World Health Organization

European Region

Situation assessment of assistive technology in Uzbekistan

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Abstract

This report presents the findings of the Assistive Technology Capacity Assessment conducted in Uzbekistan, a collaborative effort between WHO and national stakeholders. The assessment evaluated the country's capacity to provide assistive technology (AT) and identify strategic opportunities to enhance access for individuals with functional limitations. With a growing demand for AT driven by noncommunicable diseases, injuries and an aging population, Uzbekistan stands at a critical juncture in ensuring inclusive health and social services.

The assessment applied WHO's 5P framework – Policy, Provision, Products, Personnel and People – to analyse the strengths and gaps in the national AT ecosystem. Key achievements include the establishment of the National Agency for Social Protection, increased government funding and the introduction of a voucher-based AT provision system. However, challenges persist, including limited eligibility criteria, inconsistent service delivery, a shortage of trained professionals and limited national data on AT needs and outcomes.

The report recommends actions to strengthen AT access and delivery in Uzbekistan: expanding eligibility, developing national standards for products and services, strengthening the workforce, and establishing a coordinated governance mechanism. Implementing these actions will be essential for achieving universal health coverage, upholding the rights of persons with disabilities and advancing progress towards the Sustainable Development Goals.

Keywords
SELF-HELP DEVICES, PERSONS WITH DISABILITIES, AGING, HEALTH POLICY, UZBEKISTAN

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Abbreviations

AFO	ankle-foot orthoses
AP	assistive products
APL	assistive products list
APS	assistive product specifications
AT	assistive technology
ATA-C	Assistive Technology Capacity Assessment
ENT	ear, nose and throat
FAB	foot abduction braces
FM	frequency modulation
GPS	Global Positioning System
ISO	International Organization for Standardization
ISPO	International Society for Prosthetics and Orthotics
LLC	limited liability company
MSEC	Medical Social Expert Commission
NASP	National Agency for Social Protection
NCD	noncommunicable disease
ND	no data
PO	prosthetics and orthotics
rATA	Rapid Assistive Technology Assessment
RSSPMCP	Republican Specialized Scientific and Practical Medical Centre for Paediatrics
RSSPMCTO	Republican Specialized Scientific and Practical Medical Centre for Traumatology and Orthopaedics
TAP	WHO training on assistive products
VKK	Medical Consultative Commission
WHODAS	WHO Disability Assessment Schedule
WSTP	Wheelchair Service Training Package
WSTPb	Wheelchair Service Training Package - Basic level
5P framework	Policy, Provision, Products, Personnel, People

Executive summary

Assistive technology (AT) refers to the systems and services related to the delivery of assistive products (AP), which are tools and devices designed to maintain or improve an individual's functioning and independence. These products range from simple tools like walking canes to complex digital devices, such as hearing aids or communication software. AT plays a crucial role in enabling people with functional limitations – whether due to disability, chronic illness or aging – to participate fully in society.

Globally, the need for AT is significant and growing. WHO estimates that over 2.5 billion people require one or more AP, a number expected to rise due to aging populations and the increasing prevalence of noncommunicable diseases (NCDs). In Uzbekistan, NCDs are the leading cause of death, accounting for over 73% of all deaths in 2022. This includes cardiovascular diseases, respiratory illnesses and cancer. Additionally, road traffic injuries and other health conditions contribute to a growing demand for rehabilitation and assistive services.

Uzbekistan, a country of over 37 million people, has made notable efforts to improve access to AT. The government has shown commitment through policy reforms, including the establishment of the National Agency for Social Protection (NASP) and the implementation of a voucher-based system for AT provision. WHO has supported these efforts by conducting assessments using standardized tools such as the Systematic Assessment of Rehabilitation Situation and the Assistive Technology Capacity Assessment (ATA-C). These tools help evaluate the national capacity to deliver AT and identify areas for improvement.

Findings and recommended actions

Policy

Uzbekistan has made significant strides in policy and governance, including the establishment of the NASP and the introduction of the voucher-based AT provision system; however, eligibility is limited and outcome data is lacking. The government has increased funding for AT, expanded the list of subsidized products and introduced an online platform to facilitate user choice. The NASP has taken a leadership role in coordinating AT services and has begun piloting functional assessments to improve the accuracy of AT prescriptions.

Recommended actions

- Extend eligibility to include all people in need, not just those with disabilities or of retirement age.
- Increase financing for AT to ensure universal coverage.
- Collect data on AT needs and outcomes through national surveys and monitoring systems.
- Establish an AT monitoring mechanism to ensure that products and services are of consistently high quality and meet national and international standards.
- Adopt WHO definitions of assistive technology and products to align with global standards.
- Establish an interministerial taskforce to coordinate AT policy and develop a national roadmap with the goal of integrating AT into broader health, education and social protection policies and programmes to ensure cross-sectoral coordination, sustainability and inclusion.

Provision

While 30 types of AP are provided, services such as fitting, training and follow-up are inconsistent. Most products are distributed without adequate support. Access to AT is still limited to persons with disabilities and older adults, excluding many others with functional limitations. The range of available products is narrow, with many essential items – especially for vision, hearing and cognitive impairments – either unavailable or unaffordable.

Recommended actions

- Ensure comprehensive services (assessment, fitting, training and follow-up) for all AP.
- Develop service standards for all priority AP.
- Improve collaboration between AT providers and health facilities.
- Provide services at all levels, including community-level provision of simple products.

Products

A mix of high- and low-quality AP are available in Uzbekistan. Many essential items, especially for vision, hearing and cognitive impairments, are unavailable or unaffordable. Local production exists but often lacks the technical sophistication and quality assurance found in international products.

Recommended actions

- Develop a national list of priority AP.
- Establish product standards and specifications to ensure quality and safety.
- Support international partnerships for technology transfer and local production.
- Simplify registration procedures and ensure all AP are tax-exempt.

Personnel

Uzbekistan has a severe shortage of trained AT professionals, including prosthetists, orthotists, audiologists and rehabilitation specialists. Most providers rely on on-the-job training, and formal education programmes for these professions are either limited or non-existent.

Recommended actions

- Integrate AT into health professional curricula.
- Train general health and social protection staff on basic AT services.
- Develop an International Society for Prosthetics and Orthotics (ISPO)-accredited training programme for prosthetists and orthotists.
- Conduct wheelchair service training for relevant staff.

People

Access to AT is fundamental to the achievement of the Sustainable Development Goals and to realizing the rights of persons with disabilities. The provision of AT within the context of universal health coverage is also economically sound, with a return on investment of 9:1, resulting from increased engagement of individuals with functional limitations in all areas of society, and reduced costs associated with health and social care needs.

Recommended actions

- Extend eligibility criteria to include all people in need.
- Increase financing for AT.
- Collect data on AT needs and outcomes.

1. Introduction

1.1. Assistive technology and the importance of access

Assistive technology (AT) is an umbrella term which includes assistive products (AP) and the services required to provide these to people with functional limitations to improve participation and engagement in society *(1)*. People who require AT typically experience functional limitation in one or more areas, including limitations in hearing, vision, mobility, self-care, communication and cognition. AP are those products which help to restore or maintain function, independence and participation, and range from simple analogue to complex digital devices. In order to be effective, appropriate AP: must meet the user's needs, including needs which are unique to their local environmental conditions; must be provided by competent, trained professionals with the necessary knowledge of AP and functional limitations; and must be prescribed and fitted to the user's needs. Furthermore, services must be available for both assessment and follow-up, including training on AP use, maintenance and repair.

Access to AT is fundamental to the achievement of the Sustainable Development Goals *(2)* and to realizing the rights of persons with disabilities *(3)*. The provision of AT within the context of universal health coverage is also economically sound, with a return on investment of 9:1 resulting from increased engagement of individuals with functional limitations in all areas of society, and reduced costs associated with health and social care needs *(4).* Furthermore, AT is critical to addressing functional limitations associated with ageing.

Box 1 provides an overview of key global documents which are relevant to AT.

Box 1. Key global documents on AT

World Health Assembly Resolution 71.8

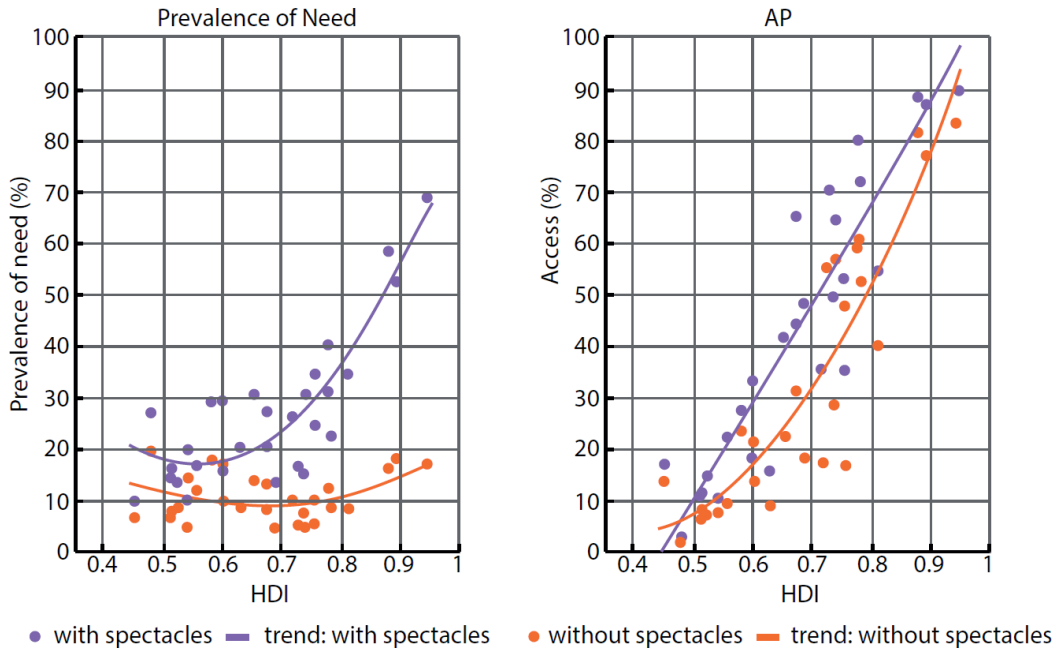
WHA 71.8 Improving Access to Assistive Technology, urges Member States to develop and implement policies to ensure access to AT within universal health coverage, to ensure the adequate training of human resources for health for the provision of AP at all levels of health care, and to develop national priority AP lists, including affordable and cost-effective AP to meet the needs of the population *(5)*.

Global report on assistive technology

The *Global report on assistive technology* is a landmark report outlining the current state of AT provision on a global level, identifying the need for, and provision of AP worldwide. Recommendations from the report include improving access to AT; ensuring products are safe, effective and affordable; strengthening workforce capacity for AT; engaging AT users and their families; increasing public awareness; ensuring policies are based on current evidence and data; and investing in AT research, the development of enabling environments, the inclusion of AT in humanitarian responses, and economic cooperation to enhance access to AT *(6).*

Globally there is a significant need for AP. The *Global report on assistive technology* estimates that approximately 1 in 10 individuals requires AP (excluding spectacles), with prevalence of need increasing with age (Fig. 1) *(6).*

Fig.1. Prevalence of need and access to AP globally as a function of human development index



HDI: human development index.
Source: WHO (2022) *(6).*

1.2. Uzbekistan country context

Uzbekistan declared its independence on 31 August 1991. As of December 2024, the population of the country was 37.5 million, marking a 2.1% increase compared to the previous year.

Geographically, Uzbekistan is a doubly landlocked – being bordered by other landlocked countries, namely Afghanistan, Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan. It is also one of the largest countries in central Asia, with a total area of 447 400 km2. The country contains 12 regions *(viloyats),* the city of Tashkent and the autonomous Republic of Karakalpakstan.

Uzbekistan has neighbourhood or local community-level administrative structures called *makhallas*; there are over 9000 *makhallas* in Uzbekistan. These makhallas function as the primary social support structures, often being the first point of contact for residents seeking assistance. Each *makhalla* has a catchment population of 2000–12 000 people. Each is managed by a committee comprising five members: a chair, an assistant to the governor and representatives from the women's committee, youth committee and crime prevention/police. *Makhallas* have a detailed electronic list of all the people in their catchment area, based on a type of informal annual census.

Globally, noncommunicable diseases (NCDs) are the leading cause of death and disability, contributing significantly to the total number of disability-adjusted life years lost. The rising prevalence of NCDs,

alongside an aging population, is anticipated to increase the need for rehabilitation services and AT. These interventions are essential for enhancing individuals' functionality, mobility and overall quality of life *(7)*.
In Uzbekistan, while an aging population is not currently a primary concern, other health trends are driving the need for rehabilitation services. These include the steady rise of NCDs, road traffic crashes and injuries, the number of persons with disabilities or functional limitations, and the impact of coronavirus disease.

NCDs remain the leading cause of mortality in Uzbekistan, accounting for over 73% of all deaths in 2022. The Statistics Agency of Uzbekistan reported that cardiovascular diseases were responsible for 55.5% of total deaths, respiratory diseases for 9.6%, and neoplasms for 8.0% in that year. This trend aligns with data from the WHO Global Health Observatory, which identified NCDs as the top four causes of death in Uzbekistan in 2019. The persistent high mortality rates from NCDs underscore the critical need for continued public health interventions and policy measures targeting these diseases *(8)*.

It is noteworthy that road injuries are also in the Global Health Observatory's top 10 causes of death. In 2019, Uzbekistan's road traffic death rate was 11.7 per 100 000 population, nearly 1.6 times the rate of the WHO European Region average at 7.4 per 100 000 *(8)*.

The first study to produce a global estimate of the need for rehabilitation services was published in The Lancet in December 2020. Estimates are based on the global burden of disease and are grouped according to seven main conditions: musculoskeletal disorders, sensory impairments, neurological disorders, mental disorders, chronic respiratory diseases, cardiovascular disease and neoplasms.

- Globally, 1 in 3 people could benefit from rehabilitation in 2019, which translates to 2.4 billion people.
- In the European Region, 2 in 5 people could benefit from rehabilitation; the equivalent of 370 million people.
- In Uzbekistan, about 1 in 4 people could benefit from rehabilitation; meaning 9 million people (with 2.1 million affected by lower back pain) *(9)*.

