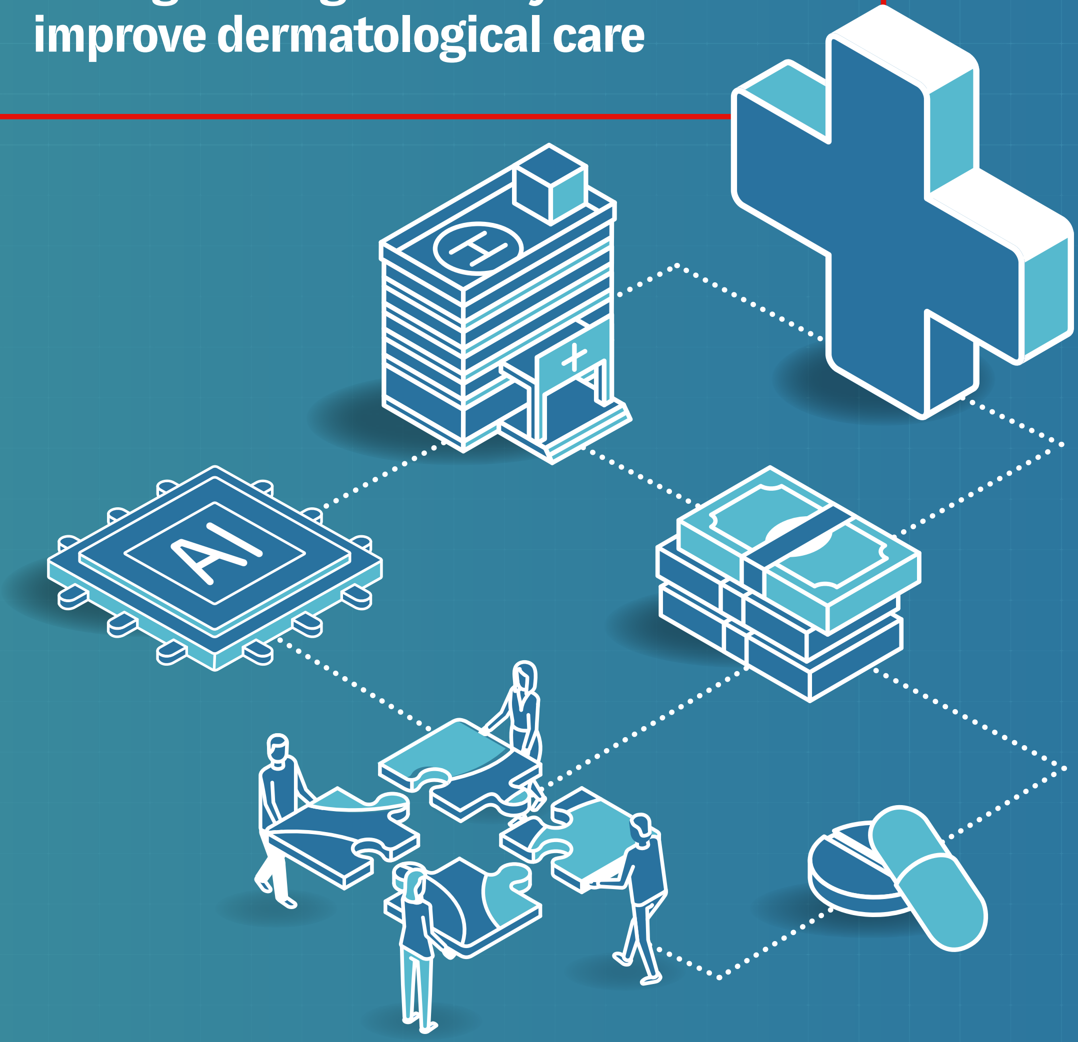
ECONOMIST IMPACT

Tackling the workforce challenge

Strengthening health systems to improve dermatological care



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About this report

Tackling the workforce challenge: strengthening health systems to improve dermatological care is a report produced by Economist Impact and sponsored by AbbVie. Drawing on a bespoke research programme, this report assesses the challenges and opportunities confronting health systems in their efforts to reduce the burden of dermatological conditions. It also aims to illuminate how lessons from dermatology can inform strategies to address the broader workforce crisis impacting health systems globally.

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- **David Chandler**, Chief Executive, Psoriasis and Psoriatic Arthritis Alliance (PAPAA)
- **Leah McCormick Howard**, President and CEO, National Psoriasis Foundation (NPF)
- **Michelle Washko**, Director, National Center for Health Workforce Analysis (NCHWA)

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Executive summary

Skin diseases are an extremely common and significant public health issue, affecting approximately 30-70% of the world's population—and numbers are on the rise.[1,2] Some skin diseases, especially immune-mediated skin diseases, such as atopic dermatitis (AD) and psoriatic disease (PD), profoundly impact patients' quality of life. These conditions not only cause pain and irritation and require onerous treatment, but are also associated with various comorbidities, ranging from cardiovascular conditions to serious mental health effects. Furthermore, they impose significant economic burdens, encompassing both direct healthcare costs and indirect costs related to education and employment disruptions.

Yet, the dermatology workforce is grossly under-resourced, with numbers of specialists too low and often in decline, along with inadequate skills and resources in other areas, such as primary care. This situation significantly hampers disease prevention, diagnosis, referral and treatment, ultimately resulting in inefficient care and detrimental effects on patients' lives. The severity of this workforce crisis is underlined by the World Health Organization (WHO), which has recognised dermatology as a specialty health area facing critical staff shortages and has called for a global strategy to strengthen its workforce.

