Team name: KpoW

Institution: Foreign Trade University,
Hanoi University of Science and Technology

Country: Vietnam

SEEK WELL

Democratizing Early Skin Cancer Detection Through AI and Community Workers

SDGs to achieve:


On a sunny day in Ninh Binh, Vietnam...

A skin cancer crisis in plain sight

VNEXPRESS
Báo tiếng Việt nhiều người xem nhất

Friday, November 15, 2024, 13:55 (GMT+7)

Skin cancer detected from black spots that appeared 10 years ago

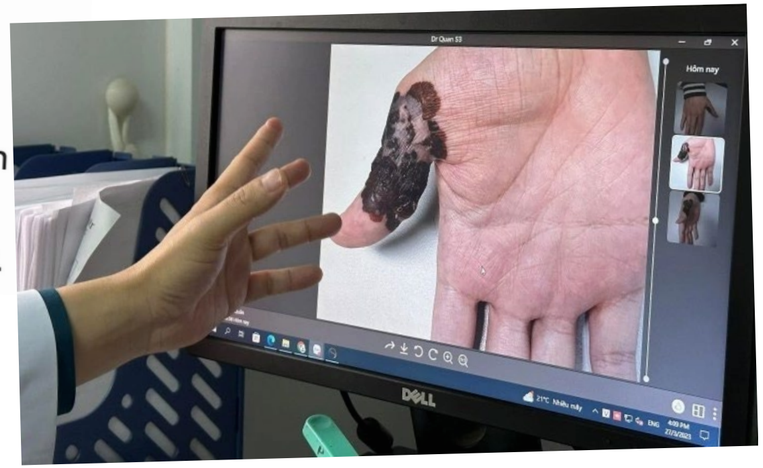
HANOI:— A 70-year-old man had a black lesion on the sole of his foot for 10 years, thought to be a mole, but it gradually increased in size, and the results showed melanoma.

VNEXPRESS
Báo tiếng Việt nhiều người xem nhất

Saturday, November 23, 2024, 05:00 (GMT+7)

The rate of Vietnamese people with skin cancer is increasing.

About 500 skin cancer patients come to the Central Dermatology Hospital for examination each year, a 50% increase compared to 5-10 years ago and with a tendency to be younger.

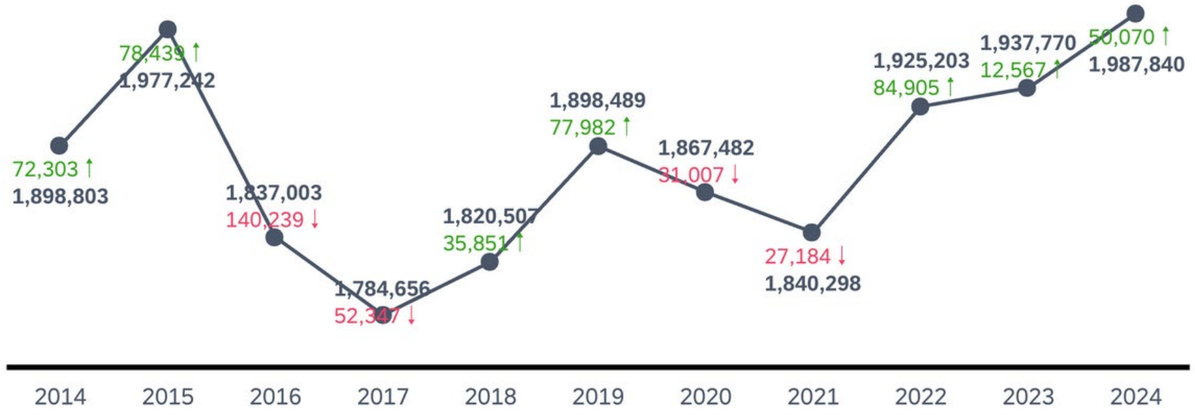


Source: vnexpress.net

But what are the root causes driving this crisis?

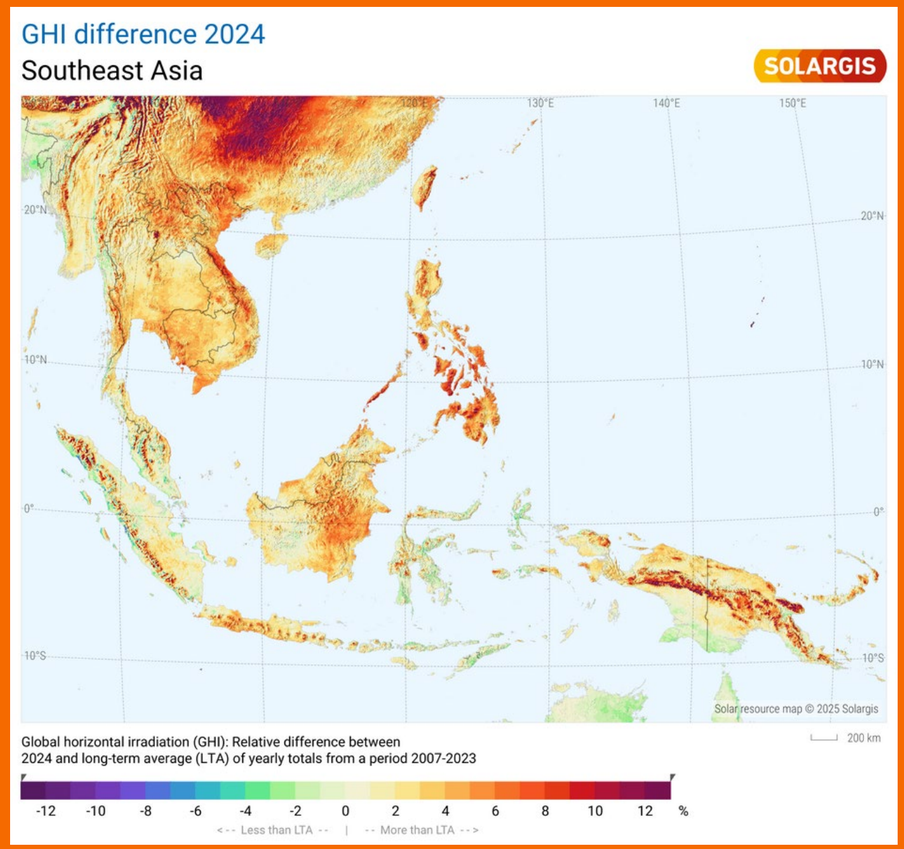
The Culprit : Our Sun is Getting Harsher

Shortwave radiation (W/m2) per year, Ho Chi Minh city



In 2024, the solar radiation on Ho Chi Minh city has reached its highest in decades. And it is still increasing, not just in a single city.