The Government of Uzbekistan is dedicated to improving access to AT and developing inclusive health and social care services to meet the needs of persons with disabilities, in accordance with the United Nations Convention on the Rights of Persons with Disabilities. At the same time, WHO is implementing ambitious initiatives worldwide to strengthen rehabilitation in health systems and scale access to AT products and services. These initiatives have a shared objective of improving people's functioning, leading to greater participation and an enhanced quality of life.

In support of Uzbekistan's efforts, WHO is collaborating with the respective governmental bodies, particularly the Ministry of Health and the National Agency for Social Protection (NASP), to develop a multisectoral national rehabilitation strategy that includes AT policies and programmes.

In 2023 and 2024, WHO conducted assessments of the rehabilitation sector in Uzbekistan using WHO standardized tools, which aimed to better understand the current level of need and unmet need for rehabilitation and the barriers to access in Uzbekistan (Box 2).

Box 2. WHO Systematic Assessment of Rehabilitation Situation

The WHO Systematic Assessment of Rehabilitation Situation was carried out in Uzbekistan in February–March 2023 *(10)*. The Systematic Assessment of Rehabilitation Situation is used to facilitate an in-depth understanding of a country's situation with respect to rehabilitation provision, and to enable the identification of priority areas for planning, integration and action.

2.

Assessing AT capacity in Uzbekistan

2.1. Scope and purpose

To develop an equitable, appropriate and sustainable AT system to improve access to AT and overcome barriers affecting access to AP, it is important to develop a broad understanding of the AT ecosystem in Uzbekistan. This is done using WHO's Assistive Technology Capacity Assessment (ATA-C) toolkit to assess the mechanisms of regulation, financing, procurement and provision of AT *(11).*

The ATA-C is carried out to assess the country's capacity to deliver AT services and products to the population *(11).* The results of the ATA-C can be used as a baseline measure of a country's capacity, in addition to providing recommended actions and areas of opportunity to facilitate planning and prioritizing to enhance AT provision at the national level *(11).*

The ATA-C tool has been developed to help understand the AT sector at a national level using the 5P framework (Policy, Provision, Products, Personnel, People) (Fig. 2).

Fig. 2. The 5P people-centred AT model

Source: WHO (2021) *(12).*

The assessment aims serve three purposes:

- Awareness raising: to provide initial information at national level about the current AT situation.
- Policy and programme design: to identify key gaps and opportunities in the AT sector to inform decision-making when designing policies, strategic action plans and programmes (using the full assessment).
- Ongoing monitoring and evaluation: to monitor and evaluate the AT situation in a country over time.

The research focuses on the 5Ps, and this report reflects that with sections describing the situation in Uzbekistan in terms of policy, provision, products and personnel. People does not have a dedicated section because it is integrated into the other sections as it is the lens through which the assessment has been carried out.

2.2. Data collection methodology

The ATA-C relies on interviews and focus groups discussions with key stakeholders (government officials, AT providers, AT professionals and AT users) and desk research to collect information on AT and identify gaps in the sector and opportunities to strengthen it.

In Uzbekistan, desk research was conducted in April 2024, to identify relevant legislation and key documents, and to identify key stakeholders to participate in an in-country mission for further data collection. Individual interviews with key ministry and other organizational stakeholders, as well as focus group discussions with additional stakeholders, were conducted in April–May. Following processing of the findings, validation meetings were held with key stakeholders to confirm the results of the data collection.

2.3. WHO definitions in AT

Box 3 sets out the definitions of AP and AT.

Box 3. AT definitions

AP: any external products (including devices, equipment, instruments or software), specially produced or generally available products, the primary purpose of which is to maintain or improve an individual's functioning and independence, and thereby promote their well-being. AP may also be used to prevent impairments and secondary health conditions *(6)*.

AT: the application of organized knowledge and skills related to assistive products, including systems and services. AT is a subset of health technology *(6)*.

AT, including both products and services, is used across a variety of settings and environments, and should be understood to contribute to the health and well-being of all individuals including those with disabilities, those with age related impairments, and anyone who is experiencing a temporary or permanent restriction or impairment to their function and independence. As such, it should be acknowledged that AT

contributes to the ability of children and young adults to attend school; for adults to participate in work, home life and leisure; and for older adults to be connected to their communities. AT is critical to supporting the ability of people to use their senses for full participation in society, including helping people both to hear and see better, and also compensating for the partial or complete loss of either vision or hearing. AT also plays a role in supporting individuals with intellectual and cognitive disabilities, including cognitive limitations associated with mental health conditions, to participate more fully in their communities and manage their conditions. AT has been acknowledged to contribute to the achievement of both the United Nations Convention on the Rights of Persons with Disabilities and the Sustainable Development Goals *(2,3).*

2.4.Methodology to analyse and develop recommended actions

To develop a full and clear understanding of the capacity of the Government of the Uzbekistan to provide necessary and appropriate AT to their citizens, it was necessary to undertake a thorough review of policy documents, followed by in-depth evaluation of the circumstances of AT provision on the ground.

To begin, key policy documents were reviewed for content related to AT, including provision and procurement practices and standards, funding for AP, an assistive products list (APL), and relevant laws or regulations (see the section "Policy"). Content from key policy documents was categorized according to the 5Ps described above. Related disability data was also reviewed and evaluated to understand the need for AT in the country. Detailed notes from interviews and focus group discussions with key stakeholders were assessed, with key concepts extracted according to the 5Ps. Narratives based these were developed for inclusion in the report.

Following the collection and analysis of all data, validation meetings were held with all key stakeholders to confirm the data gathered was accurate and complete, as of the time of the assessment. During these validation meetings, results were presented with an opportunity for systematic feedback, across all key stakeholder groups.

Recommended actions were developed for each of the 5Ps to address major gaps or challenges to the capacity of the country to deliver effective AT services and products to the population.

3.

Policy

Summary of findings

- The NASP manages a national programme to provide AT to people in need.
- AT is provided by registered private providers that are reimbursed by the NASP through a voucher system.
- Persons with a disability and persons of retirement age are eligible for government-funded products.
- The NASP AT budget for 2024 was of 100 billion Uzbek sum.
- The Medical Social Expert Commissions (MSECs) are responsible for disability determination and product prescription.
- No outcome data on AT is currently collected by the government and there is no data on overall need.

3.1. Legislation

Decree No. 411 of the Cabinet of Ministers on the approval of the regulation on the procedure for providing needy persons with prosthetics and orthotic devices and technical means of rehabilitation (13) is the main regulatory document for AT. As the assessment was underway, decree No. 253 was being drafted to update the regulations and procedures for providing AT *(14).* Some core principles of AT provision in decree 253 include:

- Persons with disabilities are entitled to AT based on a prescription from an MSEC, following a disability determination.
- AP are provided at the expense of the government programme by registered private providers.
- Beneficiaries are issued a voucher that can be redeemed with a private provider for a product of their choice.

Other legislation that is relevant to AT includes:

- *Law on the rights of persons with disabilities (LRU-641) (15);*
- *Resolution No. 166 of the Cabinet of Ministers on approval of the Regulation on the procedure for payment of compensation for acquired technical rehabilitation equipment or services rendered (16);*
- *Resolution No. 62 of the Cabinet of Ministers of the Republic of Uzbekistan on approval of regulatory legal documents concerning the organization of the structure and functioning of the medical and social expertise service (17);*
- *Presidential resolution No. 88 on measures to improve the system of providing people in need with prosthetic and orthopaedic products and technical means of rehabilitation (18).*

While the assessment was ongoing, and following the desk review of the legislation in April 2024, a new presidential decree came into law:

- *Decree of the President of the Republic of Uzbekistan on measures to improve the system for providing persons in need with prosthetic and orthopaedic devices and technical means of rehabilitation (14).*

In addition, Uzbekistan ratified the United Nations Convention on the Rights of Persons with Disabilities in 2021.

3.2. Leadership and governance

Leadership

The NASP was established in 2023 and is the main government agency responsible for AT policies in Uzbekistan. The agency oversees the government AT programme that provides people in need with AP subsidized by the state. In addition, there is an interministerial committee on rehabilitation and AT that includes the Ministry of Finance and Ministry of Health, which has the authority to introduce new legislation in these areas. When new laws or policies are developed, organizations of persons with disabilities and development partners are also consulted. These organizations are approached to review and provide comments on draft documents.

Management

The government AT programme is managed by the NASP through regional "Inson" social service centres. Inson centres are located in all districts of the country; they review and approve AT requests and issue a voucher or certificate that can be redeemed for AP. Some Inson centres also organize local auctions for wheelchairs and other AP that are then distributed to beneficiaries.

Monitoring

After product delivery, within five working days, the responsible Inson centre will contact the beneficiary to enquire about the integrity of the product and compliance with specifications. In cases where the beneficiary has complaints and wants to report defects or abnormalities, they will need to submit photos of the product as evidence. Payment to the supplier is only approved after the product has been verified accordingly. Companies which, following inspections, are found at fault of delivering defective products five times are liable to being removed from the electronic platform for sale and purchase of AP.

3.3. Finance

In Uzbekistan, AT is funded from national and local budgets. For 2023, the budget allocated for AT was approximately 60 billion sum (US$ 4.7 million). The estimates vary by agency, with the Ministry of Finance reporting a 60 billion sum (US$ 4.7 million) allocation and the NASP 23–43 billion sum (US$ 1.8–3.4 million). In 2024, the planned budget increased to 100 billion sum (US$ 7.9 million).[1]

In addition, since May 2024, the maximum reimbursement rates for AP have increased by a factor of 3–10, depending on the device. The reason for the increase in the amount the government is paying for different types of products is to allow people to obtain higher quality devices. The costing was done through a market assessment that also looked at reimbursement rates in other countries of the WHO European Region including Azerbaijan and Türkiye.

Reportedly there are also several local charities as well as national donors, including the Zamin Foundation and the Islam Karimov Foundation, who make important financial contributions on AT. Typically, these

1. All dollar currency equivalents in this document were calculated using an average from May 2024 (US$ 1 = 12 674 sum), from exchange-rate.org.

organizations will focus on children and women and will fund AT as part of broader initiatives such as promoting education of children with disabilities. Often, they will also supplement local government budgets, so that if funding runs out from the government people will turn to the charities to obtain the products they need.

3.4. Coverage of state programme

Population covered

People registered as disabled are eligible for government-funded products. People of retirement age without a disability certificate can also obtain government-funded products based on a report by a medical commission. People with NCDs or chronic conditions are not covered unless they have disability status or are of retirement age.

Products covered

The NASP currently provides 30 different types of AP (see Table 1). It pays for 100% of the cost of the product up to the maximum value of the voucher. If the price of a product exceeds the one indicated in the certificate, the difference is to be covered by the applicant.

Table 1. AP covered by the NASP

Product	Duration of use/replacement
Above knee prosthesis	24 to 48 months
Below knee prosthesis	24 to 48 months
Upper limb prosthesis	24 to 48 months
Breast prosthesis	12 months
Orthopaedic devices	24 to 48 months
Lower limb orthoses	12 months
Spinal orthoses	24 months
Orthopaedic shoes	12 months
Ocular prosthesis	24 months
Digital hearing aid	48 months
Walking stick/cane	24 months
Tripod/Quadripod	24 months
White cane	24 months
Crutches (pair)	24 months
Elbow crutch	24 months
Stool receiver	6 months (90 pieces)
Urine receiver	6 months (90 pieces)
Running gear (comfortable)	24 months

Rollator	24 months
Specialized chair for use at home	48 months
Rollator with seat	48 months
Mechanical wheelchair equipped with sanitary equipment (for shower, bath, toilet)	48 months
Manual wheelchair (mechanical)	48 months
Electric wheelchair	48 months
Electric wheelchairs for independent movement of children and adolescents with disabilities, lower limb fractures and cerebral palsy	48 months
Braille alphabet	Indefinite
Braille writing device	48 months
Talking thermometer	48 months
Talking tonometer	48 months
Talking glucometer	24 months

Source: President of Uzbekistan (2024) *(14).*

Services covered

Decrees 411 and 253 mention services including user training and product adaptations *(13, 14).* For hearing aids and prosthetics and orthotics (PO) there are more explicit rules than for other AP, including obtaining in-person measurements and individually customized parts. For other products, there is no specific guidance on providing services. Service provision is at the discretion of the provider. Within the warranty period beneficiaries are also entitled to repairs at the expense of the provider, and if products become defective after the warranty period, expenses related to repair or replacement are met from local budgets.

With decree 253, the NASP also supports an electronic platform for sale and purchase of AP, and covers the cost of home deliveries. AT providers registered with the NASP can list their products on the online platform. The products are listed with a photo, technical specifications, the expected useful lifespan of the product and warranty periods. Upon receiving an electronic voucher, the beneficiary is free to select the product and company of their choice from the platform. This product is then delivered to the place of residence of the beneficiary at expense of the state.

3.5. Procedure

AT assessment and prescription

While the NASP oversees AT, assessment and product selection begins at health polyclinics. The Medical Consultative Commissions (known by their Russian acronym, VKK) are the gatekeepers for AT. There are over 200 VKKs and with approximately 2500 trained medical doctors. Many polyclinics have a VKK doctor,

who is usually a general practitioner. Based on a physical assessment, VKKs are responsible for determining disability and for prescribing AT for each patient. The decisions of VKK assessments are then sent electronically to the district-level MSEC, some of which are nested in Inson centres. After reviewing the VKK disability determination and AT prescription, the MSEC contacts the applicant by text message to make an appointment or, if the condition does not require further assessment, the person is notified that the AP indicated is approved, and they will be awarded a voucher or certificate. The MSECs use an algorithm to check that the person's condition makes them eligible for the product that is indicated.

