in hearing, speech or vocal functions, and also to psychological issues. Training in communication skills aims to enable a person to communicate with others via spoken, written or other forms of language through, for example, communication partner training. Communication skills training includes advice on appropriate communication strategies and is practised in one-to-one or group format.
Education, advice and support for the self-management of the health condition	Education on self-management entails providing information about tasks relevant for the self-management of medical, emotional and social aspects related to the prevention of, or coping with, a health condition. The individual advice aims to identify and discuss strategies which help to enhance the self-management skills that best suit the needs and capabilities of the individual to maintain or achieve independence and optimal participation in daily life. Support is provided whenever a person is not able to self-manage the issues related to the health condition. Support may also be provided by peers through sharing the same experiences or challenges as the person in the rehabilitation process, and supporting the person in the rehabilitation process in the development of self-management skills and coping strategies to achieve and maintain optimal functioning and well-being. The education, advice and support for self-management can be performed in one-to-one or group sessions.

Intervention	Description of the intervention
Educational counselling, training and support	Educational activities are activities that are accomplished in the context of education (kindergarten, school, university). Educational counselling supports an individual during school enrolment or return to school, or to identify new educational goals and opportunities. Educational training is directed to achieve school enrolment, a return to, or maintenance at, school or university through learning (compensatory) strategies to perform the required tasks, taking into consideration functioning limitations or potential health risks. The training consists of education, advice and practising functional tasks and is guided or assisted by a health or social worker or (special) educator. Educational support (also sometimes referred to as "supported education") provides individual support to an individual at kindergarten, school or university to sustain long-term participation at school or university, usually involving the school, (special) educators or social workers.
Language therapy	Problems with using language comprise difficulties to understand and express spoken, written or other forms of language, which exist in, for example, people with limited language development (e.g. in people with hearing loss), or due to different types of impairments following, for example, brain damage (e.g. aphasia). Language therapy aims to promote and restore understanding and expression of language through structured conversational practice and language stimulation (including early and family interventions) or, if full restoration is not possible, by developing compensatory strategies (e.g. using language cues) to allow a person to understand language and to express themselves. These techniques are practised repetitively and, if feasible, performed self-directed by the patient following education and advice on the appropriate techniques.
Modification of the home environment	The structure, layout, furniture and lighting of a home can facilitate or hinder functioning. Modification of the home environment may involve varying degrees of intervention that address environmental barriers and maximize safety, independence and performance of activities of daily living. These may include: • providing general advice and guidance on home modifications (including without seeing the home); • assessment of the home environment (i.e. visiting the home); • documenting/reporting structural and non-structural changes that are recommended, which may include drafting construction plans when relevant; • making environmental changes in the home, such as removing fall hazards, inserting visual cues, or moving items to make them more readily accessible; and/or • referring to appropriate service providers to conduct work beyond the scope of the health worker.
Orientation and mobility training	Orientation and mobility training aims to help people with vision impairment to develop orientation in space as well as movement and safety in independent travelling. Instructions such as the sighted guide technique or basic protection technique can be offered.
Participation focused interventions	A variety of activities (e.g. recreational or sports activities) present important opportunities to participate in communities and social life. Participation-focused interventions utilize such activities and integrate approaches that help to improve a person's skills to perform the activities with the overall goal to achieve optimal (re)integration and participation. Under guidance or assistance, different types of activities are offered and tried out (often as structured group activities), if feasible, with the participation of family members or friends.
Provision and training in the use of assistive products for communication	The provision of assistive products (e.g. communication boards/books/cards, electronic device and communication software, augmentative and alternative communication devices) to support communication. Provision includes identification of the specific needs of the individual, as well as the selection, manufacture or modification, and adjustment of the appropriate product. Following provision, the patient will be trained in the use and care of the products.

