

# **Overview of studies on needs, availability and affordability of assistive and medical devices for ageing populations in 8 Asian Countries: Australia, China, Fiji, Japan, Malaysia, Philippines, Republic of Korea and Viet Nam**

**International Federation on Ageing (IFA)  
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# Two (2) WHO Commissioned Studies 2012-2013

- Systematic review of needs for **medical devices** for ageing population (commissioned to **ASERNIP-S**, Australian Safety and Efficacy Register of New Interventional Procedures – Surgical)
- Systematic review of the needs, availability and affordability of **assistive devices** for older people in 8 countries (commissioned to **CBM Australia** – Nossal Institute Partnership for Disability Inclusive Development)

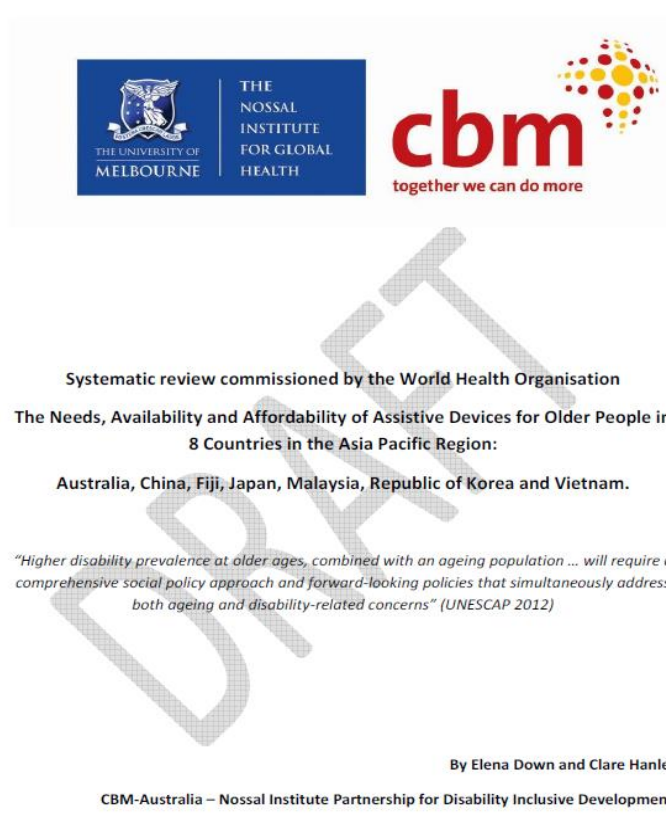


**Consultation on Advancing Technological Innovation  
for Older Persons in Asia**  
*20-21 February 2013, Kobe, Japan*

# Forthcoming publications (WHO, 2014)



~ 100 pages



~ 100 pages

<http://www.who.int/en>

and

[http://www.who.int/kobe\\_centre/en/](http://www.who.int/kobe_centre/en/)

# Medical and assistive devices are indispensable for health care



**Strategic Objective of WHO:** “to ensure the improved access, quality and use of medical products and technologies”

# Definition

## ● Medical device (MD)

= “any instrument, apparatus, implement, machine, appliance, implant, reagent for in vitro use, software, material or other similar or related article, intended by the manufacturer to be used alone or in combination, for human beings for one or more of the specific purpose(s) of diagnosis, prevention, monitoring, treatment or alleviation of disease...” (WHO, 2003).

## ● Assistive device (AD)

= “any product specially produced or generally available, for preventing, compensating for, monitoring and relieving or neutralizing impairments, activity limitations and participation restrictions” (ISO 9999:2011 Assistive products for persons with disability).