Source: open -

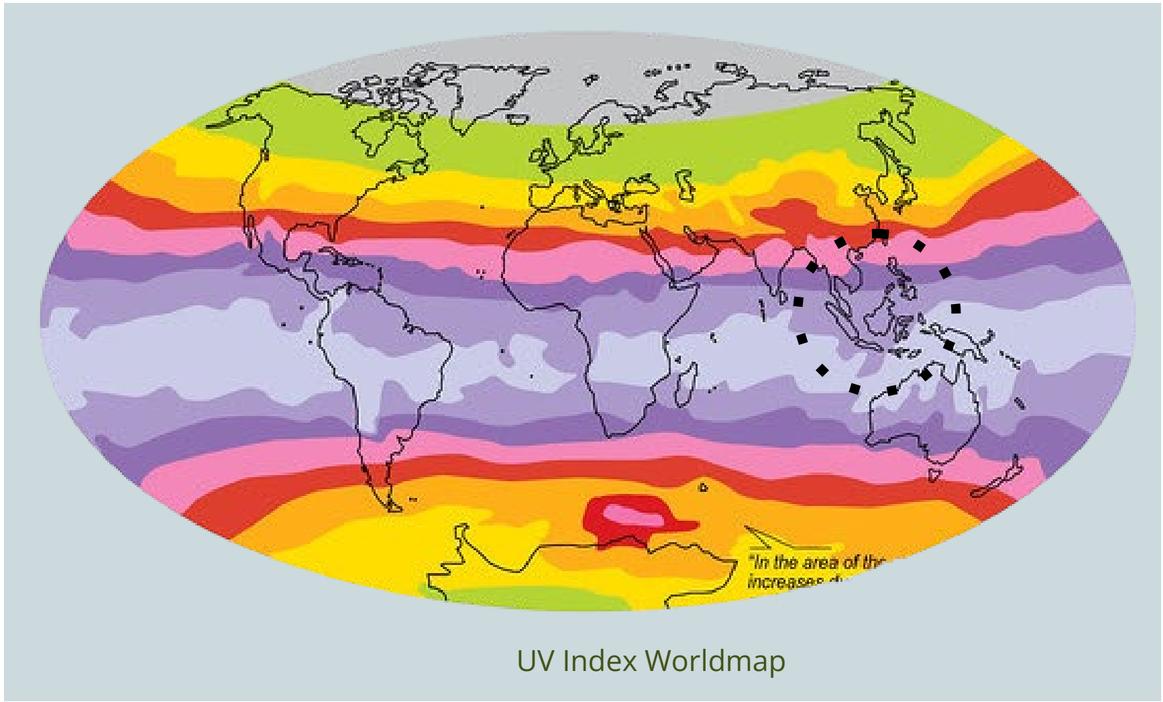


It's a regional crisis is fueled by **climate change** . In 2024, vast areas of Southeast Asia received up to 12% more solar radiation than the long-term average.

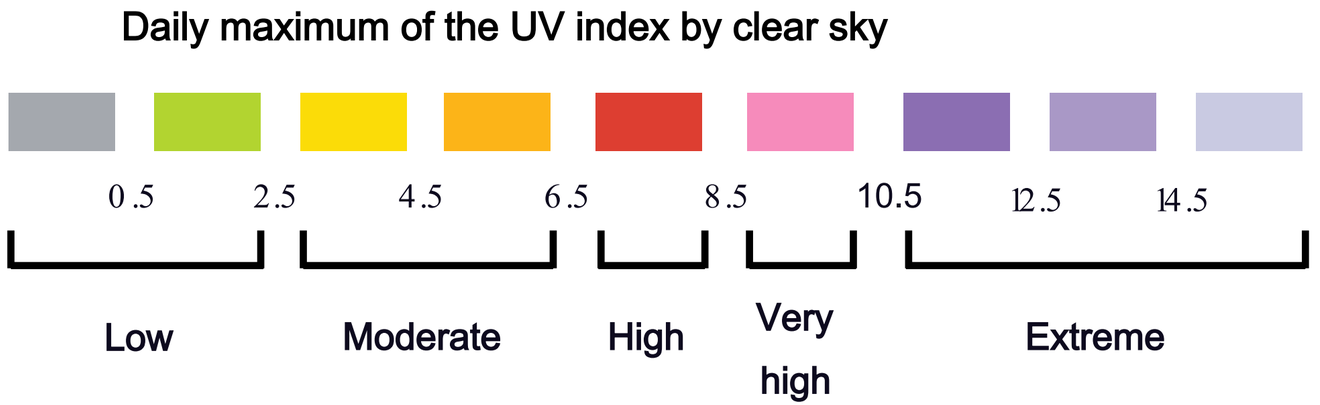
Why is UV Radiation a Critical Threat in ASEAN?

Most ASEAN countries experiece “very high” to “extreme” UV levels almost year-round.

Unlike many other regions, there is **no safe season** – exposure risk remains constant.

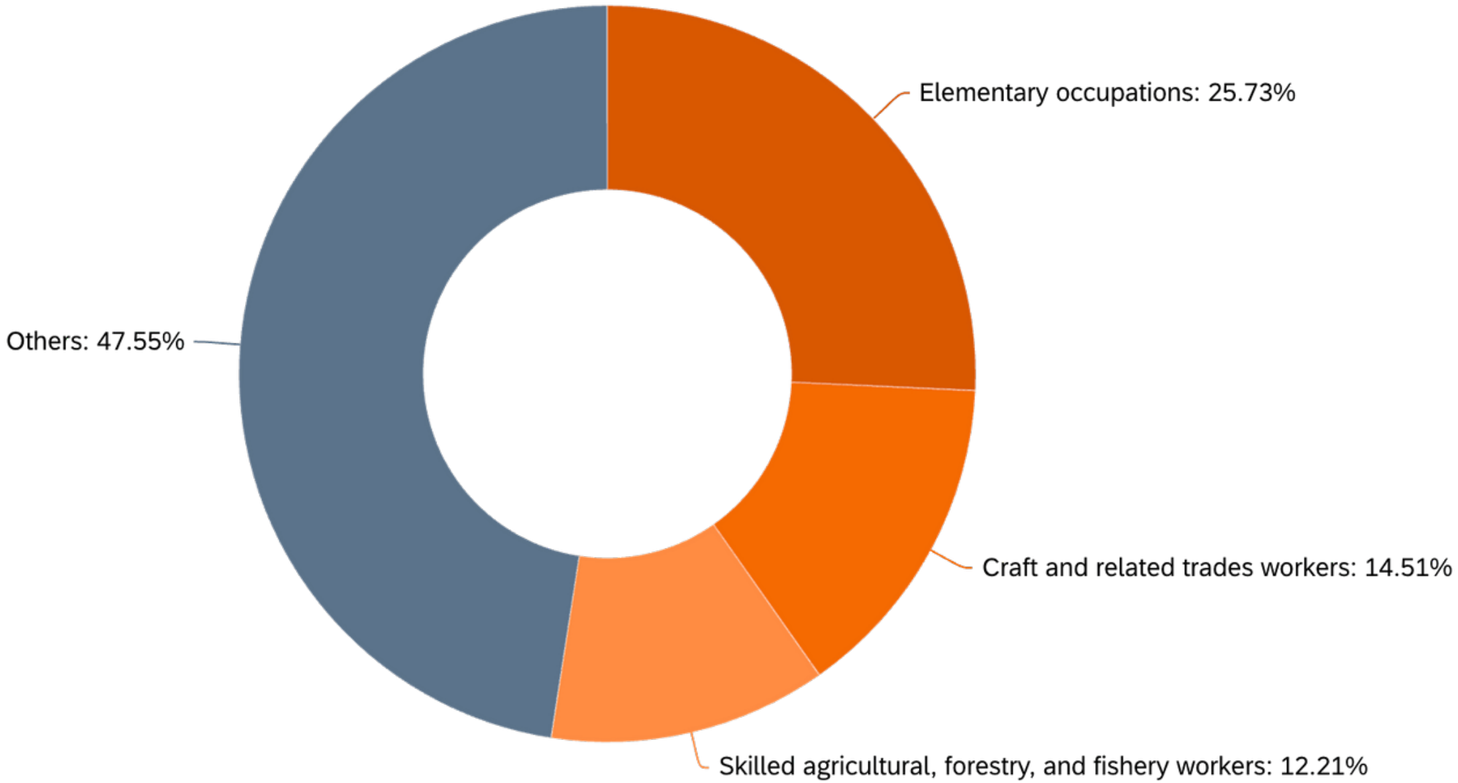


UV Index Worldmap



Data source: UV Index WorldMap | ARPANSA. (n.d.).