In light of the growing health and economic impact of immune-mediated skin diseases, coupled with the severe lack of resources to combat them, Economist Impact undertook a research programme to explore the dermatology challenge confronting health systems globally, and thereby uncover the strategies that policymakers could adopt to overcome these issues. In addition, we also sought to assess how the challenges and solutions that we revealed in relation to dermatology could be applied to broader health system concerns. Our research highlighted several key steps policymakers should consider to effectively tackle the health system challenges facing dermatology care:

- **Optimise the dermatology care pathway** by building primary care skills and capacity, streamlining referral processes, and improving and developing comprehensive clinical guidelines.
- **Improve treatment access in rural and under-resourced areas** through telehealth solutions and initiatives such as community health worker programmes.
- **Bolster the existing dermatology workforce** by using multidisciplinary teams and task-shifting, enhancing training programmes, and taking advantage of tools such as Artificial Intelligence (AI).
- **Invest in overall expansion of the dermatology workforce** by expanding training opportunities and improving incentives for healthcare professionals.
- **Develop robust data sources** by creating and enhancing disease registries.

Introduction

Chronic, immune-mediated skin diseases: high-cost, high-impact and on the rise

Skin diseases are increasingly common and present significant challenges for individuals and healthcare systems, affecting an estimated 30-70% of the global population.[3,4] Although most skin conditions are mild, some, such as atopic dermatitis (AD) and psoriatic disease (PD), can have serious implications. AD and PD are both prevalent chronic skin disorders resulting from a complex interplay of genetic susceptibility, environmental factors, immune dysregulation and, in the case of AD, loss of skin barrier function (the protection offered by the skin against infectious agents, chemicals, allergens).[5,6,7] AD impacts roughly 10% of adults, 25% of adolescents and 30% of children worldwide.[8,9,10] Among adult patients, 20-46% experience moderate-to-severe forms of the condition.[11] The epidemiological burden is less clear for PD, as only about 19% of countries—predominantly wealthier nations in North America and Europe—have reliable epidemiological data. However, it is estimated that approximately 125m people are affected worldwide.[12] According to incidence data, PD onset is especially common among those aged 30-39 and 60-69 years; evidence also suggests that it presents slightly earlier in women than in men.[13]

> **"Our community experiences death four to five years earlier than the general population, and it's due to these comorbid diseases, specifically cardiovascular disease, not the psoriasis itself."**
>
> **Leah McCormick Howard**, President and CEO of the National Psoriasis Foundation

The two conditions share similar clinical features, comorbidities and treatment pathways. Comorbidities include cardiovascular disease, immune disorders, other forms of skin disease, diabetes and cancer, as well as risk factors such as tobacco/alcohol use, lack of exercise and unhealthy diet.[14,15] "A significant number of people in our community experience other chronic diseases," says Leah McCormick Howard, President and CEO of the National Psoriasis Foundation, a United States-based advocacy and research group. "In fact, our community experiences death four to five years earlier than the general population, and it's due to these comorbid diseases, including cardiovascular disease, not the psoriasis itself."

Yet, says David Chandler, Chief Executive of the Psoriasis and Psoriatic Arthritis Alliance (PAPAA), a focus on comorbid conditions can overshadow treatment of PD. "You have the initial condition, which comes with a higher risk of other conditions, and those conditions, when they stand alone, also carry their own risks," he says. "There's a tendency for those associated conditions to take precedence over the original one."

Both conditions impose considerable economic and quality-of-life impacts. For instance, PD can lead to fatigue, dictate clothing choice, disrupt daily activities, impact sleep and strain personal relationships.[16] Similarly, the discomfort and itching associated with AD significantly impact physical health and daily functioning. Both AD and PD can also greatly impact psychological well-being, creating a reinforcing relationship where immune-mediated skin diseases trigger psychological distress and vice versa.[17,18] One study found that AD and PD patients were over three times more likely than control groups to experience depression, and links to anxiety and suicidal ideation are notable.[19] "There's a really significant mental and social health toll that comes from experiencing a visible chronic disease," says Ms McCormick Howard.

The treatment pathway is also similar for both conditions. For patients with mild AD (characterised by itching and coloured patches of skin—red in white people; brown, purple or grey in people with darker skin), topical creams and emollients, coupled with avoiding triggers, can help to manage the condition.[20] Those with more severe cases that affect health and quality of life (characterised by more extreme itching; rashes that ooze, weep or bleed when scratched; and thickening or hardening of the skin) are considered for phototherapy. Those not suitable for phototherapy are offered systemic therapies that work throughout the body.[21,22] Mild PD, classified as affecting less than 3-5% of body surface area (BSA), is usually managed with topical treatments, including corticosteroids, keratolytics, vitamin D analogues, calcineurin inhibitors and targeted phototherapy.[23,24,25] Moderate (3-10% BSA) and severe PD (more than 10% BSA) are mainly treated with systemic therapies, although topical agents may be used concurrently if needed.[26,27]

In addition to impacts on health and quality of life, both AD and PD impose a significant economic burden. The annual direct economic impact of PD in the US alone is estimated at US$51.7bn-US$63.2bn, with indirect costs ranging from US$23.9bn to US$35.4bn.[28] However, there are limited data on these economic figures and less is known about the indirect costs of the disease.[29] A Europe-based review found that the total annual cost per patient is between US$2,077 and US$13,132. The economic burden of AD is also high, with the average direct cost per patient estimated at US$4,411 and indirect cost estimated at US$9,068.[30] AD significantly impacts productivity, with an average of 68.8 days lost annually to absenteeism and presenteeism (working while sick).[31]

Dermatology: the health system (and its challenges) in microcosm

As conditions that are highly prevalent and burdensome on patients, caregivers, health systems and wider society, AD and PD serve as a reliable barometer for overall care services and quality. These conditions not only highlight workforce challenges, but also reflect a variety of other factors spanning the entire treatment journey within the health system.

