Appendix 4

Implementation considerations to improve stability and usability, interoperability, clinical functionality and patient experiences of Dermicus.

Considerations	Interview evidence	Recommendation
Ongoing training requirements		
Health care professionals perceive that some patients have limited understanding that the image taken is received and reviewed virtually by the platform dermatologist. They also perceived than younger patients rather than older patients were more able to understand the rationale for introducing the Dermicus platform.	*"They don't really appreciate that, actually, this is a direct platform to a consultant. I don't think the patients quite understand what you're doing with the device"* [GP] *"It baffles some of my older patients when I'm like, "Mind if I take a pic?"."* [GP]	Training to staff should ensure they can communicate the new pathway effectively to all patients and sympathetically to older patients to take into consideration different levels of understanding of the rationale for Dermicus.
A reliable and resilient service needs a sufficient number of trained staff to cover annual leave or staff sickness.	*"If you only had one person trained and that person either went off sick or went on holiday, [...], need at least two people trained just for reliance and resilience"* [GP Lead]	To maintain the teledermatology pathway requires training across the GP practice workforce to ensue more than just the champion or a selected few staff are trained.
A health care professional may wish to seek feedback on an image from another clinician without necessarily making a referral to a service.	*"You might use the Dermicus platform itself for referrals in, but then you might use just the dermatoscope itself to take the pictures and get some feedback"* [Dermatology-specialist consultant]	Include information regarding the 'consensus' facility to referrers / reviewers as a standard part of their training and education.
Timing out from the Dermicus platform when inactive was frustrating.	*"If you leave the device, I don't know how long time out is, but it will then go back to entering your username and password, which is slightly frustrating"* [GP]	Include information regarding the requirement to check the setting on iPhones provided to stop the phone going to sleep so the platform does not lock as a standard part of their training and education.
The time taken to complete a referral using the Dermicus platform is longer than that required to do a two week wait referral via SystmOne due to differences in the level of information required.	*"Your SystmOne entry will pre-populate onto your referral, so that's a lot quicker [than completing a referral using Dermicus] and you can literally just see the lesion and you can let the patient go"* [GP] *"You've got to go through quite a lot of steps, and to encourage someone to use it, it would actually be easier for the person to take a picture of the mole and be done with it. Because all these questions actually don't change your opinion of whether that mole needs to be seen or not. The patient will, by and large, justify their coming through by saying, "Oh, yes, my mole has changed"* [Dermatology-specialist consultant]	Include information regarding the rationale behind increased length of time for referral completion (for richness of diagnosis), by using a process map to justify additional time, as a standard part of their training and education.
Health care professionals have received unwanted email notifications of referrals made by other clinicians within the referring GP's practice.	*"I will get notifications when my colleagues have sent ones, which is redundant"* [GP]	Include information regarding how to set up email notifications as a standard part of their training and education.

The quality of photographs is variable, affected by lack of time and/or experience of the referring health care professional.	*"One, they taken the distant view too close, [...], secondly, they get too close in"* [Dermatology-specialist consultant] *"That's just probably lack of experience by the GP taking the photograph, or maybe being rushed in clinic"* [Dermatology-specialist consultant]	Provide regular education and training sessions to staff to ensure feedback on image quality is provided, and specific training requirements can be met. This regular training should include information regarding upgrades to the Dermicus platform (e.g. AI feature which will be available in Dermicus soon to prompt if photos of poor quality).
Upgrades proposed		
Automated ticket into SystmOne to increase interoperability.	*"No record of these photos, and I've got no evidence that I've confirmed that patient's consent and so forth. I've got nothing like that on [SystmOne]"* [GP] *"An automated ticket that can then just be uploaded onto SystmOne"* [GP] Proposed to ensure that *"completing a loop"* [GP] was possible so that *"[the referrals] embedded and it's documented easily"* [GP] within the existing electronic systems.	Now possible to use IM1 pairing integration (NHS standard) so that everything is automatically stored in the GP system. System functionality can be tailored to suit the unique needs of the adopting site.
Ability to sign consent without the need to photograph the information leaflet likened to the postal service's recording of signatures using a handheld device.	*"We just haven't got a good enough with tech to be able to sign on with the open device, [...], we do it [sign electronically] for our postal service but we don't seem to be able to it with other things"* [Lighthouse Manager]	Review process of gaining consent and upgrade this process in line with infection control and information governance requirements.
Backend Dermicus interface requires improvements to increase aesthetic appeal and provide greater retrievable data and improve output reports.	*"I just don't think it looks wooshy enough, [...], unless you use it, you don't get the efficiencies of it"* [Lighthouse Manager] *"There are a lot more flashier ones out there that would look a lot better"* [Lighthouse Manager] *"My main gripe with it is actually on data"* [Dermatology-specialist consultant] *"I would like to see a better output"* [Lighthouse Manager] *"One of things that you can do, you can enter the histology into Dermicus, [...], it's completely pointless because you can't bring that information back out. There's no point in putting it in"* [Lighthouse Manager]	Development of exports can be facilitated to support the creation of graphs and more user-friendly outputs, for example development of a dashboard / portal.