The regulation on determining the need for providing AP, including PO and provision of rehabilitation, is described in Annex 3 of decree 253 *(14).* The need for AP is determined based on medical recommendations specifying such needs (chapter 2 paragraph 5). The MSECs prescribe AP in accordance with a physical investigation of the disease, and evaluation of the medical diagnosis. Annex 3 has a list that matches AP to corresponding conditions or pathologies. For example, medical indications for orthosis use include:

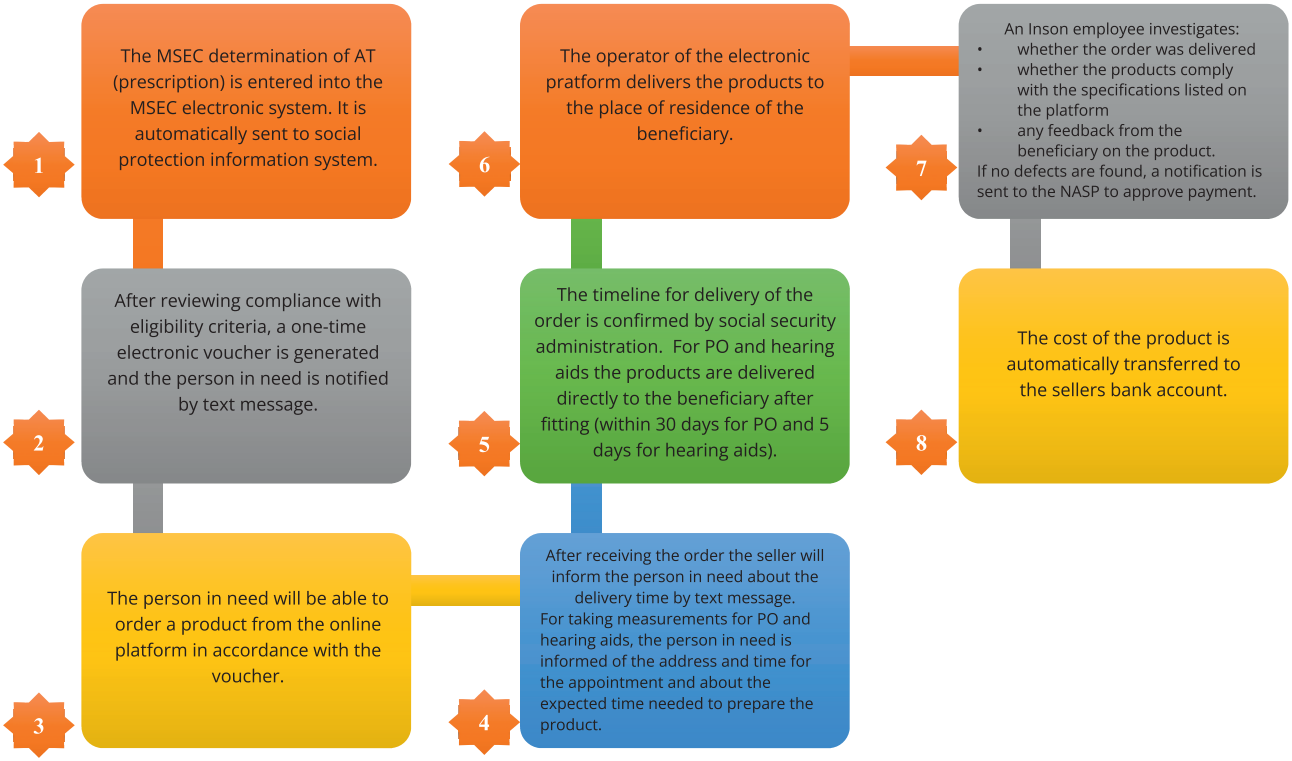
- complications of poliomyelitis
- complications of cerebral palsy in children
- leg length discrepancy of at least 3 cm due to congenital or acquired pathologies
- false joints in the lower limb.

In addition, there are contraindications to AP including:

- frequent recurring epileptic seizures
- disorders of mental functions.

At the time of the assessment, the NASP was testing a new approach to assessing disability and AT needs in two districts. This approach was based on functional assessments using the WHO Disability Assessment Schedule (WHODAS), with some additional questions. According to the NASP, the MSECs need more training on assessing AT needs and they plan to conduct trainings on WHODAS, and scale up to other districts.

Fig. 3. The eight-step procedure to obtain AP in Uzbekistan



Source: author.

3.6. Information system

The government lacks comprehensive data on the overall demand for AT and no nationally representative surveys on AT have ever been conducted. On a monthly basis, the NASP collates information on the number of beneficiaries and products provided from each region. However, outcome data from programme beneficiaries is not currently collected. During an interview, the NASP indicated plans to introduce such data collection in the future. Additionally, the NASP maintains a registry of authorized, registered providers of AP.

A 2019 United Nations Situation Analysis on Children and Adults with Disabilities in Uzbekistan, which included a survey of 3049 households with a person with a disability, found high unmet need for AP. Approximately half of the people who reported a need for AP did not have access to the products they needed. Moreover, only 26.9% of persons with disabilities who need a wheelchair are currently using one. Most people pay for AP out of pocket *(19).*

3.7. Discussion

In the last two years, under the leadership of the NASP the AT sector has evolved rapidly with significant progress and changes to AT policies and regulations. The agency has demonstrated strong commitment in taking important steps to reduce barriers to access to a wide range of AP. Some of the achievements include:

- Funding for AT has increased by two thirds compared to 2023.
- The number of product categories provided by the state increased from 18 to 30.
- Reimbursement rates for products have increased by 3–10 fold.
- An electronic platform was created to give beneficiaries choice of products and suppliers.
- Products are delivered to the place of residence.

In addition, the NASP is reviewing the way AP are being prescribed, so that MSECs prescribe products based on a functional assessment as opposed to basing prescriptions on a person's diagnosis or condition. While acknowledging the progress that has been made, it is important to highlight some important priorities to further strengthen the sector.

Extend eligibility criteria

Eligibility criteria should be extended to include all people in need, with a progressive plan of financial coverage starting to cover those who need AT and have longer term functional limitations. Currently the NASP AT programme is targeting two population groups that have a very high need for AP: persons with disabilities and older adults. This will cover a large proportion of the population who can benefit from AT; however, there are other groups who need AP such as people with NCDs or chronic conditions.

AP also play an important role in preventing injuries that could lead to disability. For example, in a diabetic patient with peripheral neuropathy, protective footwear with appropriate insoles could help prevent foot ulcers that may result in amputation. Orthoses are also used post-surgically to contain joint movements and allow tissues to heal, or they are used in the treatment of burn victims to prevent contractures.

Revise eligibility criteria and assessment

There is no linear equivalence between any pathology or disease (diagnosis) and a corresponding AP, and people affected by the same pathology or disease may have different degrees of functional limitation and will require different AP.

Eligibility and the procedure for selecting AT should include functional assessments. The conceptual framework of the International Classification of Functioning, Disability and Health could be considered to determine needs more accurately, since it is based on a comprehensive assessment of impairment, functioning and environmental and personal factors. Any doctor, or certified rehabilitation professional, with a relevant specialty and competence (rehabilitation doctors, orthopaedic doctors, etc.) should be able to prescribe AP to their patients on the basis of an assessment of the patient's functional limitations.

A source of concern are the exclusion criteria for AP. Annex 4 of decree 253 contains a list of contraindications for AP for people with certain conditions *(14).* Some could be interpreted to exclude the most vulnerable with arguably the highest need for appropriate AT. Notably, for different types of wheelchairs, one of the contraindications is for "the consequences of diseases, injuries and defects that lead to the development of a pathological process in the sitting position" *(14).* Many people in need of a wheelchair will be at high risk of developing pathological processes, such as pressure injuries or contractures due to neuropathy or poor vascularization. However, with appropriate wheelchair services these can be managed and prevented by providing sitting support, fitting, and pressure relief cushions. Therefore, these conditions should not be used as a reason to exclude potential beneficiaries, who may require additional resources and services. Rather, if vulnerable users develop pathological processes as a result of an ill-fitting device, the provider should be held accountable. Similarly, for other products such as orthoses, mental disorders is included as a contraindication even though people who could benefit from these products might also suffer from mental disorders.

Increase financing

The AT budget was increased by two thirds to 100 billion sum in 2024. Despite these commendable efforts, the budget allocated to AT is insufficient to achieve universal health coverage, and affordability is still one of the main barriers to accessing products.

Access to AT is not only a human right, but is also a smart investment for governments to undertake. A recent study by ATscale found that every US dollar invested in AT has a net return of US$ 9 *(19)*. The return is generated from increases in productivity (employment/educational attainment), lower medical costs (improved health, reduction in hospitalizations) and increased autonomy (reducing need for assistance from caregivers). AT should therefore be regarded as a priority programme for the government, and the budget should continue to grow over the years.

Establish an interministerial AT task force

AT should be understood as important in terms of needs and access across the life-course. It is a cross-cutting issue from a policy perspective in respect of health, disability inclusion, education and labour inclusion measures. In Uzbekistan, the NASP plays a leading role in developing AT provision; however, the Ministry of Health, Ministry of Defence and Ministry of Education all have a stake in the area of AT. For a more efficient use of resources and to avoid duplication of services, a cross-ministerial committee should be established to coordinate AT activities and to ensure that this crucial programme area is part of and supports health system reform. This committee should be responsible for developing and implementing a national roadmap to expand and strengthen the AT sector. AT user organizations, such as disabled persons' organizations, should also be involved in developing the roadmap and policy from the start of the process.

Collect data on AT needs and outcomes

The government should consider implementing a rapid assistive technology assessment (rATA) household survey that can establish a baseline to then monitor the progress of the AT sector in Uzbekistan.

Establish a monitoring mechanism

Following the rATA, a monitoring mechanism can be established that could include direct, regular auditing of service providers to verify their adherence to the standards, rules and regulations of the guiding framework, as well as occasional evaluations of quality and also general assistance in identifying and resolving problems. This would help to ensure that products and services are of consistently high quality and meet national and international standards.

Monitoring outcomes is also important. This involves following up with users to assess the impact of AT on their lives. A survey may be developed and used to conduct regular interviews with beneficiaries of the state programme. The information collected from the surveys would be very valuable for improving the quality of services.

Adopt the WHO definitions of AP and AT

In Uzbekistan, the definition of AP may create confusion as to its precise meaning. Notably, the definition and understanding of AP as "technical means of rehabilitation" is misleading and confines AT to one area, when its applications are in reality much broader. This is important even for registering new products in Uzbekistan and overall regulation of the system. For example, AP should have tax exemptions and will require different safety requirements than other health products, such as medical devices.

3.8. Recommended actions

- Extend eligibility to include all people in need, not just those with disabilities or of retirement age.
- Increase financing for AT to ensure universal coverage.
- Collect data on AT needs and outcomes through national surveys and monitoring systems.
- Establish an AT monitoring mechanism to ensure that products and services are of consistently high quality and meet national and international standards.
- Adopt WHO definitions of assistive technology and products to align with global standards.
- Establish an interministerial taskforce to coordinate AT policy and develop a national roadmap with the goal of integrating AT into broader health, education and social protection policies and programmes to ensure cross-sectoral coordination, sustainability and inclusion.

4.
Provision

Summary of findings

- Hospital health staff have received no training on AT as part of their studies or continued professional education.
- The Republican Specialized Scientific and Practical Medical Centre for Paediatrics (RSSPMCP) hearing aid programme, and the provision of foot abduction braces (FAB) at the Republican Specialized Scientific and Practical Centre for Traumatology and Orthopaedics (RSSPMCTO) are best-practice examples of comprehensive AT services integrated with rehabilitation and health care, guaranteeing continuity of care.
- Twenty-eight organizations providing AP are registered with the NASP.
- Most AT providers are in the capital and regional centres.
- AP are often provided with limited or no services.

4.1. AT in the health sector – hospitals and rehabilitation centres

RSSPMCTO and the Department of Neurorehabilitation of City Clinical Hospital No. 1

To assess the AT needs in the health sector two Tashkent hospitals were visited: the RSSPMCTO and the Department of Neurorehabilitation of City Clinical Hospital No. 1.

AP and rehabilitation equipment are available for use during treatment, but the hospitals do not issue products for personal use. Reportedly, almost all patients need AP after being released from the hospital. The most frequently needed products are wheelchairs, walking aids, spinal orthoses and lower limb orthoses.

Even though doctors are aware that people with disabilities are entitled to government-funded products, most patients need them immediately after discharge, and their condition might not make them eligible for products under the government programme. As an example, the head of the Department of Neurorehabilitation explained that following a stroke a person may need to wait for up to 4 months for their condition to stabilize before they can apply for disability determination and qualify for NASP-funded products. For this reason, most patients pay out-of-pocket and purchase products online or from shops and pharmacies.

Doctors' involvement in AT is limited to assessment and prescription. Typically, physicians will make a generic prescription indicating a product category, without specifying the subtype, size, design or other considerations. There is no systematic follow-up with patients after they receive the product to verify the fit and appropriateness of the device.

Doctors interviewed at the hospitals had not received any training on AT as part of their studies or continued professional education. They requested more training on product selection, prescription, and

monitoring and follow-up of patients using AT. Hospitals do not have formal working relationships with AT providers or direct relationships with the providers registered with the NASP. Most patients are referred to shops in the vicinity of the hospital. Occasionally the doctor will take the initiative to call the AT provider to discuss a particular patient and their needs.

The deputy director of the RSSPMCTO concluded that a multidisciplinary approach would produce better outcomes for AT interventions. For orthoses, for example, this would require – at a minimum –the orthopaedic doctors to communicate with the orthotist to discuss the most appropriate product, design and functional goals for the patient.

Two providers (shops) located on the premises of the RSSPMCTO were visited. The first shop offered a range of mobility products, mostly walking aids, some prefabricated orthoses and wheelchairs – all sourced from the same company in Türkiye. The second provider was manufacturing orthopaedic shoes and orthoses. This shop manufactures almost 5000 pairs of shoes each year and 100 ankle-foot orthoses (AFO). The orthoses are made from polypropylene and cost 1.5 million sum (US$ 118). The manager explained that the reason far more shoes than orthoses are produced was because people "cannot walk with an orthosis". This statement is inconsistent with clinical evidence as per WHO standards – in most cases the primary function of an AFO is to facilitate ambulation. He went on to say that even when people come to the shop with a prescription for an AFO he tries to convince them to opt for orthopaedic shoes instead. This case illustrates the limited understanding of AT even among vendors and health workers, and how it can lead to propagation of misinformation.

Box 4 highlights the best-practice example of the comprehensive AT service offered by the RSSPMCTO in the provision of FAB.

Box 4. FAB

A notable exception to the lack of provision of AT within health care are FABs that are provided with comprehensive services at the RSSPMCTO, as part of the Ponseti method for treatment of clubfoot.

According to the RSSPMCTO, on average 250 clubfoot operations are conducted per year (RSSPMCTO, unpublished data, 2024). As per the treatment protocol, Achilles tenotomy is performed, and after serial casting the child will wear FAB for up to four years to prevent relapse. The procedure is performed by an orthopaedic doctor who is a certified Ponseti method practitioner. The RSSPMCTO has become renowned in central Asia for treatment of clubfoot. It has even opened a school, where a cohort of Tajik doctors was recently trained on the procedure.