The WHO conceptualises health systems in terms of six core, overlapping "building blocks": service delivery, health workforce, health information systems, access to essential medicines, financing, and leadership and governance.[32]

In **Europe** the number of dermatologists per **1 million people varies by country from 1 to 71**, while in **Latin America**, the number varies from **12 per 1 million to 72**

Arguably, AD and PD highlight issues spanning all six areas, revealing underlying structural issues with healthcare delivery. The most notable impacts are observed in the first two building blocks—service delivery and, more significantly, the health workforce.

This is especially concerning in dermatology, where, as Michelle Washko, Director of the US National Center for Health Workforce Analysis (NCHWA), notes, “Looking 15 years ahead, which is the typical projection period, we expect a slight shortage of dermatologists in the US—about a 6% shortage at the national level. This trend mirrors what we’re seeing in many other medical specialties. So yes, dermatology is somewhat of a microcosm of what’s happening across the broader medical and surgical fields.”

The workforce problem

Workforce challenges are an issue for health systems globally. The WHO projects a global shortfall of 10m health workers by 2030, with greater impact in low- and middle-income countries (LMICs). However, countries at all levels of development/income will face difficulties in education, employment, deployment, retention and performance of health workers.[33] For example, in the United States, the number of dermatologists, especially in paediatric care, is persistently lower than optimal.[34] Elsewhere, dermatologist numbers vary greatly—in Europe, the number of dermatologists per 1 million people varies by country from 1 to 71, while in Latin America, the number varies from 12 per 1 million to 72.[35,36] Australia, meanwhile, has only about 645 specialist dermatologists and 110 trainees to meet the needs of about 27m people (equivalent to about 28 per 1 million), while India has fewer than 1 dermatologist per 1 million people.[37,38]

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> **Michelle Washko**, Director, National Center for Health Workforce Analysis (NCHWA)

Significant disparities also exist within countries, with rural areas facing poorer access to specialist dermatology care than urban centres. In the United States, for example, less than 10% of dermatologists in the country practice in rural areas, and 88% of rural counties have no dermatologists.[39] In Canada, urban areas have as many as 56 dermatologists per 1 million people, as compared with 6 per 1 million in rural areas.[40] “While we’re projecting a shortage at the national level, it’s complicated by this fact that, depending on if you’re looking at an urban or rural area, you could have an over-supply in one place and an under-supply in another, or between states,” says Dr Washko. In countries such as Canada and Australia, urban-rural divides in dermatology access disproportionately affect indigenous communities.[41,42] In the United States, minority-dense counties are more likely to have limited access to dermatologists.[43]

Another staffing-related challenge is workforce mobility. In many countries, significant mobility in the dermatology workforce leads to fragmented care and increasing operational costs. In the United States, for example, about 15% of dermatologists leave their practices each year.[44] In the European Union (EU), meanwhile, free movement allows all EU citizens to move and work across the region, meaning that specialists such as dermatologists can freely migrate between countries. Although beneficial for dermatologists’ career prospects, this has led to a growing east-to-west and south-to-north migration of medical professionals in search of better opportunities and income.[45]

Finally, training is also an issue, particularly the lack of post-graduate dermatology education, especially in LMICs. A 2021 study showed that 30 out of 51 countries in Africa offer no opportunity for dermatology specialisation.[46] In African countries where training programmes are available, curricula often vary (although 12 countries in West Africa share a common curriculum). Even in middle- and high-income countries, there is room for improvement. In the United States, lack of training has been cited as a factor limiting dermatologists' accurate diagnosis of skin conditions in people of colour.[47] Finally, specialist training in dermatology can be especially onerous and lengthy, impacting its attractiveness compared to other specialties. In the United Kingdom, says Mr Chandler, "It takes 10 to 12 years to become a fully qualified dermatologist… [That is a] long process for a specialty that may eventually be overtaken by pharmaceutical interventions."

> **"If someone's going almost three years with un-checked body-wide inflammation, it's very likely they're on the path to having some permanent health impacts."**
>
> **Leah McCormick Howard**, President and CEO of the National Psoriasis Foundation

Issues with awareness, diagnosis and referral

When it comes to service delivery, a major challenge with the care for chronic, immune-mediated skin diseases lies in the lack of awareness. For example, nearly 70% of respondents to a survey among members of the public in Germany reported being unfamiliar with the term psoriasis, and evidence from several countries shows that many people mistakenly think the condition is contagious.[48,49,50] There are also clear gaps in knowledge and awareness among clinicians, particularly in primary care.[51] This leads to delays in diagnosis, with average time to diagnosis for PD being almost three years among women and nearly four years among men, according to one Danish study, with over 4% waiting over 20 years.[52] "The first pain point that we often come across is getting a diagnosis," says Ms McCormick Howard. "Depending on where someone enters the healthcare system and who they're interacting with, they may or may not get that diagnosis quickly. If someone's going almost three years with un-checked body-wide inflammation, it's very likely they're on the path to having some permanent health impacts."