Intervention	Description of the intervention
Provision and training in the use of assistive products for hearing	The provision of assistive products (hearing aids or assistive listening devices) to improve hearing functions. Provision includes identification of the specific needs of the individual, as well as the selection, manufacture or modification, and adjustment of the appropriate product. Following provision, the patient will be trained in the use and care of the products.
Provision and training in the use of assistive products for mobility	The provision of assistive mobility devices (e.g. walking aids, transfer aids, manual or electrical wheelchairs with pressure cushions) support people to mobilize in different environments. Provision includes identification of the specific needs of the individual, as well as the selection, manufacture or modification, and adjustment of the appropriate device. Following provision, the patient will be trained in the use and care of the products.
Provision and training in the use of assistive products for reading and writing	The provision of assistive products (non-optical or electronical devices) to improve a person's performance in reading and writing. Provision includes identification of the specific needs of the individual, as well as the selection (taking into consideration a person's capacity to use the assistive product), manufacture or modification, and adjustment of the appropriate product and follow-up visits. Following provision, the patient will be trained in the use and care of the products.
Provision and training in the use of assistive products for vision	The provision of assistive products (optical devices, including filters) to improve vision. Provision includes identification of the specific needs of the individual, as well as the selection (taking into consideration a person's capacity to use the assistive product), manufacture or modification, and adjustment of the appropriate product and follow-up visits. Following provision, the patient will be trained in the use and care of the products.
Referral to cochlear (and other hearing) implant	Selecting the appropriate service, preparing relevant information and organizing the referral of the person to, and requesting feedback from, the required specialist services.
Referral to specialist assessment	Selecting the appropriate service, preparing relevant information and organizing the referral of the person to, and requesting feedback from, the required specialist services.
Speech therapy	Problems with speech functions include impairments with fluency and rhythm of speech, articulation and coordination of speech, due to impairments related to brain damage (e.g. stuttering, dysarthria or speech apraxia) or to hearing loss or development disorders. Speech therapy aims to improve the fluency and rhythm of speech, articulation and coordination of speech through, for example, phonological exercises or, if full restoration is not possible, by developing compensatory strategies (e.g. cued speech) to increase speech intelligibility and allow a person to express themselves well through speech. These techniques are practised repetitively and, if feasible, performed self-directed by the patient following education and advice on the appropriate exercises.
Verbal and/or sign language training	The capacity to use a language (verbal or sign) is the prerequisite to understanding and sharing information and communicating with others. Verbal and/or sign language training aims to enable a person to apply specific verbal or sign language. Verbal and/or sign language training is practised in one-to-one or group format.
Vision skills training	Central visual impairments include visual field loss (hemianopia) or eye movement disorders (e.g. strabismus, gaze deficits and nystagmus). Vision skills training aims to improve and strengthen visual skills and abilities through aligning the visual axes and improving the ability to focus and track objects. Vision therapy comprises restitutive techniques (e.g. convergence, pursuit, saccade exercises) and compensatory techniques (training of eye movements for reading, compensatory head posture). These techniques are practised repetitively under the guidance and assistance of a health worker and, if feasible, performed self-directed by the patient following education and advice on the appropriate exercises.

Intervention	Description of the intervention
Vocational counselling, training and support	Vocational activities are activities that are accomplished in the context of the specific occupation of an individual. Vocational counselling supports an individual during return to work or to identify new vocational goals and opportunities. Vocational training is directed towards achieving a return to, or maintenance at, work through learning (compensatory) strategies to perform the required tasks, taking into consideration functioning limitations or potential health risks. The training consists of education, advice and practising functional tasks and is guided or assisted by a health or social worker. Vocational support provides individual support to an individual at the workplace to sustain long-term employment, usually involving the employer, supervisors or co-workers.

Annex 2. Summary of declarations of interest and how these were managed

All members of the technical working groups, development groups and peer review groups completed and submitted a WHO Declaration of Interests form and signed confidentiality undertakings prior to starting the work related to the group. The WHO Department of Noncommunicable Diseases reviewed and assessed the submitted declarations of interest and performed an internet search to identify any obvious public controversies or interests that may lead to compromising situations. If additional guidance on management of any declaration or conflicts of interest had been required, the department would have consulted with colleagues in the WHO Office of Compliance, Risk Management and Ethics. If deemed necessary, individuals found to have conflicts of interest, financial or non-financial, would have been excluded from participation on any topics where interests were conflicting. The management of conflicts of interest was reviewed throughout the process. No conflict of interest was identified.

A2.1 Technical working group members

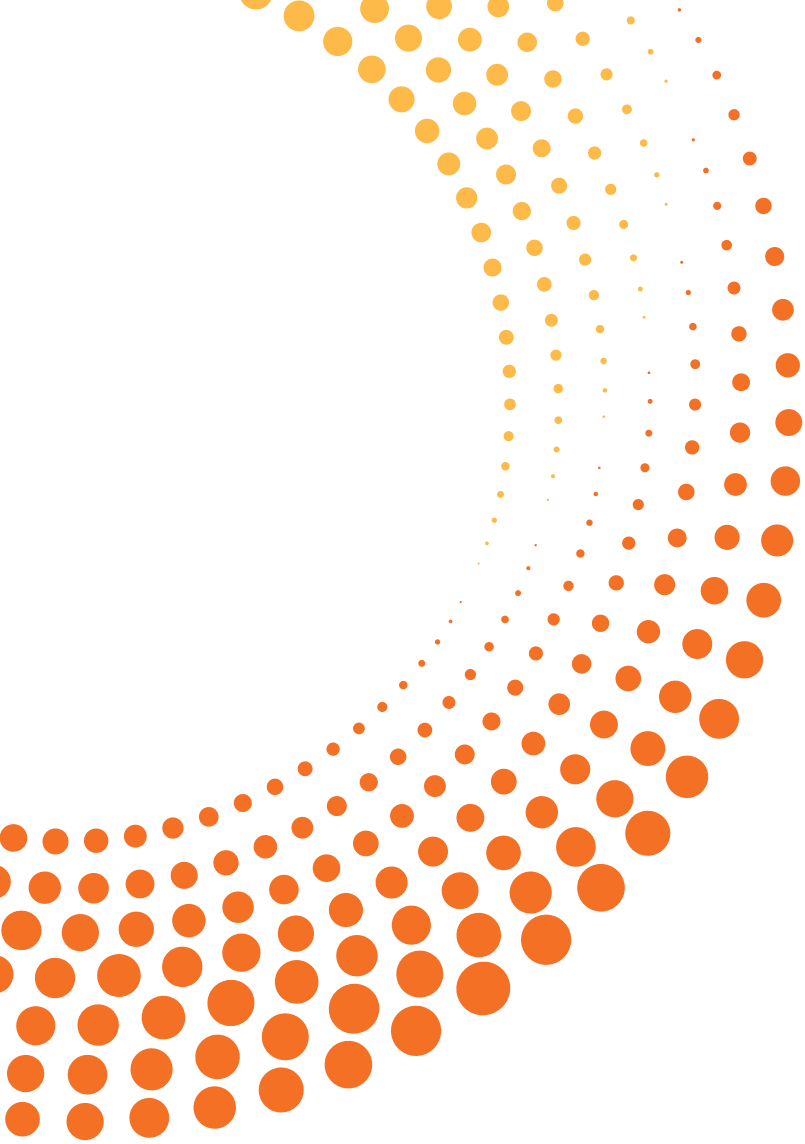
Name	Expertise	Disclosure of interest	Assessment of disclosed interest
For vision impairment			
Mary Lou Jackson	Ophthalmologist	None declared	N/A
Ruth Van Nispen	Ophthalmologist	Research funds; copyright	Not significant
Gianni Virgili	Ophthalmologist	Patent; public position	N/A
Sumrana Yasmin	Public health expert	None declared	N/A
For hearing loss			
Louise HICKSON	Audiologist	Employment; consulting; research funding; non-monetary support	Not significant
Linda HOOD	Audiologist	None declared	N/A
Sheila PRATT	Audiologist	Employment; research funding	Not significant
Lena WONG	Audiologist	Consulting; research funding; non-monetary support	Not significant

