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Creating capacity: Transforming the dermatology service

Potential impact of Teledermatology on NHS backlogs - The case for adoption

November 2022

A report commissioned and funded by AbbVie. Data analysis and observations were conducted by Carnall Farrar using a mix of publicly-available and proprietary data sources

Data periods used: Mar '20 – Oct '21 inclusive for hospital outpatient data, Jan '20 to Dec '20 inclusive for 2 week wait referrals. The report is based on calculations obtained via a model and is a possible scenario only. See footnotes and appendix for full references.

This report explores a hypothecated model of capacity that could be created through potential service pathway changes. Abbvie/Carnall Farrar do not make recommendations as to individual service management. Please refer to the relevant full NHS/NICE published guidance on service management and referral pathways.

Executive Summary

- Dermatology has the sixth highest treatment function in terms of volume in the NHS – in 2019/2020 there were 3m outpatient appointments[1]
- Currently over 380,000 people on the dermatology waiting list[2], however, the backlog is estimated to be more as COVID saw over 900,000[3] fewer appointments due to cancelled follow up activity and system disruptions.
- This unmet demand has led to overbooked clinics and delayed appointments for patients with painful and debilitating inflammatory conditions, with thousands waiting over a year to see a dermatologist[4]
- Suspected skin cancer is often prioritised within dermatology services and takes up a significant portion of clinical activity. They receive more urgent referrals for suspected cancer than any other specialty. Approximately 460,000 patients are referred through the urgent two week wait (2WW) skin cancer pathway each year where patients must be seen by a consultant face-to-face[5]
- To support transformation of dermatology services NHSE propose the use of teledermatology, using high quality images in two ways; for a new virtual 2WW cancer pathway and using advice and guidance for all other dermatology referral activity.[6]
- **This report identifies that if the new 2WW virtual pathway were fully implemented, 48,000 hours of specialist consultant time could be saved and potentially redeployed to other dermatological conditions, e.g. inflammatory skin conditions**
- **This would create 5% extra capacity to begin reducing the backlog of unseen patients. To put this in context, an increase of 15% capacity could reduce the time taken to clear the pandemic backlog to 27 months**
- **The time saved could be the equivalent to almost 15% of the unfilled Working Time Equivalent (WTE) posts dermatology consultant posts**

1. A Teledermatology roadmap 2020-21, https://www.imperial.nhs.uk/~/media/website/services/dermatology/gp-referral/notp-Teledermatology-roadmap-202021-v10-final.pdf?la=en (Accessed August 2022)
2. NHS Referral to Treatment Time data, August 2022, https://www.england.nhs.uk/statistics/wp-content/uploads/sites/2/2022/10/Aug22-RTT-SPN-publication-version.pdf (Accessed November 2022)
3. CF analysis of NHS Hospital Episode Statistic (HES) Outpatient and Admitted Patient Care (APC) data, England, Mar 19 – Nov 21, https://digital.nhs.uk/data-and-information/data-tools-and-services/data-services/hospital-episode-statistics (Accessed January 2022). See Slide 7 note and Appendix A for full methodology.
4. NHS Referral to Treatment Time data, June 2022, compiled by Lane, Clark, Peacock (LCP) https://nhswaitlist.lcp.uk.com/ (Accessed August 2022)
5. CF analysis. 460,000. e-Referral Service (eRS) 2WW Skin data, whole year Jan-Dec 2020 https://digital.nhs.uk/dashboards/ers-open-data (Accessed April 2022)
6. NHSE and BAD, 2WW skin cancer pathway, April 2022, https://www.england.nhs.uk/wp-content/uploads/2022/04/B0829-suspected-skin-cancer-two-week-wait-pathway-optimisation-guidance.pdf (Accessed August 2022)

Conclusions

- **This report identifies that capacity could be created if current 2WW suspected skin cancer dermatology pathway, where applicable, is re-designed to include a *Teledermatology virtual* 2WW pathway**

- To help secure these advantages as quickly as possible **government and national policy makers could**:
  1. Ensure **national leadership** and system accountability for the adoption of national guidance
  2. Monitor and **support implementation** across Integrated Care Systems (ICS)
  3. Determine **clear funding requirements** and develop common technology applications to support trust level roll out
  4. Ensure **systems have the equipment needed** to take and send the required good quality images
  5. Create **clinical standards** specific to Teledermatology technologies
  6. Embed redesigned dermatology pathways in day-to-day practice, especially through **training in primary care.**

Overview of NHS dermatology service pressures

There is limited capacity to meet the growing demand for dermatology services

There is significant demand for dermatology services

- Approximately one in four (nearly 13 million) **people in England and Wales see their GP about a skin**, nail or hair condition every year[1]
- There were **3m outpatient appointments** in England in 2019-20 - the **sixth highest speciality** in terms of volume[2]
- Skin cancer is the most common cancer in the UK. Dermatology services receive **more urgent referrals for suspected cancer – around 460,000 annually – more than any other specialty**[3]. NHS dermatology units carry out around 200,000 procedures to surgically remove suspicious and malignant skin lesions every year[4]
- Many inflammatory disorders, such as psoriasis, eczema and acne, impact daily life, sleep and the ability to work[4]. Systemic and biologic therapies used to manage these long-term conditions require **regular outpatient reviews**[2]
- Currently over **380,000 people** are on the dermatology waiting list[5], however, the backlog is estimated to be more as COVID saw over **900,000**[6] fewer appointments due to cancelled follow ups and system disruption.

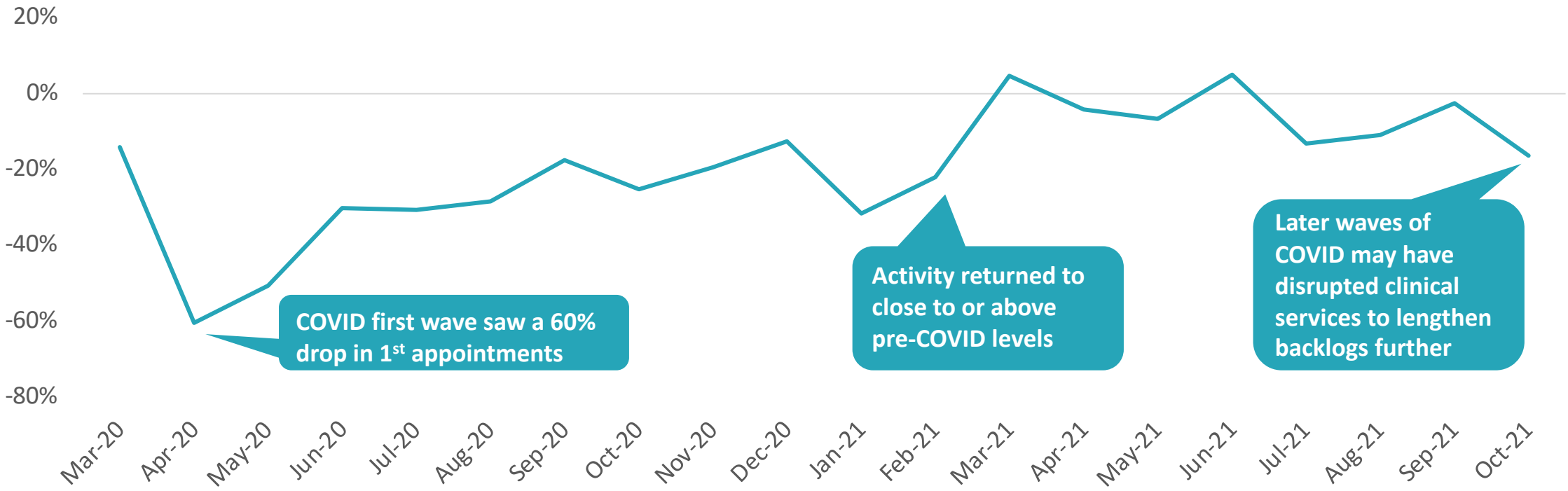
But limited capacity in the system to meet this demand