The RSSPMCTO offers its patients four different FAB models that range in price between US$ 120 for the Iowa brace (most people buy this) to US$ 400 for the Mitchel brace. One of challenges they reported was that the Mitchel was not registered with the government, therefore they could not sell this device directly to the patient. To ease expenses for patients who cannot afford the brace, the hospital has also introduced a return and reissue policy, whereby used devices that are no longer needed can be returned and given to other children in need.

The FAB are provided with full services: the correct size shoes and bar are selected; the provider will fit the brace, ensure correct positioning of the heel and check for signs of skin irritation and pressure marks; the parents of the child will be instructed on how to put on the device, when to wear it and how to care for it; and regular follow-ups are conducted to monitor whether the device is being used correctly or needs to be replaced.

Ear, Nose and Throat Department at Tashkent Medical Academy

The research team visited the Ear, Nose and Throat (ENT) Department at Tashkent Medical Academy, and interviewed the head of department and hearing specialists. The department has four units and four operating rooms. Hearing specialists provide comprehensive ear care services and a variety of treatments and interventions. The centre has six audiologists, some of whom also provide hearing aids as part of their services.

According to the head of department, in recent years significant progress has been made in extending coverage of screening for hearing loss and improving access to AT for hearing, most notably with the RSSPMCP programme (see below). Even so, there is still a large gap between need and coverage, and the head of department estimates that screening covers only 30% of newborns. According to him, up to 1% of babies are born with hearing loss and need a cochlear implant, but due to low screening and limited resources many are left untreated.

The focus of the government and donors has been on children, but there is also vast unmet need among the adult population. According to the head of department, the NASP programmes cover only a fraction of the 1–2% of people with hearing loss who could benefit from a hearing aid. Unfortunately hearing aids are not covered by national insurance and cost remains the main barrier to access. Appropriate digital hearing aids retail for about US$ 600, which is unaffordable for many people.

The ENT department was established recently, and besides treating patients it is also a training hub providing training and technical support to other health facilities. One of the stated goals is to support ENT doctors to upgrade their skills and update their scope of practice to be more in line with modern international ENT clinical standards. The goal of their programme is to enable ENT to provide a range of services, including hearing aid services, and equip all polyclinics with the tools needed to provide hearing aid services including audiometers. The department aims to raise awareness on hearing aids and promote provision of appropriate digital hearing aids with related services.

The head of department thus envisaged a network of centres that stretches horizontally, across regions, and vertically, linking polyclinics with better resourced regional centres. To maximize coverage and availability of services in districts and policlinics where ENT doctors or audiologists are not available, technicians will be trained on providing basic services with technical support and oversight from more qualified specialists in regional centres, following a task-shifting approach.

RSSPMCP

The RSSPMCP provides rehabilitation services to approximately 2500 people and performs 400–500 cochlear implant surgeries each year. Since 2014, it has run an acclaimed cochlear implant programme that has become known as the “Uzbek model”. The model is characterized by a unified system, where a central service unit oversees and coordinates all interventions related to rehabilitation of children with hearing loss – including screening, assessment, surgery (cochlear implantation), speech rehabilitation and follow-up. These services are provided in a seamless fashion, with no unnecessary interruptions in care and with integrated interventions. This includes embedding AP and related services into the broader rehabilitation intervention for optimal results.

What distinguishes the RSSPMCP in their approach is the direct involvement of families in all stages of care, and a strong emphasis on post-surgery rehabilitation with continuous follow-up at regular intervals. In some circumstances, the follow-up also makes use of tele-rehab and remote methods for monitoring, and provides training. For example, parents were invited to join WhatsApp groups where they can discuss with clinical staff and other parents, issues related to their children's rehabilitation. An app was also developed by the RSSPMCP that teaches children correct pronunciation of words so that they can continue practicing at home.

The Zamin Foundation has been contributing a large part of the funding for this programme for several years, through a special fund for cochlear implants. This includes donations of 4000 digital hearing aids in 2021 and 9600 hearing aids in 2022 *(21).* Zamin Foundation is also very active in supporting education of children with hearing loss, including provision of frequency modulation (FM) systems to schools.

The RSSPMCP is also a national training and capacity-building hub. In Uzbekistan, the RSSPMCP has trained over 200 ENT doctors in audiology and rehabilitation of children with hearing loss. An additional 67 doctors were also trained in audiology abroad. The centre also offers continued professional education for doctors and nurses in hearing and ear care. In addition, internships are offered for audiologists, surdologists and sign language teachers. The centre was awarded grants of up 50 billion sum for training of staff.

The RSSPMCP has also launched a state-funded programme for early identification of hearing loss, currently running in 227 maternity hospitals. Maternity hospital staff are trained by regional specialists, who have themselves been trained at the RSSPMCP in a cascading training-of-trainers approach. The RSSPMCP has also developed guidelines for screening newborns. The screening happens on the third day after birth. Infants that are found to be suitable for treatment with cochlear implantation will wear hearing aids between 3 to 6 months of age, and at 9 months will receive the cochlear implants.

Starting from 2024, the RSSPMCP will also provide 2000 hearing aids every year to be used by children in preparation for cochlear implantation. In the last tender, over 10 000 ReSound hearing aids were procured at a cost of US$ 132 per unit.

4.2. AT providers registered with the NASP

As of May 2024, at the time of the assessment, 28 organizations providing assistive technology (AT) were registered with NASP. This includes 11 organizations providing orthopaedic products (i.e. prostheses, orthoses, orthopaedic shoes), five of which are in Tashkent city and six in other provinces (Andijan, Bukhara, Namangan, Samarkand and Tashkent). The remaining 17 organizations provide technical means of rehabilitation (e.g. wheelchairs, walking aids, hearing aids) of which six are in Tashkent and the rest are in the regions. Most providers are limited liability companies (LLCs) owned by an individual or are family-owned businesses.

The research team visited seven registered providers including:

- three PO providers
- three wheelchair manufacturers
- one hearing aids provider.

Wheelchairs

Sayqal

Sayqal is a private enterprise, which has the largest wheelchair factory in Uzbekistan. It is situated in Ferghana about 400 km east of Tashkent, in the most densely populated part of central Asia. They produce approximately 100 wheelchairs a day. At full capacity, they can produce up to 300 a day.

Production is largely automated and makes use of robots and laser cutting machines. The factory employs 110 people, with 60 workers operating in each shift. All parts of the wheelchair are produced from raw materials except for the rear wheels that are imported from China. The steel tubes used in manufacturing the frame are sourced from the Russian Federation. Parts made from plastics or resin – including push-rims, handles and the front castor wheels – are produced using moulding methods. The slung-seats and backrests are made from high-resistance fabric that is sewed at the plant (for more information on the chair see the "Product" chapter).

Sayqal sells the wheelchair for 1.65 million sum (US$ 130). For this price the wheelchair comes with a pump and tire lever, but not a cushion. Of the 30 000 wheelchairs produced annually, approximately 60% are sold to Inson centres, 35% are sold through Sayqal's own service centres (outlets) and 5% are exported to either Kyrgyzstan or Tajikistan.

Sayqal has 21 service centres spread throughout Uzbekistan. These service centres are shared with the company Acoustic, where hearing aid services are also provided. In addition to its own chair, the Sayqal outlets also have three imported models of manual wheelchairs and a powered model. The manual chairs are basic transport types, two from China and one from Germany (Ottobock). The number of sales of imported chairs is relatively small.

In each service centre, there is at least one technician who has been trained on basic wheelchair parts and maintenance. Sayqal provides a one-day AT training for its staff that can also be provided to Inson staff or other providers; these trainings also cover wheelchair selection and maintenance.

Inkab LLC

This wheelchair producer is situated in Tashkent. The production line is housed in an old industrial building over two floors. The company was established in 2001 with the support of the Ministry of Labour.

Currently there are five technicians working on the production line. These are all skilled workers with many years' experience working at the factory. Previously the factory had 22 workers, but as demand waned over the years many staff left the company.

Some manufacturing machines date back to Soviet times, dating between 1979 and 1984. Although they are still working well, they are expensive to maintain, and the workers take a significant amount of time to fix them when they are not functioning properly.

Production varies from month to month, and depending on the order the output could be anywhere between 50 and 300 wheelchairs, but on average it is 70 units per month.

Wheelchairs are sold to public institutions – including Inson centres – and pharmacies. Even though the wheelchair factory does not have its own outlets, some wheelchairs are also sold directly to individuals, in which case the person comes directly to the factory, or the product is delivered to their house. With the new voucher system, the wheelchairs will be listed in the online catalogue and products will be delivered directly to the beneficiary's place of residence by the national courier Uzum. The manufacturers will only need to prepare the packaging of the chairs.

Prosthetics and orthotics

Ortoprotez

This company, formed in 2023, has 11 service centres in Uzbekistan. The main facility is in Tashkent and the remaining 10 branches are in different regions: Andijan, Ferghana, Jizzakh, Karakalpakstan, Khorazm, Namangan, Navoiy, Samarkand and Surkhandarya. The company's PO workshops are each located on the same premises as, or in close proximity to, a Centre for Rehabilitation and Prosthetics for Disabled People. Although they are independently managed, this integration of the workshops with the rehabilitation centres allows for ease of patient referral and use.

Ortoprotez was created in 2023 from the privatization of the state PO services, and although the rehabilitation centres remain public, collaboration continues on the same basis.

Ortoprotez has 27 personnel, including 13 staff working in the production of PO. None of the staff have a formal education in PO, rather they have learned on the job and by participating in short trainings offered by suppliers – Ottobock and Metiz. Typically, new technicians start as apprentices to more senior staff. According to the director it takes at least one year for a new staff member to learn to work independently and take more responsibilities. There are no occupational therapists or physiotherapists among the staff.
Ortoprotez produces approximately 30 lower limb prostheses per month. Almost twice as many lower limb prostheses were manufactured in 2023 and 2024 as lower limb orthoses, and five times the number of upper limb prostheses (see Table 2). All the products were financed through government certificates. Product prices vary according to the components used and prostheses cost up to US$ 280. It should be noted that with the introduction of decree No. 253 *(14)* the maximum reimbursement rates have increased up to 10-fold and prices are likely to follow suit, as Ortoprotez will be in a position to provide more sophisticated components at higher prices. In addition, in 2023 50 products were repaired.

Table 2. Manufacture of PO by Ortoprotez, 2023–2024

AP	Units provided		Price range	
	2023	2024 (6 months)	Sum (millions)	US$
Lower limb prostheses	347	203	2.8–3.6	221–284
Upper limb prostheses	75	60	1.6–3.6	126–284
Breast prostheses	194	151	2.3	181
Orthoses	170	97	2.9–3.5	229–276
Spinal orthoses	96	104	ND	ND
Orthopaedic shoes	266	133	1.1	87
Shoes for prostheses	302	135	0.4	32

ND: no data.
Source: Ortoprotez, unpublished data, 2024.

The Tashkent service unit has a large workshop area with a separate machine room, plastic and plaster modification room and storage room. The workshop is equipped for producing all types of PO from thermoplastics. There is an oven for thermoforming, at least five workstations for assembling, and multiple positions for rectifying plaster moulds. A lot of the equipment, including the socket routers, are very old and in need of maintenance, and the director plans to replace them with more modern equipment. The clinical area situated between the reception and the workshop has an orthopaedic casting chair, assessment bed and parallel bars. The space is not suitable for prolonged rehabilitation and gait training since it is small and enclosed, and the parallel bars are only long enough to take a few steps. However, patients with disability status in need of more rehabilitation can be referred to the National Centre for Rehabilitation and Prosthetics for Disabled Persons, which has better rehabilitation equipment and rehabilitation staff, including physiotherapists.

The regional branches are reportedly smaller but are fully equipped for manufacturing PO independently. Each branch has one staff member working as prosthetist/orthotist supported by one assistant.

The centre produces all types of orthoses for lower limb, upper limb and spinal support. Orthopaedic shoes are produced at the facility, which also sells readymade shoes. Breast prostheses (external pads) made of silicon are also provided. The material and components come from suppliers in China, the Russian Federation and Uzbekistan. Procurement is done ad hoc based on the level of stocks. The PO products provided range from basic to intermediate. Now that the value of the voucher has increased, the director wants to substitute basic with more intermediate products.

Ortopedia Industriya LLC

This provider is located in the outskirts of Tashkent, where it produces all types of PO and orthopaedic shoes.

The facility includes a workshop with separate casting machine, and rectification rooms. For fitting and gait training there is a small room with parallel bars. In addition, a clinical area with four assessment rooms is under construction. The director plans to hire part-time and full-time doctors to conduct patient assessments and work with the prosthetist/orthotist on rehabilitation.

PO are provided by two teams consisting of one prosthetist/orthotist supported by an assistant. The director wants to hire another team to keep up with the increasing number of clients. The staff working as prosthetist/orthotists have learned on the job, they do not have professional qualifications.

The company does not have formal collaborations with any hospital or rehabilitation centre. Clients come from all over the country and the vast majority are beneficiaries of the government AT programme. Most are returning customers that regularly come back to the centre for product replacement. Reportedly, most new customers find out about the centre from other clients through word of mouth. Only occasionally are they informally referred by doctors or through the website.

Procurement of materials and components occurs on average twice a year depending on the stock levels. Before August 2023 all components and materials were sourced locally from an Uzbek producer, but since last year the company has begun importing products as well. The director preferred not to disclose the name of the suppliers or the country from where they are sourced (for more information see Products).

Najmiddin Boburbek Shifo Invest

In 2023, this company produced an average of 15 artificial limbs a month, with three times more lower limb prostheses (128) compared to upper limb prostheses (47). Only 102 orthoses were produced in the same year, including spinal and lower limb orthoses. The price for lower limb prostheses is US$ 150–2150.

The company has four members of staff working as prosthetist/orthotists, who have learned the skills on the job and through short trainings offered by suppliers. The company is looking to hire more people to work as prosthetist/orthotists, but experienced technicians are difficult to find. Other rehabilitation workers, such as occupational therapists and physiotherapists are not employed, but the deputy director himself is a trauma orthopaedic doctor and he works closely with his PO technicians.