Retaining the photographs in the existing electronic systems to increase interoperability in multiple ways.	*"It's [the photographs are] a great reference as well. When we're discussing the patient MDT, we've got really good photos to show the MDT"* [Dermatology-specialist consultant] *"If your Drs are doing mole mapping, you could bring the patient back in and you can have a look at the previous images and do comparisons"* [Dermatology-specialist consultant] *"Upload them onto our medical records for reference, so when I put them back in to review in two months or three months, whenever it is, to see if the lesion's changed at all"* [Dermatology-specialist nurse]	Development of integrated systems, which needs to be configured at local NHS Trust level.
Awareness of staff of alternative platforms that offer additional features not offered in Dermicus to understand, where possible, other opportunities for the development of the Dermicus teledermatology.	*"It'd be interesting to know what they're [alternative platforms] like"* [Dermatology-specialist consultant]	Decision for NHS trusts / CCGs/ practices regarding what they commission / procure considering the benefits of different teledermatology platforms.
Organisation of teledermatology		
Location and storage of the equipment needs to be accessible and numbers of dermatoscopes and phones assessed.	*"The only gripe with the device, whereby I'm obviously just going to locate it in a busy surgery, especially if someone's got it tucked somewhere"* [GP]	Decision for NHS trusts / CCGs/ practices to determine the amount of equipment required by sites, and to monitor this requirement, and whether 'skin clinics' (defined as a clinic allocated for patients with suspicious lesions from a triaging eConsult appointment) are introduced to mean a single practitioner requires equipment, so equipment can be less widely spread. This is better addressed by ensuring each practice has a site-specific plan of where to locate, charge and / or store the iPhone and dermascope for sharing.
Expand to use with other dermatological conditions.	*"Wondering about extending it obviously to rashes, […], with rashes a little bit more vague"* [GP]	Decision for NHS trusts / CCGs/ practices regarding use and what they commission / procure for other dermatological conditions.
Administration of the platform requires full time admin support to transfer data between the Dermicus platform and the local patient management system and can present risks because manually transferring information could result in errors.	*"It [the administration] is a full-time job for an admin person to do"* [Lighthouse Manager] *"The other downside is, whenever you're moving from SystmOne to another like that, we have then a risk of putting the wrong data on the wrong patient"* [Lighthouse Manager]	Decision for NHS trusts / CCGs/ practices to determine how to manage the administrative element and that this presents an additional cost to support the operation of Dermicus. To also note: The administrative process implemented in this evaluation was specific to IOW and the Lighthouse Medical LTD as the provider, and could be a unique model for this context, and require local

		adaptations to ensure the admin support is feasible to implement.
Adequate Wi-Fi access sim cards are needed and present an additional cost.	*"If you had that [internet access] problem across a larger number of GP services or reference services [providing sim cards] could be quite costly"* [Lighthouse Manager]	Decision for NHS trusts / CCGs/ practices to determine how to manage this additional related cost of Dermicus.
Pricing and cost of the Dermicus platform requires consideration by commissioners and providers.	*"Do you license it per user? Do you license it per practice? Do you log prices in per device? However you do that is really key, important"* [Lighthouse Manager]	Commissioners and providers need to be cognisant of the additional costs to run Dermicus on top of the license and infrastructure costs.
Maximising learning opportunities between GP practices to improve proficiency of Dermicus integration. For example, advanced health practitioner allocated to take photographs and complete Dermicus referral via a "skin clinic" rather than the GP completing Dermicus referral during consultation.	*"In one practice [where GP completes referral] it really doesn't work quite so well"* [GP lead] *"There may be an opportunity for sharing practice [of how Dermicus used] which we might have missed"* [GP Lead]	Decision for NHS trusts / CCGs/ practices to ensure shared learning occurs and there are feedback mechanisms in place to ensure there is continual learning and improvement.