The Unseen Frontline
- A Nation Working Outdoors



Source: General Statistics Office of Vietnam

Ove**r HALF** of the workforce in Vietnam (> ⅓ in ASEAN) is outdoors

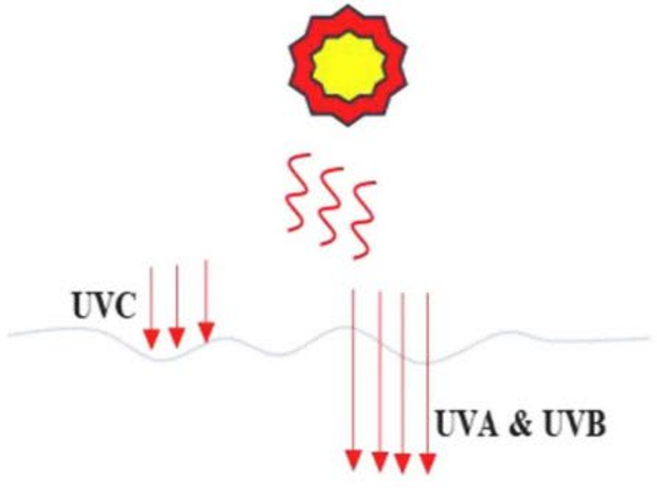
who risk being exposed to UV that causes

Ove**r 80%** of skin cancers

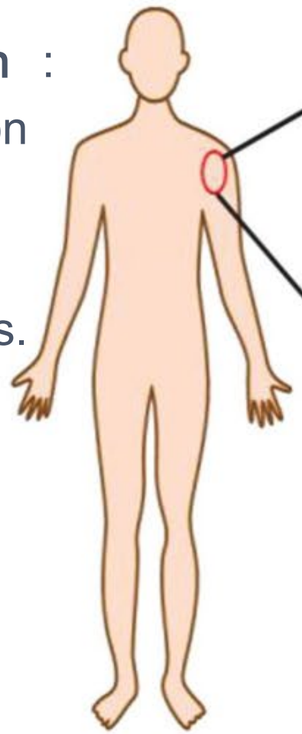
Yet, only **27%** Seek for professional help

Source: Worldwide Cancer Research, theleader.vn

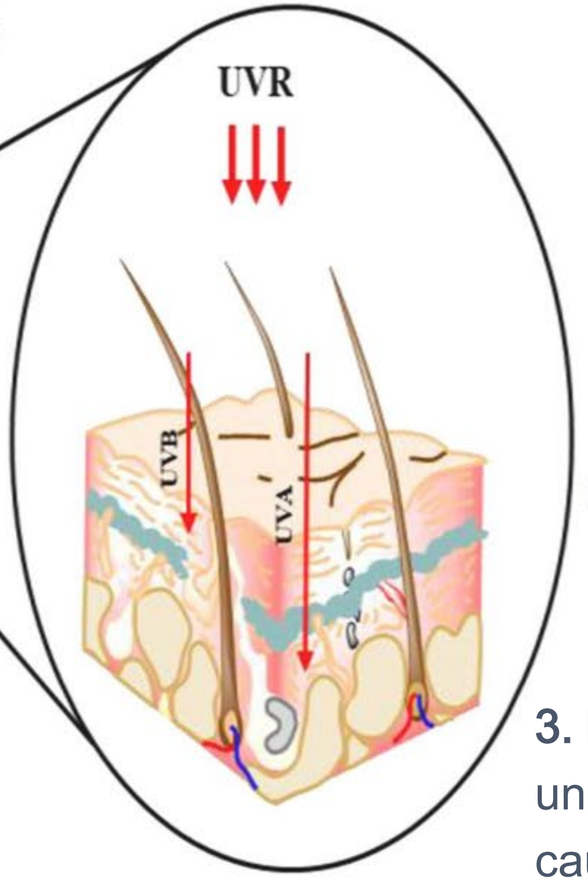
How UV Radiation Damages Skin at the Cellular Level



1. Penetration : UV radiation penetrates the skin's outer layers.



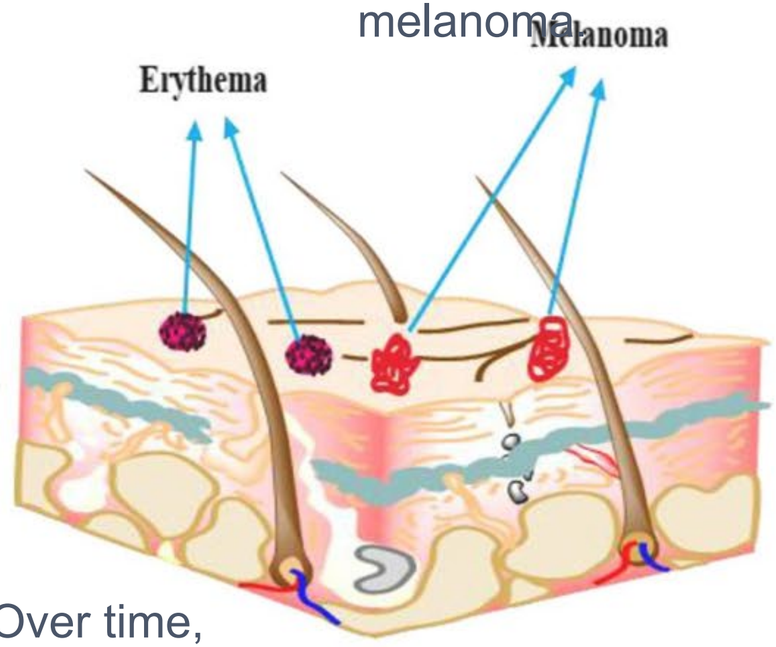
2. DNA Damage : The radiation damages the DNA within individual skin cells.



3. Mutation : Over time, unrepaired damage causes mutations that lead to uncontrolled cell growth.

Effects

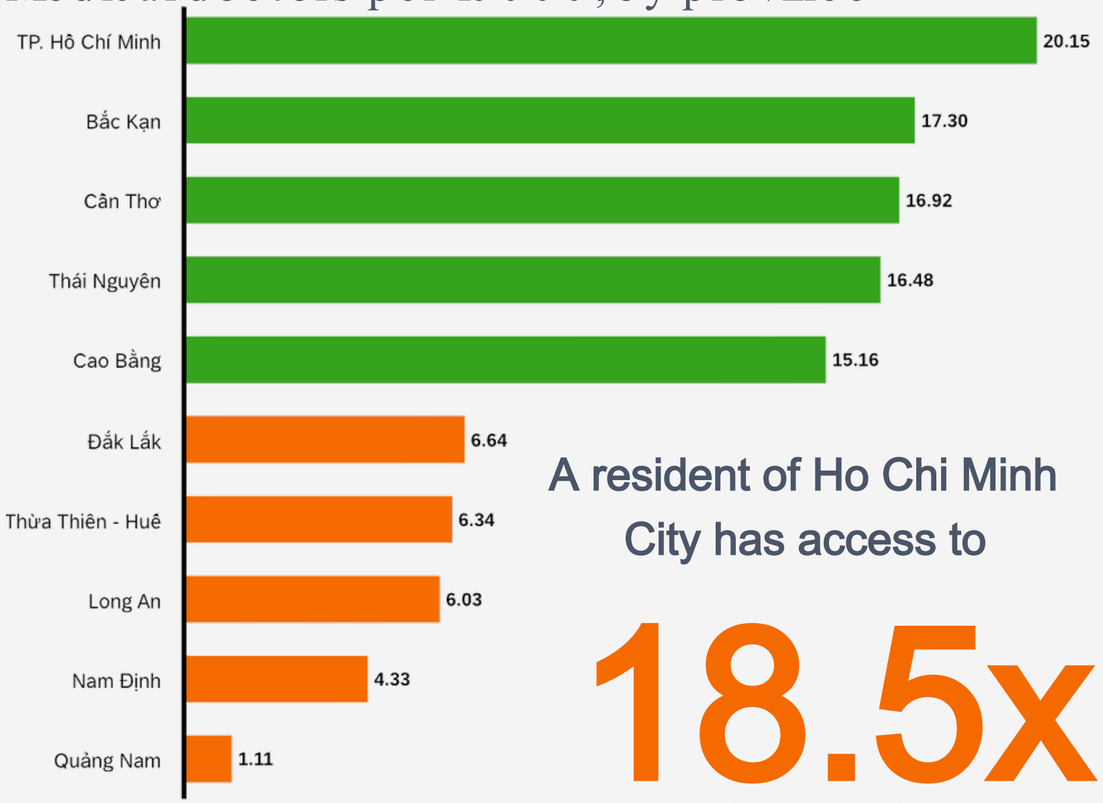
4. Cancer Formation : This rapid, uncontrolled growth forms cancerous tumors like melanoma.



