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Hywel Dda University Health Board

National Evaluation of Community HealthPathways

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Who We Are

In 2021 the TriTech Institute was launched. We are a team based in a bespoke facility within Hywel Dda University Health Board comprising of industry-leading engineers, scientists and clinicians.

Our Institute

Here at the TriTech Institute, we support the development of healthcare solutions on a local, national, and global level offering designers and manufacturers a single point of access to the NHS through a collaborative and agile approach.

What We Offer

The team's advanced skills in clinical and research design are combined with technical engineering expertise to manage the whole innovative pathway from early unmet need, through to concept design, prototyping, clinical investigations, and real-world service evaluations.

Our Services

We provide specific services and solutions for clinical engineering, research and innovation and Value-Based healthcare, and can also support with grant writing and submission.

Executive Summary

Situation

The Community HealthPathways (CHP) platform is a digital tool designed to support healthcare professionals (HCPs) in primary care settings by facilitating adherence to standardised, evidence-based, and locally adapted clinical pathways. These pathways are co-developed by HCPs within their respective regions to ensure relevance and applicability. International implementation of the CHP platform, notably in countries such as New Zealand and Australia, has demonstrated improvements in the quality of clinical referrals and the overall delivery of healthcare services.

In Wales, significant variation in healthcare delivery, patient outcomes, and experiences has been identified, even within individual health board regions. This inconsistency reinforces the need for sustained efforts to ensure the effective implementation of national clinical guidelines into routine practice, thereby promoting the delivery of high-quality, evidence-based care. Furthermore, persistent challenges in the quality and consistency of referral processes across the country have been noted.

Addressing these issues has the potential to yield substantial efficiencies in terms of time and financial resources, contributing to a more streamlined and effective healthcare system. In response to these identified needs, the CHP platform has been proposed as a viable solution to support standardisation and improvement in clinical practice.

The CHP platform was first introduced in Wales by Cardiff and Vale University Health Board (CAVUHB) in February 2019. As of July 2025, the platform is undergoing a national rollout and has been implemented in six of the seven health boards across the country. Preliminary assessments of CHP's impact in Wales have suggested potential improvements in the quality of clinical referrals, and anecdotal reports have highlighted its positive influence on healthcare delivery.

However, there remains a lack of structured, empirical evidence to substantiate the platform's value proposition and to inform decisions regarding its continued procurement and integration into the Welsh healthcare system.

To address this evidence gap, NHS Wales Performance and Improvement commissioned the TriTech Institute, part of Hywel Dda University Health Board, to conduct an independent evaluation of the CHP platform. This evaluation was carried out over a six-month period, from February to August 2025, and the findings are presented in the current report.

Evaluation Methodology

The TriTech Institute conducted a mixed-methods evaluation of the CHP platform, incorporating both quantitative and qualitative data collection approaches. The quantitative component focused on referral metrics, including referral rates, acceptance and rejection patterns across Wales, and the extent to which the CHP platform was utilised in the referral process. This analysis aimed to assess the platform's impact on the quality and efficiency of clinical referrals.

Complementing this, a qualitative strand involved a survey distributed to HCPs across both primary and secondary care settings in Wales. The survey solicited feedback on the perceived value and utility of the CHP platform. Additionally, a subset of HCPs participated in semi-structured interviews to provide deeper insights into their experiences and perspectives regarding the platform's implementation and effectiveness.

The evaluation was structured around five key thematic areas:

1. Uptake of the CHP platform across Wales
2. Impact of the CHP platform on HCPs
3. Usability analysis of the CHP Platform
4. Impact of the CHP platform on patient referrals
5. The value proposition of using the CHP platform

Findings of the Evaluation

Uptake of the CHP: Uptake of the CHP platform across Wales has been most prominent within Cardiff and Vale University Health Board (CAVUHB), where the platform has been operational for approximately five years longer than in other regions. This extended period of implementation has contributed to a more established integration and utilisation of the platform within this health board. The rate of pathway localisation was observed to be more rapid within Hywel Dda University Health Board (HDUHB), Cwm Taf Morgannwg University Health Board (CTMUHB), Aneurin Bevan University Health Board (ABUHB), and Swansea Bay University Health Board (SBUHB), compared to Cardiff and Vale University Health Board (CAVUHB), with more localised pathways at 12 months than there were in CAVUHB. CHP page views nationally have increased at a steady rate, from 23,666 views in July 2023, to 53,397 views in May 2025 (over double).

Despite this, around 1 third of all HCPs (n=48) who responded to the survey (30.4%) indicated they do not use CHP. The majority of these (57%) indicated they had not heard of the platform or didn't know how to access the platform/needed further training (14%). Out of the non-users, 76.2% indicated that they would like to use the platform, indicating that better engagement, ensuring that CHP is sufficiently promoted to potential users and adequate training/onboarding should be primary goals for any future work.

Impact on Health Care Professionals: Overall satisfaction with the CHP platform was high with 67% of survey respondents indicating satisfaction, and 51.1% of survey respondents agreeing that the platform integrated well into their daily workflow (n = 48). HCPs recognised the benefits of CHP, such as having access to an up-to-date repository of evidence-based information, the downstream impact of this on referrals and patient access to treatment, and the opportunity to collaborate with other clinicians during the pathway development process. Despite this there were negative comments from some HCPs who felt there was a lack of communication or consultation process before the CHP platform was implemented within their region. There was also frustration from some HCPs, with some believing that CHP can hinder their consultations, especially as some pathways were either missing or incomplete. Some also felt there were integration/usability issues with the technology.

Usability Analysis of CHP: CHP has demonstrated utility in supporting users to complete healthcare related tasks. However, usability analysis indicated that many users experience challenges in navigating the system, often describing it as confusing and difficult to follow. While the platform functions as intended, its usability is hindered by a lack of clarity, which necessitates additional cognitive effort from users and may impede task efficiency.

Impact on Patient Referrals and Patient Care: Data supporting the impact of CHP on referral quality was mixed. Data from across Wales shows an increase in the number of total referrals per 1000 people by around 37% from April 2021 to present day (post lockdown). In contrast CAVUHB has seen only (approximately) a 15% increase in the number of referrals per 1000 people over the same time. The data collected shows a persistent widening gap between the number of referrals (per 1000 people) in CAVUHB compared to the rest of Wales. Whilst it is difficult to purely attribute this to the implementation of CHP additional evidence from audits of current care pathways indicate that: between 5 and 54% of referrals could have been avoided if CHP criteria was followed (depending on specialism). As part of the evaluation, and to assess the direct impact of the CHP platform, a case study approach was employed focusing on individual care pathways. These case studies provided evidence of a positive correlation between the use of the CHP platform by healthcare professionals and improvements in referral quality. Notable examples include the headache pathway within Swansea Bay University Health Board (SBUHB) and the carpal tunnel syndrome pathway within Hywel Dda University Health Board (HDUHB), both of which demonstrated enhanced referral appropriateness and clinical decision-making associated with platform utilisation.

Despite this, staff views on the impact of CHP on referrals were mixed with the majority (7) of the 10 secondary care staff that completed the

HCP survey not agreeing that CHP has improved the quality of referrals they have received. 43.5% of primary care HCPs believed that using the platform has improved the quality of their referrals (n = 48). However, HCP survey respondents indicated a perceived overall positive impact of CHP on their patients. With 56.5% of respondents stating that engaging with the CHP platform had increased clinical confidence around referring patients and had helped them set realistic patient expectations by providing helpful patient information resources.

The case studies carried out in this evaluation show an apparent improvement in referral rate or quality after the introduction of CHP. Whilst this data is still relatively localised in many of the health boards who have only just newly adopted CHP, the evidence base is more developed in CAVUHB. As stated previously since 2021 there has been a noticeable difference in the trend of total referrals, which has resulted in a difference of around 3 referrals per 1,000 population in CAVUHB when compared with the rest of Wales.

Under the assumption that the referral rate across Wales can be brought in line with CAVUHB, this could result in a cost avoidance across Wales. Additionally, the impact on the quality of referrals, indicated by the case studies, could incur resource release by reducing unnecessary staff time. This was also supported by the survey and interviews with primary care staff which indicated CHP is supporting more efficient workflows, with staff spending less time searching for information.

Conclusions

Although CHP has grown steadily since its adoption, a large proportion of HCPs are either unaware of it or need more support to use it effectively. In addition to this, users find the interface challenging to navigate effectively, which impedes the ability for HCPs in primary care to use the platform efficiently.

Evidence collected from the health board actively using the CHP platform points toward its impact in reducing the number of referrals into secondary care. Additionally, evidence from multiple health boards suggests an improvement in the quality of referrals into secondary care after pathway introduction (if only limited to specific pathways). This view is generally supported by the opinions of the majority of HCPs who use the platform. As a result, the evaluation has found that there is evidence of the impact and effectiveness of the CHP platform, however, this has not been realised across all health boards and there are still barriers to CHP from reaching its full value potential.

A critical determinant of the CHP platform's effectiveness and cost-efficiency is the extent of stakeholder engagement and awareness. Ensuring that a broad range of healthcare professionals and system stakeholders understand the platform's purpose and functionality is essential to promoting widespread adoption and utilisation, thereby maximising its potential impact on clinical practice and service delivery.

Based on this evaluation, several key recommendations are made:

Implementation, Visibility and Engagement

A central theme emerging from this evaluation is the importance of enhancing stakeholder understanding and engagement with the CHP platform. Many of the recommendations focus on increasing awareness of the platform's purpose and functionality, and on fostering user confidence and active participation, which are essential for maximising its utility and impact within the healthcare system.

Recommendation 1: Promotion of CHP across Wales

Awareness of the CHP platform remains low among HCPs, limiting its potential to contribute to service transformation. To address this, a national communications strategy is recommended, incorporating targeted materials and local engagement initiatives across health boards to promote uptake. Crucially, the programme's success and sustainability depends upon active Executive-level oversight and sponsorship to ensure strategic alignment, resource prioritisation, and integration within broader organisational transformation efforts.

Recommendation 2: Promotion of CHP Locally

To maximise the impact and cost-effectiveness of the CHP platform, targeted promotional efforts are recommended in regions exhibiting lower levels of engagement. For instance, Swansea Bay University Health Board (SBUHB) has demonstrated comparatively limited utilisation, as reflected in reduced page view metrics twelve months post-launch. In addition to a national communications strategy, it is advised that each health board implement mechanisms to systematically monitor platform engagement.

Such monitoring would facilitate the identification of areas with suboptimal usage, enabling the deployment of tailored interventions to enhance awareness, uptake, and integration of CHP into routine clinical workflows. Effective monitoring is contingent upon the implementation of individual user logins (see Recommendation 11), which would allow for accurate tracking of engagement patterns at the user level.

Recommendation 3: Reframing the Strategic Purpose

Clarifying the intended purpose and strategic objectives of the CHP platform is essential to fostering meaningful engagement among healthcare professionals. Evaluation findings indicate that many clinicians remain uncertain about the rationale for the platform's implementation and its relevance to their clinical practice.

Current pathway development efforts should move beyond documenting existing practice and instead adopt a transformative approach that actively reimagines service delivery. This requires convening primary care, secondary care, General Practice Committee Wales (GPCW), and local authority representatives in a shared space to co-design integrated pathways. CHP should not be seen as a "quick fix" to reduce referrals. Instead, it should be positioned as:

- A clinical communication tool
- A mechanism to reduce unwarranted variation
- A platform to support equitable access to care

To support the widespread adoption and effective utilisation of the Platform (CHP), it is recommended that concise and accessible informational resources—such as leaflets and digital materials be developed and disseminated across all health boards.

These resources should clearly communicate the platform's objectives and emphasise its potential benefits, particularly in relation to enhancing clinical decision-making, streamlining referral processes, and improving patient care. Tailoring content to highlight the relevance and utility of the CHP for individual stakeholders will be critical in fostering engagement and integration into routine practice.

Recommendation 4: Embed CHP in Operational Pathways

A lack of operational ownership has been identified as a key barrier to the effective implementation of the CHP Platform. To overcome this challenge, the platform should be formally integrated into routine clinical practice, with explicit support from secondary care services. Furthermore, alignment with existing service redesign initiatives and triage models is essential to ensure coherence with broader system transformation efforts and to facilitate sustainable adoption across care settings.

Recommendation 5: Improved Governance

Robust and clearly defined governance structures should be established to ensure effective oversight and accountability. These structures must incorporate mechanisms for shared accountability among stakeholders, transparent reporting lines to enhance operational clarity, and alignment with national digital and clinical strategies.

Such governance arrangements are essential for fostering coordinated decision-making, maintaining strategic coherence, and supporting the integration of CHP within broader health system transformation initiatives.

Recommendation 6: Training

To optimise the effective utilisation of the platform by HCPs, it is essential to implement comprehensive onboarding and training mechanisms. Evidence gathered through direct engagement with HCPs highlights a prevalent perception of inadequate training and a lack of confidence in navigating the platform and accessing key functionalities. Accordingly, it is recommended that standardised training resources, including user-friendly guides, be developed and made readily accessible.

These materials should be tailored to accommodate varying levels of digital literacy and offered in multiple formats to address diverse learning preferences.

In addition, HCPs should have access to designated trainers or support personnel capable of providing hands-on guidance and responding to specific queries. The contact details and availability of these support resources should be clearly communicated and easily retrievable within the platform or associated documentation.

Recommendation 7: CHP champions

To support the effective implementation and sustained utilisation of the CHP platform, it is recommended that each health board designate one or more CHP representatives, referred to as "CHP Champions." These individuals would be responsible for engaging with both primary and secondary care teams to raise awareness of the platform, provide education and training, and facilitate the collection of relevant data where appropriate.

The presence of dedicated CHP Champions is expected to enhance stakeholder understanding, promote consistent usage, and support the ongoing evaluation of the platform's impact.

Data and Evaluation

The evaluation has identified that the availability and quality of routine data related to referrals and referral outcomes remain limited and inconsistent across health boards, posing challenges for robust analysis. To address these limitations and support future evaluations and progress reporting on the utilisation of the CHP platform, a series of recommendations have been developed.

These recommendations aim to improve data collection practices, enhance data accessibility, and establish standardised metrics for assessing referral quality and platform impact.

Recommendation 8: Data quality

A key finding of the evaluation is the widespread absence of robust, standardised data on referral activity and referral quality across health boards. This limitation significantly constrains the ability to assess the impact of the CHP platform.

Consequently, it is recommended that systematic data collection practices be established within each health board to generate high-quality, consistent data on referral processes. These data should be directly aligned with key performance indicators (KPIs) associated with the CHP platform. To accurately assess the clinical utility and impact of CHP, it is recommended that pathway engagement data, such as page views be systematically contextualised alongside appointment and referral rates.

This triangulated approach enables evaluators to distinguish between passive usage and meaningful clinical adoption, thereby providing a more robust understanding of how CHP influences decision-making, service demand, patient flow and service transformation priorities.

Furthermore, it is advised that data collection be integrated into the pathways themselves, enabling real-time evaluation of the platform's effectiveness. For example, embedded prompts such as, "Has this pathway enabled you to make a more appropriate referral?" could be used to capture user feedback and assess alignment with the platform's intended goals.

Recommendation 9: Continued Evaluation

Building on the findings of this evaluation, it is recommended that a structured framework be developed to support the ongoing assessment of the CHP platform. This framework should incorporate clearly defined, measurable objectives linked to KPIs, thereby enabling continuous monitoring of platform effectiveness and alignment with intended outcomes.

Notable variation exists across Health Boards (HBs), particularly in engagement and communication strategies and in secondary care triage practices. Future evaluations should examine the extent to which these variations influence platform uptake, clinical behaviours, and patient outcomes.

Sustained evaluation efforts will be critical to inform strategic decision-making, guide iterative development, and ensure that the platform continues to deliver value across the healthcare system.

Future evaluations should:

- Involve key stakeholders early, including those with deep implementation knowledge.
- Be co-designed with operational and clinical leads.
- Include KPIs that reflect real-world impact, not just usage metrics.

Usability

Usability of the CHP platform emerged as a key theme during the evaluation. Feedback from users highlighted several areas where enhancements could improve the overall user experience and facilitate more effective engagement with the platform.

Based on this, a number of further recommendations have been proposed to address usability concerns and support the development of a more intuitive and accessible interface for HCPs.

Recommendation 10: Review of CHP Interface to improve Usability

A common theme amongst participants was the difficulty navigating the CHP platform, which some users found confusing and difficult to follow. It is recommended that the layout and interface of the platform is reviewed to improve ease of use and efficiency of using the platform.

Recommendation 11: Single Sign in for Practices

To optimise the usability of the platform within clinical environments, it is recommended that enhanced integration and single sign-on (SSO) capabilities be implemented. These improvements should be designed to align with existing clinical workflows, thereby reducing friction in user access and promoting seamless interaction with digital systems.

Recommendation 12: Learn from International Experience

Valuable insights can be derived from the evaluation work undertaken in New South Wales. Comparative analysis of these findings should inform future considerations, particularly with respect to:

- The scalability of the intervention;
- Its alignment with population health priorities;
- The design and implementation of governance models.

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Abbreviations

ABUHB	Aneurin Bevan University Health Board
ATiC	Assistive Technologies Innovation Centre
BCUHB	Betsi Cadwaladr University Health Board
CAVUHB	Cardiff and Vale University Health Board
CHP	Community HealthPathways
COPD	Chronic Obstructive Pulmonary Disease
CTMUHB	Cwm Taf Morgannwg University Health Board
DHCW	Digital Health and Care Wales
DHT	Digital Health Technology
DPIA	Data Protection Impact Assessment
ENT	Ear, Nose and Throat
GDPR	General Data Protection Regulation
GP	General Practitioner
HB	Health Board
HCP	Healthcare Professional
HDUHB	Hywel Dda University Health Board
IG	Information Governance
MRI	Magnetic Resonance Imaging
N/A	Not Applicable
NHS	National Health Service
NHSE	National Health Service Executive
NICE	National Institute for Health and Care Excellence
PIS	Patient Information Sheet
PREM	Patient Recorded Experience Measure
PROM	Patient Recorded Outcome Measure
PTHB	Powys Teaching Health Board
QMS	Quality Management System
R&D	Research and Development
SBUHB	Swansea Bay University Health Board
SAMD	Software as a Medical Device
SUS	System Usability Scale
TBD	To Be Determined
UEQ	User Experience Questionnaire
UK	United Kingdom
UWTSD	University of Wales Trinity Saint David
UX	User Experience
WIMD	Welsh Index of Multiple Deprivation
WP	Work Package

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1 Situation

1.1 Background and Context

Community HealthPathways (CHP) is an online manual used by clinicians to assess and manage patients in the community, covering a wide range of community and primary care conditions and services. It includes medical and non-medical management advice, diagnostics, and prescribing guidelines in line with national and local standards.

1.1.1 The Need

CHP was originally procured in Cardiff and Vale University Health Board (CAVUHB) in February 2019, with the aim of reducing variation in treatment, reducing delays, waiting times and potential harm to patients.

Early feedback on the CHP platform has been notably positive. Following its initial deployment within CAVUHB, the pilot phase yielded a series of significant improvements across the local health system. Among the most prominent outcomes was the health board's achievement of the greatest reduction in ear, nose, and throat (ENT) outpatient waiting lists in Wales. Additionally, there was an approximate 66% reduction in referrals for magnetic resonance imaging (MRI) of the knee and spine, indicating a substantial enhancement in referral management and diagnostic efficiency.

The success of the Cardiff and Vale implementation has contributed to growing confidence in the broader applicability of the CHP platform. As one NHS Wales clinical lead observed, "The Cardiff and Vale implementation of CHP gave us confidence in the value of rolling out across the rest of the country." This endorsement highlights the perceived scalability and strategic relevance of the platform.

Further, it was emphasised that "When scaled nationally, CHP will directly support the five work streams of the Strategic Programme for Planned Care and will magnify their impact. It also directly supports the Unscheduled Care, Primary Care and Mental Health, and End of Life Care programmes and thereby will also indirectly support the Planned Care Programme by reducing barriers to flow in these other programmes." This statement supports the platform's potential to act as a cross-cutting enabler of system-wide transformation, supporting both planned and unplanned care pathways and contributing to improved service integration across NHS Wales

In 2023 the decision was made for CHP to be centrally procured via NHS Wales, as a national solution for the creation, dissemination and maintenance of condition specific pathways of care. The decision to procure CHP nationally was informed by the demonstrably successful implementation of CHP in CAVUHB, and to make CHP available to all seven of the Health Boards (HBs) across Wales.

1.1.2 National rollout

The national rollout of the CHP platform in Wales has followed a coordinated "Once for Wales" approach. Under this model, individual HBs have taken the lead in developing specific clinical pathways, which are subsequently adapted by other HBs to align with local service configurations and operational requirements. This collaborative framework has facilitated consistency in clinical standards while allowing for necessary contextualisation across regions.

Currently, CHP is live in five of the 7 Health Boards, with the sixth (BCUHB) expected to launch in July 2025. There are now over 242 national pathways developed, with increasing platform usage, evidenced by 139,494 page views in the last quarter of 2024.

"CHP enables collaboration and standardising "the way we do things" across and within both primary and secondary care settings in your health system."

Comment of the official CHP website about the partnership in Wales.

