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# Advancing Wound Care and Rehabilitation for Skin Neglected Tropical Diseases (NTDs) in Resource-Limited Settings

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### ABSTRACT

Skin-related neglected tropical diseases (skin NTDs) remain a major public health challenge in low-resource and humanitarian settings, disproportionately affecting marginalized and vulnerable populations. These conditions frequently lead to chronic wounds, disability, stigma, mental health challenges, and socioeconomic exclusion. Despite significant progress in global health responses to NTDs, access to quality wound care and rehabilitation services remains inadequate in many endemic communities.

This presentation explores practical approaches to strengthening wound care and rehabilitation for people affected by skin NTDs in resource-limited settings. It highlights the importance of integrated, community-based, and people-centered models of care that combine early detection, wound management, rehabilitation, psychosocial support, disability prevention, and social reintegration.

The manuscript discusses key skin NTDs associated with chronic wounds and disabilities, including Buruli ulcer, leprosy, lymphatic filariasis, mycetoma, yaws, cutaneous leishmaniasis, podoconiosis, and noma. It examines the barriers that hinder access to care, such as weak health systems, poverty, inadequate training, stigma, conflict, forced displacement, poor sanitation, and limited rehabilitation infrastructure.

The paper further presents recommendations for strengthening integrated wound care systems through task-shifting, community health worker engagement, rehabilitation integration, digital health tools, local partnerships, and sustainable financing. Emphasis is placed on integrating wound care into primary health care systems and humanitarian responses while promoting dignity, inclusion, and long-term recovery.

The manuscript concludes that advancing wound care and rehabilitation for skin NTDs requires stronger partnerships, community participation, investment in health systems, and global solidarity to achieve the targets of the WHO NTD Road Map 2021–2030.

**Keywords:** Rehabilitation, Diseases, Skin, Mycetoma

### Introduction

Africa continues to carry a disproportionate burden of skin-related neglected tropical diseases, particularly in communities affected by poverty, weak healthcare systems, conflict, forced displacement, and limited rehabilitation services. Across the continent, millions of people living in rural areas, informal settlements, and humanitarian settings continue to experience preventable disability and chronic wounds associated with skin NTDs.

Uganda provides an important example of both the challenges and opportunities surrounding integrated skin NTD care in

Africa. Uganda is one of the largest refugee-hosting countries in the world and the largest in Africa, hosting more than 1.6 million refugees and asylum seekers from countries including South Sudan, the Democratic Republic of Congo, Sudan, Somalia, Eritrea, Rwanda, and Burundi. Refugees are largely settled in northern and southwestern Uganda in settlements such as Bidibidi, Nakivale, Kiryandongo, Rwamwanja, Rhino Camp, Imvepi, and Adjumani settlements.

Many refugees and host communities live in overcrowded environments with limited sanitation, inadequate shelter, insufficient access to clean water, and overstretched healthcare systems. These conditions increase vulnerability to skin infections, chronic wounds, secondary bacterial infections,

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lymphoedema-related complications, and delayed treatment outcomes. Refugees living with skin NTDs often face interrupted treatment, poor continuity of care, stigma, trauma, and severe barriers to rehabilitation services.

The Government of Uganda, together with WHO, UNHCR, district health systems, and humanitarian partners, has increasingly promoted integrated healthcare approaches for refugees and host communities through frameworks such as the Health Sector Integrated Refugee Response Plan. This integration model offers valuable lessons for strengthening wound care, rehabilitation, and inclusive healthcare systems in fragile and resource-constrained environments.

In many refugee-hosting districts, healthcare facilities serve both refugees and host populations using the same national healthcare structures. However, shortages of wound care materials, rehabilitation professionals, physiotherapists, mental health services, and assistive devices remain major challenges. Humanitarian organizations have reported significant unmet needs in physical rehabilitation among refugees affected by violence, chronic injuries, disabilities, and neglected health conditions.

Distinguished representatives of the World Health Organization, esteemed researchers, health professionals, development partners, civil society representatives, colleagues, and participants, It is an honor to contribute to the Second WHO Global Meeting on Skin-Related Neglected Tropical Diseases here in Geneva, Switzerland. I sincerely thank the organizers for creating this important platform that brings together global actors committed to addressing the burden of skin NTDs and advancing integrated approaches toward the achievement of the 2030 NTD targets.

Skin-related neglected tropical diseases continue to affect millions of people worldwide, particularly among populations experiencing poverty, displacement, inadequate sanitation, weak health systems, and limited access to healthcare services. These diseases disproportionately impact people living in remote rural communities, urban informal settlements, refugee settlements, and conflict-affected regions.