Source: Saha et al., 2024
https://doi.org/10.1016/j.heliyon.2024.e40027

The Healthcare Gap - An 18- Fold Disparity

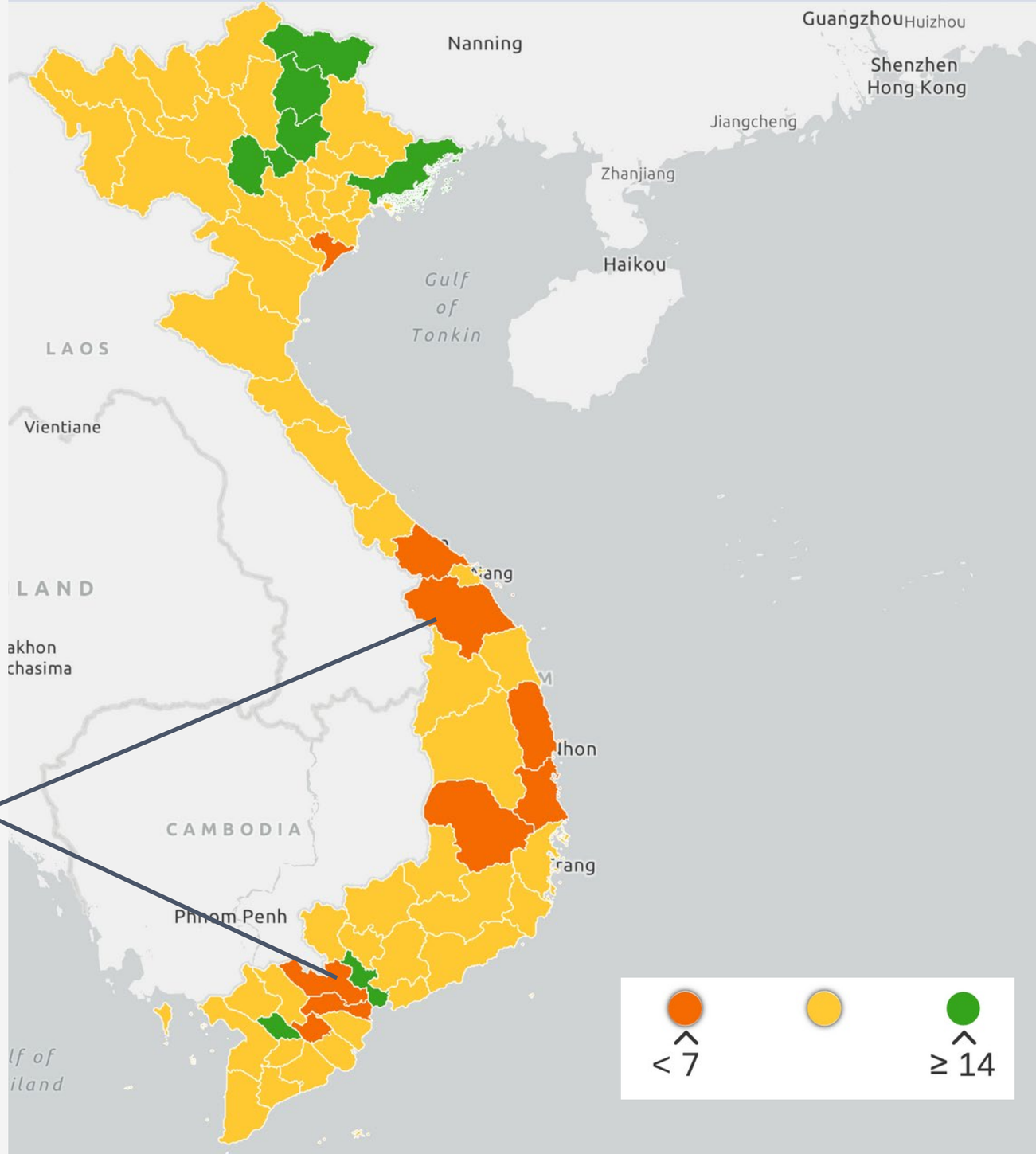
Medical doctors per 10000, by province



A resident of Ho Chi Minh City has access to

18.5x

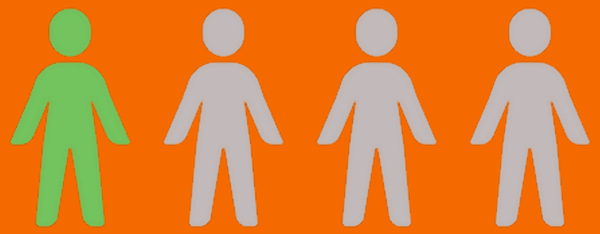
more doctors than a resident in Quang Nam.



This isn't a gap; it's a **chasm** .

Source: General Statistics Office of Vietnam

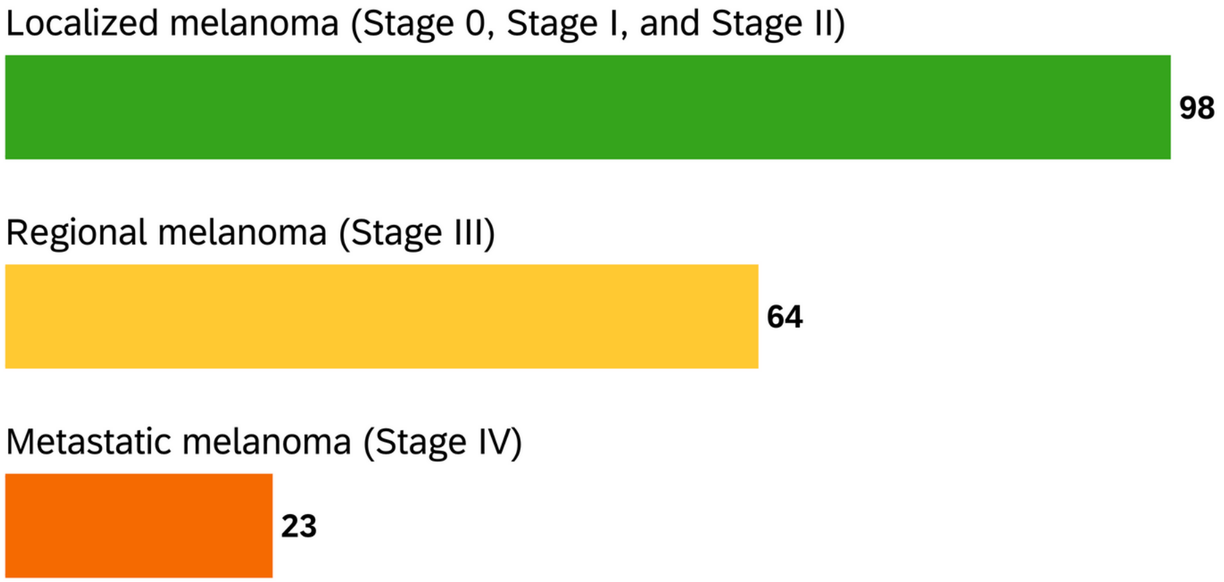
And This Chasm Has Life - or - Death Consequences



1 in 4

Metastic melanoma patients survives after **5 years** of discovery.

Survival rate of melanoma patients after 5 years of discovery, by Stage



This access gap has **life - or - death** consequences. Early, localized detection almost certainly results in survival. If diagnosis is delayed, that rate plummets by **75%.**

Source: curemelanoma.org

Our Mission

FIRST

a **harsher climate** is increasing the fundamental risk

SECOND

this disproportionately affects millions of essential **outdoor workers**

THIRD

a **severe, systemic gap** in healthcare access prevents this vulnerable population from getting timely screenings

This delay might turns a **highly survivable condition** into a **fatal one** .