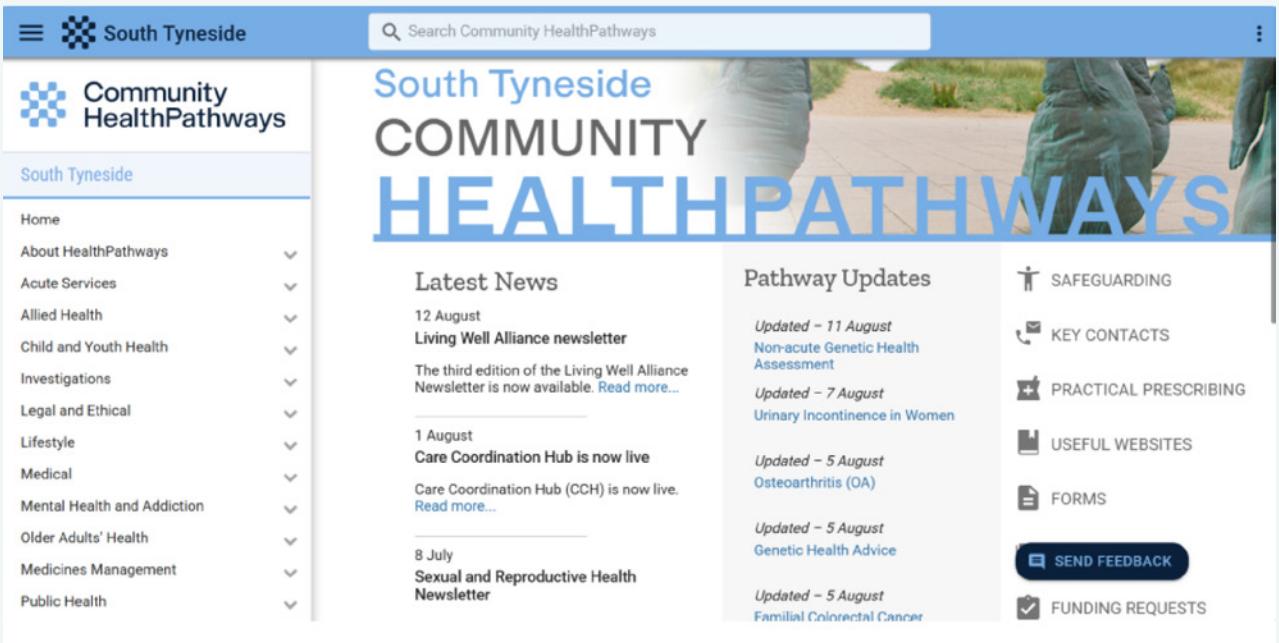
1.2 What is the CHP Platform

CHP provides clinicians with quick access to localised clinical guidance and best practice. It gives users instant guidance, including what questions to ask patients and what treatments are available (see Figure 1). This is combined with local information on what specialist care is available for patients in their region. It is a comprehensive tool, with more than 600 condition specific pathways that can be used by general practitioners (GPs), nurses, and other healthcare professionals (HCPs) across 60 health systems who care for 35 million patients across Australia, New Zealand, and the UK. At present the national programme has over 240 nationally developed pathways, developed with national clinical leads appointed by the relevant Clinical Implementation Network (CIN), with HBs then working with local subject matter experts to localise the pathway.

The development and review process underpinning the CHP platform is designed to elicit critical reflection on unconscious biases and implicit assumptions regarding patient behaviour and service availability. By systematically interrogating these assumptions, the process enables the identification and mitigation of potential inequities embedded within clinical pathways.

CHP is structured to accommodate necessary variation in care processes that arise from legitimate local differences in service configuration, population needs, and resource availability. Simultaneously, it serves as a mechanism for identifying and reducing unwarranted variation in clinical practice, thereby contributing to greater equity in health outcomes across regions.

Figure 1. View of the CHP dashboard as seen by primary care HCP using the platform.



At the point of care, CHP provides clinicians with locally agreed, evidence-informed guidance to support shared decision-making with patients. This ensures that clinical decisions are both contextually appropriate and aligned with best practice standards. The platform is particularly valuable in enabling GPs and hospital-based clinicians to make informed and supportive decisions in collaboration with patients, even when operating within the constraints of local service availability. They help to:

- Reduce variation in care, experience and outcomes for patients.
- Improve local resource use and avoid an over-reliance on secondary care.
- Translate national guidance into local practice consistently.
- Increase relationships and efficiencies across primary and secondary care.
- Improve trust and relationships across the care continuum.
- Save time for patients and clinicians.
- Improve capacity more efficiently.

1.3 Current Situation

At the time of the evaluation, CHP has been implemented across 5 of the 7 health boards in Wales and whilst the application has received favourable comments from health care professionals, the evidence on the benefits of the platform for patient outcomes and for the health service staff lacks conclusive evidence.

NHS Wales Performance and Improvement have determined that a real-world evaluation is commissioned to determine the value, or otherwise, of CHP.

1.4 Rationale and Aim of the Evaluation

To provide a robust and fair evaluation of the CHP platform, NHS Wales Performance and Improvement has commissioned the TriTech institute and Innovation team (part of the Research and Innovation department at Hywel Dda UHB) to conduct a comprehensive evaluation of the CHP platform over six months, providing a detailed report that will:

- Compare resource usage (clinical editor time, Health Board management time) between national implementation and isolated Health Board approaches;
- Evaluate the diversity of roles involved in clinical pathway development;
- Compare the number of subject matter experts involved in pathway development with other global implementations and within CAVUHB;
- Determine if clinicians recognise CHP as a valuable tool in their daily work;
- Assess whether user numbers and page views increase over time post-launch;
- Evaluate if CHP helps clinicians set realistic patient expectations by providing a useful patient information resource;
- Assess if CHP changes the speed of decision-making or the amount of clinical time spent searching for information;
- Measure changes in referral quality following CHP implementation, quantified by first-time acceptance, adherence to pathway guidelines, or correct referral direction;
- Impact on productivity, such as reduced demand on secondary care and reduced prescribing costs;
- Identify the most popular pathways in each area and understand the reasons for their popularity;
- Analysis of alternative products on the market and their relative benefits and costs;
- Strengths and weaknesses of the current offering;
- Business justification for continuing the programme; and
- Opportunities of integration of the platform into existing infrastructure and its effect on healthcare services.

The project has been commissioned by NHS Wales Performance and Improvement to determine the value for continuing to support the CHP platform. This will be achieved by a) exploring the value provided by continued investment in the CHP platform. b) The benefits of a national programme versus individual implementations. c) investigate alternative products available, along with their relative benefits and costs. The evidence obtained during the evaluation will help to support or oppose the business case for the

recommissioning the application. The evaluation will contribute to the practice of evidence-based medicine in Wales ensuring that resources continue to be utilised on interventions that provide the most value. The existing service in Wales and existing care models will be unaffected by the evaluation.

2 Evaluation Methodology

The study adopted a mixed-methods approach, combining both quantitative and qualitative data collection techniques. All data collected for the evaluation was anonymised and non-identifiable.

A preparatory lead-in phase began in December 2024, during which foundational activities, including stakeholder engagement, resource mobilisation, and preliminary planning were undertaken to ensure readiness for full evaluation. The duration of the evaluation itself was 6 months from 10th Feb 2025 to 22nd August 2025, as per the requirements of key collaborators. The timescale was agreed by all key stakeholders as a suitable time scale. Monthly project board meetings were held to oversee project governance and progress, and for stakeholders to input into the various deliverables and outputs e.g. protocol, questionnaire questions, interview questions

To understand the implementation and impact of CHP in Wales the evaluation was divided into several aspects and work packages. See GANTT chart (Appendix 1) for indicative timescales of individual work packages. The evaluation methodology focused on:

- Regulatory review of the CHP platform
- Literature review of the CHP platform and comparators on the market
- Effectiveness and Impact of the CHP Platform
- Value of the CHP platform

2.1 Regulatory Review

In addition, as part of the evaluation it was important to understand the regulatory aspects of using CHP technology. The intended purpose of the CHP system was investigated to ensure compliance with medical device regulations (MDR, 2002) (Medicines and Healthcare Products Regulatory Agency, 2024). Additionally, compliance to the relevant health IT software standards was investigated (NHS England, 2025).

2.1.1 Regulatory Compliance

Using the NICE evidence standards framework for digital technologies (The National Institute for Health and Care Excellence (NICE), 2018), CHP is expected to fall into tier A: System Service, with the key evidence considerations for defining and demonstrating value within this tier as follows:

- the DHT should comply with relevant safety and quality standards
- embed good data practices in the design
- describe the intended purpose and target population
- describe the current pathway or system process
- ensure appropriate scalability

The evaluation aims to provide evidence for the above elements where possible to determine the overall value of the platform according to recognised guidelines, as well as recognising that a key determinant of the value provided is the ability to provide up to date information and promote positive behaviour change amongst health care professionals and citizens agnostic of condition.

2.2 Literature Review

An extensive literature review was carried out to assess the current evidence on the effectiveness and value of CHP in improving decision making, efficiency and the quality of referrals. The review also aimed to assess the views of healthcare professionals and the barriers to successful implementation.

2.2.1 Competitor Review

In preparation for future commissioning decisions, it is essential to develop a comprehensive understanding of the digital health market, including the identification of potential competitors to the CHP platform. To support this objective, a structured scoping exercise was undertaken

to evaluate alternative platforms that may offer comparable functionality. This exercise involved mapping the core features and capabilities of each identified platform, with particular attention to their alignment with clinical workflow requirements and decision-support mechanisms. Where available, cost data were also collated to provide a comparative overview of the financial implications associated with each solution. The analysis aimed to highlight both similarities and differences in functionality, usability, and scalability, thereby informing strategic decision-making regarding future investment and deployment.

2.3 Effectiveness of the CHP Platform

2.3.1 Uptake of CHP

Data on the number of pathways developed and the number of CHP page views was provided through the HealthPathways Evaluation Dashboard, which was developed to provide a real time view of various performance metrics of CHP. Uptake data on individual pathways was available at the HB level, allowing for direct comparisons of uptake between the different HBs.

2.3.2 Impact of CHP on Referrals

Information was requested from various stakeholders to quantify the impact of CHP on referrals and referral quality. Data on total referrals from GPs were available publicly from StatsWales (Welsh Government, 2025). Additionally, data on population estimates of health boards from StatsWales were utilised to determine referral rates (Welsh Government, 2025 (2)). The most recently available estimates (mid-2023) were used for calculations relating to referral rate for 2024/25.

2.3.3 Impact of CHP on HCPs Across Wales

2.3.3.1 CHP 2025 Survey (TriTech and ATiC) and usability analysis of CHP

An independent survey was developed to evaluate the impact of the CHP platform on clinical practice. The design of the survey (see Appendix 2) was informed by input from a range of stakeholders engaged through the project board, ensuring that the instrument reflected diverse perspectives and operational contexts. The survey was jointly administered by the TriTech Institute and the Assistive Technologies Innovation Centre (ATiC), reflecting a collaborative approach to evaluation.

The primary objective of the survey was to assess whether the implementation of CHP had a positive or negative influence on the clinical behaviours of HCPs. To achieve this, the survey was structured around the Capability, Opportunity, Motivation–Behaviour (COM-B) model, a widely recognised framework for understanding behaviour change in healthcare settings. This approach enabled a systematic exploration of the factors influencing HCP engagement with the platform, including their perceived ability to use it effectively, the contextual opportunities for its use, and the motivational drivers underpinning adoption.

The findings from this survey are intended to inform future iterations of the platform and guide strategic decisions regarding its broader deployment and integration into clinical workflows. In addition, the usability of CHP was assessed using two widely recognised validated tools: the System Usability Scale (SUS) and the User Experience Questionnaire (UEQ). The survey was conducted through the Qualtrics online survey platform, with both English and Welsh versions of the survey available for respondents to complete.

In order to get maximum responses to the survey in a short time window, opportunistic sampling was carried out using the following methods:

- The survey was advertised via a link which was displayed on the CHP landing page.
- A letter was sent to all GP practices in HBs where CHP was actively being used, containing a link and QR code directed to the survey (Appendix 3).
- A link to the survey and QR code was shared via professional networks and social, such as VIVA Engage, Linkedin and X.

2.3.3.2 Rationale for use of COM-B to inform evaluation questions

The COM-B model stands for Capability Opportunity Motivation-Behaviour. It now forms the first element of the wider Behaviour Change Wheel (Michie, S., et al., 2011) and helps policy makers understand behaviour requiring change in the context within which it occurs.

The central tenet of the model is that in order for any behaviour to occur then an individual must have the capability to do it (have the knowledge and physical skills etc); the opportunity to do it (must have a conducive physical and social environment including being accessible, affordable, and socially acceptable); and have a strong motivation to engage in the relevant behaviour.

When trying to change behaviour (in this context, increasing appropriate self-management behaviours), increasing one or more of these factors may also result in changes in the other factors (e.g., through increasing motivation, people may be more likely to engage with CHP and therefore increase their psychological capability to understand how to self-manage their behaviours.

The COM-B model has been used extensively to inform the field of self-management apps including for respiratory conditions and in understanding aspects of self-management and adherence (Arden M.A., et al., 2021. Zhu, L., et al., 2023)

For the purposes of the CHP evaluation the COM-B model guidance and exemplars were used to initially develop seventeen items to capture relevant COM-B constructs Respondents were asked to rate each item on a 5-point scale, ranging from "strongly disagree" to "strongly agree.

2.3.3.3 Usability Analysis of CHP

ATiC has employed two widely recognised validated tools: the System Usability Scale (SUS) (Brooke, 1996) and the User Experience Questionnaire (UEQ) (Laugwitz, Schrepp, & Held, 2008).

1. System Usability Scale (SUS):

The SUS is a widely recognised tool for measuring usability. It consists of 10 statements rated on a 5-point scale, ranging from "strongly disagree" to "strongly agree." The scale focuses on the ease of use, effectiveness, and efficiency of a system, producing a single score between 0 and 100. In general, a score above 68 is considered above average, making the SUS ideal for evaluating whether users can intuitively navigate and complete tasks within the system.

The SUS's strengths lie in its simplicity, reliability, and validity across various industries, including healthcare. Its ease of application makes it a quick and effective way to gauge the usability of the CHP platform, providing a straightforward measure of how well users interact with the system.

2. User Experience Questionnaire (UEQ):

While the SUS measures usability, the UEQ goes further by assessing user experience across six key dimensions:

- o Attractiveness: The visual appeal and overall satisfaction.
- o Perspicuity: Clarity and ease of understanding.
- o Efficiency: How quickly and effectively users can achieve their goals.
- o Dependability: The system's reliability and trustworthiness.
- o Stimulation: The level of engagement and enjoyment users feel.
- o Novelty: How innovative and unique the app feels to users.

The UEQ employs a 7-point semantic differential scale to capture these dimensions, providing both functional and emotional insights into how users engage with the platform. It is a reliable tool that offers valuable feedback on how the platform meets users' cognitive and emotional needs. In the context of this study, the UEQ allows for a more detailed evaluation of how healthcare professionals experience the CHP platform, beyond just usability. The short-form UEQ (Schrepp and Hinderks, 2017) will be used

to reduce participant burden while still gathering meaningful feedback. By combining the SUS for usability and the UEQ for a comprehensive view of user experience, areas where the CHP platform excels and where improvements might be needed can be identified, ensuring the platform meets both practical and emotional needs of users (Brooke, J., 1996).

2.3.3.4 Health Care Professional Interviews

Upon completing the survey, HCPs had the option to provide their contact details for follow-up interviews. These semi-structured interviews allowed users to offer additional qualitative feedback on their experiences with the various elements of the CHP platform. Interviews were carried out with Commissioners, Primary Care HCPs, and Secondary Care HCPs to determine views of the platform from these three different perspectives (see Appendix 4-6).

2.3.3.4.1 Qualitative Data Analysis of the interviews

Qualitative data were analysed using thematic analysis (Braun and Clarke, 2008). Following familiarisation with the dataset, interview transcripts were coded systematically, and initial themes were identified. These themes were then reviewed, defined, named, and written up in an iterative manner.

2.3.3.4.2 Researcher description

The data analyst had a background in psychology and expertise in the analysis and interpretation of qualitative and quantitative data. The data analyst had no background in clinical practice and had no prior knowledge of CHP prior to analysing interview transcripts.

2.3.4 Value-Based Analysis

Value was determined through assessing the impact of CHP on patients, healthcare professionals and the wider healthcare system. This included the impact of the platform on referrals, efficiency, and staff working practices. Other non-tangible value of the platform was identified through qualitative interviews with health care professionals and patients. Thematic analysis was utilised to identify key themes related to the various components of the toolkit. A major focus of the HCP interviews was to identify the value of the CHP platform in providing health care professionals with the guidance to provide high-quality care.

2.3.5 Conclusions, Limitation and Recommendations

The final part of the evaluation focused on summarising the findings from the evaluation and drawing conclusions. The conclusions focused on the value and impact of CHP and also identified the limitations of the CHP platform (if any) and the evaluation process (if any). Finally key recommendations around the CHP platform were provided.

2.4 Data Analysis

Statistics were carried out using IBM SPSS version 29. Data normality were assessed via Shapiro-Wilk test and Q-Q plots. Normally distributed data are presented as mean ± standard deviation, and non-normally distributed data are presented as median (IQR).

3 Findings

3.1 Regulatory Review

3.1.1 Intended use of CHP

The intended use of CHP as defined in the Clinical Safety Case Report provided by Streamliners NZ Ltd. as part of this evaluation is as follows:

"The platform is web based and restricted for use by qualified health and social care professionals.

HealthPathways falls into two separate offerings that can be standalone or linked depending on customer preference."

3.1.1.1 Community HealthPathways

Provides general practice teams with standardised information in relation to local agreements for the assessment and management of patients with common medical conditions or symptoms. Although focused on providing care in the community, information is also provided on the criteria and process for requesting support from local specialist services.

Written primarily for general practice teams, Community HealthPathways is also available to, and used by, health and social care professionals across the system.

3.1.1.2 Hospital HealthPathways

Provides secondary care clinicians with access to a similar suite of localised pathways, in this instance reflecting the agreed pathways within an acute Trust. Written primarily for junior doctors, and for senior doctors working outside their specialty, Hospital HealthPathways is used across an organisation to promote standardised ways of working, to reduce duplication, inconsistency, and confusion."

3.1.2 Regulatory compliance with intended use of CHP

In accordance with its intended use, the CHP platform does not meet the criteria for classification as a medical device under the UK Medical Devices Regulations 2002 (UK MDR 2002). The platform is designed to support clinical decision-making rather than to diagnose, treat, or monitor patients independently, and therefore does not fall within the scope of regulated medical devices as defined by the Medicines and Healthcare products Regulatory Agency (MHRA).

However, as outlined in NHS Digital guidance (2022), CHP is utilised to support the real-time or near real-time care of patients. Consequently, the platform is subject to mandatory compliance with the clinical safety standards DCB0129 and DCB0160. These standards govern the application of clinical risk management in the development (DCB0129) and deployment (DCB0160) of digital health technologies used in direct patient care.

Furthermore, the Health and Social Care Act 2012, which underpins the legal enforceability of these standards, applies to both England and Wales. As such, DCB0129 and DCB0160 are legally recognised and mandated across both nations, ensuring consistent governance and safety assurance in the use of clinical software systems such as CHP.

3.1.2.1 DCB0129: Clinical Risk Management: its Application in the Manufacture of Health IT Systems

Prepared by the NHS England Clinical Safety team, DCB0129 is designed to help manufacturers of health IT software evidence the clinical safety of their products (NHS Digital, 2025). Importantly, CHP has been developed in compliance with the DCB0129 standard.

3.1.2.2 DCB0160: Clinical Risk Management: its Application in the Deployment and Use of Health IT Systems

Prepared by the NHS Digital Clinical Safety team, DCB0160 is designed to help health and care organisations assure the clinical safety of their health IT software (NHS Digital, 2023). It is the responsibility of the deploying organisations to ensure compliance with DCB0160.

3.2 Literature Review

3.2.1 Impact of CHP: What the Literature Says

A literature review was carried out to determine the impact of CHP on primary and secondary care services. The findings are summarised below with the full literature review in Appendix 7.

3.2.2 Impact of CHP: Summary of the Literature

Evidence supporting the use of the CHP digital referral platform primarily highlights its effectiveness in improving the quality of referrals, enhancing care coordination, and supporting clinical decision-making processes. While these system-level benefits are well-documented, the existing literature tends to focus more on implementation-related factors, such as

integration into clinical workflows, stakeholder engagement, and user experience rather than on direct patient-level outcomes. This emphasis reflects a broader trend in digital health evaluations, where early assessments often prioritise operational and behavioural impacts over long-term clinical effectiveness.

A mixed-methods study conducted by Akehurst et al. (2018) examining the implementation of HealthPathways in the United Kingdom found that the utilisation of online, evidence-based care pathways increased progressively over time, contributing to improved decision-making and referral processes across both primary and secondary care settings. The study identified several key facilitators of successful adoption, including strong leadership, the presence of established clinical networks, and effective integration into existing health system infrastructures. Conversely, barriers to implementation included limitations in resource availability and variability in the use of pathways across different clinical contexts.

While early implementation outcomes were promising in terms of enhancing referral quality and care coordination, the authors emphasised the need for further research to evaluate the impact on patient outcomes and to engage a broader range of stakeholders in future development and deployment efforts.

A systematic review of electronic community resource referral systems in the U.S. reported that such platforms, when integrated into clinical workflows and electronic medical records, facilitated connections to social and community resources. Successful implementation was associated with strong clinic-community partnerships and up-to-date resource directories. However, technical challenges, costs, and the sensitive nature of social needs were noted as barriers. The review emphasised that electronic medical record (EMR) integration and automation were advantageous but called for more robust implementation science and outcome studies (Drewry et al., 2023).