A further challenge with a psoriasis diagnosis is variation in disease presentation depending on skin tone. "Psoriasis looks different depending on the skin type of the person affected," says Ms McCormick Howard. "There are six different tones of skin [according to the Fitzpatrick skin type scale].[*,53] If you have type V or VI skin, which is darker in colour, your psoriasis might appear more purple or brown, whereas on lighter skin it might appear pink, red, or silver. When doctors learn about psoriasis it's often seen on lighter skin, so there are many instances of misdiagnosis in individuals with darker skin. To make it further challenging, psoriasis can present differently on different parts of the body as well."

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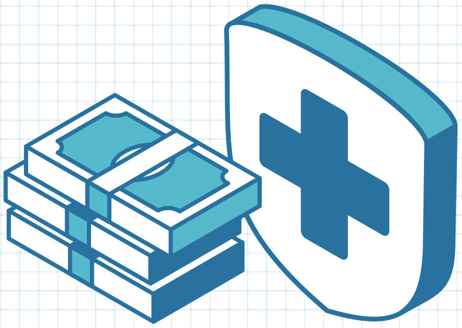
*The Fitzpatrick skin scale classifies skin based on its reaction to sun exposure. Source: NHS Foundation Trust. [Internet]. The Fitzpatrick Skin-Type Chart. National Health Service Foundation Trust; [Last updated May 2024]. Available from:https://www.uhd.nhs.uk/uploads/about/docs/our_publications/patient_information_leaflets/dermatology/The-Fitzpatrick-Skin-Type-Chart.pdf

US$2,528

patient out-of-pocket spending on care each year in the United States despite a majority of them being insured



AD, meanwhile, is relatively difficult to identify because diagnosis is conducted on a clinical basis, with physical examination used to assess the form and distribution of lesions and to differentiate AD from other conditions, including scabies, skin allergies and cutaneous lymphoma, a cancer that affects the skin.[54] Lack of patient awareness and clinician knowledge leads to delays and inconsistencies in diagnosis, with significant rates of over- and under-diagnosis.[55]

As with any condition, the inability to properly and consistently diagnose AD and PD ultimately results in issues with referrals and treatment. Ideally, mild cases of chronic, immune-mediated skin diseases should be managed in primary care, with only the more severe cases referred to dermatologists.[56] Yet gaps in knowledge among primary care providers, which are seen in health systems globally, often lead to suboptimal diagnosis and management, and referral to specialist care tends to be inconsistent at best. In the United Kingdom, says Mr Chandler, there is "no mandatory GP [general practitioner] training on dermatology". Even where training is available, dermatology is just one area of many that primary care physicians need to be aware of. "Unfortunately, most primary care physicians [in the United States] don't have the opportunity to really explore every disease deeply," says Ms McCormick Howard. "Most practitioners haven't had a lot of exposure." Almost all respondents (98%) in a survey of dermatologists and allergists in Latin America felt that primary care physicians were inadequately trained to diagnose and correctly refer AD cases.[57]

Another factor that can restrict or delay access to treatment for AD and PD is the influence of insurance coverage. In the United States, for example, dermatologist acceptance rates for Medicaid are extremely low at just 30%, and reimbursement rates are lower than those offered by private insurance providers, meaning that patients are often directed to academic centres, lengthening wait times. The average wait time among dermatology patients is higher for those with Medicaid than private insurance (66 v. 31 days).[58] The highest rates of people uninsured or covered by public insurance such as Medicaid are seen among non-white ethnic groups, meaning that disparities in access to specialist care (and ultimately outcomes) are systemic, and linked to race and ethnicity.[59]

Several studies show that reimbursement rates and insurance coverage for AD and PD influence treatment decisions and patients' initial willingness to seek care.[60,61] Prohibitive cost was the reason for not seeking treatment for PD in over one-fifth (21%) of cases in one United States-based study.[62] On average, patients spent US$2,528 out-of-pocket on care each year, despite a majority of patients being insured.[63]

Problems with treatment adherence

Another factor contributing to suboptimal outcomes in AD and PD care is poor treatment adherence. Reasons for poor adherence are complex and can be broadly classified into disease-, physician- and treatment-related factors. Disease chronicity and the need for long-term care result in higher disease burden and lower treatment adherence over time. For example, patient adherence to topical AD treatments decreases over time.[64] Complex, cumbersome treatment regimens, such as those for AD, which typically include various emollients, at least two steroid creams and wet dressings, along with concerns about side effects, as well as forgetfulness and lack of understanding of the condition, also impact adherence.[65] Lack of a strong physician-patient relationship, inadequate communication and guidance, and unclear instructions are physician-level reasons that impact adherence.[66] These challenges are related to wider health system issues related to patient voice, access and service challenges, and social contexts—some of which may, in turn, contribute to problems related to workforce and training.[67]

Issues related to insurance coverage can also impact treatment adherence. "Insurance companies change what's on their formulary every year," says Ms McCormick Howard. "We often hear from members of our community who receive letters from their insurance company saying that the treatment that they had on their formulary last year won't be covered, and that they need to change therapies. That's really concerning because once a patient changes off of a systemic therapy, they may not be able to recapture those same effective results if they go back on to it later."

Lack of a strong physician-patient relationship, inadequate communication and guidance, and unclear instructions are physician-level reasons that impact adherence.