The core problem we must solve is to overcome these problems to **eliminate the fatal delays**

The Spark:
From an Academic Question to an Applied Solution

My Journey began inside Hanoi University of Science and Technology

The Question at BKAI

- Focused on **high - precision** medical AI models.
- Sparked a crucial **question** : How can these AI models create practical benefit?

The Answer at AI4LIFE

- In an environment built for **applied solutions** , the concept for SeekWell was born.
- Development continued with validation & support from the institute

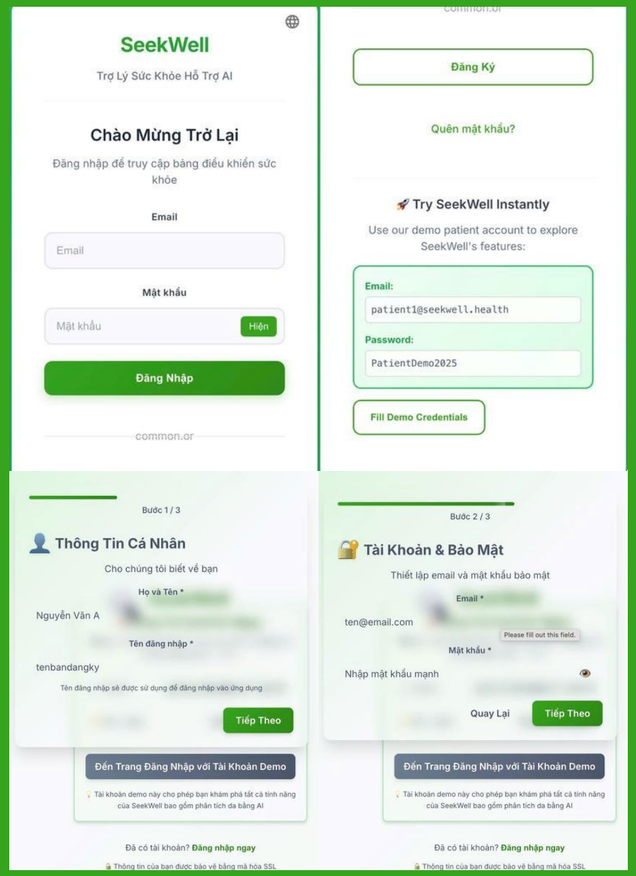
Our Solution

SEEK WELL

A seamless ecosystem from screening to care, empowering community health with AI via democratized early detection

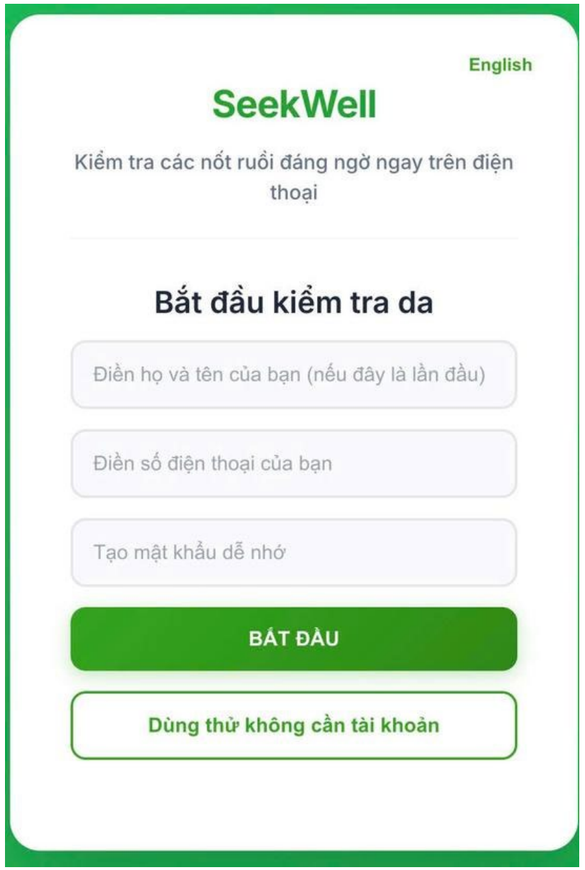
From Hypothesis to Reality: A Lesson in Empathy

Our first design failed because we didn't listen to our users. Here's what we learned:



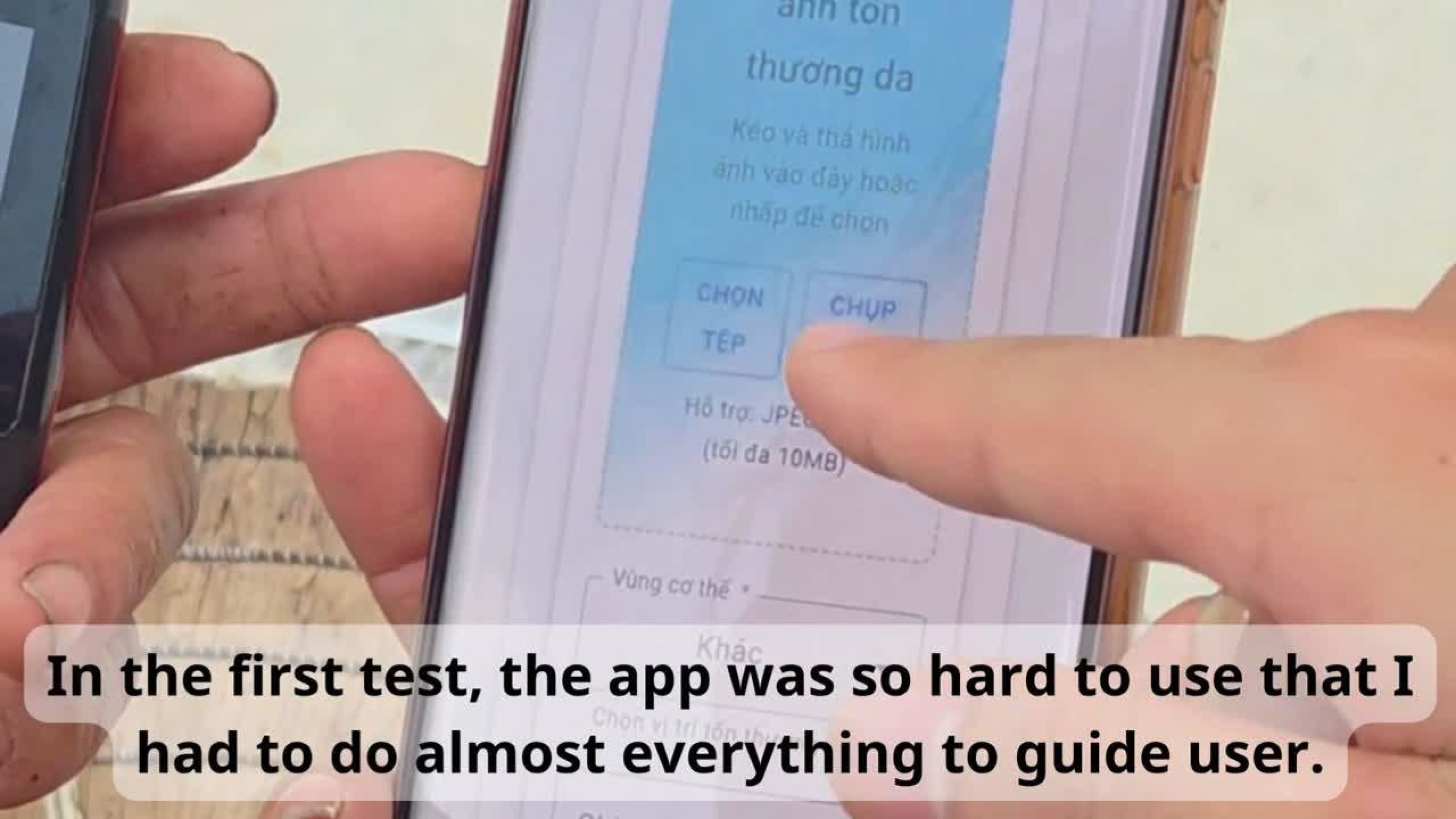
Our Assumption

- Users understand email/password logins.
- A standard tech interface is intuitive.
- More options and information are better.