All types of PO are manufactured from thermoplastics, including spinal orthoses. A range of components are used – from basic to intermediate – to accommodate different mobility needs. These include locally produced prosthetic components and imported components mainly from the company Metiz. Follow-up of clients is only ad hoc, but maintenance and repair services are provided based on need.

The company does not have any official working relationships with health-care facilities, but collaborates with four PO companies in other cities of Uzbekistan. As PO providers have clients from different regions, they have entered into an informal agreement to accept each other's clients when in need of repairs, so that patients do not need to travel to the original provider but can access the closest facility. Another way in which the providers support each other is by sharing materials and components when they are low on stock of some products.

Hearing aids

Acoustic

Previously known as Euro-Hearing, the company started as a Danish–Uzbek joint venture in 2006. They were the first company to bring digital hearing aid technology to Uzbekistan. Since then, the Uzbek contingency has bought 100% of the shares and the company was renamed Acoustic. The company

headquarters in Tashkent has a clinical service area on the ground floor, a training room and office space on the first floor, and a laboratory in the basement. It currently provides about 25 000 hearing aids each year.

Acoustic has 21 service units across all regions of Uzbekistan. The company currently has a total of approximately 150 people working in all branches. The staff are mostly trained by Acoustic's own trainers, who have undergone extensive training in Europe, and for a long time were supported by international staff in providing trainings in-country. All new clinical staff go through a three-month training in Tashkent followed by a two-month apprenticeship in the regions, before becoming full-time employees. People from other countries, including Tajikistan, have also been trained in the centres in Tashkent. Based on their own training programme, Acoustic is also supporting the Tashkent Medical Academy to develop a curriculum for training specialists.

The laboratory produces custom ear-moulds and provides repair services. The laboratory caters to clients from every region of Uzbekistan. It produces custom ear moulds from ear impressions obtained at the regional units, making approximately 40 custom-moulds a day. On average approximately 4–5% of hearing aids provided are sent back for repairs during the warranty period, and all devices in need of repair are sent to the laboratory.

There are reportedly 5–6 companies that provide hearing aids in the country. In addition, some ENT departments also provide hearing aids and pharmacies sell some sound amplifiers too.

Acoustic Ferghana branch

The Fergana branch of Acoustic has four rooms, all equipped with audiometers. The technicians described services as consisting of four components:

- Assessment – including subjective assessment and ruling out red flags (e.g. Otitis media, ear wax) that warrant referral to specialists.
- Programming and fitting the device – all devices are programmed based on an audiogram, and technicians will also take impressions of the ear canal for production of custom ear moulds.
- Training – technicians will instruct the client on how to use and take care of the device.
- Follow-up – two months after provision the receptionist will call each client to enquire whether there are any problems with the device, and should the customer have any issues they will be invited to the centre for a follow-up visit.

Approximately 50% of clients are financed by the government voucher scheme and 50% pay out of pocket

4.3. User experiences[2]

To capture lived user experiences and understand barriers to accessing services for users as part of this assessment, meetings were held with three organizations of persons with disabilities:

- Association of Disabled People of Uzbekistan
- Society of the Deaf of Uzbekistan
- Society of the Blind of Uzbekistan.

[2]Since May 2024, in accordance with Cabinet of Ministers Resolution No. 253, assistive products have been provided to persons in need under an updated provision mechanism. The observations presented in this section reflect the situation at the time of the assessment (May 2024).

In addition, individual interviews were conducted with service users during the meetings and during other visits (see case studies below).

Overall, users acknowledged some significant advances in the AT sector in recent years in some areas, such as hearing aids, but still reported many challenges. The three recurring themes were: 1) low quality products and limited options; 2) products provided with no services or incomplete services (including limited access to maintenance and repairs); and 3) inappropriate products. As most providers are based in the towns, access to AP and related services in rural areas is very low and awareness is also a problem. Some observations for product categories are reported below.

Wheelchairs

Four out of five users interviewed said that they did not receive any type of services with the chairs. Most users were using wheelchairs that were not the appropriate type and were too big for them, but they reported not having a choice. All wheelchairs were issued without a cushion, and none were using pressure relief cushions, even when they were at high risk of pressure injuries due to their condition (e.g. spinal cord injuries). None of the users had any fitting or any help to ensure that the chair matched their postural needs. No adjustments were made to the wheelchairs. Some users make their own modifications, adding padding, cushioning and belts to help with their posture. No training or instructions on how to use the chair safely and effectively were provided. Users also reported that they did not know where to go for maintenance and repairs.

Prosthetics and orthotics

According to the chairman of the Association of Disabled People of Uzbekistan, who is a knee-ankle-foot orthosis user, the quality of locally produced PO is a challenge. No prostheses users were interviewed for this assessment, but this perspective is consistent with a World Bank assessment on implementation of the United Nations Convention on the Rights of Persons with Disabilities in Uzbekistan (2023) *(21)*, which reported that prostheses provided in the country were bulky, uncomfortable and deteriorated rapidly. In addition, poor-quality amputations are also prevalent, and this compromises the prosthetic interventions.

Case study 1. Shoira

Shoira (not her real name) is a 25-year-old woman with skeletal dysplasia. She is currently using a wheelchair that is too large for her; the seat is too wide and deep, but at the Inson centre they told her that it was the only size they had. She had to wait a year to receive her wheelchair. She cannot self-propel since the push-rims on either side are out of her reach. The chair was issued without a cushion and no adjustments or equipment to accommodate her postural needs. She has developed contractures and scoliosis of the spine, and she thinks her wheelchair is aggravating her conditions because she cannot maintain a good posture in this chair.

Case study 2. Sherkhon

Sherkhon is a 28-year-old man with spinal cord injury. He was given the option to have an electric wheelchair, but he chose to have a manual chair because he wanted to remain active. He has been using the wheelchair for three months and the left footplate gave-way, and the push-rim of the left wheel snapped off. He said that he does not know where to go for repairs and has not asked yet. He uses the chair by pushing directly on the tire.

Case study 3. Umida

Umida is in her 50s and has been a wheelchair user since she was a teenager. She has never been able to find a well-fitting wheelchair. In the past, she never received any training or help with fitting from providers. The seat in her current wheelchair is too deep so she has been placing a cushion between her torso and the backrest to be able to sit upright. She has suffered back pain for many years as a result of poor posture.

Recently, in a rehabilitation centre in Tashkent, she met a Japanese physiotherapist who gave her valuable advice. She noticed that her footrests were not set to the correct height, and she had a habit of not using them (letting her legs hang). The physiotherapist explained to her the importance of using the footrests to control forward stability and distribute weight evenly. Incorrect positioning of the footrests can create areas of pressure on the legs and feet and also increase the risk of falls. Since learning this, Umeda has been sharing this information with other wheelchair users.

Case study 4. Nassar

Nassar is a 28-year-old computer programmer, who has experienced impaired hearing since childhood. In 2010, he received a hearing aid from his school. It was a basic analog hearing aid with an on/off switch and no other features. He does not remember anyone performing an audiometry test or making any adjustment to the device before it was handed to him. He describes the device as never working well for him; it would produce a whistling sound and overamplify some sounds and background noises. If he wore the aid for long periods of time, he would get headache. Therefore, he only used it occasionally and eventually completely stopped using it.

Nassar is aware that now there are much better digital hearing aids on the market. The situation of hearing aids and related services in Uzbekistan has improved in the last decade. However, he says these products are expensive and not everyone can afford them. He has now mastered sign language and prefers not to invest in a hearing aid since he is uncertain if it would help him.

Case study 5. Oybek

Oybek is Chairman of the Association of Disabled People of Uzbekistan, and has been using a knee-ankle foot orthoses for most of his life. He used to have it made in Uzbekistan, but it was low quality and not durable. The orthosis was cumbersome and weighed 8 kg.

Eight years ago, he was able to get a knee-ankle-foot orthosis made in the United States of America, and he has been using it ever since. The orthosis is the same type as he had been using previously, but the quality of the material and workmanship are far superior. It is much lighter and more robust, and it has greatly improved his mobility. This orthosis, however, was a lot more expensive and the current government reimbursement rates would not cover the cost.

Hearing aids and other AP for hearing

Over the last decade access to digital hearing aids and related services has improved significantly in Uzbekistan. In Tashkent and regional urban centres several organizations, companies and hospitals now offer good quality hearing aids with comprehensive services. Nevertheless, the unmet need remains high, especially in rural areas where services do not exist. Appropriate digital hearing aids can cost up to US$ 600 and a lot of people cannot afford them. The government and charitable programmes in schools and hospitals only cover a minority of people who could benefit from hearing aids.

In Tashkent, there are at least four shops that sell AP for deaf people, including vibrating devices such as alarm clocks, door-bell signallers and Global Positioning System (GPS) tracking devices. The government list only covers hearing aids, but the Society of the Deaf of Uzbekistan believe that other devices are also high priority, and the government should consider providing these products. This includes baby-cry signallers, FM systems (for schools) and emergency alarm systems. The representative of the Society explained that there were cases in which babies suffered injuries and almost died because a deaf mother could not hear their cries, and this situation could be averted if the mother was wearing a vibrating bracelet linked to a microphone that could detect the sound.

In 2023, the Society received a grant from parliament that allowed them to buy 300 vibrating devices to be used in emergency situations, which could be activated at the press of a button and equipped with a GPS signaller. The devices were all distributed among members of the Society, but now many of them are in need of maintenance and repairs and users do not know where to get these services.

For government-funded hearing aids, potential users have to visit the local polyclinic, where an MSEC commissioner will assess whether they need such a device. Only people classified in disability group III, who have some residual hearing, are entitled to a hearing aid. The person will be referred to a hospital or other centre where they can get an audiogram. An application for these individuals will be sent to the local Inson centre, and a community social worker will provide the hearing aid. Typically, Inson centres provide only one type of hearing aid for all people in need. These are very basic products that are not individually programmed and only have an on and off button.

Box 5 sets out the 10-point plan to strengthen the AT sector proposed by the Association of Disabled People of Uzbekistan.

Box 5. Ten point plan to strengthen the AT sector

The Association of Disabled People of Uzbekistan proposed a 10-point plan to strengthen the AT sector:

1. Allow persons with disabilities to choose any provider, not only the ones registered with the NASP, for AP.
2. Translate software programs and speech synthesizers into Uzbek language.
3. Introduce quality controls for AP.
4. Develop technical standards for AP.
5. Develop service standards for AP.
6. Establish a school or training programme for prosthetists and orthotists.
7. Provide more training on AT to the general health workforce.
8. Conduct research on AT and implement surveys to determine the need.
9. Involve persons with disabilities in planning and developing AT policies.
10. Increase funding for AT.

4.4. Discussion

All AP should be provided with services comprising at least four essential steps:

1. Product selection: selecting the most appropriate product for the person.
2. Fitting: adjusting and fitting the product to suit the person.
3. User-training: teaching the person how to use and take care of their product.
4. Follow-up: reviewing the person's needs, maintaining and repairing the product.

Services ensure that products can be used safely and effectively. Distribution of AP without services may harm the user and reduce the effectiveness of the product. There can be substantial benefits to providing comprehensive services by averting health risks. For example, a study in a rehabilitation hospital in Sri Lanka in 1999 found that selecting the correct wheelchairs (size and type) and cushions, combined with adequate patient education, reduced the incidence of pressure injuries by 70% (23). Users of other AP are also at higher risk of secondary complications when supporting services are inadequate. For example:

- walking aids not fitted to the correct height or used incorrectly may increase the risk of falls and of shoulder injuries;
- hearing aids that are not adjusted to the hearing loss of the user might further damage their hearing; and
- lower limb prosthesis that are not well aligned or fitted can provoke pressure injuries and gait deviations.

Table 3 summarizes potential risks for gaps in service provision at each step.

Table 3. Potential risks for gaps in service provision for AP

Service step	Gap	Risk
Screening and referral	• Low awareness of AT • Limited collaboration with health services	• Low awareness of AT results in potential beneficiaries not receiving services
Assessment and selection	• AP selection based only on a diagnosis	• Wrong AP provided
Fitting	• Some AP provided without fitting or with inadequate fitting	• Discomfort, pain or difficulty in using the product • Secondary complications including injuries and pressure injuries
User training	• Some AP provided without training or with inadequate training	• Inability to use the AP correctly or to get maximum value from its use
Follow-up, maintenance and repairs	• No systematic follow-up of users • Low number of repairs	• Changes in user needs or products that are no longer needed are not identified • AP falls into disrepair and reduced product lifespan

Source: authors.

Each service step that is not performed correctly has a cumulative effect on the risk of the product being unsafe or ineffective and increases the chances of the product being abandoned. Although there is no reliable data on product use and abandonment in Uzbekistan, studies from other countries found abandonment rates of 20–30%, and in some places as high as 75% *(24,25).* Product abandonment was to a large extent attributed to inadequate services in those countries.

In Uzbekistan, AT services for different product categories are inconsistent and vary significantly in quantity and quality. Some hearing aid providers (e.g. RSSPMCP and Acoustic) offer comprehensive services following the four essential steps. These providers also train their staff with courses that can take over a month. Unfortunately, from other suppliers, a large number of hearing aids are also being provided without any services at all.

For PO, registered companies provide products with related services. The providers visited had orthopaedic doctors supporting technicians with assessment and other service steps, but no other rehabilitation workers – such as occupational therapists or physiotherapists – were part of the teams. All products were customized to each individual and user training was offered. However, it was also observed that some prostheses awaiting delivery appeared to be made from a standard form, as opposed to

individual casts from patients' residual limbs. Moreover, the facilities were not well equipped to provide prolonged and sustained gait training to the users. Most of the PO technicians learned on the job or through short courses with suppliers.

Interviews with users revealed that other mobility or self-care products, including wheelchairs, were provided with little to no services. White canes for blind people were also distributed without any services.

Uzbekistan should strengthen regulations on AT service provision to ensure that all providers conform with minimum requirements. It is recommended that the following the practices are adopted.

Develop and implement service standards and protocols

The absence of service standards or protocols precludes the possibility of monitoring the quality of services. Without standards, appropriate service provision is a somewhat arbitrary concept, and providers can get away with providing inadequate services. National service standards should be developed for all priority products. Standards should describe service steps with sub-tasks and clarify what constitutes an appropriate level of service for each step of the process. Service standards should be framed so that they can be subject to monitoring, auditing and evaluation of separate aspects of service, with minimum requirements and expected outcomes for individual steps.