- Dermatology workforce capacity struggles to meet growing demand[3]. There are currently **159 WTE consultant vacancies** and the service relies heavily on locum cover[4]
- This **staff shortage is impacting patient access to diagnosis, investigations** (like allergy patch testing) and treatments such as phototherapy (a treatment to clear psoriasis), and psychodermatology[4]
- The constant demand to prioritise suspected new cancers referrals over other skin conditions can lead to limited clinical slots and **delayed appointments** for patients with painful and debilitating inflammatory conditions[2]

1. Schofield JK Grindlay D Williams H. Skin conditions in the UK: a Health Care Needs Assessment. https://www.nottingham.ac/research/groups/cebd/documents/hcnaskinconditinosuk2009.pdf (Accessed November 2022)
2. A Teledermatology roadmap 2020-21, https://www.imperial.nhs.uk/~/media/website/services/dermatology/gp-referral/notp-Teledermatology-roadmap-202021-v10-final.pdf?la=en (Accessed August 2022)
3. CF analysis. 460,000. eRS 2WW Skin data, whole year Jan-Dec 2020
4. GIRFT Dermatology, Programme National Special Report, August 2021, https://www.gettingitrightfirsttime.co.uk/wp-content/uploads/2021/11/Dermatology-overview.pdf (Accessed August 2022)
5. NHS Referral to Treatment Time data, August 2022
6. CF Analysis of HES Outpatient and APC data, England, Mar 19 – Nov 21

COVID has increased the pressure on services, as patients not seen during the pandemic return for diagnosis and treatment

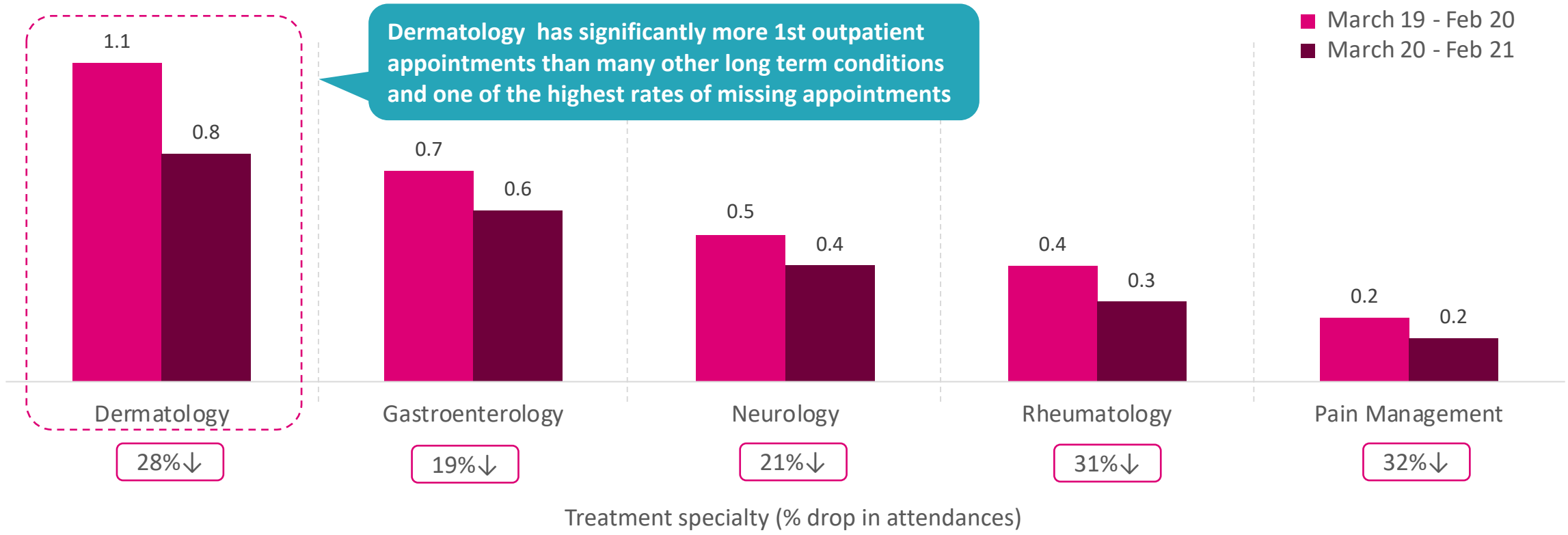
Percentage reduction in dermatology 1st outpatient attendances, Mar 2020 - Oct 2021 compared to same months in 2019, England[1]



1. CF Analysis of HES Outpatient and APC data, England, Mar 19 – Nov 21. CF analysis 'First' outpatient attendances are those flagged as the initial visit for a particular condition, as opposed to a subsequent/follow-up attendance

28% of dermatology first outpatient attendances were missing in the year to Feb 2021 – suggesting 300k went without specialist treatment in first year of pandemic alone

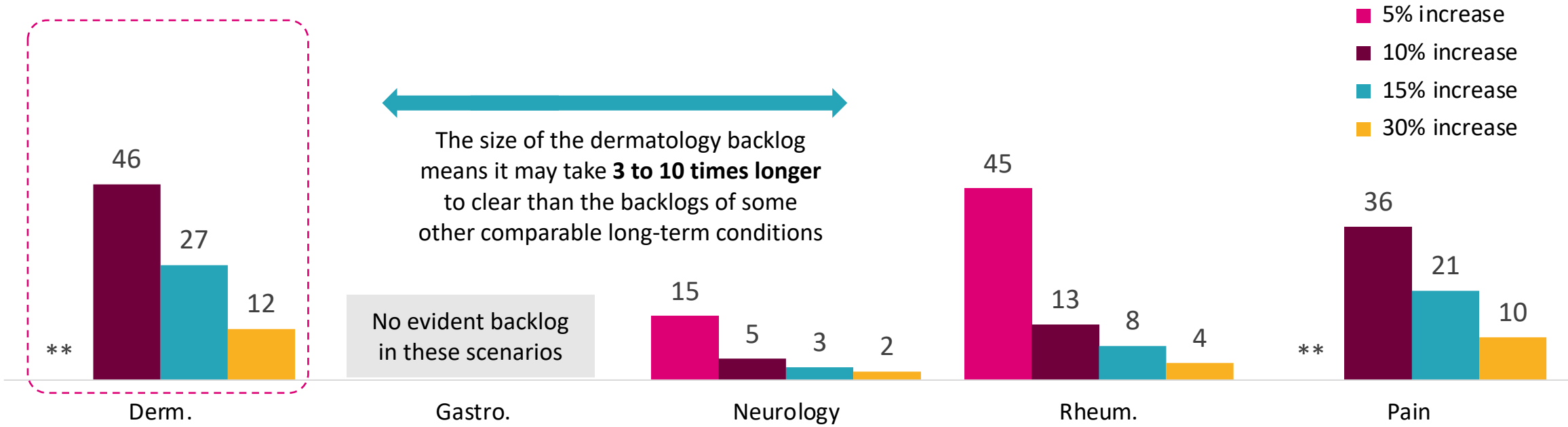
First outpatient attendances for March 19 – Feb 20 and March 20 – Feb 21 and percentage reduction, England, millions[1]