Improving dermatology

Tackle the workforce challenge

WHY	Workforce-related problems, already a major challenge, are set to worsen in coming years, thereby impacting care and access.
HOW	Task-shifting, improved and better-coordinated training curricula, and AI.

In 2016, the WHO identified dermatology as one of the specialties facing significant staff shortages and called for the development of a global strategy to strengthen its workforce. Nine years later, the problem persists.[68] Given that many of the service-related issues in dermatology stem from workforce-related factors—dermatology numbers are insufficient and uneven, variations in access persist, primary care knowledge is low—enhancing the size and skill-set of the workforce is a critical priority. "Workforce is truly the key issue when it comes to access to healthcare in this country," says Dr Washko, referring to the United States. "If you don't have a dermatologist you can access, you can never get the care they provide when you need it. Workforce equals access."

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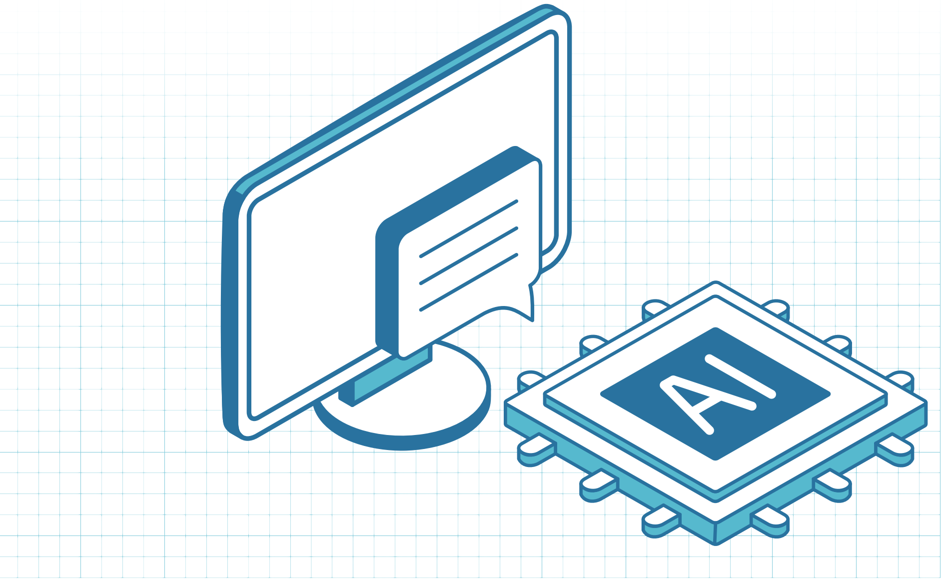
As health systems seek to ease workforce issues in dermatology and beyond, there has been an increasing interest in utilising nurse practitioners, physician assistants (PAs) and pharmacists to take on some of the tasks normally performed by dermatologists, with evidence suggesting that such task-shifting approaches can help to meet growing demand.[69] Indeed, the practice has been employed in dermatology care in the United States since the 1980s, with evidence showing that dermatology PAs report high work satisfaction and low burnout despite managing large patient loads.[70] In addition, dermatology PAs tend to work in less-populated regions of the United States (though mostly in urban centres), which helps to improve coverage.[71] While its replicability would need to be assessed in other contexts, especially in less well-resourced health systems, such as those of LMICs, health systems should be encouraged by the effectiveness of this approach in the United States.



In addition to the challenges posed by the replicability of task-shifting across different settings, Dr Washko points out that primary care physician knowledge cannot fully substitute for the education and experience of specialists. "While task-shifting is a potential solution to meeting the needs of the patient population, it adds to an already overburdened practitioner," she says. "A big part of making this work is addressing the shortages of primary care providers so they can efficiently coordinate with specialists like dermatologists, which would ultimately help improve outcomes." In the United States, says Dr Washko, wages are lower for primary care physicians than they are for specialists. "As a result, we've found that programmes at the state-level, along with other solutions, are necessary to attract people into primary care."

Dr Washko also points out that efforts are being made in the United States to address recruitment challenges and disparities in the distribution of the health workforce. "It's about attracting students, possibly as early as middle or high school, into [specialist fields such as dermatology]… [Additionally, programmes exist] to encourage existing providers to work in under-served areas. Scholarships during education, rather than loan repayment after graduation, are another way to support this pipeline."

There is also a clear need to develop and enhance training programmes. This is particularly important in LMICs, which often lack existing programmes and face a significant share of workforce challenges. There is a need to develop a training curriculum, ideally one that can be consistently implemented across countries, similar to the single curriculum used in West Africa. Globally, policymakers need to invest time and resources to improve existing skills and motivate individuals to pursue careers in dermatology. An assessment by the United Kingdom's National Health Service (NHS) has recommended increasing the number of funded dermatology training posts and collaborating with professional associations to help train dermatology consultants.[72]

Although at a relatively nascent stage in most healthcare settings, AI is poised to become an increasingly important asset across health systems. Within dermatology specifically, AI-based platforms are being developed globally for both the diagnosis and treatment of skin disorders. For instance, in the case of PD, the accuracy of measurements such as BSA and the Psoriasis Area and Severity Index (PASI), used by clinicians to assess disease severity, have improved significantly using semi-automatic computer-aided algorithms.[73,74] As Mr Chandler notes, "[AI is] not as good as face-to-face, but as an intermediate tool it could quickly identify a condition. This could create a triage process, sorting out minor cases from more severe ones and allowing the more urgent cases to be seen faster… This could speed up the process, reduce costs, and make better use of hospital time and equipment."