Additional studies on digital referral and decision-support systems indicate that these tools can improve the appropriateness and prioritisation of referrals, enhance data quality, and transform workflows, provided that user engagement and iterative feedback are prioritised (Mariotti et al., 2022, Warren et al., 2012). However, the evidence base is still developing, and most studies focus on process measures and clinician perspectives rather than direct clinical outcomes.

In summary, the current evidence supports the use of CHP digital referral pathways for improving referral processes, decision support, and care coordination, but further research is needed to establish their impact on patient outcomes and health system efficiency (Akehurst et al., 2018, Drewry et al., 2023, Mariotti et al., 2022, Warren et al., 2012).

3.2.4 Literature Review: Challenges and Barriers to Adoption of CHP

The literature review identified several challenges associated with the implementation of the CHP platform, as well as barriers to its broader adoption:

- A lack of integration of clinical systems (Goddard-Nash et al., 2020).
- Increasing volume and complexity of website content (McGeoch et al., 2015).
- Discomfort with the prescriptive nature of pathways (MeGeoch et al., 2015).
- Insufficient consideration to organisational dynamics, clinician workflows and cultural readiness for adoption (Stokes et al., 2018).

Although a growing body of evidence supports the potential benefits of the CHP platform particularly in enhancing referral quality, care coordination, and clinical decision-making, there remains a notable lack of independent, peer-reviewed studies that rigorously evaluate its effectiveness.

The majority of available evaluations are affiliated with organisations involved in the development or implementation of CHP, raising concerns about potential conflicts of interest. This limitation supports the need for further impartial research to validate the platform's impact, particularly in relation to patient outcomes and long-term system-level improvements.

3.2.5 Literature Review: Alternative Systems to CHP

As part of the literature review, a scoping exercise was undertaken to identify and examine alternative digital systems to the CHP platform. These systems are summarised in Table 1 below.

Table 1. Summary of alternative systems to CHP.

System	Scope	Customisation	Content	Target Audience	Access	Cost
Health-Pathways	Localised clinical care pathways and referral guidance across chronic diseases and acute conditions	Highly tailored to local health system resources, referral options, and service availability	Evidence-based clinical pathways, referral guidelines, local resources	General Practitioners (GPs), Primary care providers, Specialists	Web-based portal, login required	Subscription/ licensing by health systems.
UpToDate	Broad clinical decision support across specialties	Limited—Standardised content, minor local customisation	Peer-reviewed clinical summaries, guidelines, drug info, patient education	Physicians, Specialists, Allied health professionals	Web and mobile apps, subscription-based	Subscription per user or institution. $539 annually for an individual subscription.
BMJ Best Practice	Comprehensive clinical decision support covering diagnosis, prognosis, treatment	Minimal—Standardised clinical content, no local adaptation	Evidence-based clinical guidelines, diagnostic algorithms	Clinicians, medical students, allied health	Web and mobile app; subscription	Subscription-based; $209 per year for an individual physician licence.
DynaMed	Evidence-based clinical summaries for diagnosis and management	Low—Standardised, no local customisation	Concise evidence summaries, clinical guidelines	Physicians, primary care, specialists	Web and mobile apps, subscription	Subscription-based; competitive pricing: $399 for an individual yearly subscription.
ClinicalKey	Comprehensive medical reference, multimedia content across specialties	None—Standardised content with publisher updates	Medical textbooks, journals, guidelines, multimedia	Physicians, researchers, clinicians	Web platform, subscription	Institutional subscription; $299 for an individual annual subscription.
Isabel Healthcare	Diagnostic decision support and differential diagnosis tool	Low—Standardised content with some learning from local data	Symptom checker, diagnostic suggestions, case databases	Clinicians, GPs, specialists	Web-based and app; user login	Subscription-based per user or organisation. $119 for an annual single user subscription.

System	Scope	Customisation	Content	Target Audience	Access	Cost
E-RS (NHS Referral Service)	Electronic referral system integrated with NHS pathways	Moderate—Configurable to local NHS trust pathways	Referral management, patient booking, pathway adherence	GPs, primary care, secondary care	Integrated into NHS systems; online portal	Free to NHS users.
Accurx	Primary care communication platform including referral management	Moderate—Integration with local GP systems and workflows	Messaging, video consultations, appointment booking	Primary care clinicians, practice staff	Web and app, integrated with GP clinical systems	Free or low-cost for NHS practices.
Consultant Connect	Real-time clinical advice and referral support	Moderate—Links local GPs with hospital consultants	Phone/video consultations, referral advice	GPs, specialists	Mobile app and web	Commissioned by health services, cost varies by contract.
eConsult	Online consultation and triage platform for primary care	Moderate—Configurable questionnaires tailored to local practice	Patient questionnaires, automated triage, referral support	Patients, GPs, practice staff	Web portal, integrated with GP systems	Contracted/licensed to practices
NHS Pathways	Standardised clinical assessment and triage protocols	Low—Nationally standardised NHS content	Symptom assessment algorithms for urgent and emergency care	Call handlers, clinicians in urgent care	Integrated with NHS 111 and emergency services	Free to NHS services.
askmyGP	Online consultation system enabling remote triage and advice	Moderate—Configurable to practice workflows	Patient online consultations, triage, and messaging	Patients, GPs, primary care teams	Web and mobile app	Subscription/licensing to practices.

The scoping exercise found that CHP stands out for its high level of local customisation, offering tailored clinical and referral pathways specific to health systems. Additionally, there is a wider range of published literature on CHP when compared with other novel localised clinical pathway systems. However, platforms such as the NHS e-Referral Service (e-RS), Accurx, eConsult, and NHS Pathways may offer superior integration capabilities, as they are already embedded within existing NHS digital infrastructures. In contrast, CHP currently lacks integration with referral systems and electronic health records (EHRs), which may limit its interoperability and scalability within the NHS at the time of reporting.

In addition to these pathway-based platforms, several general clinical decision-support systems such as UpToDate, BMJ Best Practice, DynaMed, and ClinicalKey were also reviewed. These systems provide broad, evidence-based clinical content with minimal local customisation. While they are widely used for reference and decision support, their generic nature limits their applicability in supporting locally nuanced referral and care coordination processes. As such, although these platforms offer extensive clinical coverage, they do not replicate the tailored functionality or system-level integration potential of CHP or other NHS-specific tools.

Costs will vary depending on scale, licensing model, and region. Sources indicate that licensing for alternative systems could cost from around £300,000 to £800,000 based on a single subscription model and the number of GPs in Wales (Welsh Government, 2025). However, licensing costs would most likely be significantly lower than this, due to the scale of implementation.

3.3 Effectiveness of the CHP Platform

3.3.1 Uptake and Use of CHP

3.3.1.1 National Uptake

The implementation of CHP across Wales followed a staggered, health board-led approach. The platform was first introduced by Cardiff and Vale University Health Board (CAVUHB) in early 2019, serving as the initial pilot site. Subsequent rollouts occurred across Hywel Dda University Health Board (HDdUHB), Cwm Taf Morgannwg University Health Board (CTMUHB), Aneurin Bevan University Health Board (ABUHB), and Swansea Bay University Health Board (SBUHB) between late 2023 and early 2024. Most recently, CHP was introduced to Betsi Cadwaladr University Health Board (BCUHB) during the writing of this report (July 2025).

This phased deployment strategy enabled each health board to tailor the platform to local service configurations while contributing to a coordinated national implementation effort.

Table 2. Dates that CHP was introduced into each of the HBs in Wales.

Health Board	Date
CAVUHB	14/02/19
HDdUHB	13/12/23
CTMUHB	10/04/24
ABUHB	19/04/24
SBUHB	23/04/24
BCUHB	14/07/25
PTHB	N/A

The level of engagement with CHP can be defined by the number of pathways developed, or the overall interaction with the pathways in terms of page views. Data on pathway uptake were available through the HealthPathways Evaluation Dashboard from 21st June 2023 to present, at a national and HB level. The time period included in the evaluation was from 21st June 2023 to 31st May 2025.

3.3.1.1.1 Number of Pathways

The total number of pathways live on each of the sites at the time of extraction (31st May 2025) were as follows:

Table 3. Number of pathways live on each of the CHP sites as of 31st May 2025.

Health Board	Number of live pathways (n)
ABUHB	112
CAVUHB	398
CTMUHB	173
HDUHB	205
SBUHB	120
Wales Collaboration	283
Total across all sites	1,291

Figure 2 below shows the growth in live pathways to each of the sites from the introduction of CHP in CAVUHB in February 2019 to the end of May 2025.

Figure 2. Timeline showing number of live pathways on each of the CHP sites from February 2019 to May 2025.

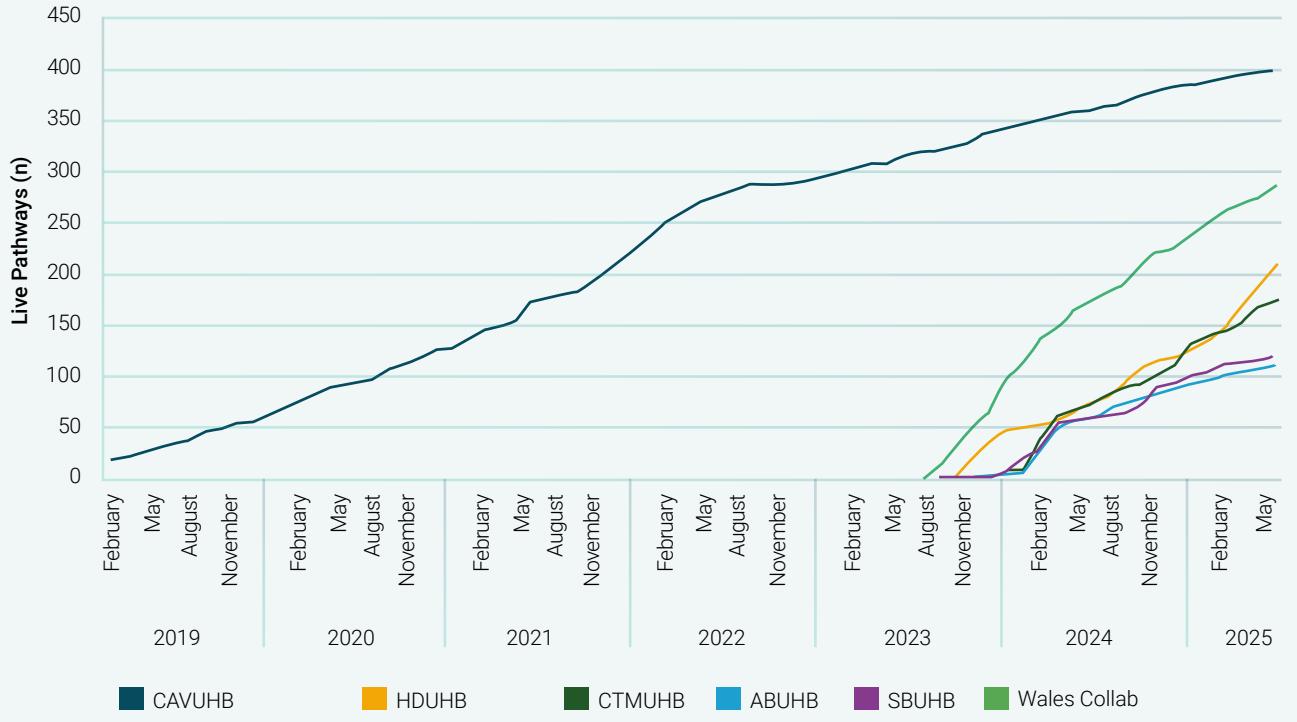
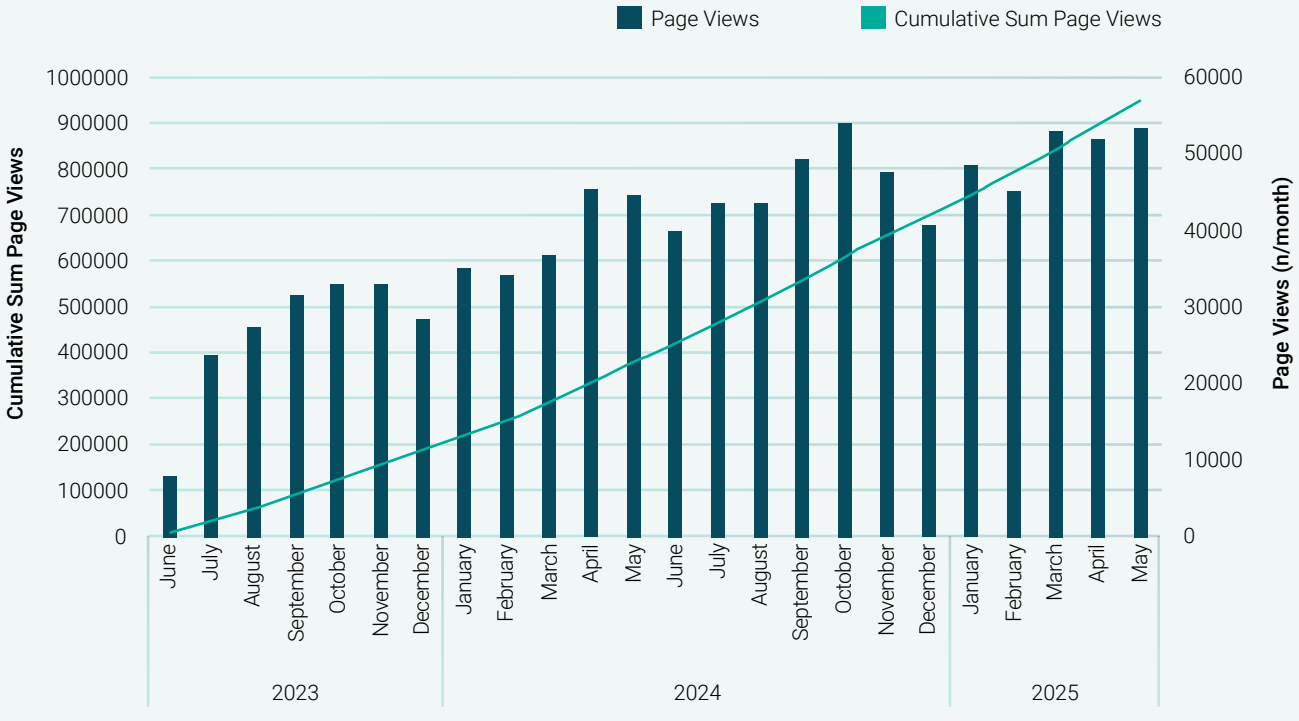


Figure 3. Page views per month, and cumulative sum of page views in Wales from 21st June 2023 to end of May 2025 across all sites.



3.3.1.1.2 Number of Page Views

During the time where pathway views were recorded from 21st June 2023 to 31st May 2025, there were a total of 949,563 page views across all sites, which equates to 173 page views per 1000 population (Figure 3).

As can be seen in figure 3 above, the total number of page views per month has steadily increased from 21st June 2023 to May 2025, from 23,666 views in July 2023 (first full month), to 53,397 views in May 2025, a 226% increase in views.

3.3.2 Diversity of roles involved in clinical pathway development;

Clinical pathway development has involved multiple stakeholders. The teams that develop and review content engage with clinicians of all levels of seniority across the health system, including clinical directors, doctors, nurses, allied health professionals, and relevant clinical governance groups and service level alliances. They collaborate using distributed clinical governance to ensure pathways reflect local clinical practice and achieve the best outcomes for patients.

3.3.2.1 Some of the People involved in the development and review of pathways:

Subject matter experts (SMEs):

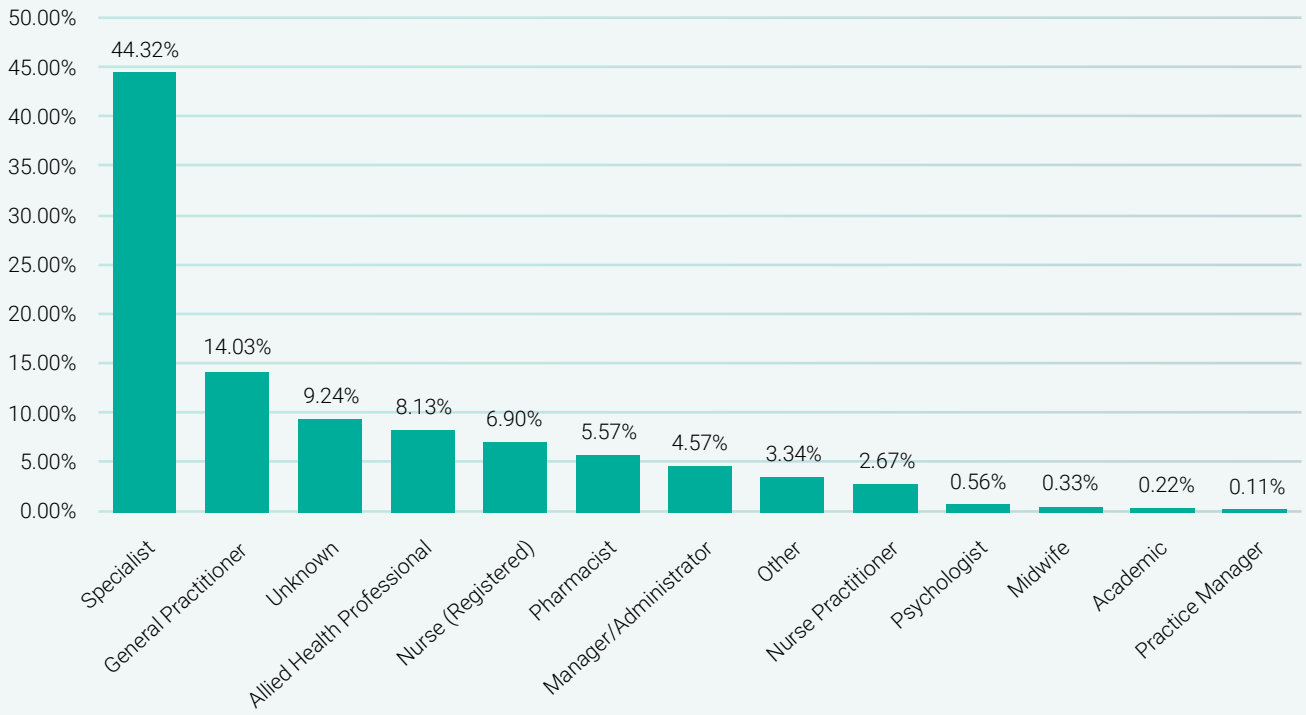
- People with clinical or health system expertise specific to the pathway being developed e.g. clinicians with experience in the pathway condition.
- SMEs help to develop the clinical content of the pathway and may be part of a clinical working group.

Representatives from non-government organisations, community support organisations, and charitable societies.

Clinical editors:

- Clinicians with relevant clinical knowledge who can provide a general perspective.
- Clinical editors compile and edit the clinical content of the pathway.

Figure 4. Percentage of subject matter experts by role (data extracted from the HealthPathways evaluation dashboard).



Technical writers:

- Highly skilled writers with technical and clinical writing expertise.
- Technical writers help to write/construct the pathways and other content.

Coordinators:

- Organisers who keep the whole team on track.
- Support the team and coordinate communications, content reviews, and working groups.
- Maintain information in the administrative system.

Members of the pathway's target audience may also review the draft pathway and provide input into its development.

Subject matter experts (SMEs) are from a diverse range of clinical roles, with the majority being medical specialists (Figure 4).

3.3.3 Uptake by Health Board

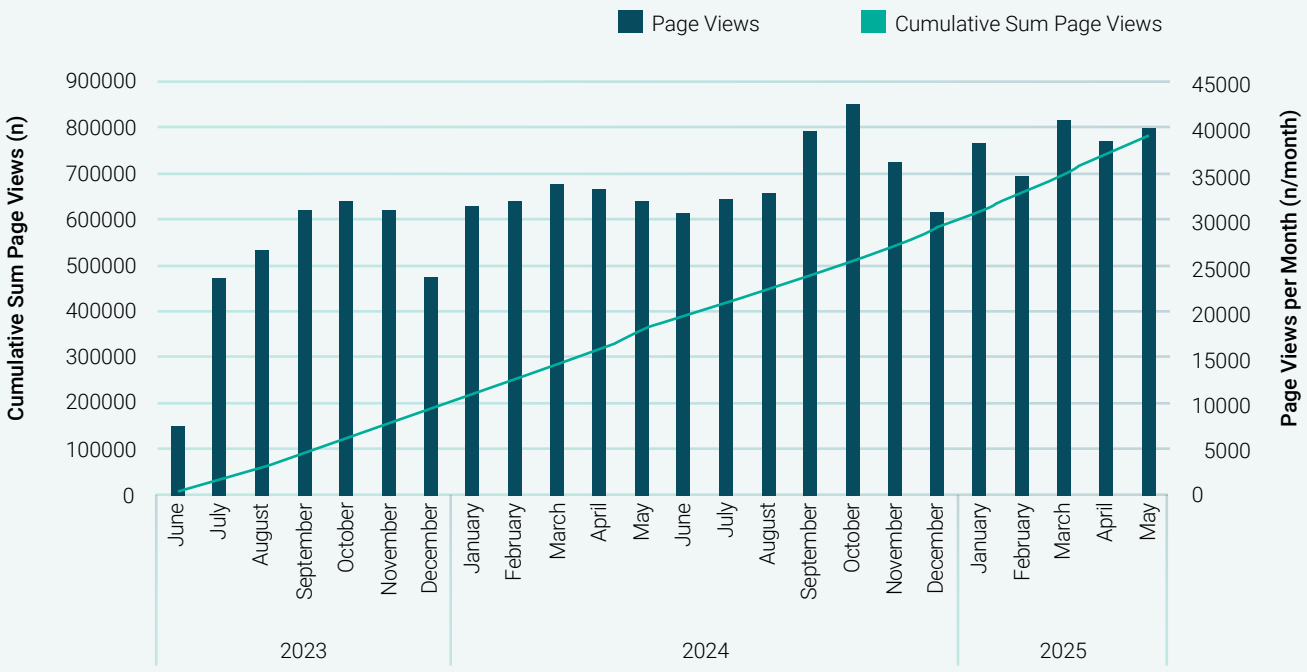
Uptake was explored for each of the active health boards individually:

3.3.3.1 Cardiff and Vale University Health Board

From 21st June 2023 to 31st May 2025, CAVUHB had a total of 773,996 page views. This equates to 1,493 views per 1,000 population.