1. CF Analysis of HES Outpatient and APC data, England, Mar 19 – Nov 21
Note: Data reflects year prior to COVID and initial year of pandemic response when disruption was highest. Number will have grown further in second year to date with ongoing service disruption.
Note: Some diseases, including dermatology and rheumatology, may require physical examination for diagnosis

There were >900,000[1] missing dermatology appointments in the first 18 months of COVID. Without significant increases in capacity, this backlog could last for many years

Months to clear the calculated outpatient backlog under different capacity scenarios[2]



** Backlog takes over 84 months (7 years) to clear

1. Full calculation is 921,993 based on CF Analysis of HES and APC data, England, Mar 19 – Nov 21. Note: This backlog is not the same as the NHS waiting list which may have different characteristics - e.g., some patients will not appear on the waiting list if they have been lost to follow-up. This is the 'backlog' that will be referred to throughout this report. Since November 2021 the backlog may have grown further due to further COVID related disruption and staff shortages. For methodology see Appendix A.
2. CF analysis of historic pre-COVID activity used to model demand by month and disease. The modelled scenarios calculate the time to clear the accumulated cumulative backlogs if capacity were increased by 5%, 10%, 15% or 30% above latest levels. See Appendix A for further details.

Teledermatology as a capacity creating solution

There has been a range of NHSE policy that suggest innovative initiatives to help address the dermatology backlog, including using telemedicine

Multiple national guidance publications offer suggestions of innovative digital solutions to improve capacity

- Teledermatology Roadmap 2020-21 [1]
- Third phase of NHS response to COVID-19, July 2020 [2]
- Dermatology Digital Playbook, 2020 [3]
- GIRFT Dermatology, Programme National Special Report, August 2021 [4]
- 2021/22 and 2022/23 Priorities and Operational Planning Guidance, February 2022 [5]
- Two-week wait skin cancer pathway: innovative ways to support early diagnosis, April 2022 [6]
- Implementing patient-initiated follow-up (PIFU), May 2022 [7]
- Referral optimisation for people with skin conditions, September 2022 [8]

Telemedicine can be applied at four key points within the dermatology pathway[3]

1. **Advice and guidance between primary and secondary care**
2. **Referral - using digital images to triage patients to the correct service**
3. **Face-to-face or virtual consultation with video/phone**
4. **Self-management and monitoring**

In practice these steps could be considered part of the same process: Digital communication between two clinicians to enable a clinician to seek rapid advice from another, by sharing clinical data and images

Digital tools to facilitate virtual consultations between clinicians and patients

Patient-facing tools to help patients monitor conditions and share images with a clinician enabling PIFU

1. NHSE Teledermatology roadmap 2020-21
2. NHSE Third phase of NHS response to COVID-19, July 2020, https://www.england.nhs.uk/coronavirus/documents/third-phase-of-nhs-response-to-covid-19/ (Accessed August 2022)
3. NHSX Dermatology Digital Playbook: https://www.nhsx.nhs.uk/key-tools-and-info/digital-playbooks/dermatology-digital-playbook/dermatology-pathway/ (Accessed August 2022)
4. GIRFT Dermatology, Programme National Special Report, August 2021
5. NHSE 2022/23 Priorities and Operational Planning Guidance, February 2022, https://www.england.nhs.uk/wp-content/uploads/2022/02/20211223-B1160-2022-23-priorities-and-operational-planning-guidance-v3.2.pdf (Accessed August 2022), 2021/22, March 2021, https://www.england.nhs.uk/wp-content/uploads/2021/03/B0468-nhs-operational-planning-and-contracting-guidance.pdf (Accessed August 2022)
6. NHSE and British Association of Dermatologists, The two-week wait skin cancer pathway, April 2022
7. NHSE Implementing patient-initiated follow-up: Guidance for local health and care systems, May 2022, https://www.england.nhs.uk/wp-content/uploads/2022/05/B0801-implementing-patient-initiated-follow-up-guidance-1.pdf (Accessed May 2022)
8. NHSE Referral optimisation for people with skin conditions, September 2022, https://www.england.nhs.uk/wp-content/uploads/2022/09/B1149-referral-optimisation-for-people-with-skin-conditions.pdf (Accessed September 2022)

Evidence is emerging to demonstrate how these initiatives could impact on demand management and other system quality dimensions[1]

Impact	1 Advice and guidance between primary and secondary care	2 Referral - using digital images to triage patients to the correct service	3 Face-to-face or virtual consultation with video/phone	4 Self-management and monitoring
Clinical efficacy	Improved primary care detection rates with better referral quality[2]		Return patients enabled to digitally submit a progress report for clinical assessment	Clear assessment over time of how patients' symptoms have evolved
Demand management	Virtual specialist review allows treatment in community for low-risk conditions and faster diagnosis and reduced demand on urgent referral pathway[3,5]		Clinicians enabled to consult patients remotely and securely in real-time	Reduced need for face-to-face clinic appointments, based on need not routine
System efficiencies	Appropriate treatment expedited in primary care Dermatologists triage referrals to the right pathway faster		Shorter virtual sessions increase service capacity within clinical care sessions	Reduced need for clinic space
Education & upskilling	Clinician communication and direct feedback facilitated GPs empowered to manage their patients with confidence		Easier referral to senior colleagues during consultation for advice	Patients empowered to be aware of their condition and track their symptoms
Patient satisfaction	Reduced wait times, less need for travel and related costs, patients generally report high patient satisfaction[4]		Additional convenience to patients and unnecessary patient journeys avoided	Reduced journeys and wait times, reduced uncertainty
Potential risks/Issues	Possibility for additional burden on GPs if process not efficient Possibility for some conditions to get misdiagnosed in absence of face to face specialist appointment Possibility for inadequate image taking due to inadequate facilities		Potential for repeat consultation if unable to treat virtually	Patients not aware of what is required to manage their condition

- Impact demonstrated through existing case studies
- Impact can be measured with additional studies
- Likely outcome difficult to measure

1. Overall, slide is CF analysis of NHSX Dermatology Digital Playbook
2. Based on skin cancer identification with better quality of 2WW referrals. More research needed on if this holds true for inflammatory skin conditions
3. 14-year review of a UK Teledermatology service found that 50% of cases were discharged to the GP with advice and 34% booked directly for surgery and 14-year review of a UK Teledermatology service: experience of over 40 000 teleconsultations, 2019, https://onlinelibrary.wiley.com/doi/abs/10.1111/ced.13928.
4. Teledermatology: idea, benefits and risks of modern age – a systematic review based on melanoma, 2020, www.ncbi.nlm.nih.gov/pmc/articles/PMC7262815
5. NHSE Teledermatology roadmap 2020-21

However, virtual consultations are not always suited to dermatology and may not generate more capacity[1], solution lies in specifically-defined Teledermatology

There is low take up of telemedicine (remote/telephone consultations) in dermatology compared with some other long-term conditions

Proportion of outpatient attendances recorded as telephone/telemedicine

Reported uptake of Teledermatology services more generally also remains limited, perhaps due to historic confusion about what it means