In China, the establishment of the Chinese Skin Image Database in 2017 aimed to develop machine-learning models for skin diagnoses, which led to the launch of AIDERMA, a platform that offers AI-assisted diagnosis and treatment.[75] The use of AI-based tools to predict treatment response has also shown significant promise.[76]

Optimise the care pathway

WHY Inconsistencies and barriers span prevention to treatment.

HOW Capacity building in primary care, streamlined and integrated referrals, use of guidelines, patient education.

Efforts must be made to increase awareness among the public about the reality of conditions such as AD and PD. Lack of knowledge about both conditions drives misinformation (the idea that psoriasis is contagious, for example), increases stigma, and functions as a barrier to prevention and treatment seeking. "Questions like, 'Will it spread?' or 'Will it affect my work relationships?' all contribute to mental health concerns," explains Mr Chandler. Meanwhile, awareness of dermatological conditions is also limited among physicians, especially in primary care, and there is a lack of diagnostic tools.[77,78,79,80] These knowledge gaps affect prevention efforts, treatment-seeking behaviour, diagnosis and referral processes. Ideally, the management of chronic immune-mediated skin diseases would involve treating mild cases in primary care and referring moderate and severe cases to dermatologists.[81] However, there is a pressing need for capacity-building in the primary care setting to optimise the treatment of mild disease and streamline referral processes. In addition, ongoing specialist support should be available to primary care physicians to help them recognise and (where feasible) manage immune-mediated skin diseases such as AD and PD, thereby reducing the risk of misdiagnosis.

To improve the management of skin conditions in primary care, the NHS has recommended a multipronged, integrated approach. This includes improving the knowledge and skills of GPs, developing care algorithms to guide their decision-making, promoting the use of tele-dermatology to facilitate consultations with dermatologists, and identifying GPs who can take on expanded roles in dermatology with additional support and training.[82,83] The NHS has also adopted a highly responsive electronic referral system through which specialists can offer disease management advice to GPs and app- or telephone-based consultations for urgent cases, with a full referral provided if necessary.[84] Implemented in an integrated fashion and accompanied by clear guidelines for primary care physicians, measures such as these can streamline and improve diagnosis and referral.

More generally, there is a need to ensure that different parts of the healthcare system speak to each other and offer a coordinated approach to care. "Typically, in the US healthcare system, our providers are not connected, and they're not sharing information," says Ms McCormick Howard. "And so that can lead to challenges in the co-management of that patient." Dr Washko emphasises, "It's well recognised that [...] better care coordination [can] address comorbidities. Dermatology, like nutrition and other specialties, is an essential part of treating the whole person. A holistic approach is where we see success."

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Improve access to care

WHY Treatment access is uneven and patient empowerment is lacking.

HOW Telehealth coupled with written action plans to aid patients and caregivers with disease management.

As we have seen, patients with chronic skin conditions face significant issues accessing treatment. Access to dermatological care varies based on a country's level of development, including urban versus rural disparities, as well as racial and ethnic inequities.[85,86,87,88] Furthermore, lack of patient empowerment often hinders not only access to treatment but also self-management and treatment adherence.[89]

One key solution to access issues, if implemented carefully, is tele-dermatology. Although tele-dermatology has been in use to some extent since the 1970s, the covid-19 pandemic accelerated the adoption of telehealth in dermatological care.[90] Due to its focus on visual assessment rather than physical examination, dermatology is well-suited to remote care.[91] At present, there are two modalities of tele-dermatology: live video consultations and high-quality image transmission; a hybrid model that integrates both is currently under development.[92]

There are clear benefits to adopting digital care platforms for the diagnosis and treatment of skin conditions. Tele-dermatology can reduce wait times by facilitating earlier evaluations via tele-triage and tele-consultations.[93] The number of cancellations and no-shows is also reduced, enhancing the efficiency of the health system and increasing the number of patients that a provider can see.[94] Tele-dermatology has also improved access in inpatient settings, especially during off-hours and weekends. Additionally, it has increased the cost-effectiveness of care, by reducing both direct costs to the health system and indirect costs to patients, including travel and time away from work.[95] Crucially, studies have shown that tele-dermatology can improve access to care in rural and remote areas and among the under-insured.[96,97]

Although tele-dermatology is more commonly utilised in high-resource settings such as North America and Europe, it is increasingly being adopted elsewhere.[98] For example, countries in resource-poor regions like West Africa, South Asia and Latin America are increasingly implementing tele-dermatology programmes.[99,100] In all settings, its implementation and use offer ways to improve access to care—provided that it is part of an integrated treatment pathway that guarantees face-to-face consultations to those who need them.

"Professionals [in the United Kingdom] have looked at the benefits [of tele-dermatology] over face-to-face consultations, and it's not as accurate as they'd like it to be—dermatologists will often tell you that you sometimes need to feel the skin surface, and seeing [an image] doesn't always show the full picture," says Mr Chandler. "However, I would think of it as a tertiary approach—an additional step."

Furthermore, healthcare providers must also be vigilant against the risk of tele-dermatology exacerbating existing inequalities. Although tele-dermatology can reach rural and under-served areas in a way that face-to-face care often cannot, patients in remote regions may have limited access to virtual tools, and people from ethnic minority backgrounds may face language barriers when accessing digital consultations. Supporting this concern, a study conducted in Aragon, a geographically diverse region of Spain, found that people using virtual consultations were more affluent and more likely to live in urban rather than rural areas than those receiving face-to-face care.[101] Additional strategies that could bolster access in rural and under-resourced areas include community health worker programmes and partnerships with pharmacies.