A total of 398 pathways were live in CAVUHB at the time of data extraction on 31st May 2025, meaning each pathway had a mean of 1,945 views.

Figure 5. Page views per month and cumulative page views for CAVUHB from June 2023 to end of May 2025.

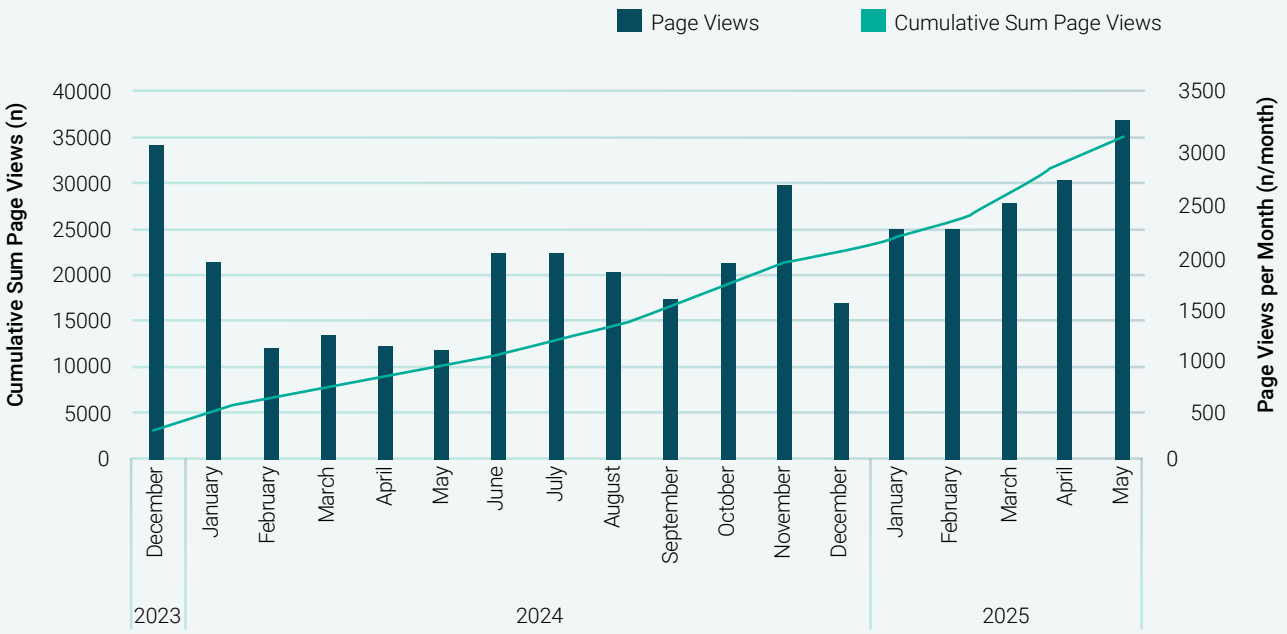


3.3.3.2 Hywel Dda University Health Board

From its launch on 13th December 2023 to 31st May 2025, HDUHB had a total of 35,083 page views. This equates to 90 views per 1,000 population.

A total of 205 pathways were live in HDUHB at the time of data extraction on 31st May 2025, meaning each pathway had a mean of 171 views.

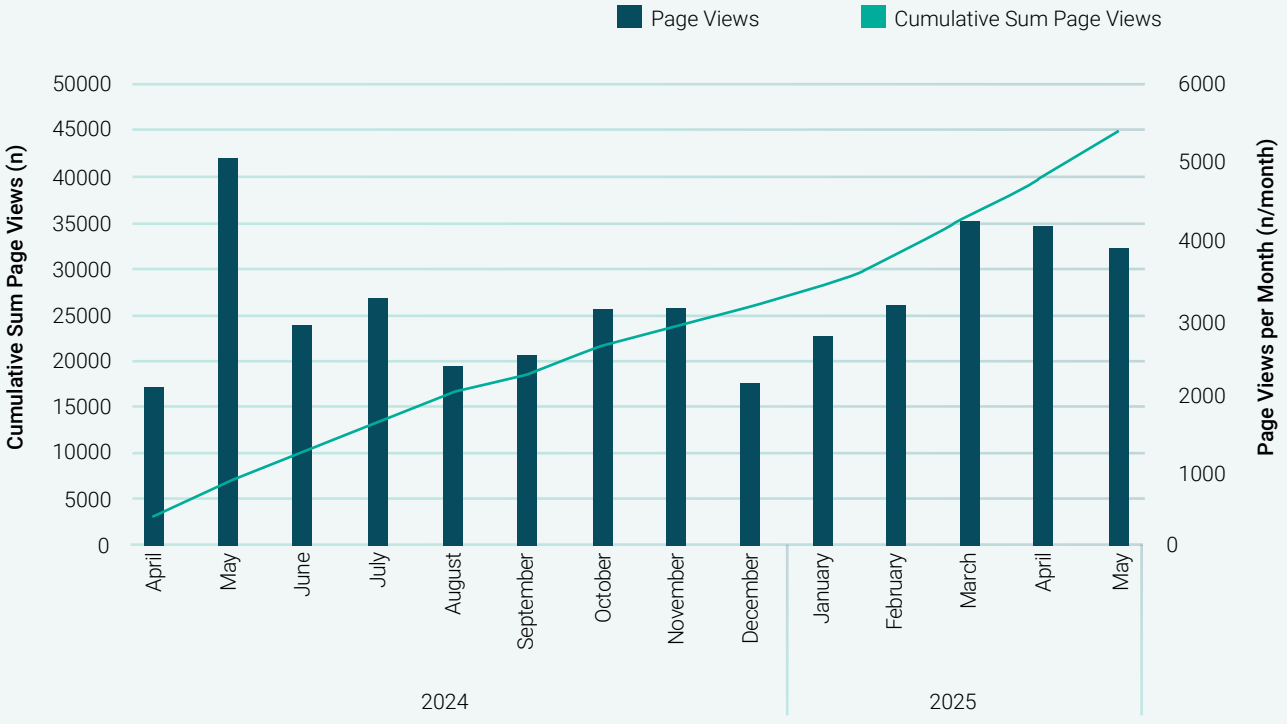
Figure 6. Page views per month and cumulative page views for HDUHB from December 2023 to end of May 2025.



3.3.3.3 Cwm Taf Morgannwg University Health Board

From its launch on 10th April 2024 to 31st May 2025, CTMUHB had a total of 44,525 page views. This equates to 100 views per 1,000 population. A total of 173 pathways were live in CTMUHB at the time of data extraction on 31st May 2025, meaning each pathway had a mean of 257 views.

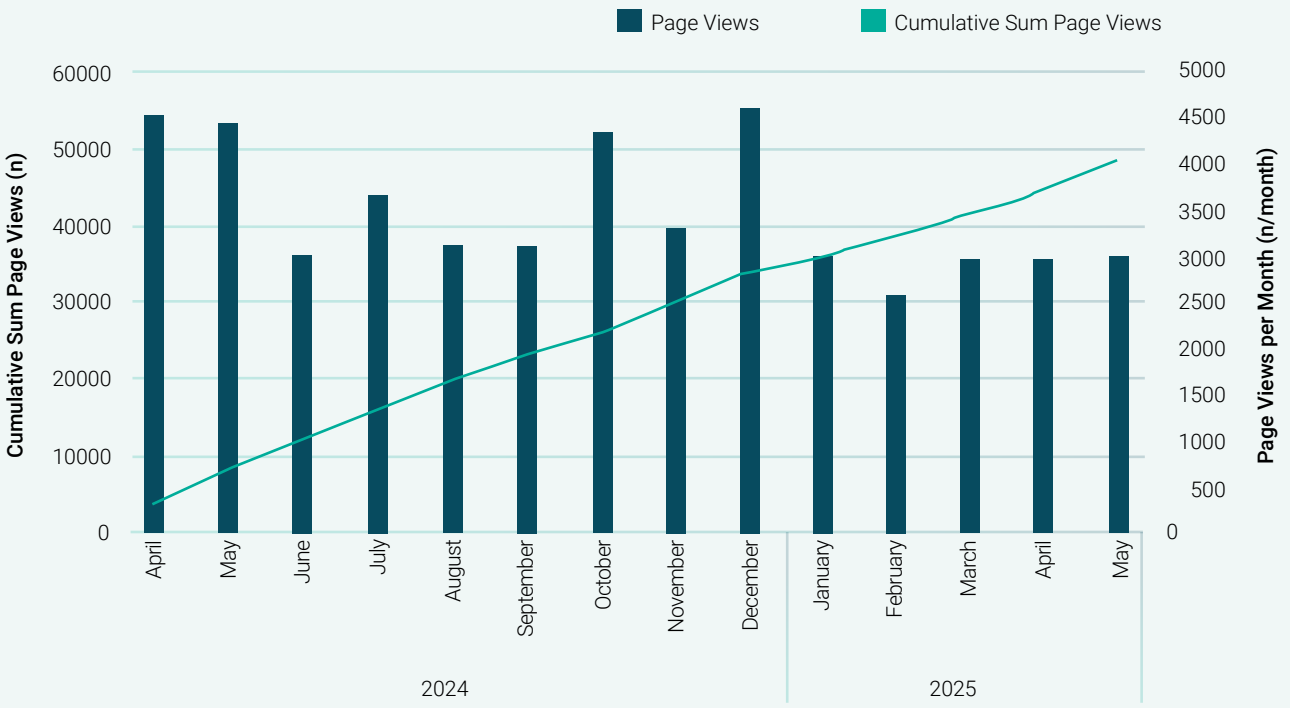
Figure 7. Page views per month and cumulative page views for CTMUHB April 2024 to end of May 2025.



3.3.3.4 Aneurin Bevan University Health Board

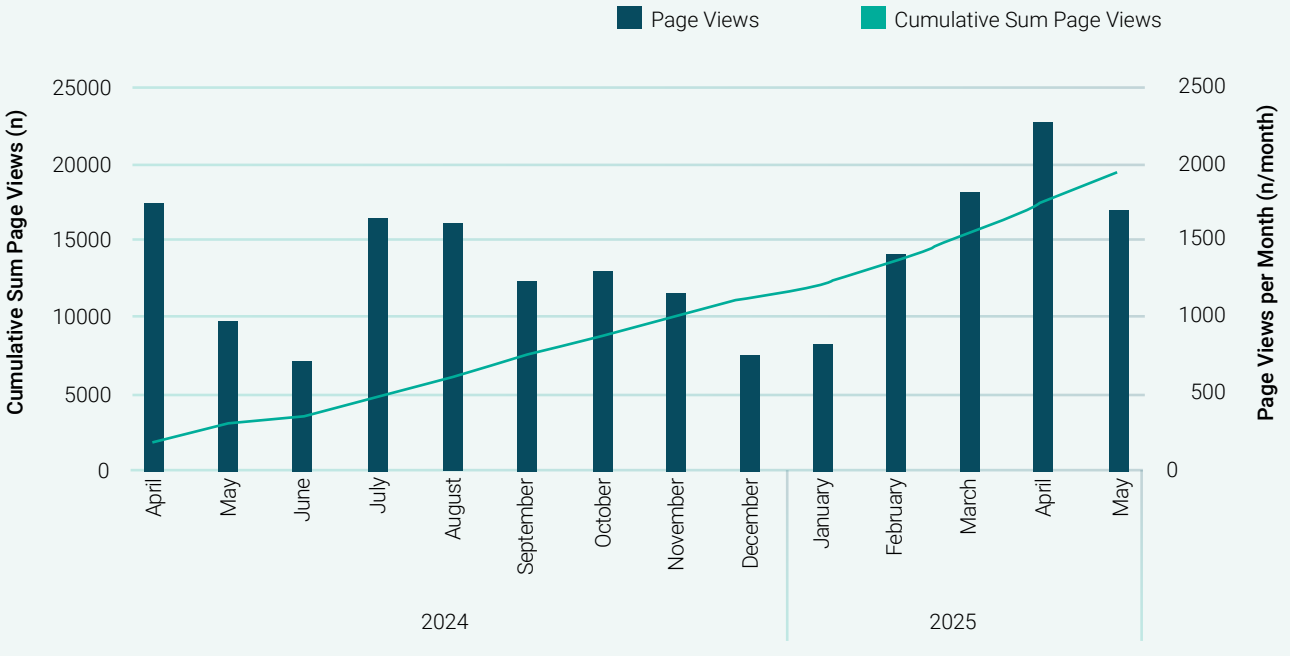
From its launch on 19th April 2024 to 31st May 2025, ABUHB had a total of 48,621 page views. This equates to 82 views per 1,000 population. A total of 112 pathways were live in ABUHB at the time of data extraction on 31st May 2025, meaning each pathway had a mean of 434 views.

Figure 8. Page views per month and cumulative page views for ABUHB from April 2024 to end of May 2025.



3.3.3.5 Swansea Bay University Health Board

Figure 9. Page views per month and cumulative page views for SBUHB from April 2024 to end of May 2025.



From its launch on 23rg April 2024 to 31st May 2025, SBUHB had a total of 19,129 page views. This equates to 49 views per 1,000 population.

A total of 120 pathways were live in SBUHB at the time of data extraction on 31st May 2025, meaning each pathway had a mean of 159 views.

3.3.3.6 Other Health boards

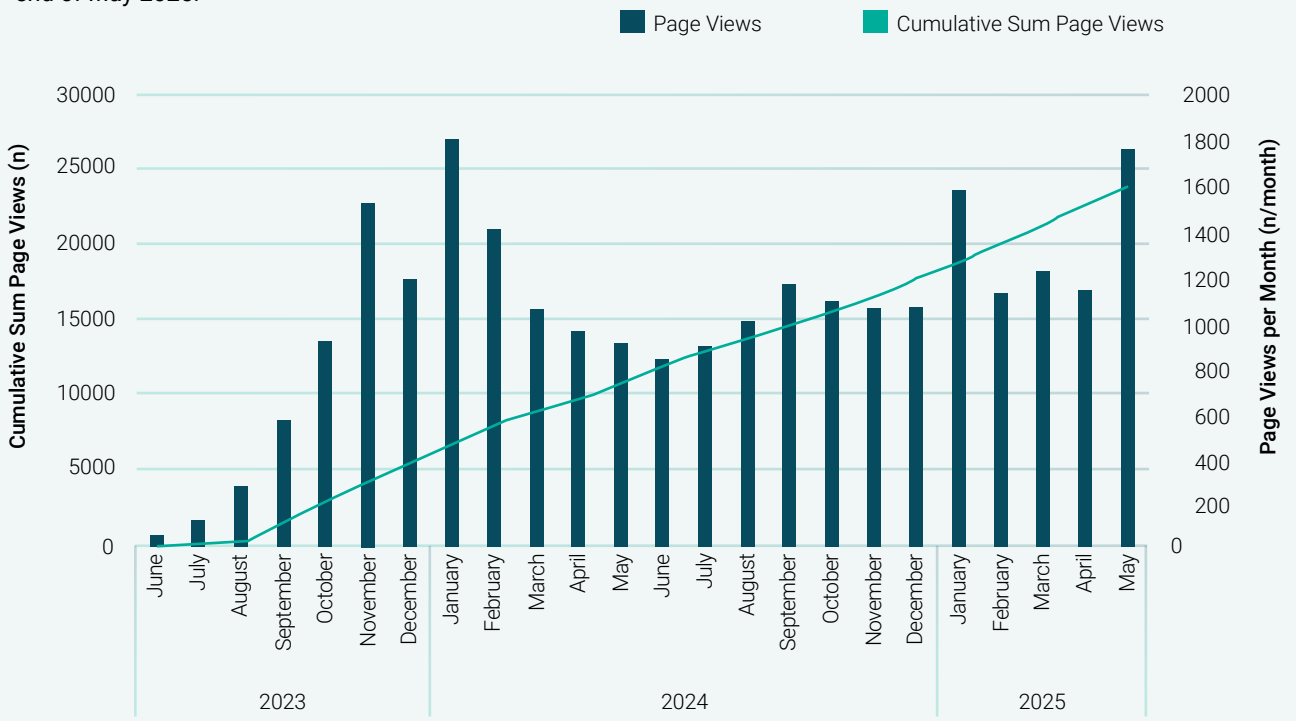
CHP went live in BCUHB on 14th July 2025, and as such no data were available to include in the evaluation. The platform has yet to go live in Powys Teaching health board.

3.3.3.7 Wales Collab Data

From its launch in mid-2023 to 31st May 2025, the Wales Collaboration site has had a total of 24,266 page views. This equates to 8 views per 1,000 population.

A total of 283 pathways were live on the Wales Collaboration site at the time of data extraction on 31st May 2025, meaning each pathway had a mean of 86 views. However, the Wales Collaboration site is not externally facing, and is only accessed by parts of the HealthPathways programmes (including clinical editors).

Figure 10. Page views per month and cumulative page views for the Wales Collaboration site from June 2023 to the end of May 2025.



3.3.3.8 Summary of Pathway Views Data

CAVUHB had the most engagement with the platform, with 398 live pathways and 1,493 views per 1,000 population, however, this is due to CHP going live in CAVUHB around 5 years before other HBs. ABUHB has the fewest live pathways with 112, followed by SBUHB with 120 pathways.

Lowest engagement at present in terms of page views per 1,000 population is SBUHB with 49, followed by ABUHB with 82.

As can be seen in table 4 below, all four other HBs have better engagement than CAVUHB did at one year in terms of the total live pathways. SBUHB has the lowest engagement in terms of page views per 1,000 population, however, data for CAVUHB was not available.

As all the logins for CHP are at a HB level, it was not possible to investigate uptake of CHP in each individual HB cluster or at the GP practice level.

Table 4. Comparison of CHP engagement at 1 year since introduction in the HB.

Health Board	Total Live Pathways at 12 months	Page Views per 1,000 Population at 12 months
CAVUHB	77	N\A
HDUHB	125	56
CTMUHB	155	86
ABUHB	106	75
SBUHB	116	45

3.4 Impact of CHP on Patient Referrals

To assess the impact of the CHP platform on the quality of patient referrals into secondary care, referral data were requested from five participating health boards: Aneurin Bevan University Health Board (ABUHB), Cardiff and Vale University Health Board (CAVUHB), Cwm Taf Morgannwg University Health Board (CTMUHB), Hywel Dda University Health Board (HDUHB), and Swansea Bay University Health Board (SBUHB). The data were requested at the condition level to enable mapping of pathway utilisation against referral patterns, with the aim of identifying any potential influence of CHP on referral quality, volume, or appropriateness.

In addition to referral data, supplementary datasets were opportunistically sourced from specific departments such as radiology to explore changes in service demand that could be partially or wholly attributed to the implementation of CHP. Following consultation with stakeholders, the evaluation team secured access to a substantial volume of referral data from HDUHB and CAVUHB. Based on the richness and relevance of these datasets, a case study approach was adopted to examine the effects of CHP on referral rates and rejection patterns. The following section presents selected case studies that illustrate the observed impact of CHP on referral processes within these health boards. The case studies include:

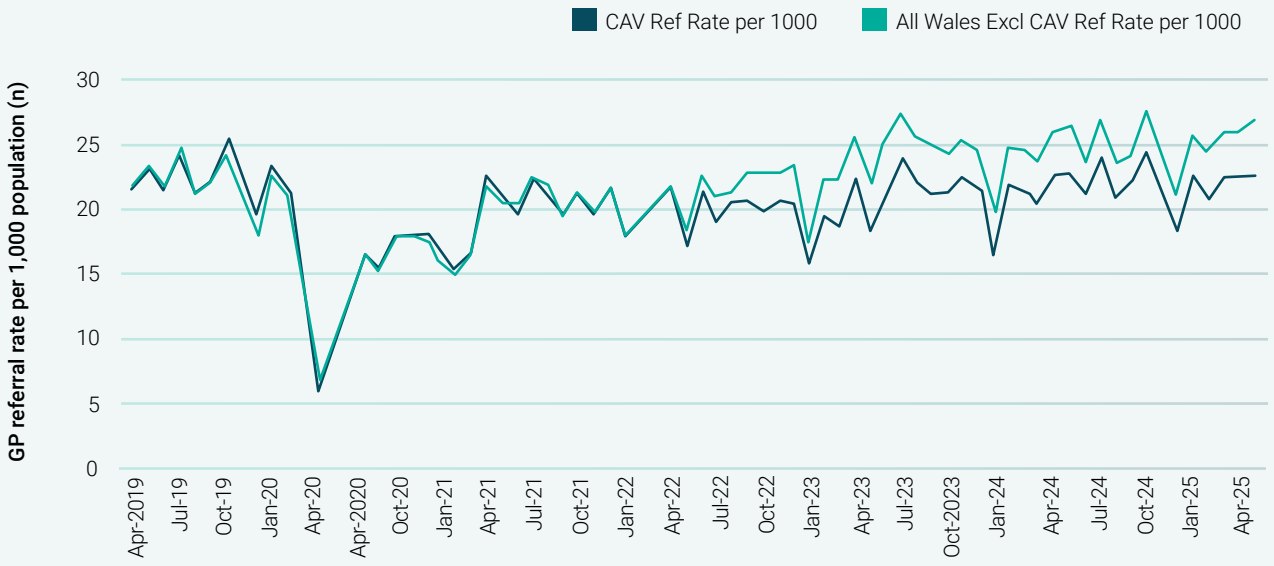
- Case Study: Referrals into CAV compared to the rest of Wales Case Study: Referrals into CAVUHB by Specialism
- Case Study: Referrals into HDDUHB by Specialism
- Case Study: Headaches in Adults in SBUHB
- Case Study: Audit of CHP Referrals
- Case study: The most popular pathways in terms of total views up until the end of May 2025:

3.4.1 Case Study: Referrals into CAVUHB compared to the rest of Wales

Data on overall health board referrals were publicly available from StatsWales (Welsh Government, 2025). The referrals per 1,000 population were estimated using health board population estimates on StatsWales (Welsh Government, 2025 (2)). The referrals per 1,000 population were reported on a monthly basis from April 2019 to April 2025.