A survey of **117** NHS trust dermatology departments, published in August 2021, showed of limited access to Teledermatology services across England[2]

30% reported their service was **adequate** and safely integrated

52% reported their services was **not adequate** and safely integrated

18% reported they had **no local Teledermatology service at all**

However new NHSE guidance defining Teledermatology using 'store and forward' images, recommended for use in the new skin cancer virtual 2WW pathway to help create more whole system capacity

1. CF Analysis of HES Outpatient and APC data, England, Mar 19 – Nov 21 Note: the most appropriate level of usage of virtual care may vary by disease type
2. GIRFT Dermatology, Programme National Special Report, August 2021

Assessing the potential of Teledermatology to create capacity

N.B. Full set of modelling assumptions can be found in Appendix A

Parameters were identified to hypothecate the potential impact on service capacity of replacing face to face 2WW appointments with virtual Teledermatology interaction

- NHSE's National Outpatient Transformation Programme (NOTP)* Teledermatology Roadmap defines Teledermatology as, "the use of static digital images to triage, diagnose, monitor or assess skin conditions by a specialist without the patient being physically present"[1]
- The urgent skin cancer 2WW referral pathway is a face-to-face pathway for GP-suspected skin cancers. Around **460,000**[2] patients are referred through this urgent skin cancer pathway each year. However, of these urgent skin cancer pathway referrals only around **6%** are diagnosed with melanoma and squamous cell carcinoma cancers[3]. This is a vast resource requirement as led to an inequity of access to care for people with inflammatory skin conditions such as eczema, psoriasis and acne[4]
- To alleviate the overall load of 2WW activity on dermatology services, NHSE suggest the application of a Teledermatology *virtual* 2WW pathway, using high quality images including dermoscopic images, that helps ensure face-to-face hospital attendance only when necessary[3]

This report identified an outpatient case study that has demonstrated a successful application of a similar approach:

NHS
The Leeds Teaching Hospitals
NHS Trust

Reduced clinical time required for assessment of skin referrals:[5]

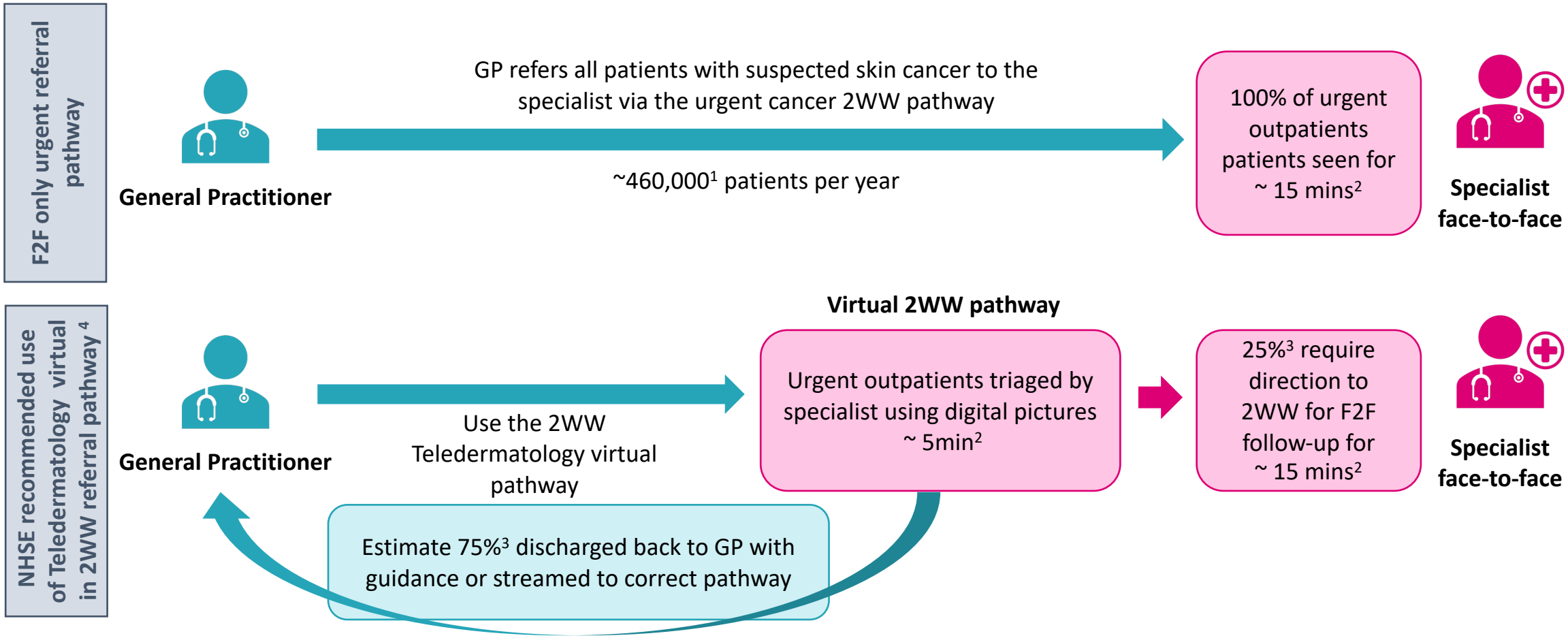
- Patient images assessed by a consultant dermatologist within 48 hours of referral
- Consultant time for **assessment of images between 30 seconds and 2 minutes** compared to a face-to-face clinic appointment of **12 minutes** (90% reduction)

* Note: The NHSE National Outpatient Transformation Programme is now part of NHSE Outpatient Recovery and Transformation Programme

1. NHSE Teledermatology Roadmap 2020-21
2. CF analysis. 460,000. eRS 2WW Skin data, whole year Jan-Dec 2020
3. NHSE and British Association of Dermatologists, The two-week wait skin cancer pathway, April 2022
4. NHSE Referral optimisation for people with skin conditions, September 2022
5. NHSX Dermatology Digital Playbook, Leeds Teaching Hospital NHS Trust, https://transform.england.nhs.uk/key-tools-and-info/digital-playbooks/dermatology-digital-playbook/a-teledermatology-pilot-to-improve-cancer-care-in-leeds/ (Accessed August 2022)

Using these parameters this report modelled the impact of Teledermatology A&G on the 2WW referral pathway in terms of consultation time and triage effectiveness

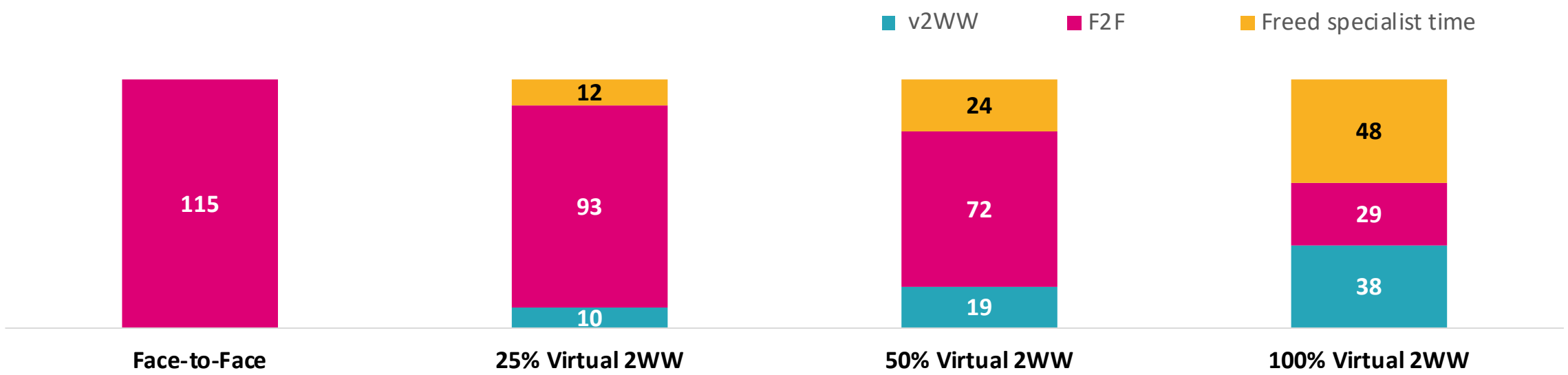
75% of referrals take 5min of specialist time and 25% of referrals will take 20min of the specialists' time (instead of all taking 15min)