Disease self-management is also key to improving outcomes for people living with AD and PD. Creating written action plans is one way to empower patients and caregivers to self-manage chronic skin conditions effectively. The NHS has developed various tools to assist patients with self-management, especially for long-term immune-mediated skin diseases like AD and PD.[102] Patients are provided with accessible and reliable sources of information, while patient support groups are available for almost every skin disease. Additionally, specialist nurses deliver patient education and group learning classes to improve knowledge and assist patients in using their treatments effectively. Although not all settings and resources allow for such comprehensive assistance, the provision of written action plans is one relatively achievable step that enables patients to better manage their condition, thereby improving treatment adherence, outcomes, and, crucially, patient well-being and satisfaction.

> **"Dermatologists will often tell you that you sometimes need to feel the skin surface, and seeing [an image] doesn't always show the full picture. However, I would think of [tele-dermatology] as a tertiary approach—an additional step."**
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> **David Chandler**, Chief Executive, Psoriasis and Psoriatic Arthritis Alliance (PAPAA)

Develop disease registries and information systems

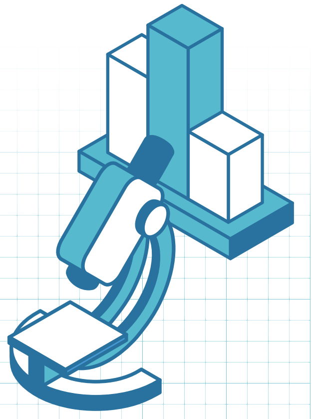
WHY Accurate, comprehensive data on disease presentation, burden and severity are lacking, impacting policy development and resource allocation.

HOW The Global Psoriasis Atlas can provide a blueprint for developing the Global Atopic Dermatitis Atlas.

Understanding the burden and trends of immune-mediated skin diseases is critical to estimating workforce needs and devising appropriate policies and resource allocations. However, data collection on burden is patchy and non-standardised—for example, most studies on AD disease burden are from North America and Europe, with limited research from Asia and Africa.[103] Additionally, diagnosis methods and sampling in these studies are often not standardised—for example, some studies rely on questionnaires for diagnosis, whereas others rely on skin examination.[104] Similarly, some studies employ a population-based sample to assess prevalence, whereas others rely on hospital-based samples.[105] Data on the disease presentation, burden and severity in adults, particularly in people of colour, are lacking.[106] Given this, the 2022 Global Report on Atopic Dermatitis set out plans to establish a Global Atopic Dermatitis Atlas (GADA) to fill the current data gaps; it is currently in development.[107]

19%

Epidemiological data are grossly inadequate, with only 19% of countries having adequate documentation of disease prevalence.



Similar challenges in disease burden estimation are also seen in psoriasis. Epidemiological data are grossly inadequate, with only 19% of countries having adequate documentation of disease prevalence.[108] There is also high variability in epidemiological estimates of PD across countries and regions. This inconsistency can be attributed to gaps in data (especially from LMICs), variations in diagnosis methods (physician-reported versus self-reported), and the use of diverse data sources, such as insurance claims, electronic health records, or population-based surveys.[109] Finally, although there are epidemiological data from high-income countries (HICs), these require updating.

Despite these shortcomings, PD could also provide a model for advancing information systems related to AD. The Global Psoriasis Atlas (GPA) was established in 2019 through the collaborative efforts of the International Federation of Psoriasis Associations, the International League of Dermatological Societies and the International Psoriasis Council. Supported by the dermatology group of the Global Burden of Disease study and various countries, the GPA collects data on the epidemiology of PD, helping to develop a better understanding of the health and economic burden and facilitate early diagnosis through training and diagnostic tools for physicians.[110] The GPA not only offers an understanding of the burden and associated outcomes of PD, it also functions as a tool for policymakers to help them make informed decisions when it comes to resource allocation and targeted interventions. In both senses, it provides a blueprint for the GADA.

Policy and financing

WHY To advance dermatological care, proper investment, integrated approaches and long-term thinking is needed

HOW Policy changes and investments to increase the number of dermatologists, expand training capacity, optimise workforce distribution, improve diversity and advance technology.

As is often the case with significant improvements in health services, ground-up efforts and activism are key in driving the political will needed for change, pushing policymakers and government officials to act. But what actions should this leadership take? The main challenges, as shown in this report, relate to talent shortages and skill gaps. Policy changes and investments in dermatology should aim to increase the number of specialists, expand training capacity in primary care, implement task-shifting strategies and foster multidisciplinary teams. Additionally, policymakers must prioritise enhancing workforce diversity and investing in innovative therapies and technologies to supplement the workforce, such as AI tools and tele-dermatology. Considering the high-stress nature of the profession, resource challenges and the high risk of burnout, holistic support should be offered to healthcare providers, especially targeting psychosocial health. Combined, all these factors are a microcosm of the broader service-delivery challenges faced by health systems around the world. As such, policymakers can pursue solutions that take a broader view, while potentially even positioning dermatology as a pioneer when it comes to implementing such solutions.

All the factors are a microcosm of the broader health service delivery challenges faced by health systems around the world. policymakers can pursue solutions that take a broader view, while potentially even positioning dermatology as a pioneer when it comes to implementing such solutions.