Service standards should also establish who is authorized to provide AT services. The standards should specify the qualifications and training required to provide different types of products. For some products any health staff or social worker may provide the product after completing the relevant short training. For other products only specialists with certificates or a degree in a relevant field (e.g. audiology, PO) should be authorized to provide the products.

Reimburse for AT services

The cost of AP is covered by the NASP, but there is no separate remuneration for services related to AT. This devalues the importance of services from the perspective of the providers, as regardless of the quality or quantity of services, they are reimbursed at the same rate. There is thus little incentive to invest in hiring skilled workers or training staff in the provision of services. It is also not fair that financial compensation for provision of prostheses or wheelchairs for primary patients is the same as providing a replacement product, since the primary patient will need more services, especially longer training, and take up much more time of the rehabilitation staff.

The government should consider calculating the cost of different service steps and reimbursing them separately. The labour that is required in providing services is not the same for each beneficiary and will vary depending on product type and condition and whether the beneficiary is a first-time user or not. In the case of some products, such as white canes for people with visual impairment, the cost of providing training for the user may exceed the cost of the product itself. If services are reimbursed separately, this will enable a more tailored approach, in which people with more complex needs may obtain a higher level of service.

Ensure continuity of care and integration with health services

AT should be provided in conjunction with other rehabilitation and health services by a multidisciplinary team. When AT is delivered without rehabilitation, or when rehabilitation and AT are disconnected, the benefits of AT and rehabilitation interventions may be greatly diminished. In other words, these interventions are interdependent in achieving improved functional outcomes for the patient, and AT professionals and health and rehabilitation personnel have complementary knowledge and skills. Moreover, the doctors and staff at health facilities have access to health data and information that AT providers need to provide services correctly.

In Uzbekistan, most AT providers are stand-alone (i.e. they are not integrated with health services). Notable exceptions to this are the provision of hearing aids at the RSSPMCP and provision of FAB at the RSSPMCTO, which are provided at the same location. For this reason, collaboration and referral pathways between rehabilitation and AT providers need to be planned and strengthened. Formal collaboration agreements should be signed between AT providers and health services. The AT providers should be able to contact staff at hospitals and rehabilitation centres and consult with doctors on AT interventions. For example, before and after an amputation a prosthetist should be able to visit the patient at the hospital and discuss with the treating staff how to proceed to maximize benefits of a prosthesis.

Build awareness of the benefits of AT

Awareness of AT and its benefits is low, and potential beneficiaries are not aware of many products that could help them. Prospective users of AT also do not know about the different product variations, accessories and services they might need – and having no exposure to good AT interventions they accept what they are able to obtain as the best possible treatment.

Health care is usually the entry point for AT. In other words, most people who need AT following an accident or health issue will start their rehabilitation journey at a health facility. All health professionals, including those at primary health care level, should play a role in screening and referral. It is therefore essential that they receive appropriate training on AT.

Enhance user choice

With the adoption of decree No 253 *(14)* and transition towards a voucher system, two important changes in relation to services occurred. Firstly, the introduction of the NASP online trading platform allows beneficiaries to select the product of their choice. To list a product on the platform, the companies need to provide product information including technical specifications, use and warranty period, price and a photo of the product. Empowering the user to select their preferred product and suppliers is an important achievement; however, it is important to recognize that users need guidance to select the most appropriate product – first-time users, in particular, may not know what to look for in AP. Ideally product selection should be done in consultation with a rehabilitation professional or other personnel trained in AT, so that the user can make an informed decision based on their functional goals.

Organizations of persons with disabilities have pointed out that selection is still limited to products from a small number of companies that are registered with the NASP, and they would like recipients to have more choice by allowing any company whose products meet minimum quality standards to offer their products on the platform.

Improve availability of services

The second important change, the new requirement for products to be delivered to the place of residence of beneficiaries, has significant ramifications for providers and services. In some respects, this is very positive, since beneficiaries will not need to travel to obtain products. In Uzbekistan most AT providers are in Tashkent or other large cities. People living in rural areas need to travel long distances to access these services, which can be costly and burdensome, especially for people with disabilities who face additional barriers.

However, although home delivery of products can overcome challenges related to transportation, it should not come at the expense of appropriate service provision. A system in which a delivery person brings the product to the place of residence and the transaction is considered complete after the delivery is signed-off, without any additional services, is inadequate in all situations. Decree 253 has a special clause for hearing aids and PO to ensure people receive fitting ("take measurements") and training at the provider's facilities *(14).* However, all AP should be provided with services, including simple products, and services should be available at all levels of health care.

A way to reap the benefits of the online platform and home-delivery system while not compromising on services, is by involving primary health care staff and social workers in AT service provision. This requires product delivery to be planned and coordinated with the community workers in all municipalities who will be engaged in providing services.

Not all AP can be provided at the community level. "Complex" AP, such as prostheses and postural support wheelchairs, etc., will require specialists and equipment that are not available in every community. However, simple AP, such as crutches, reading glasses, toilet chairs, etc., could be provided by general health staff (e.g. nurses, physicians and social workers) with minimum training. Community workers will also be trained in screening and referring people in need of complex AT interventions to specialized services. For "complex" products community workers could be involved with some aspects or steps of provision, such as follow-up.

Expand the role of community health-care professionals to include AT services

Since all municipalities have a health facility, this could ensure complete coverage, so that everyone in need has access to at least some basic AT services in their community.

At the primary care level, the medical brigades, consisting of a multidisciplinary team of doctors, nurses and social workers, are well positioned to provide AT services. Part of their responsibility is visiting patients in their homes, and adding AT services to their scope of practice would align with providing holistic health-care interventions. Moreover, being able to see the person in their house and the environment in which they would use the products gives the medical brigades a strong advantage in matching services to the

person's daily needs. However, normal primary health care workers working at polyclinics could equally be responsible for AT services.
Coordinating community workers to provide services could be a simple process. For example, each member of community personnel trained in AT could be assigned an area (in the case of the medical brigades this would already be assigned). Every time a voucher was issued to a person in their catchment area, they could also be notified of the person assigned to support them with services and help with product selection. Once the product is delivered, the community personnel responsible could be notified by text message and either provide AT services at the place of residence or refer the person to the primary health centre.

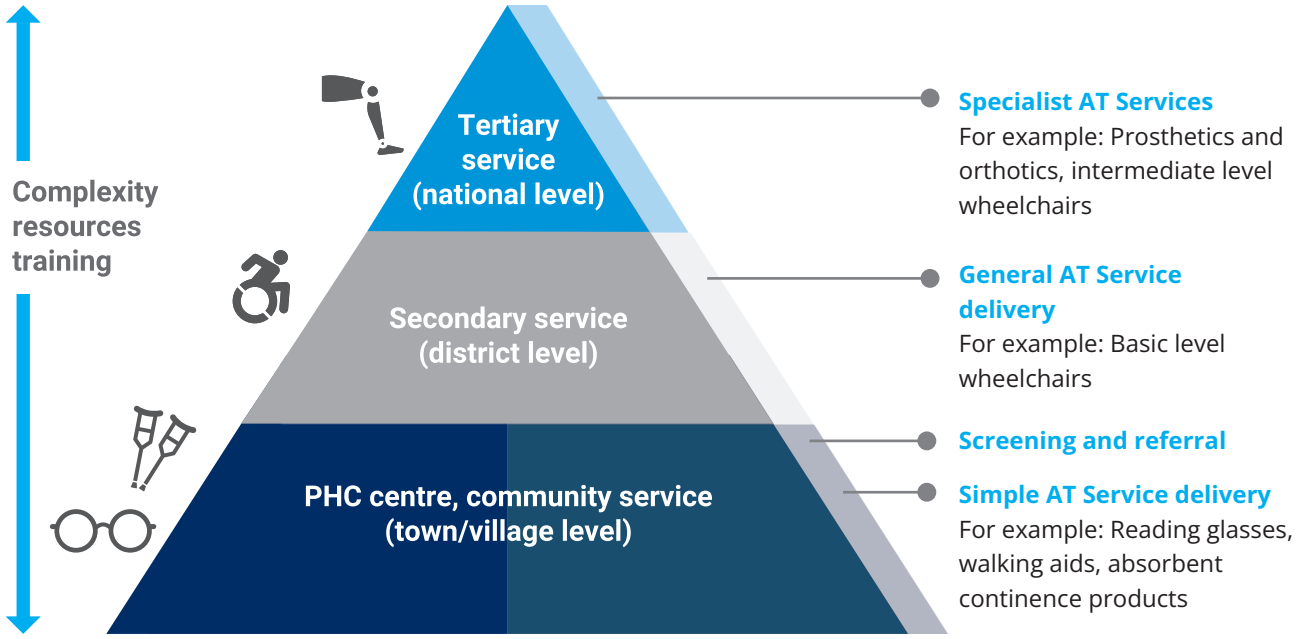
The AT services such community personnel could provide include:

- screening and referral
- supporting the user with product selection and ordering the correct size and accessories
- fitting the product and adjusting as necessary
- training the beneficiary on how to use and take care of the product
- following-up to ascertain whether the product is still functioning and appropriate for use.

Provision of some AP that require more training, equipment and specialized workforce could also be provided at the district level. For example, most district polyclinics will have ENT doctors with tools to assess hearing loss, such as an audiometry machine. With limited additional training they could learn to programme digital hearing aids and other related service steps. Instead of having to travel to the service units of hearing aid companies, which are mostly located in regional centres, the beneficiaries could obtain services from their local ENT doctor after the hearing aid is delivered to the district centre. Similarly, after receiving appropriate training on wheelchair provision, rehabilitation personnel could provide services at district health centres. In every district, at least one polyclinic could be identified to provide such services for these intermediate products. Some AP would be beyond the competence of the non-specialist. For devices such as prostheses, postural support wheelchairs or programmable hearing aids, people in need would be referred to regional centres.

A national three-tiered model for AT services could be envisaged, as illustrated in Fig. 4. The three levels are interdependent and interconnected. There is an upward stream of referral from the lower level to the higher-up specialized services. In return, the district and regional centres would provide trainings and technical support for primary health care staff at the community level. The distinct advantage of this model is also integration of AT services with rehabilitation and other health services. The head of the ENT department of Tashkent Medical Academy envisaged a similar plan for increasing coverage of hearing and ear care services, but this model is applicable to all domains of AT: mobility, self-care, hearing, vision, cognition and communication.

Fig. 4. One-stop model of AT service provision



Source: Based on WHO (2022) *(26).*

4.5. Recommended actions

- Ensure comprehensive services (assessment, fitting, training and follow-up) for all AP.
- Develop service standards for all priority AP.
- Improve collaboration between AT providers and health facilities.
- Provide services at all levels, including community-level provision of simple products.

5.
Products

Summary of findings

- The unmet need for AT is high especially in rural areas – affordability, availability and awareness are key barriers to access.
- The NASP programme provides 30 different types of AP but only covers a fraction of the estimated total need.
- Several high-priority products are not available or are difficult to find in Uzbekistan.
- A mix of high-quality advanced technology and low-quality basic products are available on the market.
- There are national standards for wheelchairs, for which Uzstandard is the monitoring agency, but not for other AP.
- Uzbekistan produces a variety of AP including wheelchairs, prosthetic components, walking aids and white canes.
- Imported products need to be registered with Uzstandard before they can be sold in the country.
- AP are exempt from tax, except for hearing aids.

According to the NASP, in 2023, a total of 48 525 AP were provided as part of the government AT programme. This included 14 627 orthopaedic products (i.e. prostheses, orthoses and orthopaedic shoes). Wheelchairs were the most widely distributed product with about 12 000 units provided, followed by orthopaedic shoes with almost 8900 pairs, and hearing aids at 6200 units (NASP, unpublished data, 2024).

The total expenditure on the AP in 2023 was 43.6 billion sum (US$ 3.4 million). This includes 32 billion sum (US$ 2.5 million) for technical means of rehabilitation and 11.6 billion sum (US$ 915 000) for orthopaedic products. The combined expense for wheelchairs and hearing aids constitutes more than 95% of the budget for technical means of rehabilitation. Table 4 shows the full list of products provided and expenditure.

Table 4. Government provision of products and expenditure for 2023

Products provided in 2023	Units	Spending (million sum)	Spending (thousand US dollars)
Wheelchairs	2 029	18 453	1 456
Orthopaedic shoes	8 799	ND	ND
Canes	6 360	431	34
Hearing aids	6 207	11 057	872
Lower limb prostheses	3 350	ND	ND
Crutches	3 310	395	31
Breast prostheses (external)	1 588	ND	ND
Stool receivers	1 330	397	31
Elbow crutches	990	145	11

(Continued)

Table 4. The Contd.

Products provided in 2023	Units	Spending (million sum)	Spending (thousand US dollars)
Walking frames	982	700	55
White canes	939	87	6.8
Lower limb orthoses	938	ND	ND
Urine receivers	874	208	16
Spinal orthoses (corsets)	730	ND	ND
Upper limb prostheses	337	ND	ND
Upper limb orthoses	42	ND	ND

ND: no data.
Source: NASP data (2023).

5.1. AT needs

In Uzbekistan, there are no representative population studies on AT to assess the overall need and use. However, international estimates could be used to derive some broad estimates of the need in Uzbekistan. Table 5 shows the total number of products that need to be provided each year to sustain universal coverage, based on international prevalence rates and expected product lifespans. The last two columns show the current government provision and the proportion of the total need that is covered.

Table 5. Estimates of need for four categories of AP

AP category	Prevalence of need (%)[a]	Total people in need	Product lifespan (years)	Total annual need[b]	Products provided in 2023	Coverage of need (%)
Hearing aids	1.6	560 000	5	112 000	6 207	6
Wheelchairs	1.0	350 000	5	70 000	12 029	17
Lower limb orthoses	0.4	140 000	3	46 700	938	2
Lower limb prostheses	0.1	35 000	3	11 700	3 350	29

[a] Prevalence of need in 29 countries, median value.
[b] Total annual need is derived from dividing total people in need by the product lifespan.
Source: WHO (2022) *(6).*

It should be noted that the estimates shown in Table 5 are conservative, considering that many users will need product replacements before the expected lifetime of a product has expired, and old products may not always be reissued.

Supply and demand

Interviews conducted with health professionals and user organizations revealed that the unmet need for AP is very high especially in rural areas. The United Nations *Situation analysis on children and adults with disabilities in Uzbekistan (19)* also found that even among persons with disabilities only half of the sample had access to the AP that they needed.