1. CF analysis. 460,000. eRS 2WW Skin data, whole year Jan-Dec 2020
2. Conservative time estimate of for F2F and A&G specialist review based expert view, NHSX Dermatology Digital Playbook, Leeds Hospital.
3. NHS expert interviews for reasonable general applicability. 75% conservative estimate of 94% cited as being non-malignant at secondary care consultation to include benign lesions.
4. NHSE and British Association of Dermatologists, The two-week wait skin cancer pathway, April 2022 (also see slide 33)

The model identified up to 48,000 hours of specialist time saved – which could be redeployed to other dermatological conditions, e.g. inflammatory skin conditions

Specialist time spent seeing cancer referrals in 2WW pathway annually[1] with and without Teledermatology first, '000s hours



% additional outpatients[2] possible to see in freed time

25% Virtual 2WW	50% Virtual 2WW	100% Virtual 2WW
1.4%	2.7%	5.5%

1. CF analysis. 460,000. eRS 2WW Skin data, whole year Jan-Dec 2020 2WW Face to face takes 15min, A&G takes 5min.
2. Over 2020 annual non2WW face to face pre COVID outpatient appointments Feb 2019-Jan 2020 3.55M appointments, HES

Summary of potential capacity impact

Model's pathway assumptions[1]

- Instead of GPs referring all patients with suspected skin cancer to specialists via the urgent 2WW pathway, a static photo of the condition is passed to a specialist for 5 min review and assessment
- The patients with concerning or ambiguous signs (conservative estimation of 25%) are escalated to the dermatology clinic for a 15min face-to-face consultation
- The remaining 75% are given reassurance, advice and guidance

Model's projected service impact

- Currently, dermatologists spend an estimated 115,000 hours seeing urgent cancer referrals face-to-face in clinic
- If all referrals used the new virtual 2WW pathway system, an estimated **38,000 hours of specialist time would be spent triaging** static image referrals
- Most of the cases would not need to be seen in clinic so, now, only **29,000 hours would be needed for clinic time**
- This totals 67,000 hours, a **saving of 48,000 hours, 42% less than the time currently needed – the equivalent of approximately 24 WTE specialists (15% of unfilled consultant posts in England)[2]**

Model's potential patient impact

- In practice, this means that the **cancer patients are still seen urgently** but potentially more efficiently and the **time saved could be redeployed into other dermatological conditions, e.g. inflammatory conditions**
- This service change alone may **allow the COVID backlog to be cleared within 5 years** – alongside other initiatives not examined in this model (e.g. spot clinics, PIFU) this timeframe could be shorter
- However, achieving this requires a system-wide change to have population-level impact (either at ICS or national level)

1 This is a summary of the hypothecate model laid out in slide 14, with reference to parameters from national NHSE guidance identified on slide 13

2. GIRFT Dermatology, Programme National Special Report, August 2021, suggests almost a quarter (159) of the required 659 WTE consultant dermatologist posts in the NHS in England are unfilled

Next steps – Overcoming barriers to implementation

N.B. For list of potential limitations of Teledermatology approach see Appendix A

Given the ambition and potential of Teledermatology, what is the path forward?

Leadership and shared goals

- Clarify NHS ambitions for pathway - **exactly what are the outcome and treatment goals**
- Ensure **systemwide understanding** of common definitions for Teledermatology
- Ensure **national leadership and system accountability** for the adoption of national guidance

Care pathway standardisation

- Re-design **local dermatology pathways and coordinate an accountability mechanism**
- **Ensure systems have the equipment** needed to take and send the required good quality images
- Monitor and **support implementation** across ICSs
- Conduct **ongoing studies to understand the effectiveness** of Teledermatology including against national Teledermatology quality standards
- **Determine the impact of increased use of the virtual pathway** on primary and secondary care activity

Common technology

- Create clinical **standards specific to Teledermatology technologies** to avoid errors and false outcomes
- Determine **funding requirements** to roll-out the required technology
- Develop **common Teledermatology technology** systems for clinicians, and potentially patients
- **Embed patient reported outcomes** in technology platforms to improve disease severity assessment and increase patient visibility of pathways and care

Workforce and Patient Education and Training

- Embed new dermatology pathways in day-to-day practice especially through **training in primary care**
- Include **fail safes** to mitigate any risks
- **Engage patients** in application of Teledermatology where necessary and possible

Appendix A: Modelling assumptions

Backlog analysis modelling methodology and assumptions

Methodology

- Focuses on the concept of cumulative missing activity from March 2020 to October 2021 (the latest data point, at the time of analysis in February 2022). This is based on monthly comparisons to the previous years' activity recorded for the 12 months before March 2020, before the observed impact of COVID on services
- Recovery projections, the notion of time to clear the backlog is based on a projected throughput scenario compared to the sum of the cumulative backlog plus the ongoing expected future demand
- The modelled scenarios calculate the time to clear the accumulated cumulative backlogs from October 2021 (the latest data point, at the time of analysis in February 2022)

Modelling assumptions

- The backlog starts building from March 2020. Before then activity is assumed equal to demand
- A 3% demand growth projection on the annual activity for 2019 was used to account for some demographic and non-demographic growth in projected demand
- This report used the assumption that only 75% of the missing cumulative demand for outpatient appointments will return, i.e., only 25% of these episodes will not need to be repeated e.g., symptoms resolve or the next annual appointment occurs before a repeat is possible
- This model assumes no seasonality and no further disruption from COVID or other large impacts to presentation or service delivery
- It is noted however that the continued effects of COVID beyond October 2021 including the Omicron variant surge are likely to have exacerbated the situation further since this work was concluded[1]

1. Note: An indication of this can be seen in the national dermatology service referral to treatment times (RTT), which in October 2021 showed 70% of patients were started on treatment within an 18-weeks of referral. In March 2022 (post main omicron wave) this number stood at 63%, in August 2022 (latest available data in November 2022) this number was 64%.