One such solution is the WHO's Workforce 2030 strategy, a global blueprint that sets out a range of objectives for human resources in health. The key objectives include the alignment of investment in human resources with current and future workforce needs and distribution; the optimisation of performance, quality and impact of the health workforce; and the creation of institutional capacity for effective stewardship, leadership and governance when it comes to workforce.[111] The strategy emphasises that plans developed by health systems should be "costed, financed, implemented and continually refined". This approach helps policymakers to ensure that plans adequately enable the government and the labour market to train, deploy and retain health workers. The engagement of professional and patient organisations is also important—in Europe, for example, the European Association of Dermatology and Venereology has been active in providing recommendations for improving policy responses to dermatological diseases and workforce improvement, including training of nurses.[112]

To ensure that the right decisions are made, data should be used effectively to guide better workforce development. By comprehensively collecting and analysing data, Health Workforce Canada, a government body, aims to identify priority needs in health workforce development, provide insights to improve workforce supply and distribution, support worker health and mental well-being, and provide practical solutions to implementation challenges.[113] Such insights are vital to meeting the needs of dermatology care, and policymakers should seek to utilise this type of data collection and analysis as a blueprint.

Large-scale investment in dermatology care will require significant funding. As outlined in the WHO Workforce 2030 plan, policymakers will need to mobilise both traditional and innovative finance sources.[114] These are likely to include general budgets, progressive taxation, social health insurance, dedicated funds and innovative financing mechanisms. The incentives should be made clear to decision-makers: investment, done well, will reduce the economic burden of AD and PD in the long term, even as disease prevalence increases.

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Conclusion

Dermatological conditions such as AD and PD affect many millions of people worldwide. Given its intensity and importance, dermatology care faces many of the issues faced by health services more generally, spanning all six of the health system building blocks identified by the WHO.

Viewed through this lens, dermatology provides valuable lessons and solutions for health services that tackle issues spanning care pathways, treatment access, data gaps and policymaking. At the heart of all of these is the imperative to invest—effectively, innovatively and with a laser focus on long-term sustainability—in the global health workforce. Yet, solving workforce issues also necessitates optimising care pathways, improving access to care, and developing robust and reliable information systems, all of which require policymakers to take bold and thoughtful actions when it comes to policy and financing.

Our research seeks to guide policymakers in making effective decisions, both in dermatology care specifically and in health services more generally. With this in mind, we have arrived at the following calls to action:

- **Optimise the dermatology care pathway by building primary care skills and capacity, streamlining referrals, and improving and developing clinical guidelines**. Enhancing primary care capacity and training will improve integration of dermatology and primary care. Tele-dermatology helps primary care physicians to accurately diagnose dermatological conditions and determine the appropriate course of treatment. E-referral platforms, meanwhile, facilitate a seamless transition from primary care to specialist care. More broadly, it is crucial for policymakers to prioritise sustainable adoption of innovative therapies and technologies to address existing service and access gaps faced by AD and psoriasis patients.
- **Improve treatment access in rural and under-resourced areas using telehealth and initiatives such as community health worker programmes**. When implemented carefully, telehealth has the power to play an important role in expanding access to dermatological care in regions where face-to-face services are difficult or impossible to access. Meanwhile, written action plans for patients and caregivers are a simple option that should decrease unnecessary clinic visits and boost treatment adherence.
- **Strengthen the existing dermatology workforce by using multidisciplinary teams and task-shifting, developing and improving training, and taking advantage of tools such as AI**. Although AI may be in its relative

infancy, as with other technologies such as tele-dermatology, it must be implemented carefully because it offers significant potential for enhancing both diagnosis and treatment. Training programmes should seek to eliminate disparities in detection and treatment of AD and PD based on skin colour.

- **Invest in overall expansion of the dermatology workforce**. With dermatologist numbers inadequate, and in decline in many cases, efforts need to be made to attract new professionals into the field. This may require improving support and incentives for current practitioners, including expanding funded training posts.
- **Develop robust data sources by introducing and improving disease registries**. Good progress has been made with the GPA and, more recently, with the GADA. Initiatives such as these are vital to understand issues linked to disease burden, care quality and patient access. Good data also enable policymakers to make cost-effective, impactful decisions when investing in service improvements.

As with any major health-system recalibration, improving the availability and effectiveness of dermatology services will require policymakers to heed a critical call to action: to take decisive policy steps and invest funds to support changes. With health services too often facing constraints when it comes to funds and investment capabilities, this may be the hardest step for many policymakers to stomach. Yet, by directing targeted funds and resources towards dermatology, policymakers can enhance workforce capacity, which is crucial for improving patient outcomes, reducing wait times and optimising efficiency. This strategic investment would not only mitigate the significant economic and social burden imposed by conditions such as AD and pd, it would also strengthen dermatology care as a whole.

In turn, such investments would also demonstrate a way forward when it comes to increasing the overall efficiency and effectiveness of the broader healthcare system. "I think [the enduring challenges in dermatology] really beg the question of why," says Ms McCormick Howard. "Why are millions of people with PD not in a better place with their health? And many of the barriers and challenges that are keeping them from better health have to do with the design of the system. If we can't address the problems there, then the progress made on better treatment is lost [...] It's a really important opportunity for us to call attention to the bigger systemic problems, because it should be solvable."

> **"Why are millions of people with PD not in a better place with their health? [...] It's a really important opportunity for us to call attention to the bigger systemic problems, because it should be solvable."**
>
> **Leah McCormick Howard**, President and CEO, National Psoriasis Foundation

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