The Reality

- **Trust comes from simplicity.** A phone number is a familiar identifier.
- **Clarity is kindness.** One screen, one clear action.
- **Accessibility is everything.** Simple, local language empowers users.

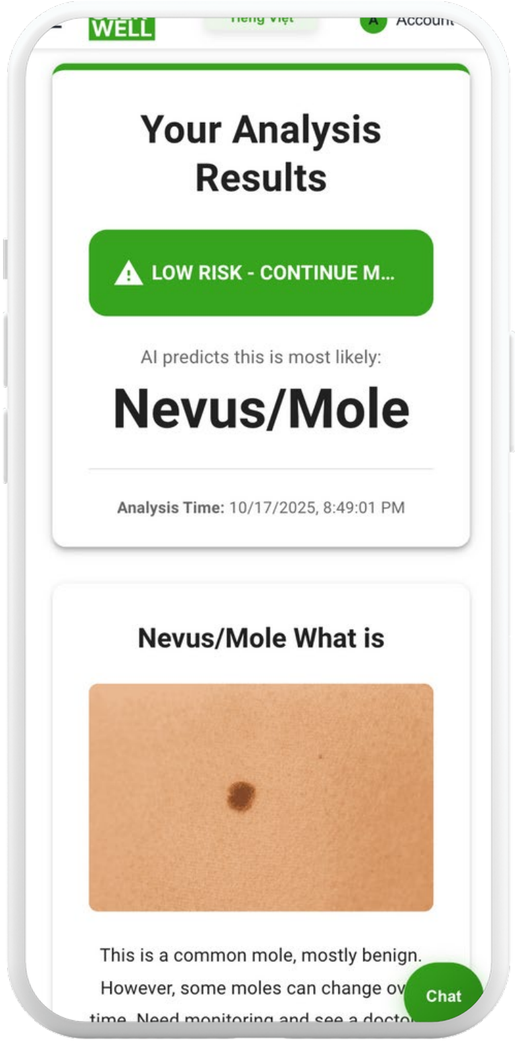


In the first test, the app was so hard to use that I had to do almost everything to guide user.

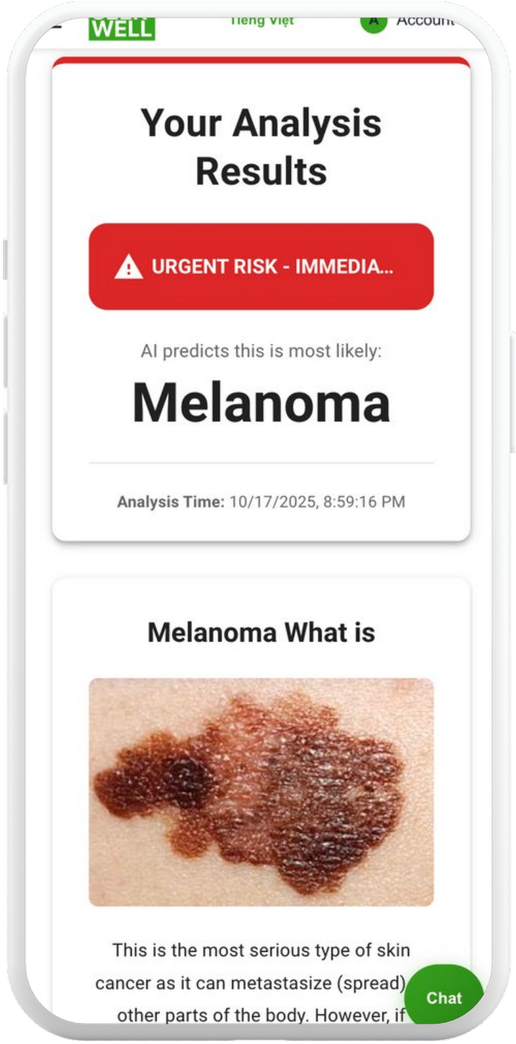
Technology in Action

SeekWell's Unique ViT AI Core

- Trained on over 10,000 dermatoscopic images
- Fine- tuned with 2,000 smartphones images of various skin types and conditions
- 70% accuracy
- Results within 10 seconds



Reduces Healthcare



Enables Early Intervention

Our Purpose: To Flag Potential Risks

- **A Screening Tool, Not a Doctor:** Its goal is to flag suspicious cases for professional review.
- **70% Triage Accuracy:** Highly effective at identifying high-risk lesions that need a doctor's attention.
- **Trained to Identify 6 Common Lesion Types, sorted by Risk:**