Summary of parameters to determine impact and approach to converting impact into cost

Summary of parameters used in impact modelling

Model: Specific application of NHSE NOTP recommendations to cancer referral service delivery[1]

- Duration of specialist face-to-face appointment = 12 mins (Leeds). Conservative expert opinion = 15 mins
- Duration of virtual (photo) assessment = 2 mins (Leeds). Conservative expert opinion = 5 mins
- Discharge rate back to the GP after virtual appointment and teletriage = 75% (conservative parameter with reference to 6% contained in the April 2022, 2WW skin cancer pathway: innovative approaches document)
- Duration of face-to-face appointment for standard 2WW pathway = 15 mins (consistent with expert opinion)

Modelling methodology and assumptions to convert impact to saved cost

Methodology

- Analysis used estimated equivalent cost of specialist time saved from reduced overall appointment duration
- It involved calculating the average time saved per patient for each model of care, multiplied that by the number of dermatologists and their average annual salaries to produce an estimated annual cost saving
- Once this was calculated the number was converted back into number of WTEs using the average annual salary of a specialist dermatologist

Assumptions

- According to latest reports, GIRFT estimates that there are 659 consultant dermatologists working in the NHS in England (508 whole time equivalents), and 143 locums[2]
- Based on observed NHS vacancies, a specialist dermatologist annual salary range of £45,124 and £77,519[3]
- Based on observed NHS vacancies, a locum dermatologist annual salary range of £82,096 and £114,003[3]
- It has been assumed that a specialist works 2,000 hours a year for illustration of impact

1. CF analysis and expert interviews, NHSX Dermatology Digital Playbook, Leeds Teaching Hospital NHS Trust
2- GIRFT Dermatology, Programme National Special Report, August 2021
3- NHS Jobs: https://www.nhsjobs.com/job_list/Medical_and_dental/s2/Medical_Dermatology/d543 (Accessed January 2022) job ranges may have since changed

Teledermatology limitations and barriers to overcome

Common risks and limitations include[1]

Clinical

- Absence of **skin palpation** which is almost as important as assessing visual signs for the diagnosis of certain conditions (e.g., dermatoses such as psoriasis, atopic dermatitis, and actinic keratosis)
- **Patients seeking clarification**, in case they have questions regarding recommendations, might encounter difficulties with getting feedback
- Risk of **increased demand** for specialist services

Economic

- Not straightforward to quantify the **tariff of a Teledermatology consultation**: some see digital image with referral as a cheap alternative to a face-to-face consultation[2]
- **Further evidence is needed to continue to demonstrate the benefits of Teledermatology** in terms of improved outcomes, cost savings or reduced referrals, more work required to develop health economic analyses at scale

Technological

- Most frequently mentioned **challenges in Teledermatology are technological** barriers, including **equipment** needed to take and send the required good quality images
- Evidence suggests poor image quality, **lack of clinical and billing systems integration** between providers and inefficient, expensive software are areas which need to be overcome

Ethical

- Providers and systems that use telehealth should review and **communicate how it impacts** access to healthcare, relationships with patients, inequalities e.g., through digital exclusion, cost, and quality of life
- There are some patient concerns around the **protection of health information**

CF Analysis based on
1. Teledermatology: idea, benefits and risks of modern age – a systematic review based on melanoma, May 2020, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7262815/ (Accessed August 2022)
2. Primary Care Commissioning Quality Standards for Teledermatology, 2013, https://cdn.bad.org.uk/uploads/2022/02/29200021/Teledermatology-Quality-Standards.pdf (Accessed August 2022)

Appendix B: Case Study considerations

The range of Teledermatology case studies being codified in NHSE's Dermatology Digital Playbook give guidelines for application across the dermatology pathway

1 Advice and guidance between primary and secondary care	2 Referral - using digital images to triage patients to the correct service	3 Face-to-face or virtual consultation with video/phone	4 Self-management and monitoring
Description	In practice these steps could be considered part of the same process: Digital communication between two clinicians to enable a clinician to seek rapid advice from another, by sharing clinical data and images	Digital tools to facilitate virtual consultations between clinicians and patients	Patient-facing tools to help patients monitor conditions and share images with a clinician enabling PIFU
Real world examples	• Teledermatology using e-Referral Service A&G: **Royal Devon and Exeter Hospital** • Teledermatology A&G service: **Barts Health NHS Trust** • Using the Cinapsis app for advice and guidance and referral management to help reduce dermatology appointments: One Gloucestershire Integrated Care System	• ChainSMS, a text messaging and video call system between clinician and patient in primary care: Staunton surgery, near Portsmouth • Virtual patient consultation: **Stirling Community Hospital, Stirling and Queen Elizabeth University Hospital, Glasgow**	• MySkinSelfie app patient-facing app for skin self-monitoring and image-sharing with clinicians: Newcastle Royal Victoria Infirmary • An app to measure eczema symptoms using the POEM: **Great Ormond Street Hospital;** Royal Devon and Exeter Hospital

Enabler

Digital solutions to enable healthcare professionals to use a smartphone and digital platforms to capture and store patient images securely, improving rapid communication between clinical teams and streamlining patient care

Source: CF analysis and expert interviews, NHSX Dermatology Digital Playbook
Note: [1]Digital tools and apps described are not endorsed by or affiliated with Abbvie/Carnall Farrar

Case studies provide operational impact metrics

Metrics	
Clinical efficacy	• **Earlier diagnosis and treatment:** All patient images are assessed by a Consultant Dermatologist within 48 hours of referral • **Faster referrals for urgent skin conditions:** Improved compliance with urgent referral target (99.5%) • **Better prediction of serious skin conditions at referral:** Teledermatology urgent referral triage improved conversion rates from 10-12% to 15.5%-17%
Demand management	**Reduced need for face-to-face appointments**: - Leeds: Increased rate of discharge back to the GP on image assessment (from 9.5 up to 33%) - Chelsea and Westminster: A third of patients can be discharged without face-to-face appointments - Luton and Dunstable: 41% discharged after Teledermatology assessment - Devon and Exeter: <20% of A&G requests result in the patient being referred for a face-to-face clinic review within 6 months of their A&G
System efficiencies	• **Reduced consultation/assessment time:** - Stirling: Median time for virtual consultation was approximately 5 minutes and 28 seconds - Leeds: Consultant time decreased from 12 minutes in face-to-face appointments to between 30 seconds and 2 minutes (average 1.25 minutes) through clinical assessment of images • **Reduced locum doctor expenditure:** Increased efficiency enabled existing substantive members of staff to deal with all 2ww referrals • **More rapid access to dermatology services:** All patient images are assessed by a Consultant Dermatologist within 48 hours of referral
Education & upskilling	• Improved GP skills • Enhanced communication and interface between primary and secondary care, and thus knowledge management • Improved patient condition management
Patient satisfaction	• **Reduced time travelling:** The total distance theoretically travelled for equivalent face-to-face consultations was 888km, resulting in a total car CO_2 emission saving of 107.6 kg CO2 (43 patients over 6 months completing virtual consultation) • **Improved appointment attendance:** Reduced patient non-attendance by 10% • **Enhanced satisfaction with the service:** Over 80% of patients would recommend the service to friends and family

Source: CF analysis, The British Association of Dermatologists: Outpatient Case studies, 2019
https://cdn.bad.org.uk/uploads/2022/05/05095440/BAD-RCP-OUTPATIENT-CASE-STUDIES-2020.pdf (Accessed August 2022)

Case study metrics considered for this model[1] – Leeds considered most relevant for the analysis in this report

The Leeds Teaching Hospitals NHS Trust

Reduced clinical time required for assessment of skin referrals:
- Patient **images assessed by a Consultant Dermatologist within 48 hours** of referral
- Consultant time for **assessment of images between 30 seconds and 2 minutes** compared to a face-to-face clinic appointment of 12 minutes (90% reduction)

University Hospitals Sussex NHS Foundation Trust

Rapid access and effective triage for non cancer lesions:
- 46% of patients were discharged back to their GP, 37% sent directly for a surgical procedure
- **Only 9% needed to be seen in clinic to clarify the diagnosis**
- 96% of patients felt reassured about the lesion and felt it was assessed appropriately