Cardiff and Vale followed the trend of Wales until early 2022 in terms of the GP referrals rate per 1000 population. In early 2022, the referral rate for CAV diverged and was lower than the Wales referral rate, which was not seen in other health boards, except for PTHB, which was an outlier with much lower recorded referral rates, possibly due to cross-border care between Wales and England. Fig 20 shows that for the rest of Wales the rate of referral per 1000 population is increasing more rapidly when compared to CAVUHB which has remained fairly constants since April 2022. Whilst they cannot be exclusively attributed to the CHP Platform, there is coincidental evidence that following the end of lockdown and the promotion of the CHP within CAVUHB, the rates of referral in CAVUHB are lower than the rest of Wales.

Figure 11. Comparison of referral rate between CAV and the rest of Wales per 1000 population.



3.4.2 Case Study: Referrals into CAVUHB by Specialism

Data on accepted and rejected referrals in CAVUHB were provided by CAVUHB Information Department and the Business Intelligence Department.

3.4.2.1 Referrals by Specialism

As part of the evaluation a snapshot of several key services using CHP in CAVUHB were investigated.

Monthly data were provided as the total number of referrals per specialism from Jan 2021 to March 2025. The 7 services evaluated were: dermatology, ENT, gastroenterology, neurology, rheumatology, trauma, orthopaedics and urology).

Additionally, referrals that were Removed Other Than Treated (ROTT) and inappropriate referrals were provided for the same period.

3.4.2.1.1 Dermatology

Dermatology referrals and rejected referrals for CAVUHB are shown in figure 12 below CAVUHB has around 50% of referrals being rejected.

Cumulative and monthly CHP page views for dermatology are shown in figure 13 below.

As can be seen, CAVUHB dermatology, with almost 12,000 page views in a two-year period to May 2025. Despite this, the data appears to show CAVUHB still has a high percentage of inappropriate referrals into dermatology.

Figure 12. Monthly rejected and accepted referrals into dermatology services for CAVUHB from January 2018 to December 2024.

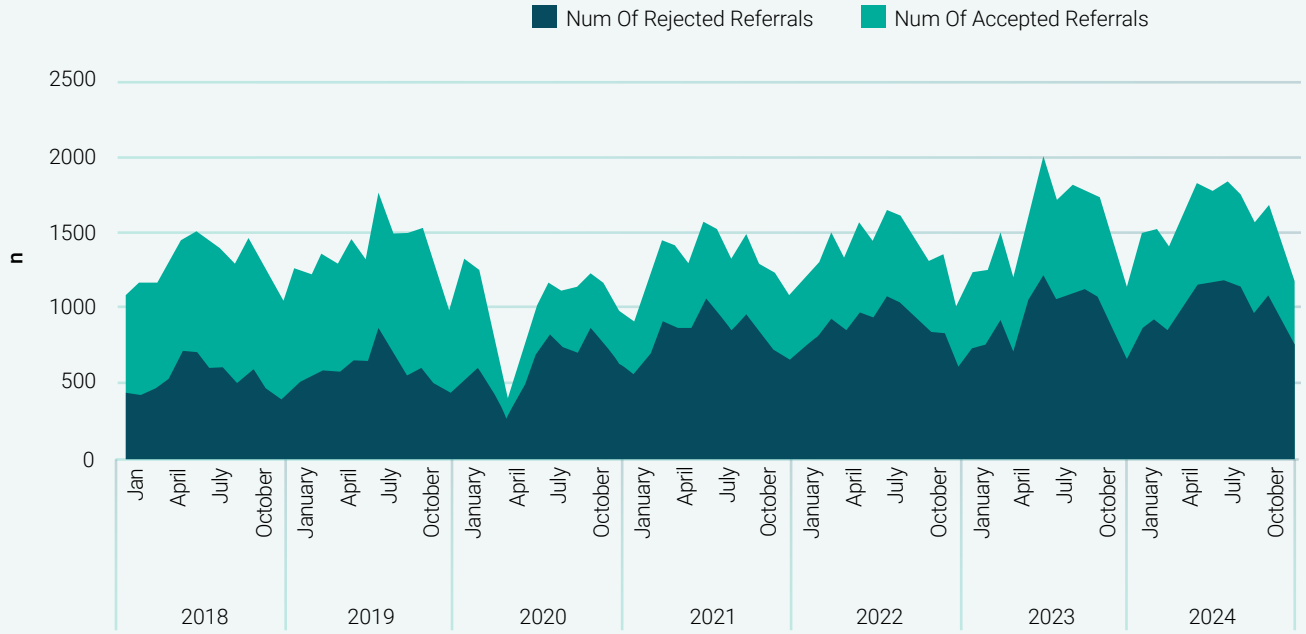


Figure 13. Cumulative and monthly page views for CHP dermatology in CAVUHB from June 2023 to May 2025.

3.4.2.1.2 Gastroenterology

Figure 14. Monthly rejected and accepted referrals into gastroenterology services for CAVUHB from January 2018 to December 2024.

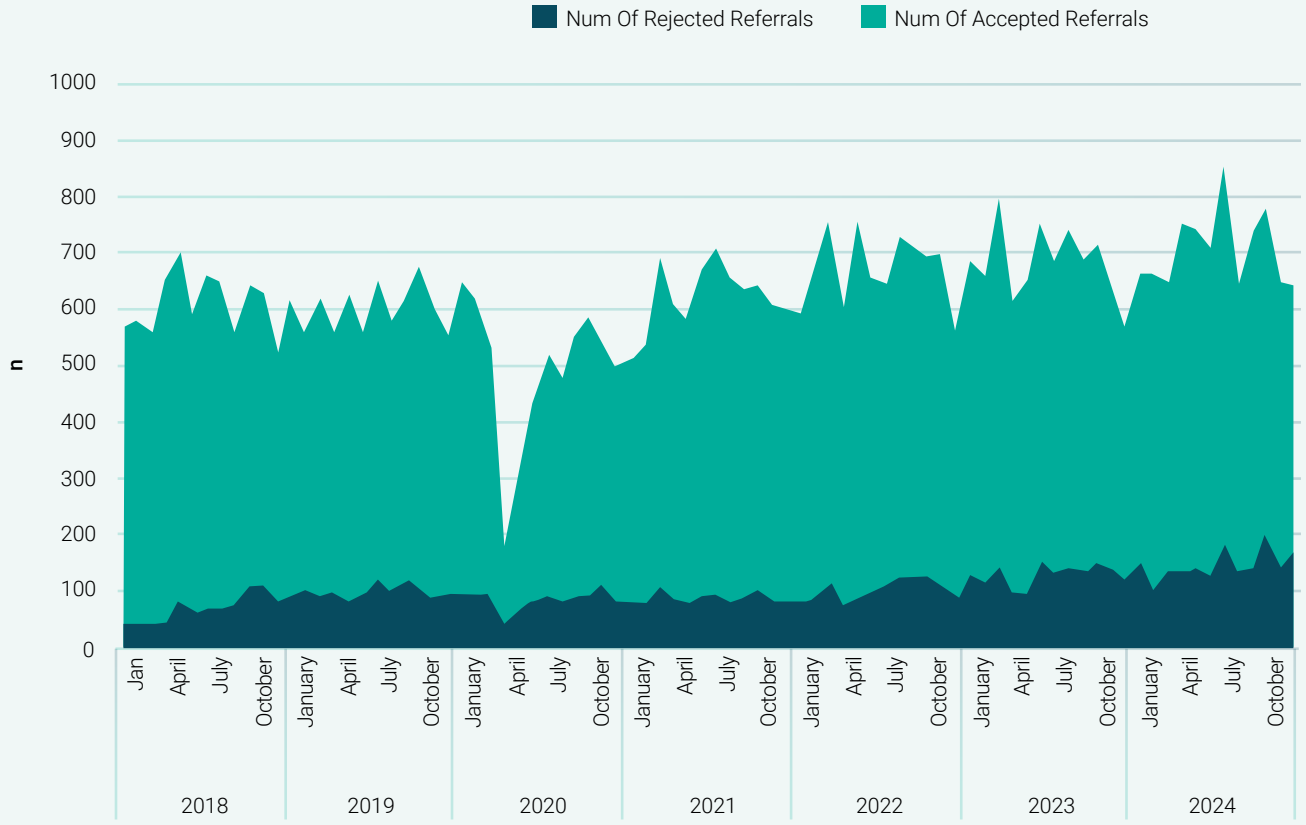
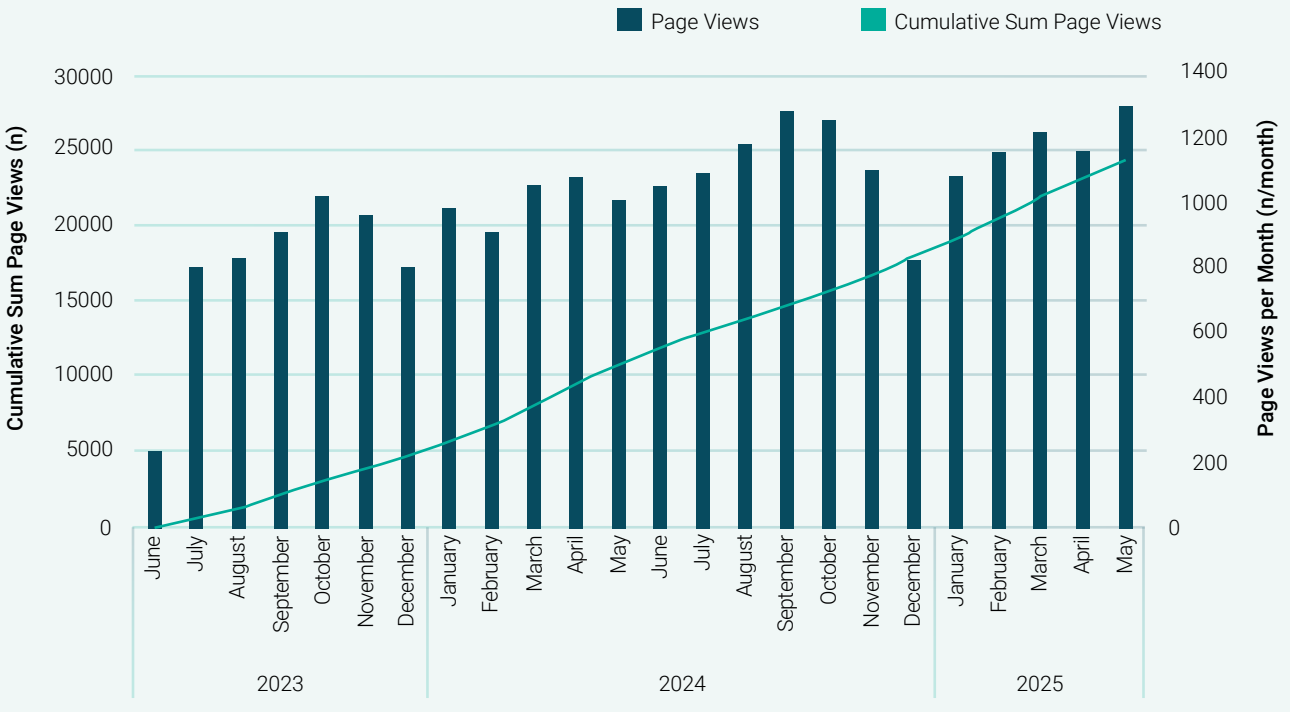


Figure 15. Cumulative and monthly page views for CHP gastroenterology in CAVUHB from June 2023 to May 2025.



Gastroenterology referrals and rejected referrals for CAVUHB are shown in figure 14 above. As can be seen in figure 14, the most recent data for CAVUHB show a referral rejection rate of around 25-30% for gastroenterology, significantly better than seen in dermatology.

Cumulative and monthly CHP page views for gastroenterology is shown in figure 15 above. Similarly to dermatology pathways, CAVUHB has seen a high number of views for gastroenterology, with almost 25,000 page views.

3.4.2.1.3 Ear, Nose and Throat (ENT)

Figure 16. Monthly rejected and accepted referrals into ENT services for CAVUHB from January 2018 to December 2024.

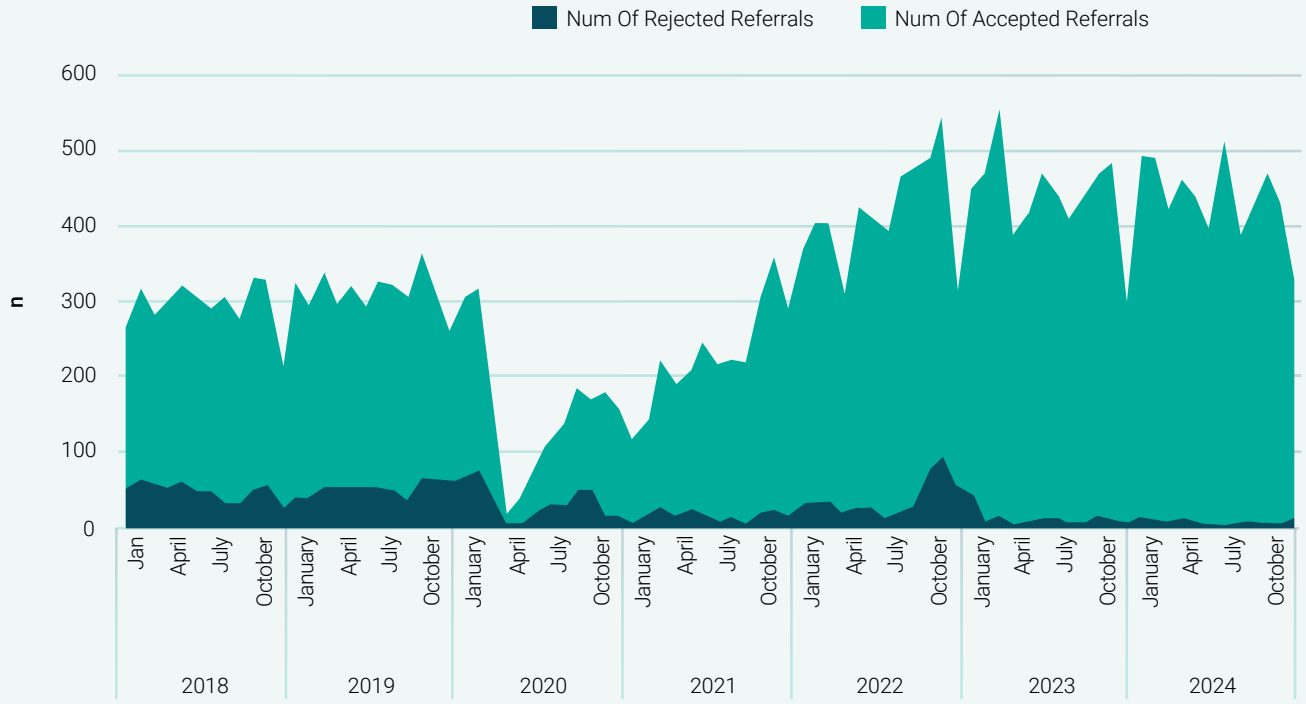
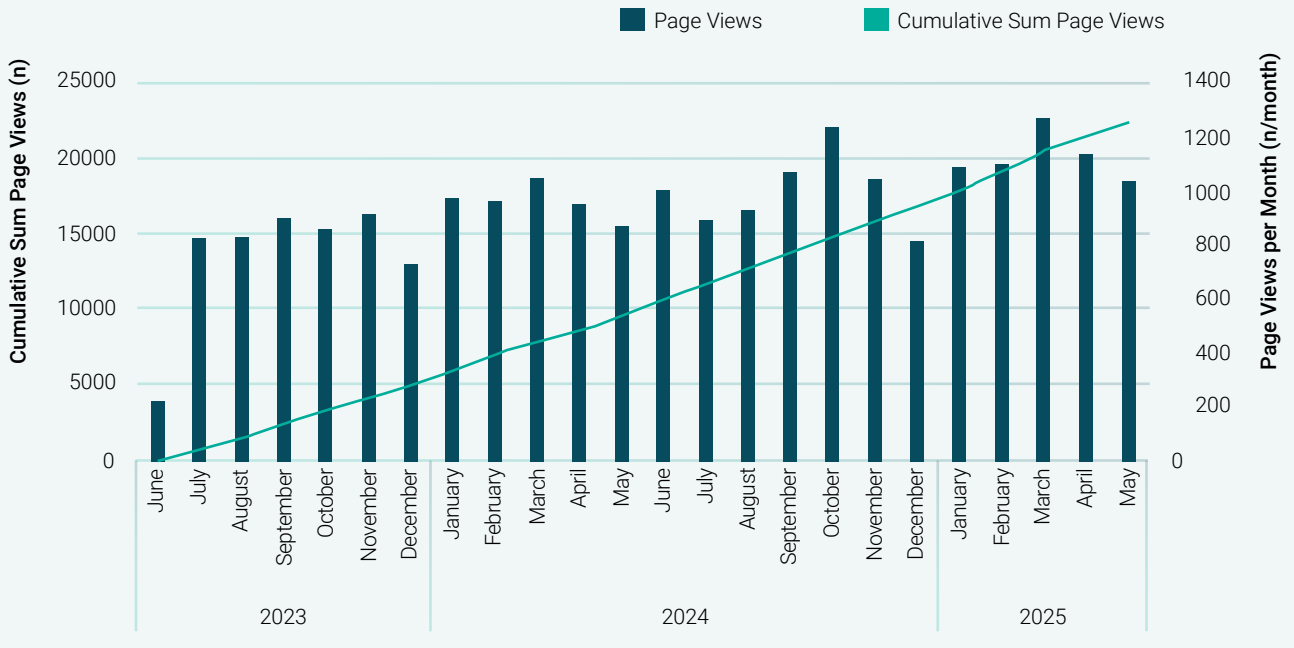


Figure 17. Cumulative and monthly page views for CHP ENT pathways in CAVUHB from June 2023 to May 2025.

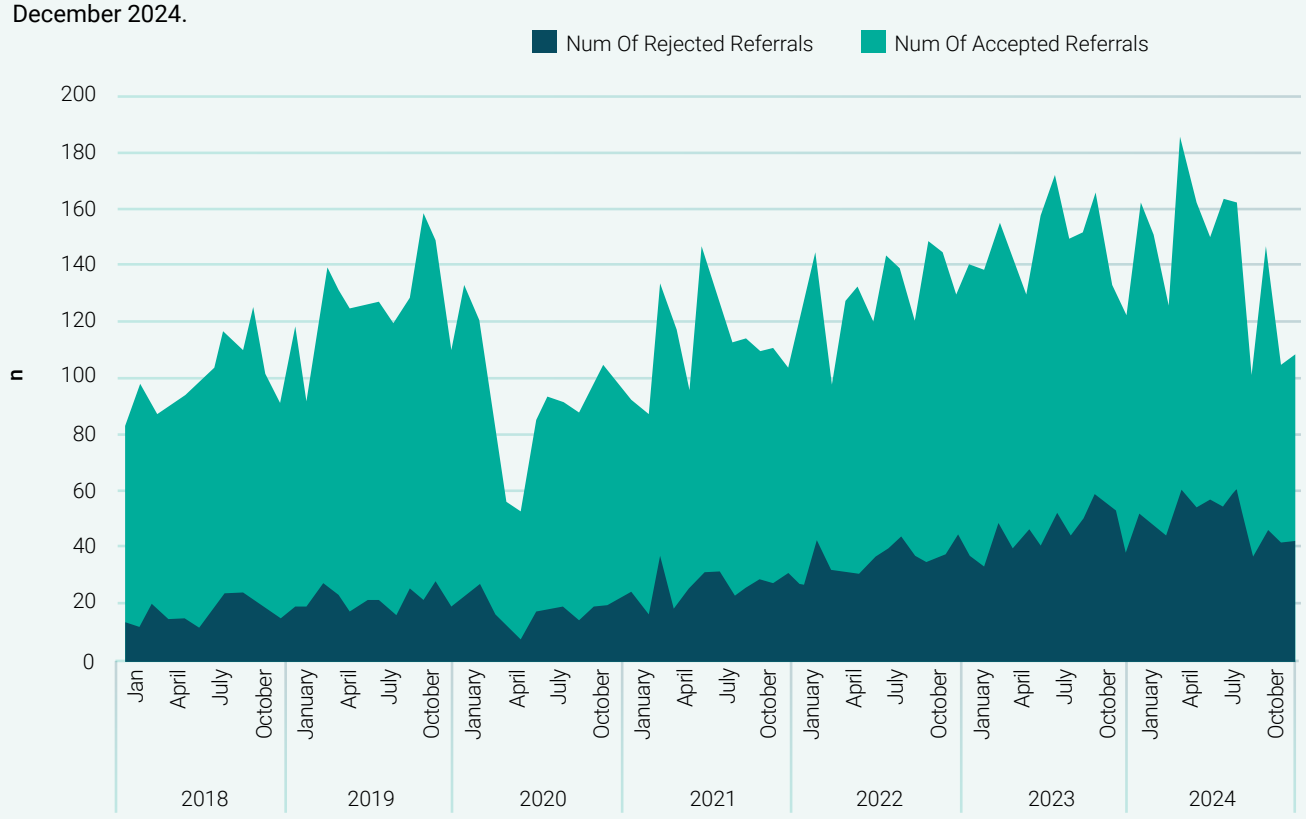


Ear, nose and throat referrals and rejected referrals for CAVUHB are shown in figure 16 above. As can be seen in figure 16 the most recent data for CAVUHB showing a rejection rate of less than 5% which is very low compared to other services.