A2.2 Development group members

Name	Expertise	Disclosure of interest	Assessment of disclosed interest
For vision impairment			
Anne Ebri	Optometrist	None declared	N/A
Andrew Jonathan Jackson	Optometrist	Employment	Not significant
Mary Lou Jackson	Ophthalmologist	None declared	N/A
Late Hasan Minto	Public health expert	None declared	N/A
Ruth Van Nispen	Ophthalmologist	Research funds; copyright	Not significant
Sumrana Yasmin	Public health expert	None declared	N/A
Gianni Virgili	Ophthalmologist	Patent; public position	Not significant
For hearing loss			
Lilly CHENG	Speech and language pathologist	None declared	N/A
Victor De ANDRADE	Speech and language pathologist	None declared	N/A
N DEVI	Speech and language pathologist	None declared	N/A
Limir LAVIE	Audiologist	None declared	N/A
Katrin NEUMANN	Pediatric Audiologist, Phoniatrician, Otolaryngologist	Research funds; non-monetary support	Not significant
Areti OKALIDOU	Speech and language pathologist	Research funds; non-monetary support	Not significant
Sara PLOWRIGHT	Speech and language pathologist	Employment; consultancy	Not significant
Sheila PRATT	Audiologist	Employment; research funds	Not significant
Hubert RAMOS	Audiologist	None declared	N/A
Shaza SALEH	Audiologist	Non-monetary support	Not significant
Snigdha SARKAR	Consumer representative	None declared	N/A
Bowen TANG	Consumer representative	None declared	N/A

A2.3 Peer review group members

Name	Expertise	Disclosure of interest	Assessment of disclosed interest
For vision impairment			
Jill KEEFE	Vision rehabilitation expert	None declared	N/A
Colleen Erin McGrath	Occupational therapist	None declared	N/A
Jugnoo SANGEETA RAHI	Ophthalmologist	Research funds; public statements	Not significant
R D RAVINDRAN	Ophthalmologist	Non declared	N/A
Serge RESNIKOFF	Public health expert	Non declared	N/A
David YORSTON	Ophthalmologist	Research funds	Not significant
For hearing loss			
Ghada BINKHAMIS	Audiologist	None declared	N/A
Jackie CLARK	Audiologist	None declared	N/A
Janet DES GEORGES	Consumer representative	None declared	N/A
Jill DUNCAN	Listening and spoken language therapist, Teacher of the deaf	Research funds	Not significant
Dagmar HERRMANNOVA	Speech and language therapist, Teacher for people with complex needs	Employment	Not significant
Ulrika LÖFKVIST	Speech and language pathologist	Public position	Not significant
MEGHA	Audiologist	None declared	N/A
Nabeelah NAGDEE	Speech and language therapist, Audiologist	None declared	N/A
Daniel PACCIORETTI	Audiologist	Research funds	Not significant
Sameer POOTHERI	Audiologist	None declared	N/A
Karen REICHMUTH	Speech and language therapist	Employment; research funds; non-monetary support; patents	Not significant
Mohamed SHABANA	Audiologist	None declared	N/A
Johanna SHEPHERD	Speech and language pathologist	None declared	N/A
Trudy SMITH	Listening and spoken language therapist, Auditory verbal therapist	None declared	N/A
Ruth WARWICK	Consumer representative	None declared	N/A



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