Chelsea and Westminster Hospital NHS Foundation Trust

Improved management of urgent referrals through medical photographers:
- **1/3 of patients can be immediately discharged without a face-to-face** clinician appointment
- 15% reduction in the number or biopsies requested (overall 25% have a biopsy procedure)

NHS Forth Valley / NHS Greater Glasgow and Clyde

Saved time when patients submit an online progress report including photos:
- **Majority of patients (96%) had inflammatory dermatoses** (psoriasis, eczema most common)
- Following initial consultations, 95% of patients required a further appointment
- The median time to complete a consultation was **5 minutes 28 seconds**

Source: CF analysis, The British Association of Dermatologists: Outpatient Case studies, 2019 (Accessed August 2022)

Appendix C: National Guidance

NHSE operational planning guidance directs providers to rationalise outpatient services and deliver services remotely via technology where possible

- The NHS 2021/22 and 22/23 priorities and operational planning guidance identified the importance of building on what we have learned during the pandemic to transform the delivery of services, and accelerate the restoration of elective care
- Systems are asked to recover elective activity in a way that takes full advantage of elective high-impact changes and transformation opportunities
- This includes embedding outpatient transformation, avoiding low-impact outpatient attendances of low clinical value and redeploying that capacity where it is needed, alongside increased mobilisation of Advice & Guidance and Patient Initiated Follow-Up services
- Where outpatient attendances are clinically necessary, at least 25% should be delivered remotely by telephone or video consultation (equivalent to c.40% of outpatient appointments that don't involve a procedure)
- A national data collection and counting methodology will be used to inform the way in which the payment system further supports implementation of these reforms

Source: NHSE 2022/23 Priorities and Operational Planning Guidance, February 2022, and 2021/22, March 2021

NHSE published a Teledermatology roadmap 2020/21 to guide healthcare professionals in managing demand while restoring patient activity

The roadmap sets out what all systems can do to implement, optimise and mobilise Teledermatology models to help them safely manage new patient demand and the existing backlog while restoring their face to face services

Steps to deliver Teledermatology triage

1. Include images with referrals and A&G requests to enable consultant triage, ensuring face to face attendances happen only when necessary
2. Triage both suspected cancer and routine referrals using Teledermatology
3. Include clinical review of Teledermatology A&G requests and referrals in consultant job plans as part of their direct clinical care
4. Record Teledermatology activity accurately to reflect the type of clinical contact taking place, demonstrate the benefits and support sustainable funding models
5. Maintain Teledermatology pathways through continuous training across professional groups and care settings

Principles for safe delivery

1. Patients need to be kept informed directly about the care pathway they are on, their diagnosis and treatment plan in a clear, compassionate and timely way
2. Teledermatology workflows should not add burden to primary or secondary care – i.e., they should be more efficient

Source: NHSE Teledermatology Roadmap 2020-21
Note (expert clinical opinion): Teledermatology is a fast moving area and guidance is being updated to take account of early studies of the use of Artificial Intelligence in the 2ww pathway

Teledermatology best practice standards

Standard 1	**Models of Teledermatology services including links to other services:** Teledermatology services should be developed around patient needs within a local integrated service and should include clear pathways with links between levels of care and specialisms. The type of Teledermatology service offered should be clearly identified and an agreed tariff established.
Standard 2	**Selecting patients for Teledermatology:** The type of Teledermatology service used will in part determine the range of patients for whom Teledermatology is appropriate. For patients whose conditions fall under the 2WW process, national guidance must be followed at all times. For patients with pigmented lesions, dermoscopic images should form part of any Teledermatology referral that replaces a face-to-face consultation.
Standard 3	**Gaining the patient's informed consent:** The legal consent requirements for Teledermatology include consent regarding the taking and subsequent use of images. It is important that specific consent/s are taken and recorded before the photographic session and that a record of consents given is retained for as long as the images are held. Informed consent also implies that the patient is made fully aware of the potential limitations of Teledermatology compared to a face-to-face consultation.
Standard 4	**Competent staff:** Clinicians and healthcare professionals involved in Teledermatology referrals should be equal in terms of competence, training and experience to those involved in equivalent non-Teledermatology referrals. For roles specific to Teledermatology (i.e. photographing patients) it is important that training and feedback are supplied and skills audited.
Standard 5	**The Teledermatology referral: patient history and suitable images** The information (history and images) supplied as part of any Teledermatology referral must be of the highest quality and as full as possible, since the patient will not be present when their condition is reviewed. Any service specification should include a well-designed pro forma for patient history and an agreed minimum standard for images (including number and type supplied).
Standard 6	**Communication between referring and reporting clinicians:** Reliable, identifiable, secure, compatible and timely communication between clinicians is central to the Teledermatology process. It is important to have agreed protocols, an alert system for any breakdowns in communication and a process of feedback built in.
Standard 7	**Information governance and record keeping:** As well as meeting the security and privacy standards in the relevant legal and professional guidance on the holding, storage and transfer of patient data, it is important that patient Teledermatology records are searchable by a variety of criteria for audit purposes. They must also be accessible both as part of the patient record and as standalone data.
Standard 8	**Audit and quality control:** It is vital that each Teledermatology service completes at least one patient survey and one audit each year to assess the quality of the service provided. Standard 8 details practical ways to map performance against the points set out in standards 1 to 7.

Source: Primary Care Commissioning Quality Standards for Teledermatology, 2013, (Accessed August 2022)

Key performance indicators have been defined for each standard

#	Key performance Indicator
1	• Evidence of a clear statement of purpose, including a definition of the types of Teledermatology used (i.e. full, triage or intermediate) and the scope of the service offered in any service specification. • Service specification for the model of care should include a full risk assessment including issues of clinical governance and accountability and requirements for audit and clinical incident reporting. • Demonstration of robust links between local primary and specialist services working as major partners in delivery of the Teledermatology service. • In those health economies where Payment by Results (PbR) operates, evidence of an agreed tariff in use for the Teledermatology service.
2	• Percentage of 'full' Teledermatology referrals (i.e. replacing face-to-face) for pigmented lesion diagnosis that has included a good-quality dermoscopic image (Standard: 95%). • Percentage of responses to the referring clinician within two weeks of the initial Teledermatology referrals for 2WW referrals (Standard: 100%). • Percentage of patients triaged directly to skin surgery that have been given adequate pre-operative information and been offered a face-to-face pre-operative discussion with skin specialist or surgeon where necessary (Standard: 95%). • Patient satisfaction with the Teledermatology diagnosis and management plan.
3	• Provision of an information leaflet for potential Teledermatology patients explaining the nature of the service, with translations as required (Standard: 95%). • Adherence to local and national guidance to ensure that patient consent to Teledermatology is recorded in the referring and reporting clinicians' patient record for all patients (standard: 95%).
4	• An identified named clinical lead for the service who is on the UK GMC Dermatology Specialist Register and working in active NHS practice. • Evidence that every reporting specialist is working as part of an integrated dermatology service where the commissioned model of care includes support from a consultant dermatologist on the UK GMC Dermatology Specialist Register with a commitment to and ongoing experience in Teledermatology. • Evidence that the majority of the reporting clinician's clinical interactions are face-to-face consultations. • Audit and quality control: percentage of staff who are involved in audit and quality control as outlined in standard 8 (Standard: 100%).
5	• Minimal number of referrals returned due to incomplete patient demographic data/ inadequate clinical history/poor quality images (Standard: <15%).
6	• Providers of services for Teledermatology should be able to demonstrate a complete electronic pathway with appropriate logging and receipt points. The audit should also include evidence of the reliability of the patient identification and the timeframe within which the result is reported back to the referrer. • Patient records of the referring clinician to include received response from the reporting specialist and a full note of the outcome of the Teledermatology referral (Standard: 100%).
7	• Service providers have an information governance policy in place to ensure that legal and national guidelines and the provisions of the Data Protection Act 1998 are followed with regard to the use of Teledermatology (Standard: 100%). • All images are transferred using encryption equivalent to that required by the NHS Information Governance data encryption standards (Standard 100%). • The Teledermatology system is compatible with both primary and specialist care computer systems (Standard: 100%). • The Teledermatology service record-keeping and storage practices allow for each episode to be audited within both primary and specialist care as well as for individual patient outcomes (Standard: 100%).