Cumulative and monthly CHP page views for ENT services is shown in figure 17 above. CAVUHB has seen a relatively high number of views for ENT, with almost 23,000 page views in the two-year period up to May 2025.

3.4.2.1.4 Neurology

Figure 18. Monthly rejected and accepted referrals into neurology services for CAVUHB from January 2018 to December 2024.



Neurology referrals and rejected referrals for CAVUHB are shown in figure 18 above. As can be seen in figure 18, around a quarter of neurology referrals into both CAVHB were rejected.

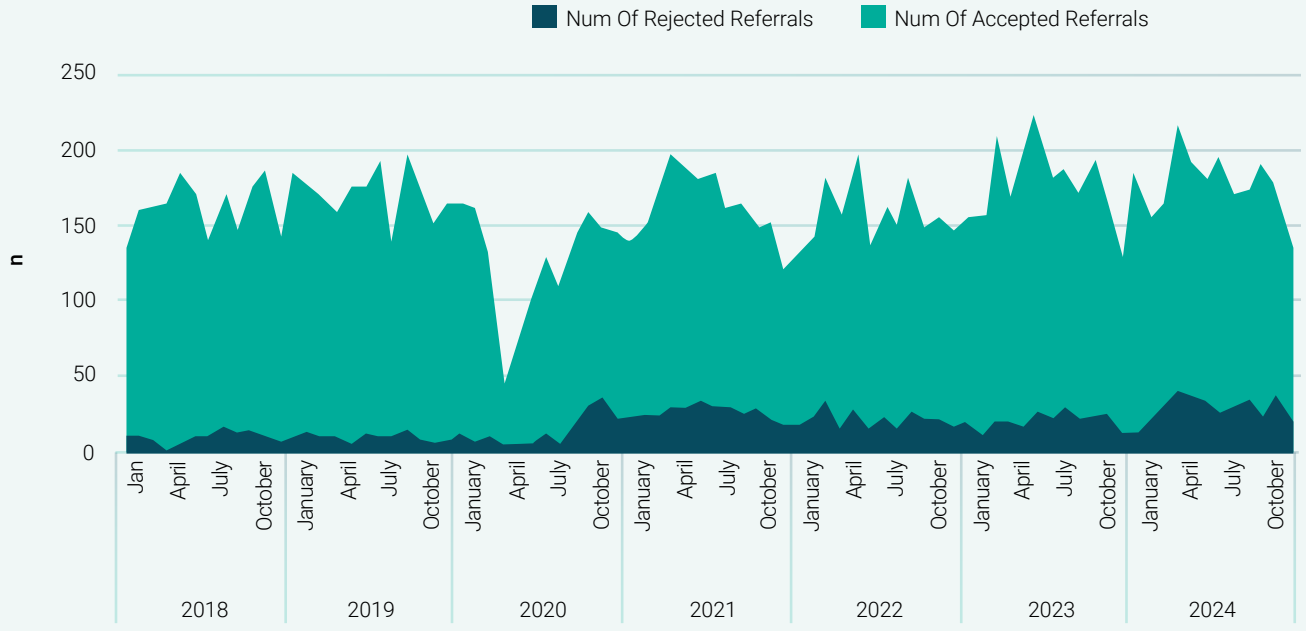
Cumulative and monthly CHP page views for neurology is shown in figure 19 below.

Similarly to other specialties, CAVUHB has seen a high number of views for neurology, with over 12,000 page views in the two-year period up to May 2025.

Figure 19. Cumulative and monthly page views for CHP neurology pathways in CAVUHB from June 2023 to May 2025.

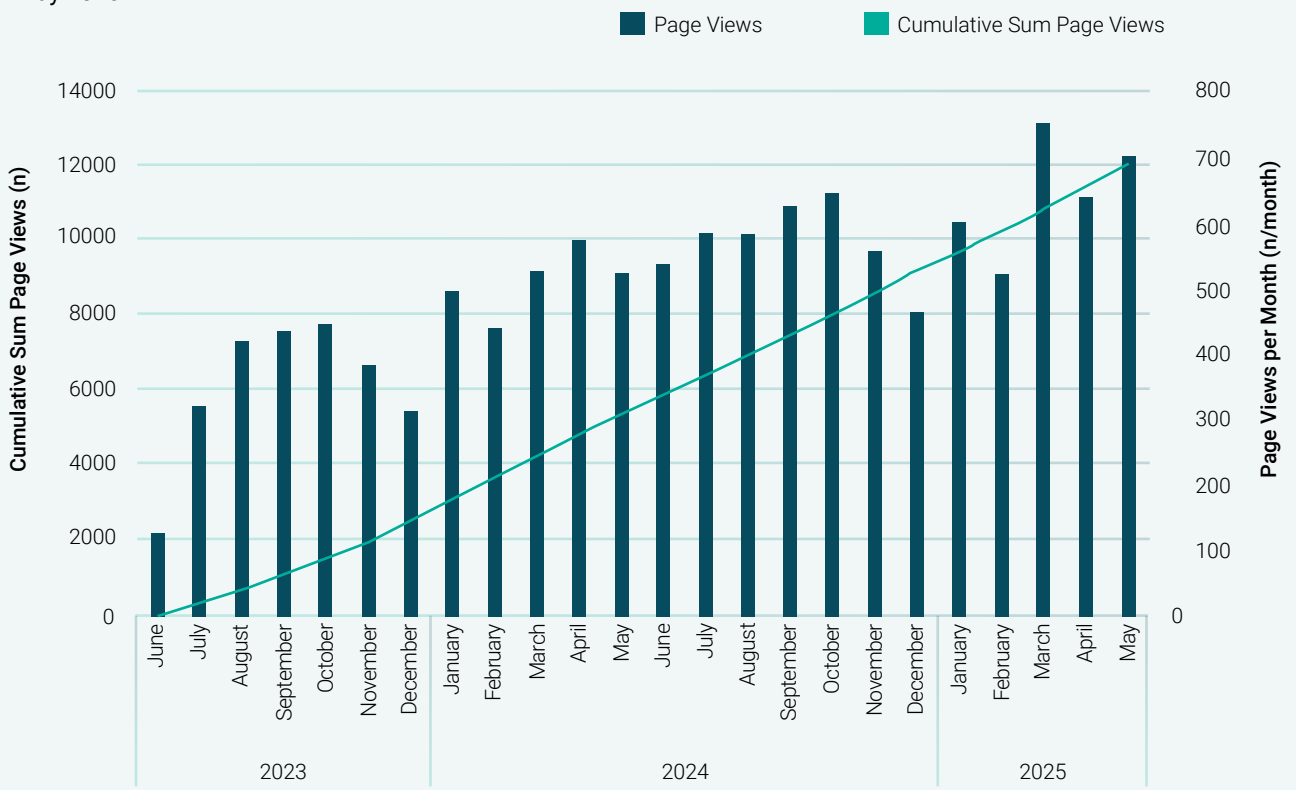
3.4.2.1.5 Rheumatology

Figure 20. Monthly rejected and accepted referrals into rheumatology services for CAVUHB from January 2018 to December 2024.



Rheumatology referrals and rejected referrals for CAVUHB are shown in figure 20 above. As can be seen in figure 20, the most recent data for CAVUHB showing a rejection rate of around 10-15%. Cumulative and monthly CHP page views for rheumatology services are shown in figure 21 below. Similarly to other specialties, CAVUHB has seen around 12,000 page views in the two-year period up to May 2025.

Figure 21. Cumulative and monthly page views for CHP rheumatology pathways in CAVUHB from June 2023 to May 2025.



3.4.2.1.6 Trauma and Orthopaedics

Trauma and Orthopaedics referrals and rejected referrals for CAVUHB are shown in figure 22 below. As can be seen in figure 22, the most recent data for CAVUHB showing a rejection rate of less than 10%.

Cumulative and monthly CHP page views for trauma and orthopaedics services are shown in figure 23 below.

Similarly to other specialties, CAVUHB has seen around 18,000 page views in the two-year period up to May 2025.

Figure 22. Monthly rejected and accepted referrals into trauma and orthopaedics services for CAVUHB from January 2018 to December 2024.

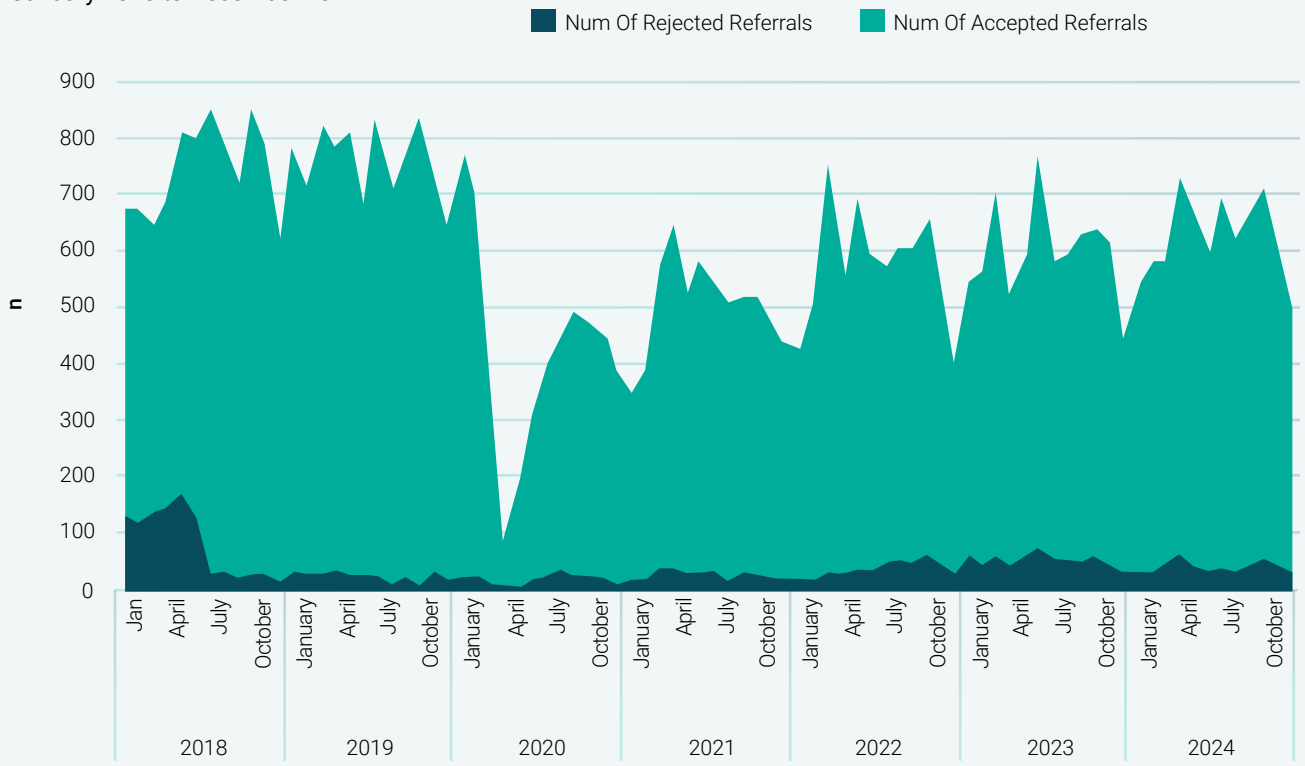


Figure 23. Cumulative and monthly page views for CHP trauma and orthopaedics pathways in CAVUHB from June 2023 to May 2025.

3.4.2.1.7 Urology

Figure 24. Monthly rejected and accepted referrals into urology services for CAVUHB from January 2018 to December 2024.

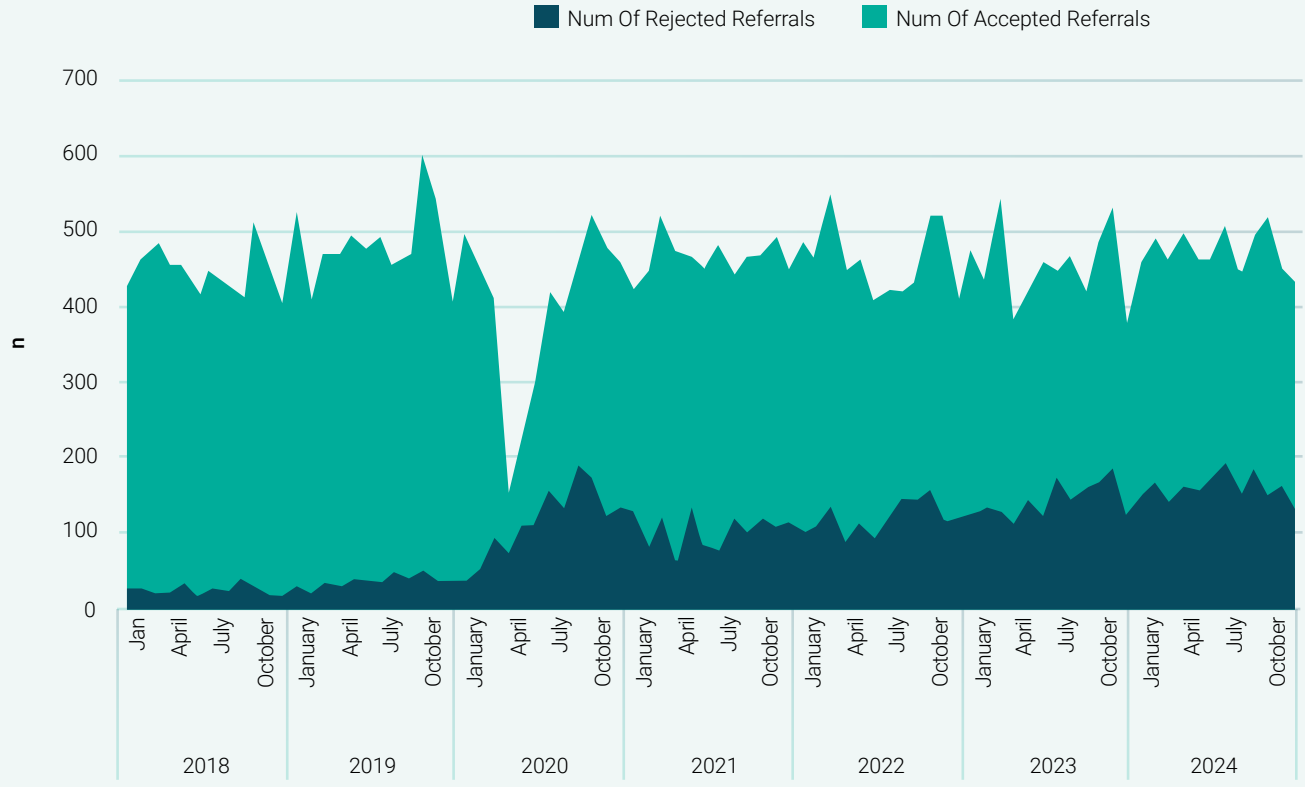
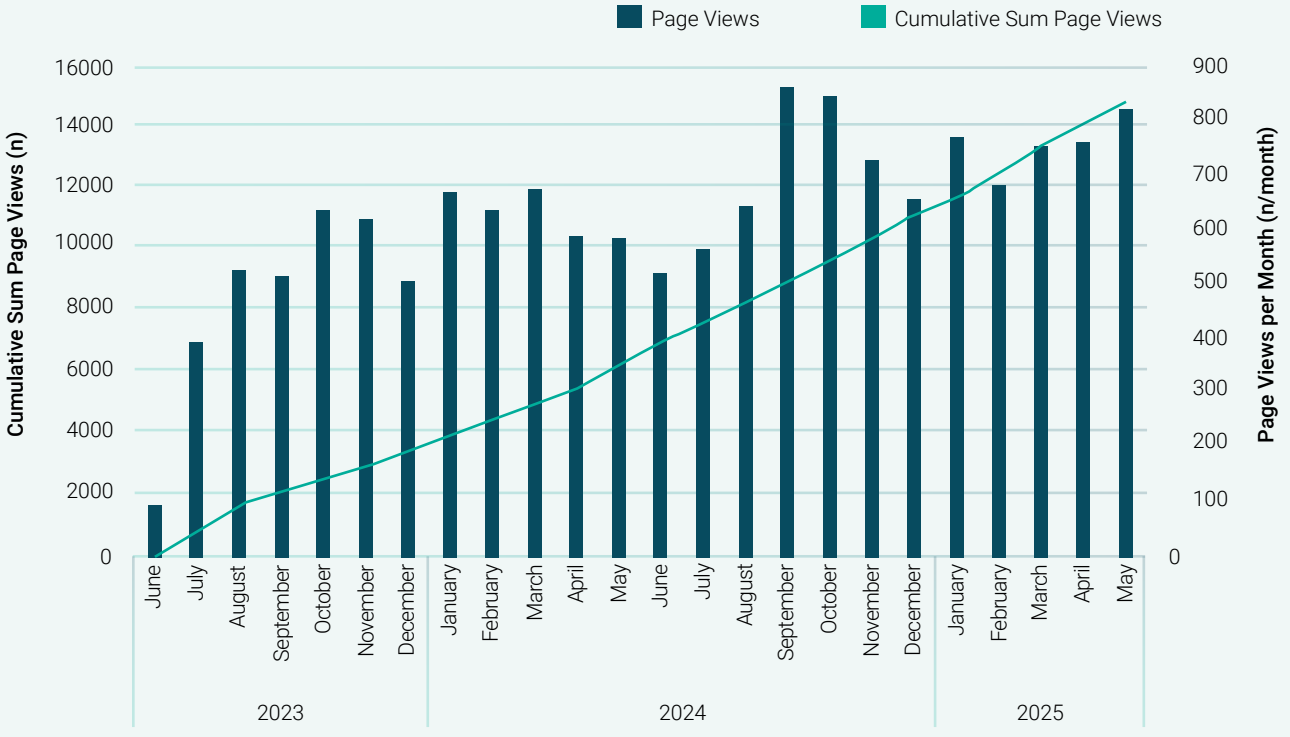


Figure 25. Cumulative and monthly page views for CHP urology pathways in CAVUHB from June 2023 to May 2025.



Urology referrals and rejected referrals for CAVUHB are shown in figure 24 above. As can be seen in figure 24, rejected referral rates in CAVUHB for urology are around 30%. Cumulative and monthly CHP page views for urology services are shown in figure 25 above. Similarly to other specialties, CAVUHB has seen around 15,000 page views in the two-year period up to May 2025.

3.4.2.1.8 GP Radiology Referrals, Focusing on MRI of Knee and Spine & Ultrasound of Foot and Shoulder

Data provided by the national clinical lead for musculoskeletal (MSK) services included radiology referral patterns into Cardiff and Vale University Health Board (CAVUHB). Analysis of this dataset revealed a notable reduction in general practitioner (GP) referrals for magnetic resonance imaging (MRI) of the knee and spine, as well as ultrasound (US) imaging of the foot and shoulder, coinciding with the activation of relevant CHP pathways (see Figure 26). Concurrently, as illustrated in Figure 27, there was a corresponding increase in MRI referrals originating from Extended Scope Practitioners (ESPs), suggesting a shift in referral behaviour potentially attributable to the implementation of CHP. These findings indicate that CHP may influence referral distribution across professional groups, with implications for service demand and workforce utilisation.

Additionally, an increase in referrals to physiotherapy of around 600 per month was observed during the same period (Figure 28). This demonstrates an interesting impact of CHP, with a change in the resource demand from radiology towards physiotherapy. As an increase in radiology referrals offsets some of the reduction in radiology referrals from primary care. It was claimed in the published data that reduction in MRI had no impact on other services, however, a significant increase in the demand from physiotherapy services is apparent.

Figure 26. GP referrals to MRI (knee, spine) and US (foot, shoulder).