Wheelchairs

Sayqal produces 30 000 wheelchairs a year, 97% of which are destined for the local market. The other two local producers manufacture about 1500 units a year. These are sold to Inson centres as well as other clients (e.g. pharmacies). There are no other producers, but Chinese imports are also prevalent on the market. As such the total supply is at least 30 000 units, which is about 45% of the need, without consideration of the variations of products required (e.g. size, features).

Lower limb prostheses

Unlike wheelchairs and hearing aids, the three PO providers all confirmed that all or almost all of their clients pay for their prostheses using government vouchers. As such, we may conclude that the total supply is around 3600 units a year. This is about 30% of the need.

Hearing aids

Acoustic provides 25 000 hearing aids per year and the vast majority are sold in Uzbekistan, with only a small percentage exported to other countries in central Asia. Although there are other hearing aid providers, reportedly they are far smaller in scale supplying at most 1000 hearing aids annually. Acoustic is therefore the market leader, also by virtue of being the official distributor of hearing aids for most of the large global manufacturers. The director of Acoustic estimates that the company has approximately 60% of the digital hearing aid market share. If this is accurate, the total annual supply is somewhere around 40 000 units a year. This is about 30% of the estimated need in the country. It is important here to clarify that the need is not equal to the demand, and particularly for hearing aids the demand could be much lower, if a lot of people who could benefit from hearing aids do not perceive a need, and bad experiences with low quality hearing aids could contribute lowering demand. In addition, sound amplifiers are sold by many pharmacies as a substitute for hearing aids since they are cheaper, but it is unclear how many are sold. These are often not appropriate to address the hearing loss.

5.2. Quality and range

Wheelchairs

According to manufacturers' own accounts, over 31 000 wheelchairs are produced in Uzbekistan every year and large quantities are also imported from other countries. However, none of the wheelchairs observed during the assessment were appropriate for active users or for people with intermediate or advanced postural support needs (e.g. children with cerebral palsy). During interviews, staff from rehabilitation centres also confirmed that they were unable to find postural support wheelchairs. Only wheelchairs considered transport chairs, as per WHO AP specifications (APS), seem to be available in the country. This type of chair is appropriate for intermittent use for short duration transportation, but they are not suitable for active users who use the wheelchairs independently over long distances and different types of terrain.

The largest producer, Sayqal, manufactures a foldable steel frame wheelchair (Photo 1) that comes with different options including rear wheels of different width, two castor types and a reclining seat. The

footrests are adjustable in height, and the armrests flip up to allow easier transfers. The two smaller manufacturers also produce folding wheelchairs with slung seats. Although all producers have the capacity to make wheelchairs in different sizes and fulfil individual orders, they are mostly just produced in one standard size for adults and one size for children. The seat width size of the chairs is set to a standard 46 cm. Wheelchairs are issued without cushions, and although comfort cushions are available on demand, they are ordered separately. Pressure relief or postural support cushions are not available.

None of the locally produced wheelchairs were tested in accordance with International Organization for Standardization (ISO) 7176 standards or had independent testing against other international standards. However, wheelchairs are tested periodically by Uzstandard using the national wheelchair standards (see Box 6). Every three years a representative from the organization audits the producers and takes random samples of wheelchairs to test in its own facility. Neither Uzstandard nor the testing facility were visited during the assessment.

Sayqal also conducts its own internal quality control and has its own testing facility. Within the confines of the production centre there is an indoor and outdoor testing facility. The outdoor part is a circuit with ramps, obstacles and different types of terrain to assess wheelchair performance under different circumstances. The indoor facility has testing equipment including some that replicate ISO tests such as the double-drum test (Photo 2), and others for tensile strength testing of the back and seat etc.

During discussions, the producers said that they are interested in diversifying their range and starting to make different wheelchair variations, including for active users in accordance with WHO APS. However, they pointed to three barriers: technical knowhow, limitations with existing production lines and financial limitations. They posited that these barriers could be overcome through collaboration with international partners, including other wheelchair producers or international organizations. This could lead to investment and technology transfer.

Box 6. Uzbekistan national wheelchair standards

National standards for manual wheelchairs were developed by the Ministry of Health and put into effect by Uzstandard in 2016. They expand on Regional State Standards (GOST) for wheelchairs and wheelchair-testing that Uzbekistan adopted in 1992. The document also references ISO 7176 and is harmonized with EN 12183-2008 of the European Standards.

Wheelchairs are classified in accordance with GOST 30472, and are also subdivided into indoor or active type and adult or paediatric. The document indicates minimum requirements for several parameters: size, weight (maximum 25 kg), floor clearance (i.e. minimum 35 mm), static stability (not less than 10 degrees incline for a loaded wheelchair with brakes engaged) and rotation diameter (1200 mm). Strength and durability are measured according to GOST 31073-2002 – on static, impact and fatigue strength. Notably, wheelchairs are required to have adjustability features to accommodate individual needs, including adjustable or multiple size seats and footrest adjustability. The document also sets standards for transportation, storage, packing and manufacturing.

Photo 1. Sayqal manual wheelchair.

Photo 2. Double-drum roll test at Sayqal testing lab.

©WHO/ Andrea Pupulin

Prosthetics and orthotics

PO providers in Uzbekistan offer a range of components from basic to intermediate, and a mix of locally produced and imported parts. Basic prosthetic feet and knees are produced at a plant in Uzbekistan (Photo 3). The plant produces solid ankle cushioned heel feet from rubber with a fiberglass keel and plastic ankle adapter. The knee is a single axis locking joint that can be used in a locked position for walking and unlocked manually for sitting. These components are most appropriate for low activity users. They do not restore a natural walking gait and are less energy efficient than more advanced components.

Imported components range from basic to intermediate. The Chinese, German and Russian manufacturers supply components for low activity users, but also offer an array of intermediate components for people with higher activity levels. This includes pneumatic and polycentric knee joints, and single or multi-axis feet. Imported parts also include silicon liners that are not produced in Uzbekistan, with different suspension systems offering an alternative from traditional leather belts. One of the PO facilities even had an agreement with Ottobock to provide advanced prosthetic components (i.e. microprocessor-controlled prostheses) to patients who could afford them, for which Ottobock prosthetists travel from Germany for fitting and user training.

Orthoses (and prosthetic sockets) manufactured in the country are made from thermoplastics – lamination and 3D printing are not used. Thermoplastic is either imported or sourced locally. The local plastic is less expensive but not as good quality – being more brittle.

The PO providers only started using large numbers of imported components from 2023, after the value of the voucher increased substantially. Imported components are superior in functionality and durability and have now become affordable.

Nonetheless, many locally produced components are still used. At one facility the director estimated that about 50% of the prosthetic feet they used were local, and providers have large quantities in stock. Even

though imported products are superior in almost all respects (more durable and with better functionality), the directors argued that for some geriatric patients the old prosthesis is adequate, and less expensive (feet reportedly cost about US$ 12).

Metiz and Ottobock are renowned producers with reliable products that have been tested to international standards, including ISO 13405. The research team does not have any information on structural testing of locally produced components, to ensure that they are safe and reliable, or whether they have been tested clinically through user trials. The prosthetic factory was not visited during the assessment.

The director of Orthotec planned to open a production plant for PO components in Tashkent in 2024. The company has already acquired a 200 m^2 plot where the factory will be built. For this they have partnered with a Chinese company that has agreed to offer technology transfer, and to lend its engineers to support with product design and the manufacturing process. The vision of the director is to produce higher quality (intermediate) products from a wider range of materials and metals than the thermoplastic parts currently produced in the country.

Photo 3. Lower limb prosthesis with locally produced foot and knee joints.

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Hearing aids

Acoustic sells 26 different hearing aid models and is the official distributer of five international companies: Audifon, Oticon, Resound, Signia and Videx. This company controls up to 60% of the hearing aid market in the country, according to their own estimate. There are another five or six hearing aid providers that sell up to 1000 hearing aids a year, including representatives of Bernafon and Phonak.

The least expensive Acoustic product costs about 1.5 million sum (US$ 118), which is a special price that Acoustic has offered to fit within the government voucher price limits. Prices for other products can reach up to about 38 million sum (US$ 3000) for the most advanced models. The current government voucher for hearing aids has a value between 1.5 and 2.5 million sum (US$ 118–197) with the higher price bracket reserved for children and people with higher levels of hearing loss.

In addition, a variety of low-cost sound amplifiers are also available on the open market. These are found in various pharmacies and shops, and even on the rehabilitation webpage of the Uzum platform, where several models are listed for sale. Reportedly individuals with hearing loss are sometimes led to believe that these are hearing aids, since they cannot tell the difference between them.

Personal sound amplification products (amplifiers), hearables (or smart headphones) and hearing aid apps are alternatives to hearing aids. Although they may be more affordable and easier to access than hearing aids, due to not relying as heavily on a specialized workforce and equipment, their effectiveness, benefits and limitations need careful investigation. For example, they may cause hearing damage if the amplification they provide is not adjusted to safe levels. For this reason, WHO currently recommends hearing aids that meet the amplification needs of their users and that comply with relevant quality standards as well as the specifications described in WHO's *Preferred profile for hearing-aid technology suitable for low- and middle-income countries (27).*

Hearing technicians at Acoustic lamented that it was not uncommon for them to see clients who suffered from tinnitus and degraded hearing loss after months of use of these products that are not appropriate to their condition. The advantage of sound amplifiers is that they cost only 126 000–190 000 sum (US$ 10–15), and for people who cannot afford regular hearing aids these devices can enable them to hear better.

UD-Audifon LLC manufactures around 5000 hearing aids a year in Uzbekistan, at 1.9–5.0 million sum (US$ 150–395) a unit. They are produced at a plant in Ferghana from parts sourced from China. The company has a 3D printing laboratory with 10 specialists and also employs 15 microelectronics specialists. The hearing aids are also exported to Germany.

Other products

Wheelchair producers Sayqal and Tibtexnika LLC also manufacture walking aids including crutches, canes and walkers. In 2023, Sayqal produced 4500 crutches (unit price 55 000 sum (US$ 4)), 700 walking aids (630 000 sum (US$ 50)) and 3000 pairs of crutches (92 000 sum (US$ 7)). It has recently started to manufacture a mobile toilet chair; however, it is not yet authorized to sell this, since toilet chairs are not a recognized category of AT for Uzstandard, which can be tested for conformity. White canes are also manufactured in country by the Society of the Blind of Uzbekistan.

5.3. Product registration and taxes

To sell any AP or other health product in Uzbekistan, the company needs to obtain a licence from Uzstandard. The licence is needed regardless of whether the product is imported or locally produced, to certify that it complies with quality and safety standards. The process of obtaining a licence can take between six months and a year, and the fee varies depending on the product category.

A major challenge for technical means of rehabilitation is that there is no clear definition or official government list of products that fall within this category, and this introduces uncertainty over the status of some products and what rules and standards they should be subjected to. For example, Sayqal cannot obtain a licence for its recently introduced mobile toilet chair since there are no standards for toilet chairs. There are also some models of clubfoot braces, such as the Mitchel brace, that the RSSPMCTO cannot sell directly to patients since the company was not able to register the product in the country. This also has implications for taxation since technical means of rehabilitation are exempt from taxes, but a product like a hearing aid is considered to be a medical rehabilitation device and is subject to 15% value added tax.

5.4. Discussion

Increase the variety of available AP

The number of AP has increased significantly in the last year; however, current government provision is still skewed towards mobility and self-care products. Far fewer products are available for people with vision or hearing impairments.

Members of the Society of the Deaf of Uzbekistan identified several products for hearing loss that they regard as high priority, namely: GPS locators, sound to light or vibration devices such doorbell signallers and crying baby signallers. These AP are also considered a high priority by WHO and they are listed among the 50 products on the WHO APL.

Postural support and active user wheelchairs are also not available in the country – all wheelchairs correspond to transport type wheelchairs as per WHO specifications. No communication and cognition products are on the government APL. These products are often software, and some are available open source, but as highlighted by the head of the Society of Disabled people of Uzbekistan they are not available in Uzbek most of the time. Therefore, provision of these AP entails government involvement in supporting their translation and developing culturally appropriate content, as well as Uzbek language speech synthesizers.

In addition, there is a lack of diversity in product variations and even sizes. Some of these variations and accessories, often needed by people with higher functional needs, are more expensive and might exceed the amount that the state reimburses for products. Product variations should be defined, and price brackets should allow people in need to obtain these products. APS should be developed to ensure all essential product varieties are provided, and that they have minimum features and design requirements.
A large number of prosthetic shoes are produced each year, even though all modern prosthetic feet can be fit into regular shoes. As such, the question is whether prosthetic shoes should be provided free of charge or should be dropped so that the funding could be used to provide larger volumes of other essential products.

A list of priority products should be revised at least every 2–4 years to keep up with the changing needs of the population and technological advances. It is recommended that the government consider reviewing its list of priority AP in consultation with providers and user groups.

Address issues of quality through the application of product specifications and quality standards

In Uzbekistan there is a mix of high- and low-quality products in different functional domains. Low-quality products will usually be ineffective, not last long and may put the user at health risks. Product quality standards should be introduced to ensure that minimum requirements are met and that the user is protected. Standards should not be too high, to allow affordable but appropriate products to enter the market. In Uzbekistan, quality standards exist for wheelchairs but not for other products.

To prevent duplication of regulatory efforts, Uzbekistan could implement reliance pathways in the registration of AP, based on recognized verification by other jurisdictions, including the European Union, Japan and the United States. In other words, products that have successfully passed regulatory procedures in these countries should automatically be approved for retail in Uzbekistan, without having to go through a certification process. This would facilitate procurement from a wider range of manufacturers.

Strengthen the quality and variety of products produced locally

There are local producers of wheelchairs, PO and even hearing aids. In fact, most of the products on the government list are also produced in-country, including walking aids and even white canes. Local production has important advantages including job creation, lower reliance on external supply chains, and enhanced capacity to repair products and control design. However, these products must also meet minimum requirements, and this will involve strengthening production. To improve variety and quality, collaboration between Uzbek producers and international organizations should be explored with a view to technology transfer.

5.5. Recommended actions

- Develop a national list of priority AP.
- Establish product standards and specifications to ensure quality and safety.
- Support international partnerships for technology transfer and local production.
- Simplify registration procedures and ensure all AP are tax-exempt.