# Systematic review of needs for medical devices for ageing populations (WHO, 2014)

## ● Methodology

- Systematic literature search
- Database : PubMed
- Two-step search strategy:
  - Core search (focus to *devices* and *aged*)
  - Consistently applied to a **condition-specific** search
- Broad MeSH (MEdical Subject Heading) terms and keyword terms used
- Clinical practice guidelines were used to supplement initial results, if needed

## ● Search Results

- 3,278 papers retrieved, 1,535 papers included (i.e., referring to a medical device)



# Results (Medical devices)

- The results were considered from a clinical perspective in order to establish the role of each device within the overall management of a specific condition.
- Therefore, identified medical devices used in the prevention, diagnosis and treatment of health conditions of ageing populations were listed under 5 broad categories:
  - Cardiovascular diseases;
  - Malignant neoplasms;
  - Respiratory conditions;
  - Neuropsychiatric conditions; and
  - Sense organ diseases.



# MDs for Cardiovascular diseases

- **Prevention** Low density lipoprotein gene marker test; biofeedback devices
- **Diagnosis** In vitro diagnostic (IVD) blood tests, blood pressure monitors, various cardiovascular tests
- **Therapy** Angioplasty; endovascular devices; ventricular aid devices, implantable cardioverter defibrillators, heart valves
- **Common** Cardiac resynchronization therapy (CRT) devices (for ischaemia and hypertension)



# MDs for Malignant neoplasms

- **Prevention** Ablation (pre-cancerous tissue); screening tests for known risk factors (*H pylori* for upper GI cancer); BRCA test (breast cancer)
- **Diagnosis** Endoscope, various biopsy devices, medical and nuclear imaging
- **Therapy** Surgical resection (range of devices); tests for gene expression to guide chemotherapy; stents (oesophageal and colonic); radiotherapy devices (various, including brachytherapy)
- **Common** Medical/nuclear imaging (MRI, CT, PET), biopsy



# MDs for Respiratory conditions

- **Prevention** No device identified [broader measures include education regarding the risks of smoking; control of environmental toxins]
- **Diagnosis** Spirometer, various lung function tests (also for screening)
- **Therapy** Inhalers, ventilators, surgical resection



# MDs for Sense organ diseases

- **Prevention** No device identified
- **Diagnosis** Ophthalmoscope, tonometers, charts, refractor; audiometer, otoscope
- **Therapy** Intraocular lens replacements, lasers (LASIK and control of blood vessels), spectacles (aid), angiography; external or implantable hearing aids
- **Common** Ophthalmoscope



# MDs for Neuropsychiatric conditions

- **Prevention** No devices identified
- **Diagnosis** Scales (cognitive, functional, behavioural and psychological), contrast and nuclear imaging
- **Therapy** No devices identified [other therapies included music, exercise, relaxation and cognitive stimulation]
- **Common** Scales



# Discussion (Medical devices)

- Clinical practice guidelines were *not* often required as a supplementary resource.
- The absolute and comparative clinical safety, effectiveness and cost-effectiveness of devices were usually not clear
- The results have broad clinical applicability in different countries.
- Devices associated with performing surgery were commonly *not* reported.

# Conclusions (Medical devices)

- The report has identified a robust list of devices over a range of five conditions.
- Application of results across countries in the WHO Western Pacific Region.
- Consider: local disease-specific issues; healthcare infrastructure and skills.
- Appropriate management of a condition involves successful employment of medical devices for:
  - **prevention,**
  - **diagnosis and**
  - **therapy.**

# The needs, availability and affordability of ADs for Older People in 8 Countries (WHO, 2014)

## ● Methodology

- Focused on the health conditions that were the top causes for Years Lost to Disability (YLD) for older people 60 + years in the 8 countries in the WHO Western Pacific Region
- Used as most relevant the 6 classes of assistive devices under ISO 9999:2011
- Resorted to Key Informant Interviews (N = 41)

- **Search results:** not stated; systematic review of literature considered “*not* an adequate method” due to limited literature at country level