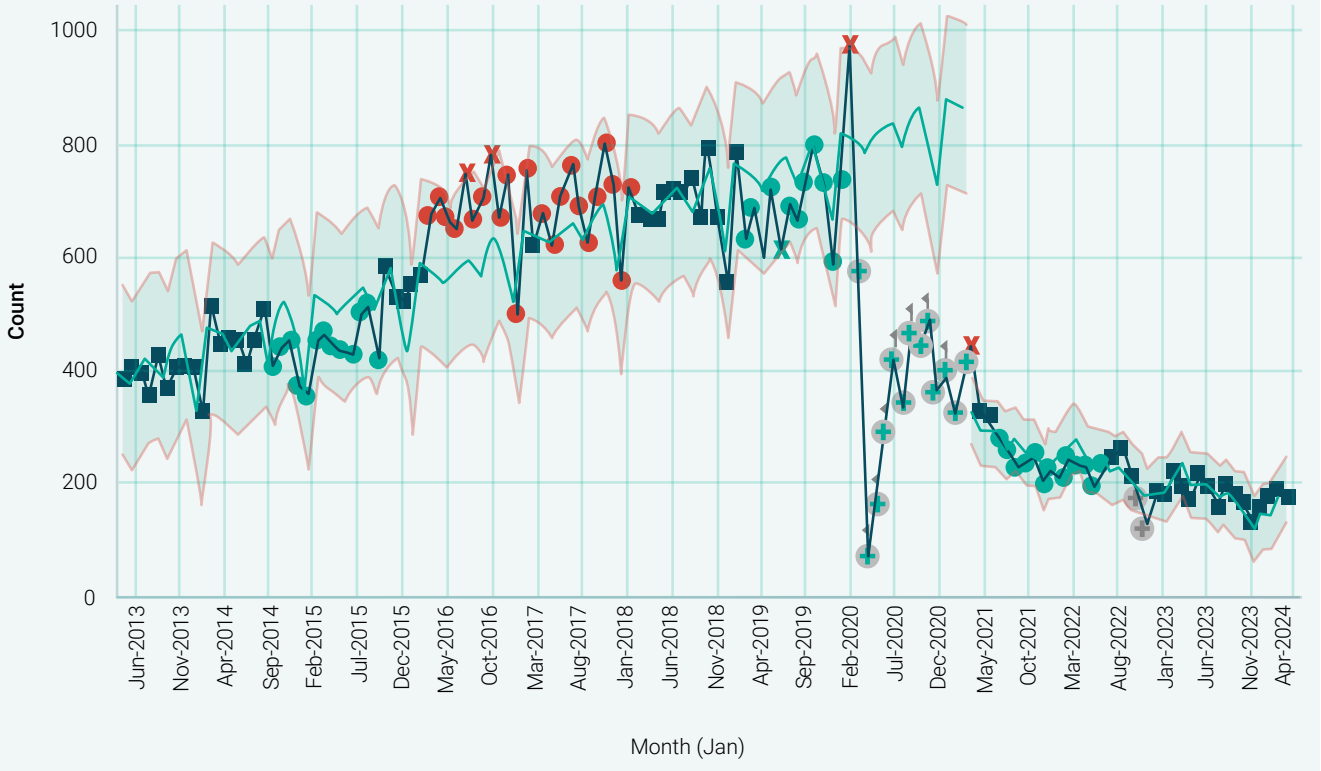


Figure 27. ESP referrals to MRI (knee, spine) and US (foot,shoulder).

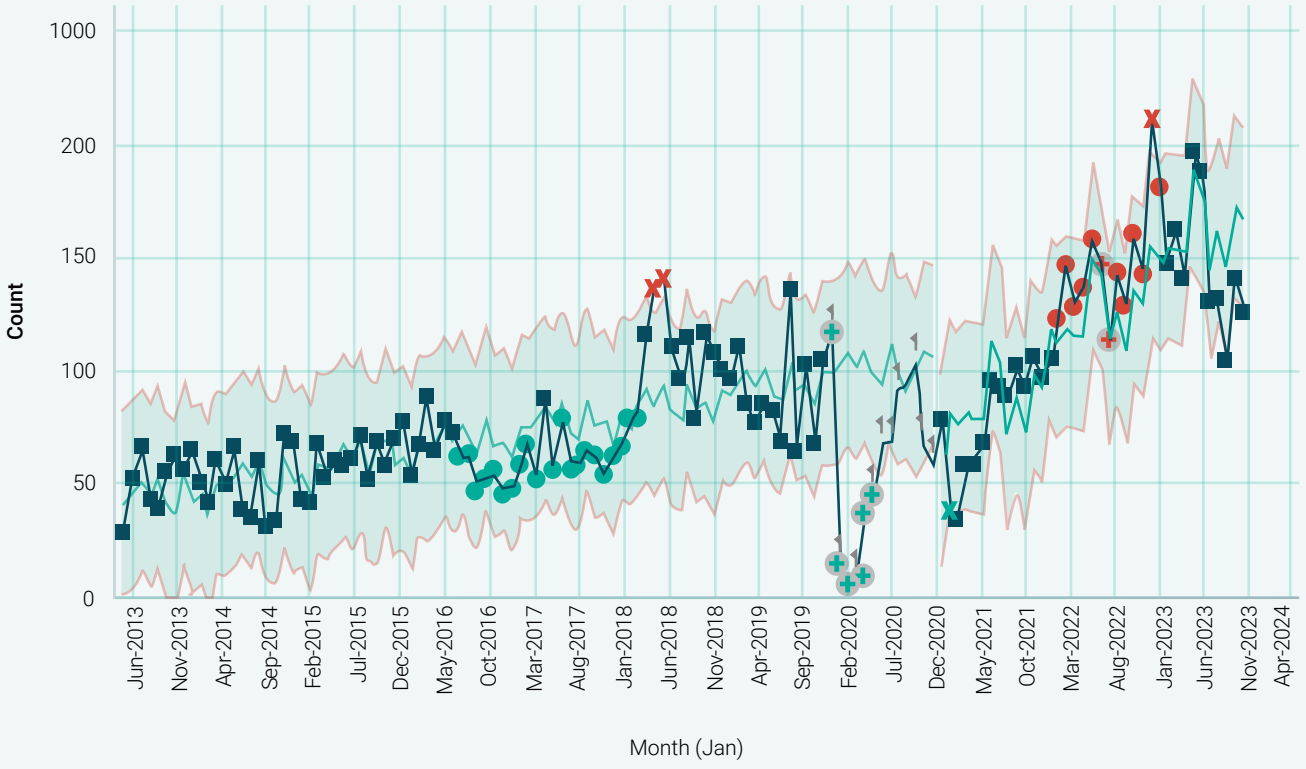
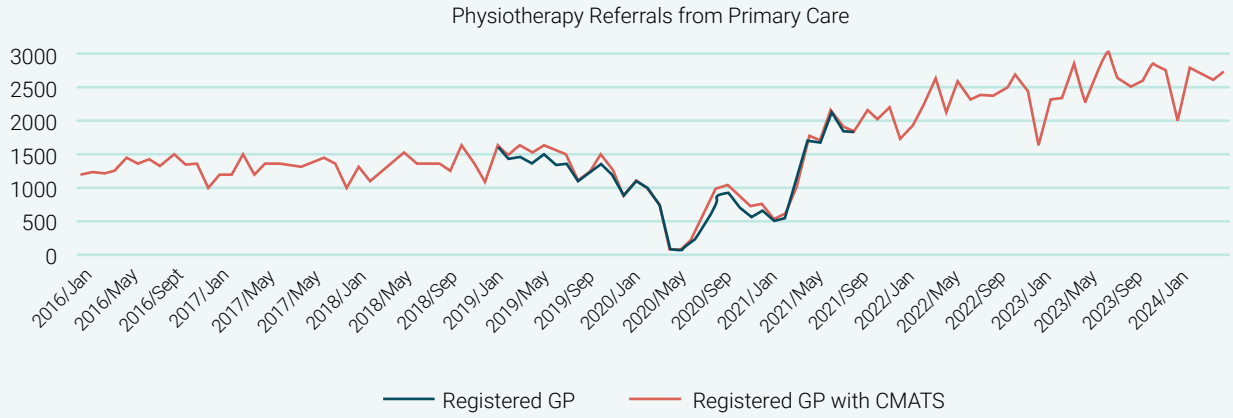


Figure 28. GP referrals to hospital-based physiotherapy in CAVUHB.



3.4.2.2 Summary of the findings for referral rates across CAVUHB

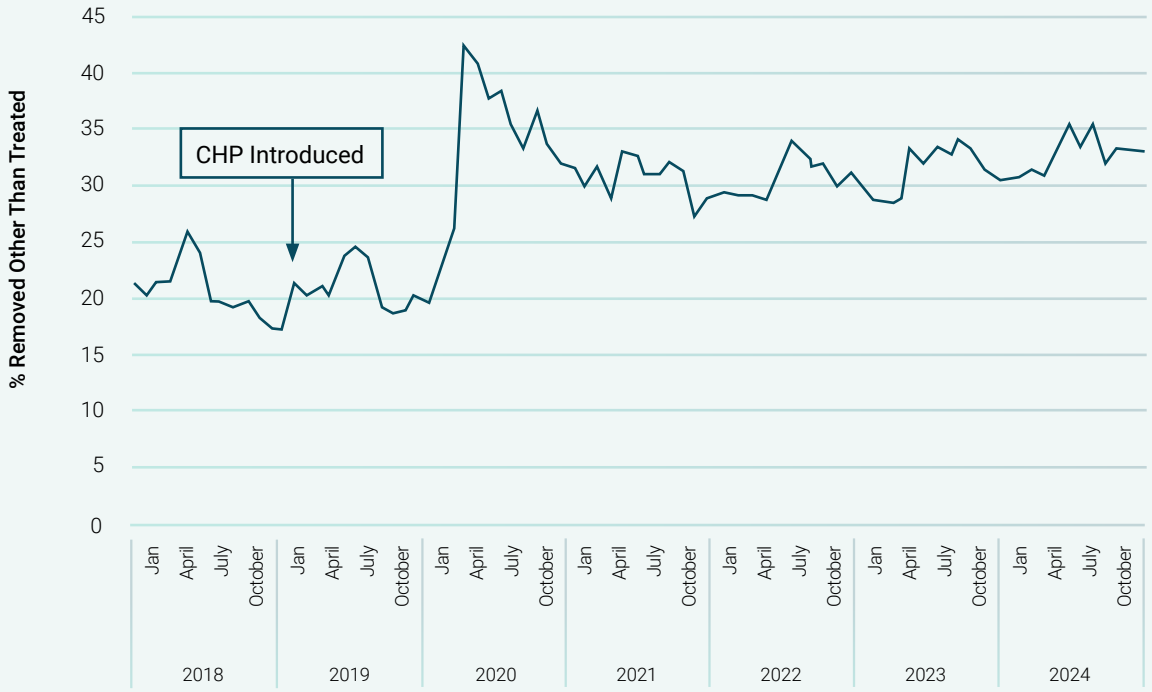
The data collected shows excellent engagement with the CHP platform, with several thousand views for each of the pathways over the time period. Analysis of the monthly page views and cumulative page views over the time period shows for most specialisms there is a general increase in viewership. Despite this over the time period 2021 to 2025 in most of the specialisms there does not appear to be a significant reduction or change in the % of rejected referrals when compared to the total number of referrals.

In fact, for dermatology, urology and neurology there is a noticeable increase in the % of rejected referrals relative to the total number of referrals.

When exploring the rejected referral data in CAVUHB it was dominated by dermatology, which accounted for 66% of all rejected referrals. For CAVUHB, the percentage of referrals removed other than treated from January 2018 to December 2024 is shown in figure 29 below.

As can be seen in figure 29, since COVID, the percentage of referrals that are ROTT for dermatology, neurology, ENT, gastroenterology, rheumatology, trauma and orthopaedics and urology combined appear to have a slight upward trend from 2022 to 2024 in CAVUHB.

Figure 29. Percentage of referrals that were ROTT in CAVUHB from January 2018 to December 2024.



3.4.3 Case Study: Referrals into HDDUHB by Specialism

Data on accepted and rejected referrals in HDUHB were provided by HDUHB digital services.

3.4.3.1 Referrals by Specialism

Monthly data were provided as the total number of referrals per specialism (dermatology, ENT, gastroenterology, neurology, rheumatology, trauma, orthopaedics and urology) from Jan 2021 to March 2025.

Additionally, referrals that were Removed Other Than Treated (ROTT) and inappropriate referrals were provided for the same period.

3.4.3.1.1 Dermatology

Dermatology referrals and rejected referrals for HDUHB are shown in figure 30 below. As can be seen in figure 30 the most recent data for HDUHB shows a rejection rate of around 25-30%. Cumulative and monthly CHP page views for dermatology are shown in figure 31. In HDUHB there were only 400 page views in the 18 month period to May 2025.

Figure 30. Monthly rejected and accepted referrals into dermatology services for HDUHB from January 2021 to March 2025.

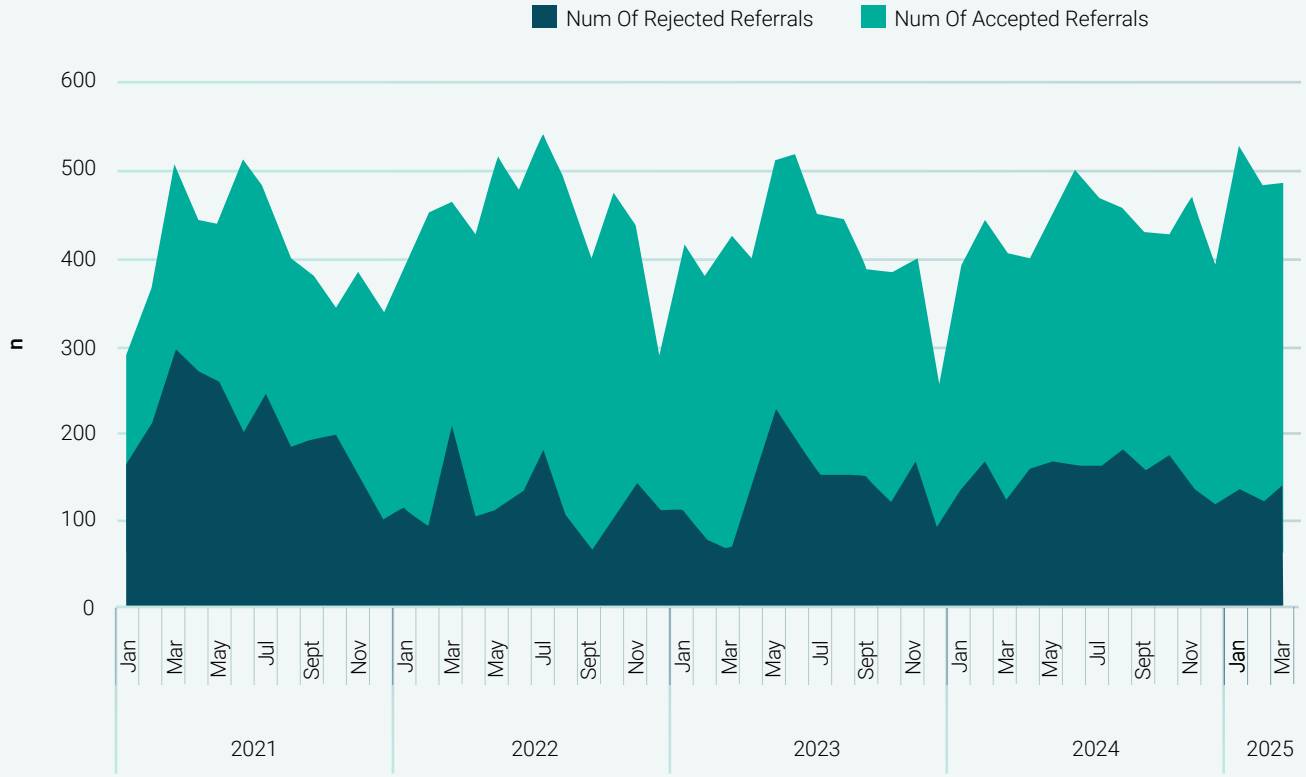
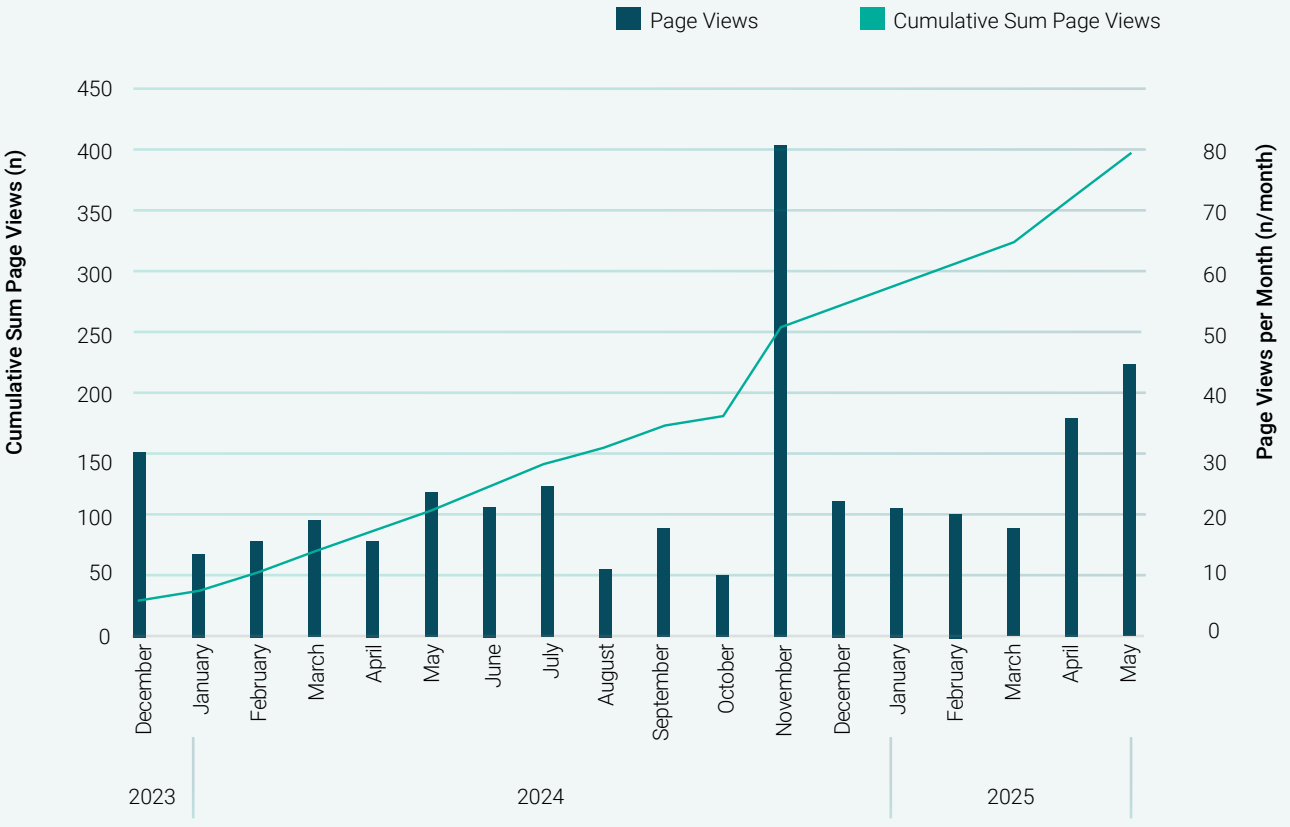


Figure 31. Cumulative and monthly page views for CHP dermatology in HDUHB from launch of CHP in HDUHB in December 2023 to May 2025.



3.4.3.1.2 Gastroenterology

Figure 32. Monthly rejected and accepted referrals into gastroenterology services for HDUHB from January 2021 to March 2025.