Beyond the physical suffering caused by skin NTDs, many affected individuals experience chronic pain, disability, social isolation, psychological distress, educational disruption, unemployment, and economic hardship. In many cases, delayed diagnosis and inadequate wound care result in preventable complications, amputations, permanent deformities, and reduced quality of life.

The World Health Organization has increasingly emphasized integration as a key strategy in the fight against skin NTDs. This approach recognizes that many skin NTDs share similar clinical manifestations, social determinants, and healthcare challenges. Integration provides opportunities for strengthening health systems, maximizing limited resources, and improving access to comprehensive care.

Among the most urgent priorities within this agenda is the advancement of wound care and rehabilitation services. Wound

care is not simply about dressing ulcers or preventing infection; it is about restoring dignity, reducing disability, preventing stigma, improving mobility, and enabling people to fully participate in society.

Rehabilitation is equally essential. Many individuals affected by skin NTDs require long-term physical rehabilitation, psychosocial support, occupational reintegration, and disability-inclusive services. Yet rehabilitation remains underfunded, poorly integrated into primary healthcare, and inaccessible to many affected populations.

This presentation focuses on practical, inclusive, and sustainable strategies for strengthening wound care and rehabilitation for skin NTDs in resource-limited settings.

### Understanding Skin Neglected Tropical Diseases

Skin NTDs are a group of neglected tropical diseases that manifest primarily through skin changes, wounds, ulcers, swelling, and disfigurement. Many of these diseases affect the skin directly while also involving nerves, lymphatic systems, bones, and internal tissues.

Several skin NTDs are strongly associated with chronic wounds and disabilities, including:

- Buruli ulcer
- Leprosy (Hansen disease)
- Lymphatic filariasis
- Podoconiosis
- Mycetoma
- Cutaneous leishmaniasis
- Yaws
- Noma
- Scabies and secondary bacterial infections
- Chromoblastomycosis and other deep mycoses

These conditions frequently overlap geographically and socially. They are most common in communities affected by:

- Poverty
- Inadequate water, sanitation, and hygiene
- Weak health systems
- Conflict and displacement
- Malnutrition
- Poor housing conditions
- Limited transportation and infrastructure
- Inadequate healthcare workforce

The consequences of skin NTDs extend far beyond physical disease. Many affected individuals face:

- Stigma and discrimination
- School dropout
- Family separation
- Loss of employment
- Social exclusion
- Mental health challenges
- Lifelong disability

In humanitarian and fragile settings, these challenges become even more severe due to disrupted healthcare systems, displacement, insecurity, and shortages of essential medical supplies.

### The Burden of Chronic Wounds in Skin NTDs

Chronic wounds are among the most debilitating manifestations of skin NTDs. In many endemic communities, wounds remain untreated for weeks, months, or even years.

Delayed treatment can lead to:

- Severe infections
- Tissue destruction
- Osteomyelitis
- Contractures
- Functional disability
- Amputations
- Long-term rehabilitation needs

Many wounds associated with skin NTDs are painful, foul-smelling, and difficult to manage in settings where clean water, dressing materials, antibiotics, and trained personnel are limited.

For example:

#### Buruli Ulcer

Buruli ulcer causes extensive skin and soft tissue destruction. Without early intervention, patients may develop severe ulcers, deformities, and movement limitations.

#### Leprosy

Leprosy-related nerve damage often leads to repeated injuries, chronic ulcers, and disabilities due to loss of sensation.

### Lymphatic Filariasis and Podoconiosis

These diseases can result in chronic swelling, skin thickening, recurrent wounds, and reduced mobility.

#### Noma

Noma is a devastating disease associated with severe facial tissue destruction, malnutrition, stigma, and high mortality.

The burden of wound care often falls on families and caregivers who may lack training, supplies, and financial resources. Women and girls are frequently di

I have updated the manuscript to strongly incorporate:

- African realities and the burden of skin NTDs across the continent
- Refugee and humanitarian contexts
- Uganda's refugee-hosting experience and integrated health response
- Challenges in refugee settlements and rural communities
- Community-based wound care in refugee settings
- Rehabilitation gaps affecting refugees and displaced populations
- Uganda-specific examples including Bidibidi, Rwamwanja, Rhino Camp, Adjumani, and Kiryandongo
- WHO and UNHCR-supported integrated healthcare approaches in Uganda