6. Personnel

Summary of findings

- Uzbekistan has very few AT and rehabilitation professionals trained to international standards.
- Several rehabilitation professions are not even recognized in the country, and are not licensed or protected.
- Often people without any background education in AT and rehabilitation are trained on the job to perform these duties.
- General health personnel are not trained in AT.

6.1. AT specialists

Prosthetist/orthotists

The director of Ortopedia Industriya LLC identified lack of professional training of prosthetist/orthotists as the biggest challenge for the AT sector. International collaboration for training and education of prosthetists/orthotists is greatly needed, since there are no experts in the country, and the cost of training new staff falls on the providers. He estimates that there are currently 30 skilled technicians working as prosthetist/orthotists in the country.

At the time of the interview, the Russian company Metiz were planning a one-week training in June 2024 on how to select and fit their product. Although these trainings are welcome, more comprehensive education is needed to provide a better foundation. Language is a significant barrier since most technicians do not speak English and there are no Uzbek trainers. In the past, there were plans for three PO specialists to travel to Germany to study at the Ottobock academy, with an American sponsor, but unfortunately this did not materialize.

Physiotherapists

These professionals play an important role in provision of all AP. In Uzbekistan, physiotherapy is thought of as a specialization for medical doctors. There is no stand-alone education for physical therapy. All physical therapists/physiotherapists are either medical doctors with advanced training or are nurses with additional training.

Occupational therapists

Occupational therapists also play a very important role in the provision of AT. There is no formal education for occupational therapists/ergotherapists in Uzbekistan and this profession does not yet exist in the country.

Speech and language therapists

Speech and language therapy is represented mainly through logopaedists (speech correction). This

profession has historical roots as part of early childhood development and education.
According to the Statistics Agency, at the end of 2021 there were 1151 logopaedists in Uzbekistan.

Wheelchair professionals

Often wheelchair professionals do not have a degree in this discipline but rather are occupational therapists or physiotherapists who specialize in wheelchair services. In Uzbekistan, no trainings are conducted on wheelchair provision and there are health or social workers working in this role.

White cane orientation and mobility specialists

There are no white cane orientation and mobility specialists in Uzbekistan.

6.2. Discussion

In areas where AT professionals are not available, task-shifting is a useful approach to provide some basic AT services. WHO has developed a dedicated online training on assistive products (TAP). It is designed to prepare primary health and other personnel to fulfil an AT role. TAP has a modular structure; personnel may select the modules that match their role and the needs of the local population. For each AP, an introductory and product-specific module will cover key learning content to support the acquisition of skills to safely and effectively provide that product.

In addition, WHO has developed a series of wheelchair service training packages (WSTP). The purpose of the basic-level package (WSTPb) is to equip personnel with the knowledge and skills to provide a wheelchair for a child or adult who does not have postural support needs. To train someone in providing these basic wheelchair services the training typically lasts about five days.

Integrate AT into training for the general health workforce

AT is needed in all areas of medicine (traumatology, oncology, rehabilitation, ophthalmology etc.) and all doctors and nurses should have basic training on AT. Since many health staff have not received sufficient training on AT, it is even more important that AT be included in their continued professional education.
The TAP modules are really suitable for this since they can be taken online from any location, can be integrated into a credit system for continuous professional education and can be individualized by selecting areas of interest. In addition, community workers could also be trained on WSTPb to provide wheelchair services.

Increase the number and availability of AT specialists

There is a need for educational programmes for all major rehabilitation professions including physiotherapists, occupational therapists, speech and language therapists, prosthetists and orthotists. For more information and detailed recommendations see the Systematic Assessment of Rehabilitation Situation report *(10).*

On average, a country requires 5–10 PO clinicians per million population (see Prosthetics and Orthotics Standards, WHO 2015 *(18)*). Therefore, in Uzbekistan there is a need for between 175 and 350 such clinicians, far more than the estimated 30 people currently working as prosthetists and orthotists in the country. Each clinician is normally supported by two non-clinicians (International Society for Prosthetics and Orthotics (ISPO) Cat. III technicians), and in a standard PO service unit, a clinician (supported by nonclinical personnel) can be expected to provide complete services to 300–600 users per year (including first provision, renewals, follow-up and maintenance and repairs).

Leverage the experience of international professional associations

Since Uzbekistan has a dearth of trained rehabilitation and AT professionals, and no national professional associations in these fields, leveraging the experience and resources of international associations is very important. These organizations (e.g. International Society of Wheelchair Professionals, World Federation of Occupational Therapists, ISPO) could support with developing plans and implementing activities to help establish rehabilitation professions in Uzbekistan. International associations have supported several countries with developing educational curricula, service standards, scopes of practice and national associations.

6.3. Recommended actions

- Integrate AT into health professional curricula.
- Train general health and social protection staff on basic AT services.
- Develop an ISPO-accredited training programme for prosthetists and orthotists.
- Conduct wheelchair service training for relevant staff.

7.
Conclusions

The ATA-C for Uzbekistan highlights both the commendable progress made and the critical gaps that remain in ensuring equitable access to AT for all who need it. The government's commitment, demonstrated through policy reforms, increased funding and the establishment of the NASP, lays a strong foundation for future development. However, systemic challenges persist across all five pillars of the AT ecosystem – policy, provision, products, personnel and people. Limited eligibility criteria, inconsistent service delivery, a lack of trained professionals, and insufficient data collection mechanisms hinder the realization of inclusive and effective AT services.

To move forward, Uzbekistan must adopt a comprehensive, multisectoral approach that aligns with international standards and best practices. Implementing the recommended actions outlined in this report will require coordinated action across government ministries, civil society and international partners. By expanding eligibility, investing in workforce development, standardizing product quality, and integrating AT into broader health and social systems, Uzbekistan can ensure that AT becomes a cornerstone of inclusive development. This transformation will not only uphold the rights of persons with disabilities but also contribute to the country's broader goals of universal health coverage and sustainable development.

7.1. Summary of recommended actions

Policy

- Extend eligibility to include all people in need, not just those with disabilities or of retirement age.
- Increase financing for AT to ensure universal coverage.
- Collect data on AT needs and outcomes through national surveys and monitoring systems.
- Establish an AT monitoring mechanism to ensure that products and services are of consistently high quality and meet national and international standards.
- Adopt WHO definitions of assistive technology and products to align with global standards.
- Establish an interministerial taskforce to coordinate AT policy and develop a national roadmap with the goal of integrating AT into broader health, education and social protection policies and programmes to ensure cross-sectoral coordination, sustainability and inclusion.

Provision

- Ensure comprehensive services (assessment, fitting, training and follow-up) for all AP.
- Develop service standards for all priority AP.
- Improve collaboration between AT providers and health facilities.
- Provide services at all levels, including community-level provision of simple products.

Products

- Develop a national list of priority AP.
- Establish product standards and specifications to ensure quality and safety.
- Support international partnerships for technology transfer and local production.
- Simplify registration procedures and ensure all AP are tax-exempt.

Personnel

- Integrate AT into health professional curricula.
- Train general health and social protection staff on basic AT services.
- Develop an ISPO-accredited training programme for prosthetists and orthotists.
- Conduct wheelchair service training for relevant staff.

People

- Extend eligibility criteria to include all people in need.
- Increase financing for AT.
- Collect data on AT needs and outcomes.

8.

References[2]

2. All references were accessed on 2 October 2025.

1. Assistive technology [news release]. World Health Organization; 2 January 2024 (https://www.who.int/news-room/fact-sheets/detail/assistive-technology).
2. Tebbutt E, Brodmann R, Borg J, MacLachlan M, Khasnabis C, Horvath R. Assistive products and the Sustainable Development Goals (SDGs). Global Health. 2016;12(79) (https://doi.org/10.1186/s12992-016-0220-6).
3. Smith EM, Huff S, Wescott H, Daniel R, Ebuenyi ID, O'Donnell J et al. Assistive technologies are central to the realization of the Convention on the Rights of Persons with Disabilities. Disabil Rehabil Assist Technol. 2022;19(2):486–91 (https://doi.org/10.1080/17483107.2022.2099987).
4. The case for investing in assistive technology. ATscale; 2021 (https://atscalepartnership.org/investment-case).
5. Seventy-first World Health Assembly. Geneva, 26 May 2018. World Health Assembly Resolution 71.8. Improving access to assistive technology. Geneva: World Health Organization; 2018 (WHA71.8; https://iris.who.int/handle/10665/279511).
6. World Health Organization, United Nations Children's Fund (UNICEF). Global report on assistive technology. Geneva: World Health Organization; 2022 (https://iris.who.int/handle/10665/354357). Licence: CC BY-NC-SA 3.0 IGO.
7. Policy brief: Rehabilitation: a key strategy in addressing noncommunicable diseases. World Rehabilitation Alliance; 2025 (cdn.who.int/media/docs/default-source/documents/health-topics/rehabilitation/policy-brief-rehabilitation-a-key-strategy-in-addressing-ncds.pdf).
8. Health data overview for the Republic of Uzbekistan [website]. World Health Organization; 2024 (https://data.who.int/countries/860).
9. Mishra S, Gosling J, Laplante-Levesque A, Zapata T, Azzopardi Muscat N. The need for rehabilitation services in the WHO European Region is substantial and growing. The Lancet. 2022;24:100550 (https://doi.org/10.1016/j.lanepe.2022.100550).
10. Systematic Assessment of Rehabilitation Situation (STARS) Uzbekistan. Copenhagen: WHO Regional Office for Europe; [in press].
11. Assistive technology capacity assessment (ATA-C): instruction manual. Geneva: World Health Organization; 2021 (https://iris.who.int/handle/10665/343615).
12. Policy brief: Access to assistive technology. Geneva: World Health Organization; 2021 (https://iris.who.int/handle/10665/332222). Licence: CC BY-NC-SA 3.0 IGO.
13. Муҳтож шахсларни протез-ортопедия мосламалари ва реабилитация қилишнинг техник воситалари билан таъминлаш тартиби тўғрисидаги низомни тасдиқлаш ҳақида [Decree No. 411 of the Cabinet of Ministers (01.07.2021) on the approval of the regulation on the procedure for providing needy persons with prosthetics and orthotic devices and technical means of rehabilitation]. Cabinet of Ministers of Uzbekistan; 2021 (No 411, 1 July 2021; https://lex.uz/uz/docs/-5485696) (in Uzbek).
14. Муҳтож шахсларни протез-ортопедия мосламалари ва реабилитация қилишнинг техник воситалари билан таъминлаш тартиби тўғрисидаги низомни тасдиқлаш ҳақида [Decree of the President of the Republic of Uzbekistan on measures to improve the system for providing persons in need with prosthetic and orthopaedic devices and technical means of rehabilitation]. President of Uzbekistan; 2024 (No 253; https://lex.uz/uz/docs/-6905497) (in Uzbek).

15. Ногиронлиги бўлган шахсларнинг ҳуқуқлари тўғрисида [Law on the rights of persons with disabilities]. Republic of Uzbekistan; 2020 (LRU-641; https://lex.uz/docs/-5049511) (in Uzbek).
16. Сотиб олинган реабилитация техник воситаси ёки кўрсатилган хизматлар учун компенсация тўлаш тартиби тўғрисидаги низомни тасдиқлаш ҳақида [Resolution No. 166 of the Cabinet of Ministers of the Republic of Uzbekistan on approval of the Regulation on the procedure for payment of compensation for acquired technical rehabilitation equipment or services rendered]. Cabinet of Ministers of Uzbekistan; 2009 (Resolution No 166, 17 June 2009; https://lex.uz/docs/1489597) (in Uzbek).
17. Тиббий-ижтимоий экспертиза хизмати ташкилий тузилмасини ва фаолиятини ташкил этишга оид норматив-ҳуқуқий ҳужжатларни тасдиқлаш тўғрисид [Resolution No. 62 of the Cabinet of Ministers on approval of regulatory legal documents concerning the organization of the structure and functioning of the medical and social expertise service]. Cabinet of Ministers of Uzbekistan; 2022 (Resolution No 62, 8 February 2022; https://lex.uz/uz/docs/-5852486) (in Uzbek).
18. Ўзбекистон Республикаси Президентининг Қарори Муҳтож шахсларни протез-ортопедия мосламалари ва реабилитация қилишнинг техник воситалари билан таъминлаш тизимини такомиллаштириш чора-тадбирлари тўғрисида [Presidential resolution No. 88 on measures to improve the system of providing people in need with prosthetic and orthopaedic products and technical means of rehabilitation]. President of Uzbekistan; 2024 (No RP-88, 27 February 2024; https://lex.uz/docs/6819215) (in Uzbek).
19. Situation analysis on children and adults with disabilities in Uzbekistan. Tashkent: United Nations; 2019 (https://www.unicef.org/uzbekistan/media/3571/file/Brief%20PwD%20SitAn.pdf).
20. The case for investing in assistive technology. ATscale; 2020 (https://atscalepartnership.org/investment-case).
21. Zamin Foundation [website]. Zamin Foundation; 2025 (https://zaminfoundation.ngo/en).
22. Uzbekistan accessibility audit report. Tashkent: World Bank; 2023 (https://documents.albankaldawli.org/en/publication/documents-reports/documentdetail/099061224044524216).
23. Beattie S, Wijayaratne L. A study of the cost of rehabilitation of spinal cord injured patients in Sri Lanka. Colombo: Motivation; 1999.
24. Policy brief: access to assistive technology. Geneva: World Health Organization; 2020 (https://iris.who.int/handle/10665/332222). Licence: CC BY-NC-SA 3.0 IGO.
25. Sugawara AT, Ramos VD, Alfieri FM, Battistella LR. Abandonment of assistive products: assessing abandonment levels and factors that impact on it. Disabil Rehabil Assist Technol. 2018;13(7):716–23 (https://doi.org/10.1080/17483107.2018.1425748).
26. Training in assistive products. Geneva: World Health Organization; 2022 (https://cdn.who.int/media/docs/default-source/assistive-technology-2/tap/introduction-to-tap-november-2022.pdf?sfvrsn=1c6a9d98_3&utm_source).
27. Preferred profile for hearing-aid technology suitable for low- and middle-income countries. Geneva: World Health Organization; 2017 (https://iris.who.int/handle/10665/258721). Licence: CC BY-NC-SA 3.0 IGO.
28. World Health Organization, United States Agency for International Development. Standards for prosthetics and orthotics. Geneva: World Health Organization; 2017 (https://iris.who.int/handle/10665/259209). Licence: CC BY-NC-SA 3.0 IGO.

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