# Classes of assistive devices included in the review

Class of assistive device	Examples of assistive devices
Orthoses and Prostheses	Upper limb orthoses, lower limb orthoses, upper limb prostheses, lower limb prostheses, orthopaedic footwear
Assistive products for personal care and protection	Assistive products for dressing and undressing; toileting; incontinence management; bathing, showering and washing;
Assistive products for personal mobility	Assistive products for walking (e.g. walking sticks, crutches, walking frames); manual wheelchairs; powered wheelchairs; assistive products for orientation (e.g. white canes); assistive products for lifting people (e.g. hoists)
Assistive products for house keeping	Assistive products for dishwashing; housecleaning; chopping and measuring food; preparing and cooking food.
Assistive products for communication and information	Assistive products for seeing (e.g. spectacles, magnifiers); hearing (e.g. hearing aids, amplifiers, headphones); adapted alarms; telephones; writing boards; Braille typewriters; computers, computer software and technology (e.g. Braille printers, audible computer displays, screen magnifiers); calculation products
Assistive products for handling objects and devices	Assistive products for carrying and transporting objects; reaching and grasping objects;

# Discussion (Assistive Devices), 1

- **Personal mobility devices** (e.g., walking sticks, crutches, frames, wheelchairs) were most available.
- Devices for **handling objects and for housekeeping** (e.g., preparing food) were not widely available and where they were, were often considered unaffordable (often *not* covered by subsidy schemes, where these existed).
- **Quality** is a concern for devices requiring customisation (e.g., hearing aids, wheelchairs and spectacles).
- **Affordability** of devices is a key concern, with subsidy schemes playing a key part in making devices affordable for elderly people and the absence of subsidy schemes proving a barrier to affordability.
- In **Fiji** (and most other Pacific Islands countries), lack of availability of devices is a critical issue.

# Discussion (Assistive Devices), 2

- **Lack of information** about assistive devices - a major barrier (for consumers, service providers, planners, etc).
- Broader context of **access to health systems**:
  - affordability of transport to urban centres where the majority of assistive devices are available;
  - availability of therapists or technicians to fit and maintain assistive devices;
  - Channels for identification and referral;
  - Service delivery infrastructure;
  - Capacity development of technicians and therapists is critical.

# Discussion (Assistive Devices), 3

- **Japan and Republic of Korea** appear to have good availability of assistive devices both in cities and rural areas; The modes of delivery and funding in these two countries may be worth further investigation.
- The **supply and subsidisation** of appropriate assistive devices is only one component of a successful assistive technology 'solution'. Environmental, social and cultural factors should also be considered.
- Decisions around production and provision of assistive devices should take into account existing programs such as **Community Based Rehabilitation** programs or other local responses.

# Conclusions (Assistive Devices), 1

1. **Primary research** with older people to better understand their priorities and needs for assistive devices;
2. Intersection between community based rehabilitation (CBR) and health system approaches; research to **highlight successful low-cost, community-produced** assistive devices would be useful;
3. Greater understanding of **mechanisms for distribution and maintenance** – in particular those which respond well to the needs of people in rural areas (e.g., Japan and Republic of Korea);

# Conclusions (Assistive Devices), 2

4. The availability of **medical interventions** (e.g., cataract surgery) which may be more cost-effective than assistive devices;
5. Mechanisms and effectiveness evaluation of different **reimbursement/subsidy schemes**;
6. Research that provides evidence of the **cost-benefit** of assistive devices.

 **Further Research**

# Other identified issues (Assistive Devices)

- Tension between increasing access versus **quality risk**;
- Mechanisms for **quality control** of ADs and training;
- Mechanisms for ADs **maintenance** and parts replacement;
- **Partnerships** between health systems and NGOs – in many places, providing ADs has been the domain of NGOs;
- Who determines eligibility for **subsidy and loan schemes**?;
- Addressing barriers related to **taxation**.
- **Access to information** for consumers and service providers;
- Mechanisms for **technology transfer** between countries.

# Moving forward (Medical and Assistive Devices)



- Initial systematic reviews
- Driving innovations for ageing populations:
  - Available and Accessible
  - Acceptable
  - Affordable
  - Appropriate
  - Adaptable
  - Safe
  - Effective
  - Quality
  - Sustainable
- Research and action must continue.

**“Best days for public health are ahead of us.”**  
**WHO Director-General**