Source: Primary Care Commissioning Quality Standards for Teledermatology, 2013, (Accessed August 2022)

GIRFT outlines a need to review Teledermatology services

Good Teledermatology	Poor Teledermatology
Helps to educate GPs	De-skills GPs
Does not increase referrals	Increases overall referrals
Uses high-quality images	Uses poor-quality images
Provides patients with a more rapid accurate diagnosis and effective treatment and is an effective use of resources	Is inaccurate, leading to wrong diagnosis and treatment, longer referral pathways, delays in effective treatment and wasted NHS resources
Early diagnosis reduces cancer mortality	Missed diagnosis increases cancer mortality

GIRFT encourage trusts that choose to pilot Teledermatology systems for NHS patients to collect and publish their pilot data. Teledermatology pilots should evaluate:

- Effect on referral rate
- Safety
- Impact on patient pathway
- Timeliness of correct diagnosis
- Effectiveness of treatment
- Overall health economic impact (assessed by professional health economists)
- Patient feedback confirming that service is patient-centred
- Service is equitable, serving all relevant communities

Teledermatology: advice and guidance, and teletriage

The use of images is integral to Teledermatology. High-definition medical photography with appropriate clinical history is used to help clinicians carry out remote diagnosis and management of dermatological conditions, and to support the triage of referred patients to the correct clinical setting.
There is wide variation in access to Teledermatology.
Digital technology used to triage referrals shows promise in reducing face-to-face consultations and improving patient pathways.
In the future, if developed wisely, this will be used to underpin networks between primary, secondary and tertiary care.

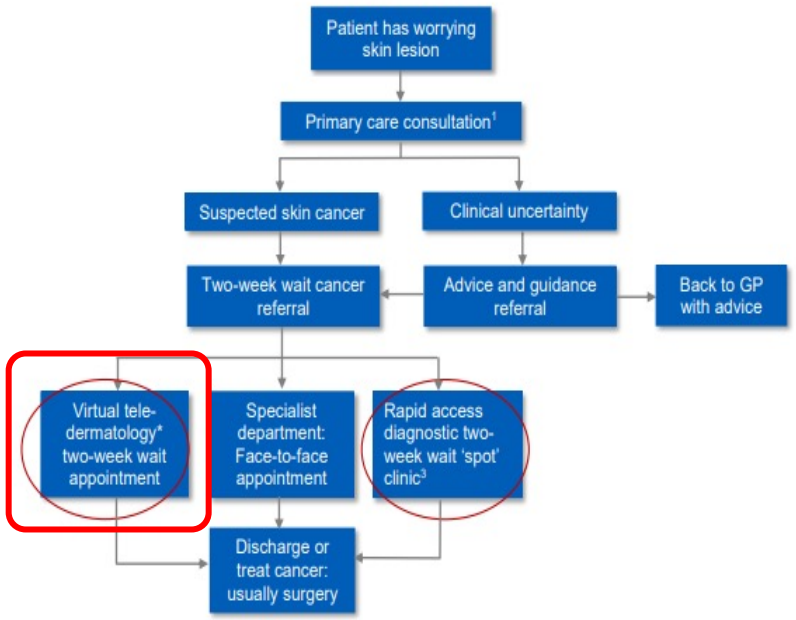
Recommendation

We are recommending that Teledermatology services are reviewed to inform trust-level investment and resourcing decisions.

Recommendation actions	Owners	Timescale
NIHR to fund studies evaluating the efficacy, safety and efficiency of Teledermatology with full health economic assessment.	NIHR	2 years
Assess Teledermatology services based on the points described in our report when considering whether to invest.	Trusts, CCGs	6 months
Trusts/CCGs to publish research and learning from Teledermatology services so that others can learn lessons and share best practice. The FutureNHS Collaboration Platform is set up for this.	Trusts, CCGs	12 months
Offer patients the electronic referral system (e-RS) Advice and Guidance Service.	Trusts	For immediate action
Include time spent providing Advice & Guidance and teletriage in the job plans for dermatologists.	Trusts	6 months
Support services keen to innovate in this area, in line with the recommendations in actions 19b and 19c.	GIRFT, trusts, CCGs, NOTP	Immediate
Prepare Teledermatology services and other clinical services for the introduction of AI and machine learning.	Trusts	18 months

Source: GIRFT Dermatology, Programme National Special Report, August 2021

2WW skin cancer pathway: innovative approaches to support early diagnosis as part of the NHS COVID recovery plan



To manage suspected skin cancer two-week wait referrals in a more streamlined way, systems should consider adopting a range of different services to meet local need. New models should:

- Ensure healthcare professionals continue to follow NICE guideline criteria
- Reduce stress for people of visiting acute hospital unless essential
- Personalise for patients by ensuring face-to-face where appropriate, e.g. for high-risk features
- Harness new technology, in particular Teledermatology and digital referral platforms to reduce the need for unnecessary hospital attendances
- Use community diagnostic centres to support image capture and transfer
- Link to learning from 100-day project outputs, recommendations and published examples of good practice
- Ensure skin cancer targets are not prioritised to the detriment of the timely care of people with rashes and long-term skin conditions
- Facilitate automatic upgrade of advice and guidance interaction to a two-week wait referral where clinically appropriate, e.g. where the primary care clinician is unsure about a skin lesion
- Support healthcare professionals and patients to take and transfer high quality images to support the diagnosis and management of skin lesions through both advice and guidance (non-two-week wait lesions) and the two-week wait pathway
- Ensure advice and guidance skin lesion service set up to provide general practices with an alternative decision-making resource

Action	Options
A virtual Teledermatology two-week wait pathway requires:	• High quality macroscopic and dermoscopic images are 'reasonable diagnostics' needed to exclude cancer • A triage outcome that permits the specialist clinician to request to see the patient face to face if required • The facility to communicate directly with the patient and their GP
Outcomes from virtual Teledermatology two-week wait referral that 'stop the clock' on the referral can include:	• The patient interaction with consultant or team member (via telephone, video or face-to-face consultation) • The patient is booked directly for surgery and receives appropriate preoperative advice and counselling
Different models for high quality image capture required locally to support this model. These could include:	• Images taken by a suitably trained healthcare professional in a GP surgery • Images taken by suitably trained healthcare professionals (for example, community nurses or medical photographers) in a community hub or secondary care setting

Source: NHSE and British Association of Dermatologists, The two-week wait skin cancer pathway, April 2022