Urgent

MELANOMA

High

BASAL CELL CARCINOMA

SQUAMOUS CELL CARCINOMA

Medium

ACTINIC KERATOSIS

Low

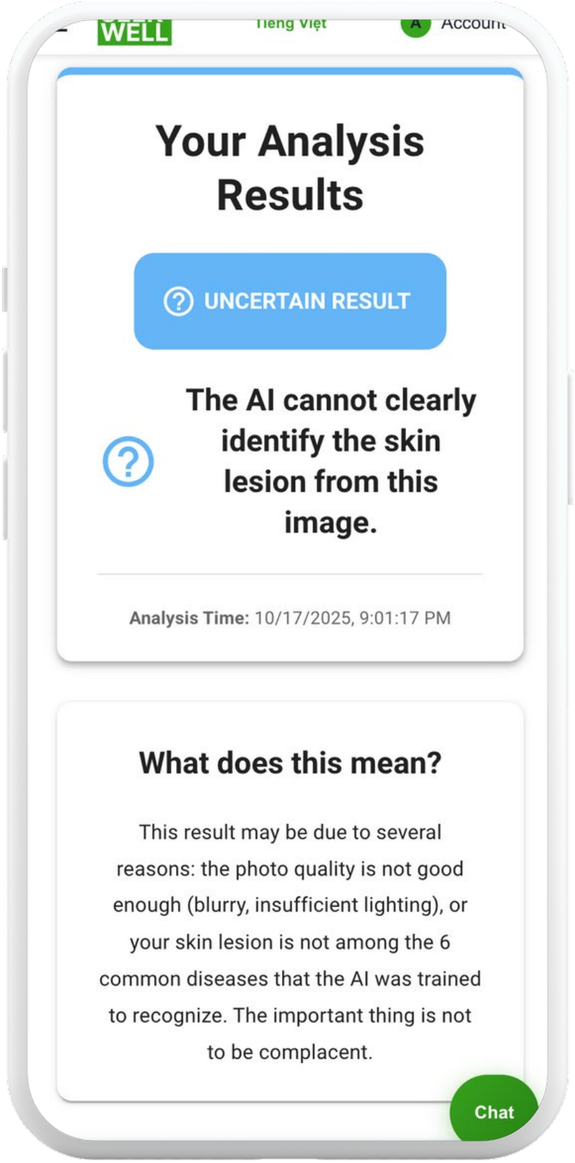
SEBORRHEIC KERATOSIS

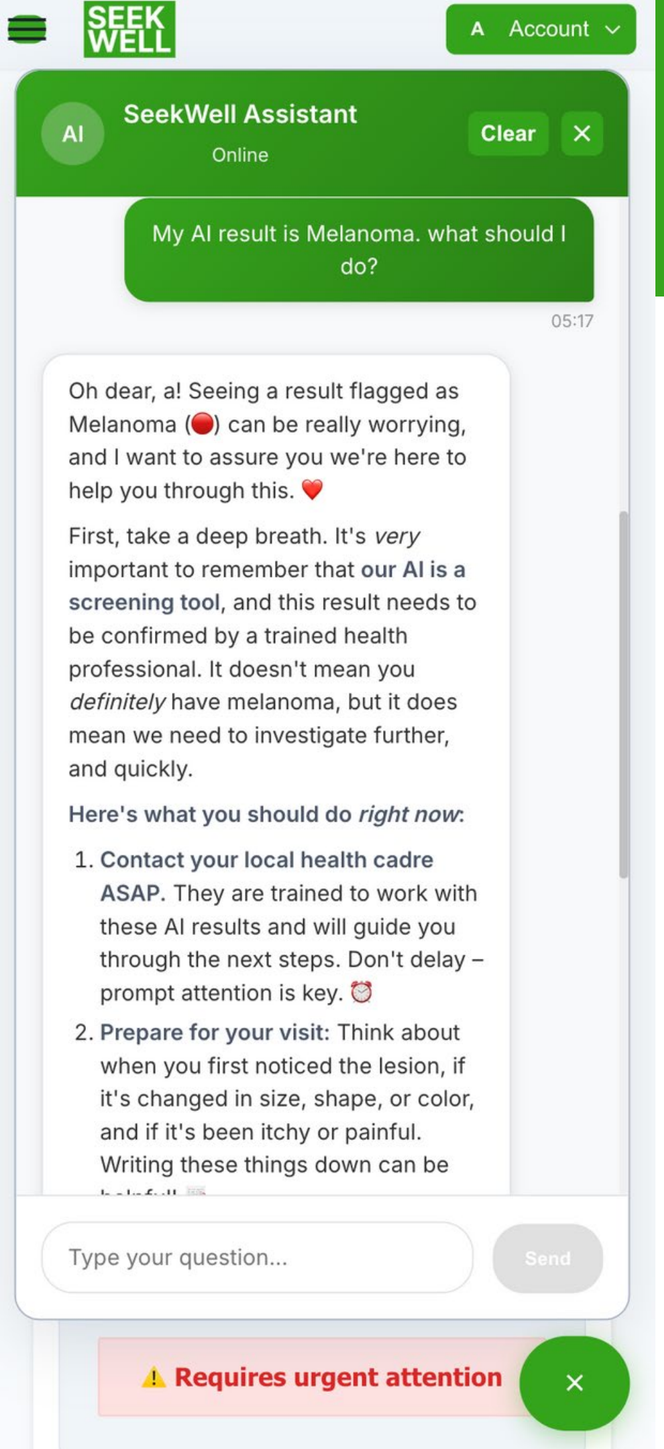
NEVUS/MOLE

Our Priority:

To Ensure User Safety

- **We Acknowledge Our Limits** : We know the AI isn't perfect, so we built in a safety net.
- **The "Uncertainty" Rule** : If the AI's confidence is **below 30%** , it **will not** show a speculative result.
- **Clear & Honest Communication** : Instead, it transparently displays an **"Uncertain Result"** and advises the user to consult a professional if they are concerned.
- **Our Guiding Principle:** *User safety is more important than algorithmic guesswork.*



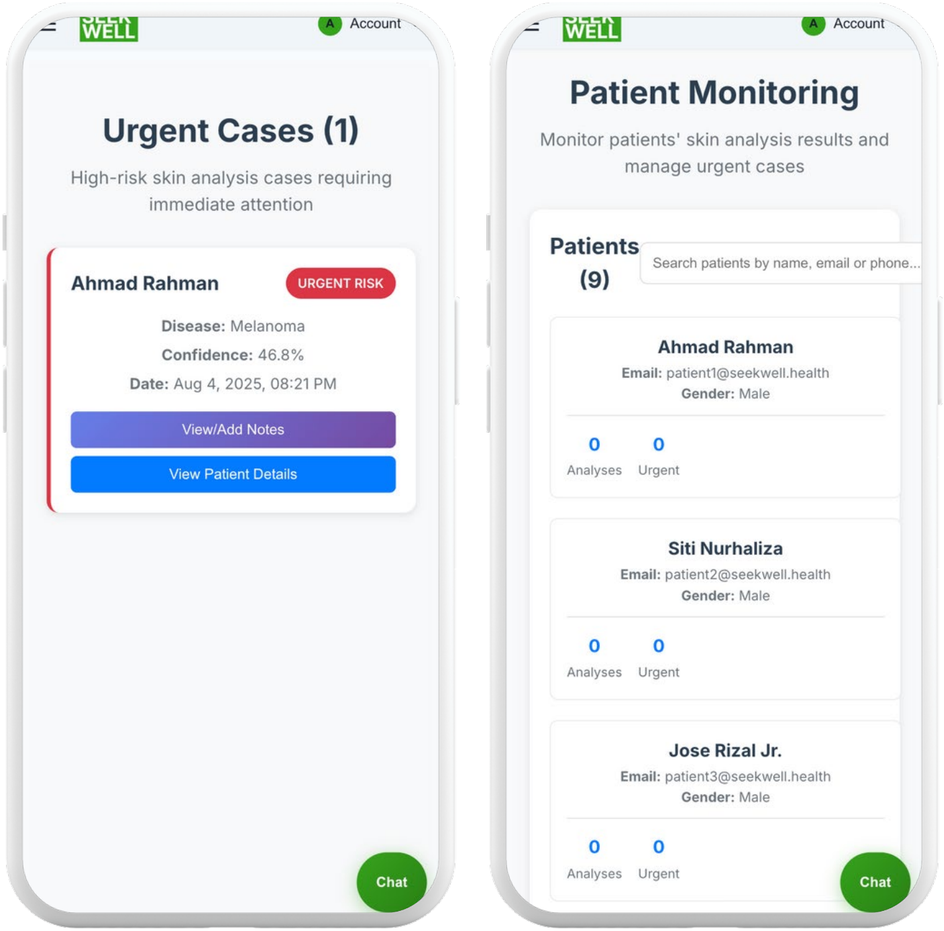


Empathetic Guidance

- **The Challenge:** An AI diagnosis can cause fear, leading to patient inaction.
- **Our Solution:** The SeekWell Assistant delivers results with empathy, empowering patients to move from anxiety to the crucial next step of getting care.
- **ASCC Alignment:** Builds an Inclusive community with equitable access (B.2) and a Caring society (E.1).

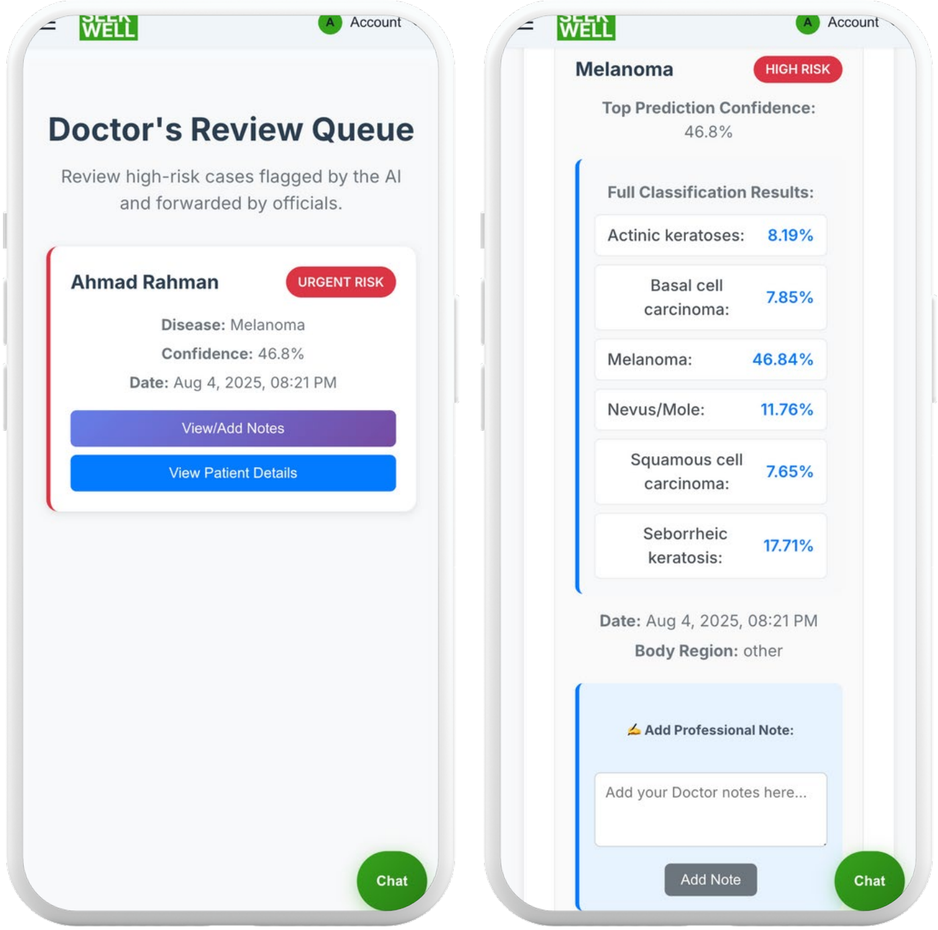
Empowering the Officials

- **AI- Powered Triage:** Dashboard has a dedicated section prioritizing high - risk patients.
- **Official's Management:** Display detailed information of the community's analyses.
- **Impact:** Directly shortens the time - to - care, the most critical factor in improving skin cancer survival rates **from 23% to 98%.**



Streamlining for the Specialist Doctor

- **Efficient Clinical Review:** Specialists receive a pre - filtered queue of the most urgent cases for immediate attention.
- **Data - Rich Referrals:** Each case includes the AI's assessment, confidence score, and notes from Patients and Officials for faster, informed decisions.



The Human Bridge:
Connecting Technology to Care

"But... How do you test a health system *without* a formal health system partnership?"

Our Solution: We Became the System

1. We acted as the first "Community Health Bridge."

- We created a small-scale pilot to prove our human-in-the-loop model works.
- We personally onboarded our initial users (our relatives in rural areas), managed the AI alerts, and provided direct follow-up support.
- We also collect feedbacks from our initial users to further improve the app and the process

First field - testing session with a pilot user in Ninh Binh province

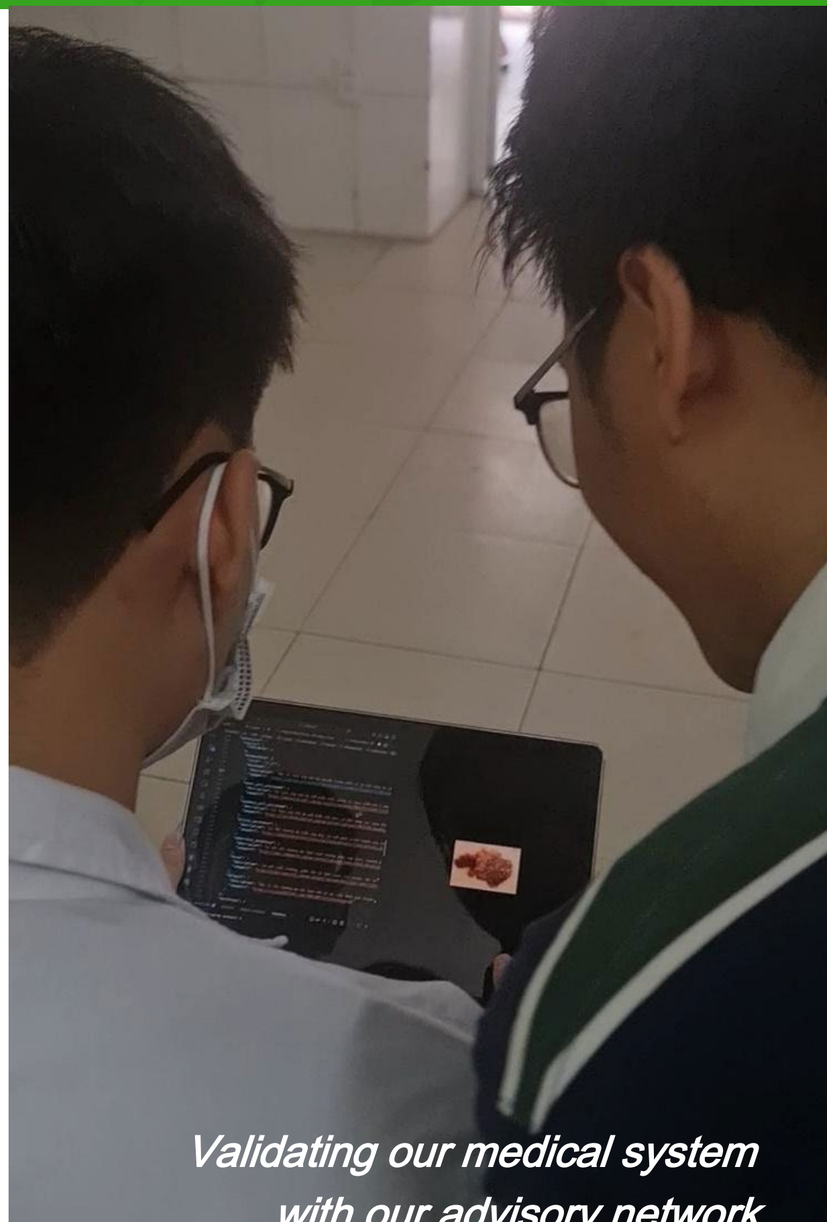
The Human Bridge:
Connecting Technology to Care

"But... How do you test a health system *without* a formal health system partnership?"

Our Solution: We Became the System

2. We built an advisory network of medical colleagues.

To ensure our medical information was sound, we collaborated with medical student friends to validate the information, the follow-up process and communication scripts.



Validating our medical system with our advisory network

The SeekWell Roadmap

	PHASE 1: PILOT & REFINE	PHASE 2: SCALE & EXPAND	PHASE 3: ASEAN & BEYOND
PLATFORM & AI	- AI feedback loop with doctors - Deploy Core Platform in Pilot Provinces - Continuously refine AI model	- Refactor for modular, multi - disease capabilities - Phased rollout to 15 more provinces across Vietnam	- "Patient Digital Twin" for longitudinal disease tracking - "Doctor Digital Twin" to augment specialist decisions
PEOPLE & PROCESS	- Onboard & train 150 local cadres - Partner with 10 provincial hospitals	- "Train the Trainer" program with trained cadres - Training hubs partner with medical universities	- Formalize AI Safety & Ethics framework in line with ASCC Blueprint - Research on AI's impact on community health in ASEAN

KPIs of Impact

10x INCREASED ACCESS

To early screening for at - risk rural populations

90 REDUCTION

In the time from initial screening to professional assessment

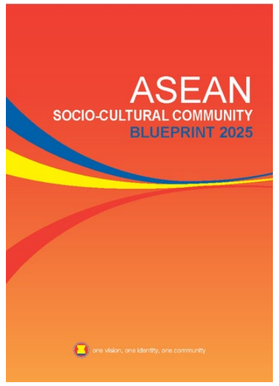
60% REDUCTION

In unnecessary specialist referrals, easing healthcare system burden

2M+ PEOPLE SERVED

Projected reach across ASEAN when the framework is scaled

SDGs and ASCC Blueprint 2025 alignment

	Reduce skin cancer deaths through early detection.		Screening access for vulnerable rural outdoor workers.	Building a tech - driven resilient health system.
SUSTAINABLE DEVELOPMENT GOALS				
	Reduce NCD deaths & promote mental health	Achieve Universal Health Coverage	Strong National and Regional Development Planning	Strengthen Resilience and Adaptive Capacity to Climate Related Disasters
	**D.2** A Safer ASEAN that is able to Respond to all Health - related Hazards including Biological, Chemical, and Radiological?nuclear, and Emerging Threats		**B.2** Equitable Access for Al Equitable access to services, resources, and opportunities for all, especially the vulnerable and marginalised, to build an inclusive and resilient ASEAN.I	**D.4** Strengthened social protection for vulnerable and marginalised groups — including women, children, the elderly, persons with disabilities, ethnic minorities, migrants, and those in climate - sensitive or remote areas — to reduce risks during climate - related crises and disasters.

SEEK WELL

Turning early detection from a privilege into a **right**

seekwell.vercel.app

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