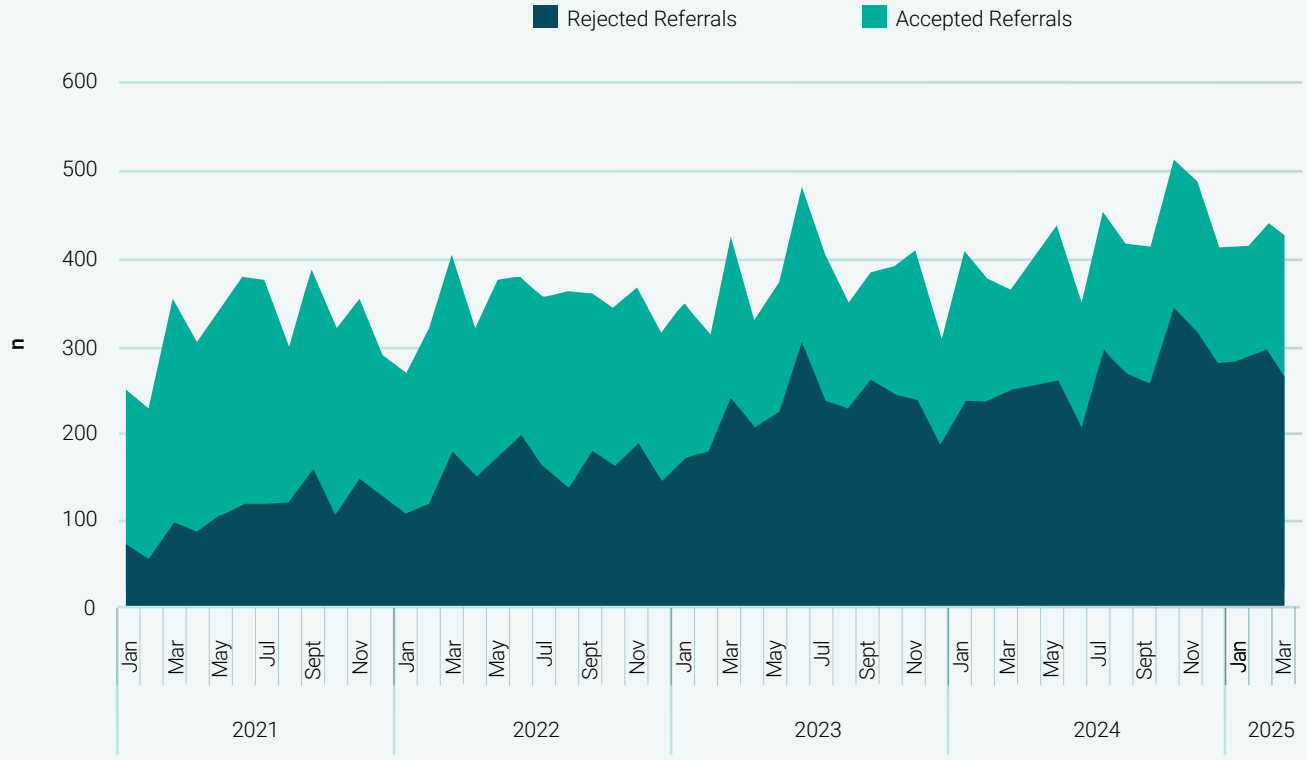
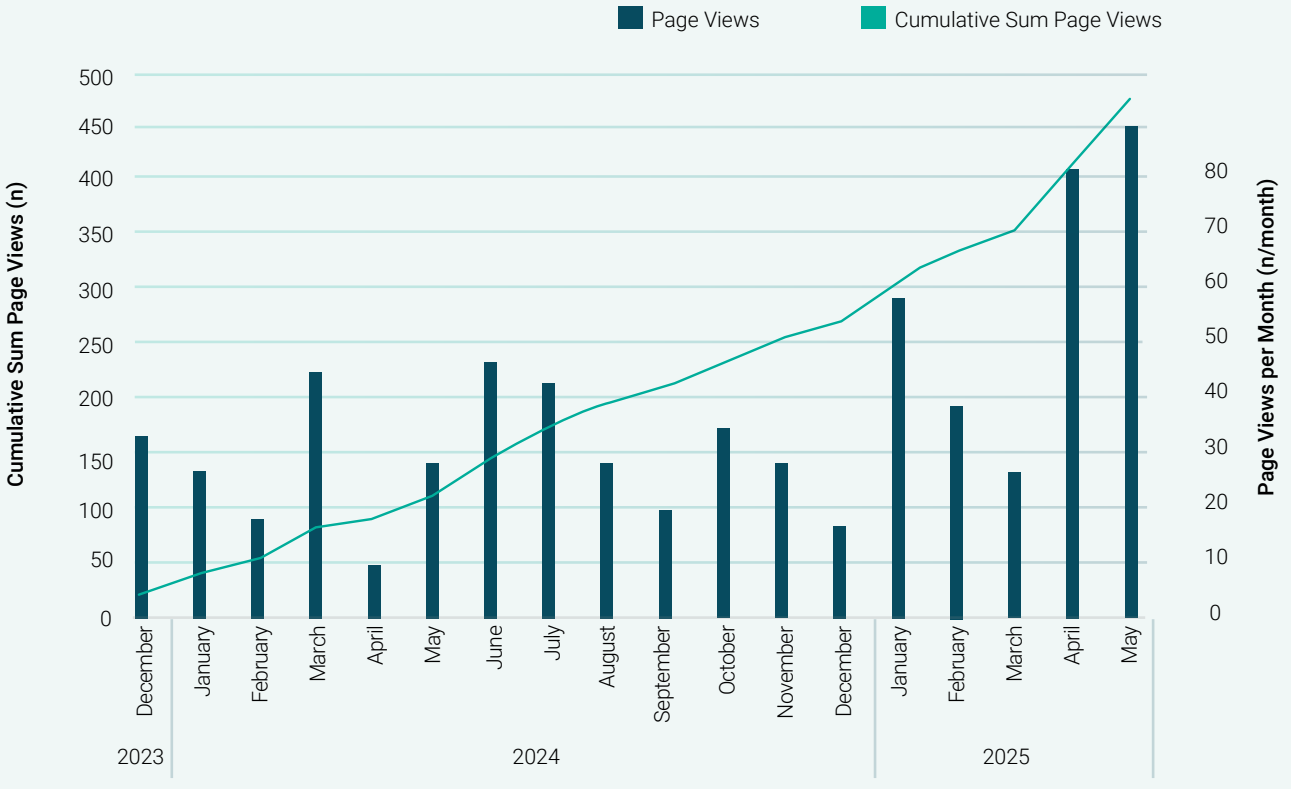


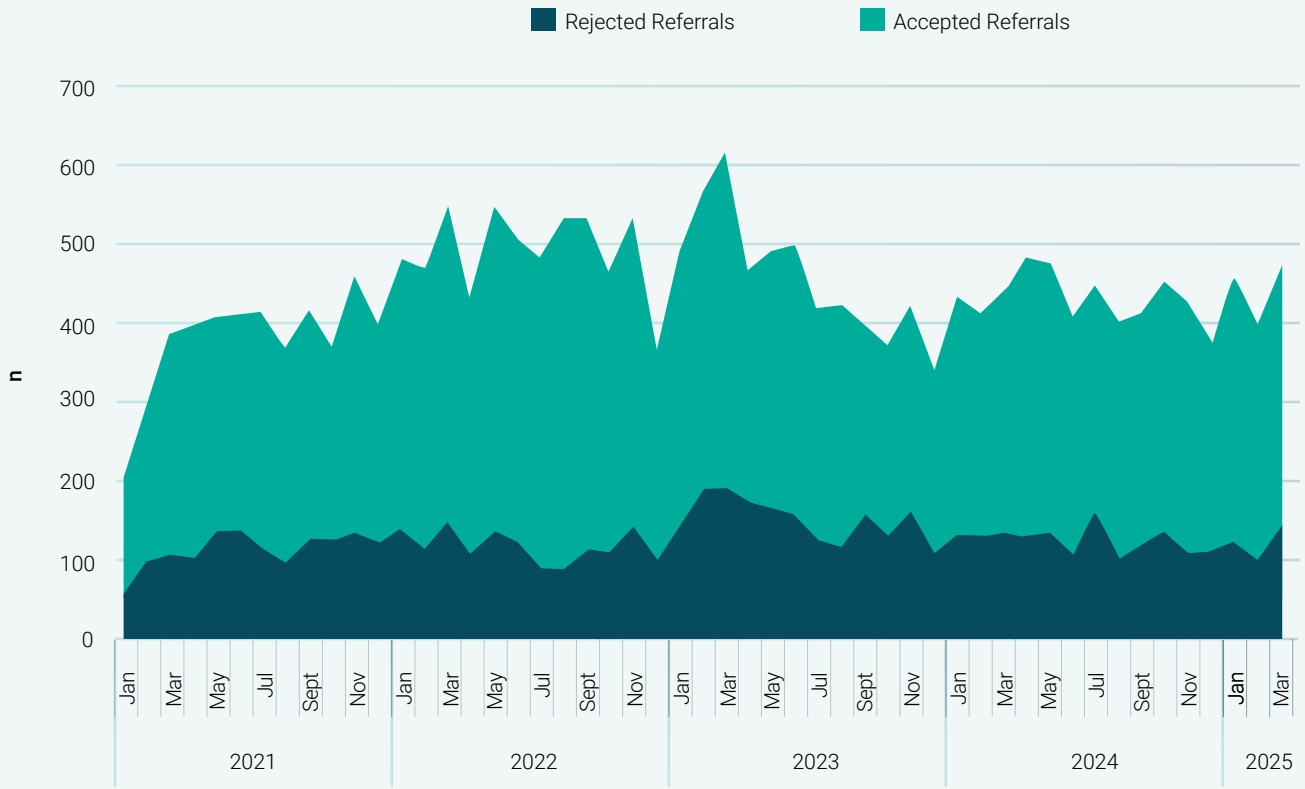
Figure 33. Cumulative and monthly page views for CHP gastroenterology in HDUHB from launch of CHP in HDUHB in December 2023 to May 2025.



Gastroenterology referrals and rejected referrals for HDUHB are shown in figure 32 above. As can be seen in figure 32 HDUHB has a high percentage of gastroenterology referrals being rejected, with more than 50% of referrals being rejected. Cumulative and monthly CHP page views for gastroenterology are shown in figure 33. Similarly to dermatology pathways, the views in HDDUHB were relatively low (450 views) in the 18-month period to May 2025 in HDUHB.

3.4.3.1.3 Ear, Nose and Throat (ENT)

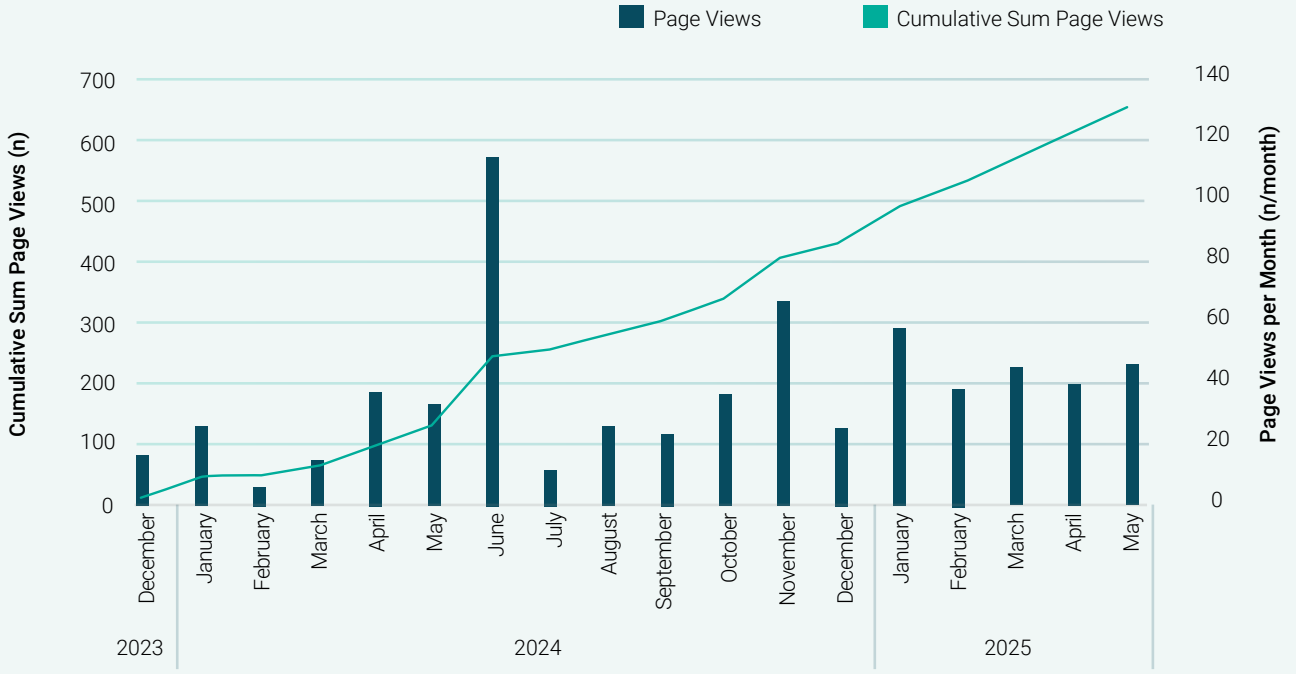
Figure 34. Monthly rejected and accepted referrals into ENT services for HDUHB from January 2021 to March 2025.



Ear, nose and throat referrals and rejected referrals for HDUHB and CAVUHB are shown in figure 34 above. As can be seen in figure 34, HDUHB has a large percentage of rejected referrals with around 25% of referrals being rejected.

Cumulative and monthly CHP page views for ENT services is shown in figure 35. There was a relatively high number of views for ENT around 650 views in the 18-month period to May 2025 compared to other services in HDDUHB.

Figure 35. Cumulative and monthly page views for CHP ENT pages in HDUHB from launch of CHP in HDUHB in December 2023 to May 2025.



3.4.3.1.4 Neurology

Neurology referrals and rejected referrals for HDUHB and CAVUHB are shown in figure 36 below. As can be seen in figure 36, around a quarter of neurology referrals into HDUHB were rejected. Cumulative and monthly CHP page views for neurology are shown in figure 37. There was a relatively low number of views for neurology compared to other services in HDUHB, with around 300 views in the 18-month period to May 2025.

Figure 36. Monthly rejected and accepted referrals into neurology services for HDUHB from January 2021 to March 2025.

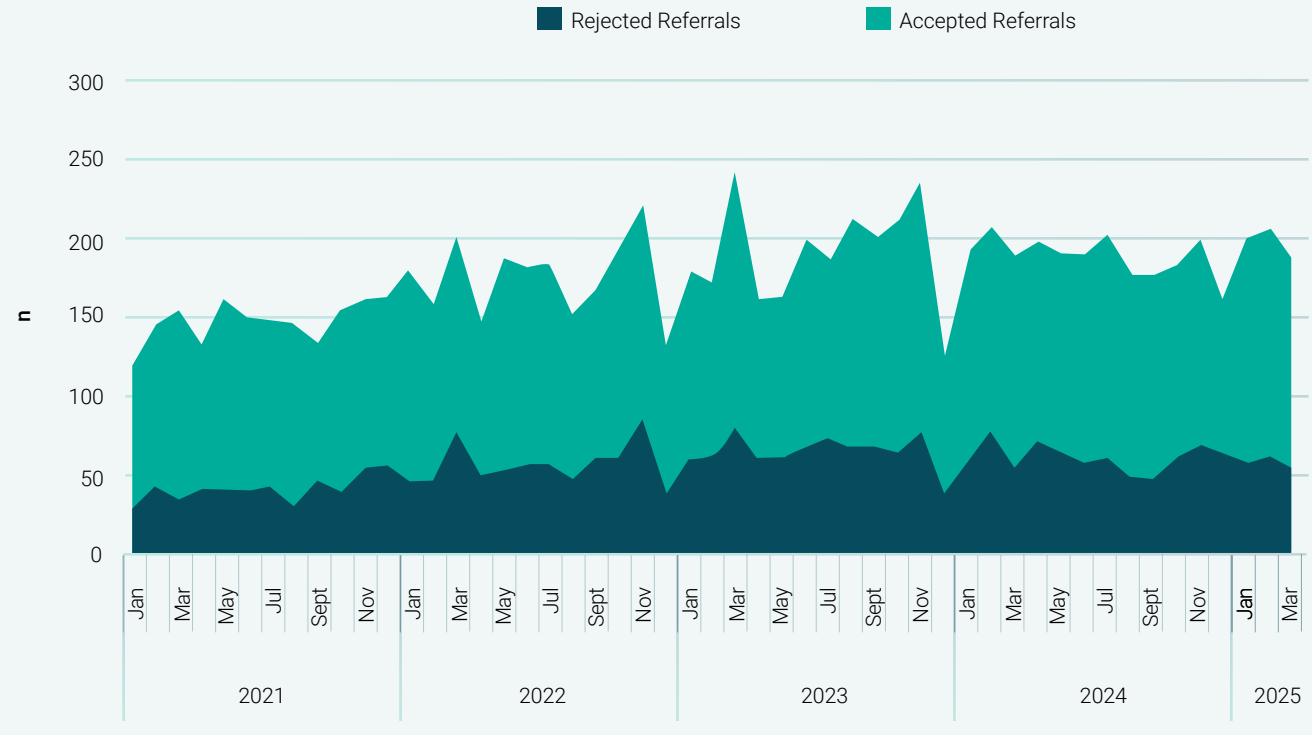
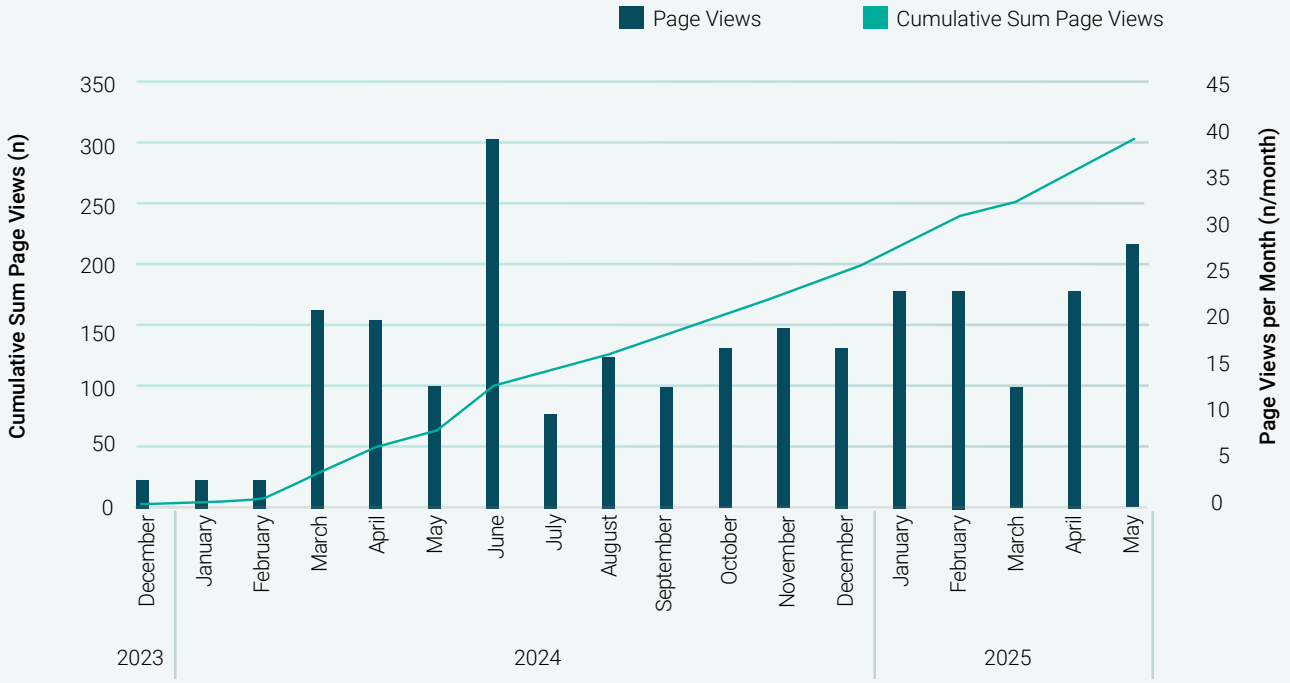


Figure 37. Cumulative and monthly page views for CHP neurology pages in HDUHB from launch of CHP in HDUHB in December 2023 to May 2025.



3.4.3.1.5 Rheumatology

Rheumatology referrals and rejected referrals for HDUHB are shown in figure 38 below. As can be seen in figure 38, HDUHB has a large percentage of rejected referrals into rheumatology with around 30% of referrals being rejected.

Cumulative and monthly CHP page views for rheumatology services are shown in figure 39. Similarly to other pathways, there were around 400 views in the 18-month period to May 2025 in HDUHB.

Figure 38. Monthly rejected and accepted referrals into rheumatology services for HDUHB from January 2021 to March 2025.

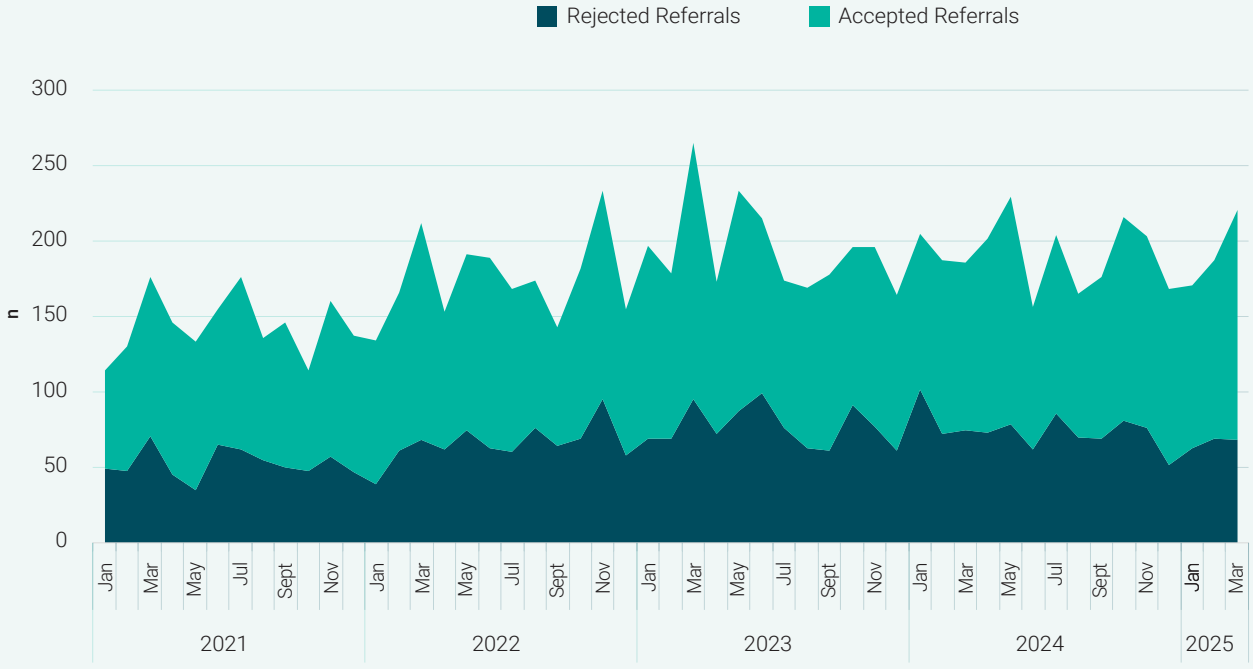
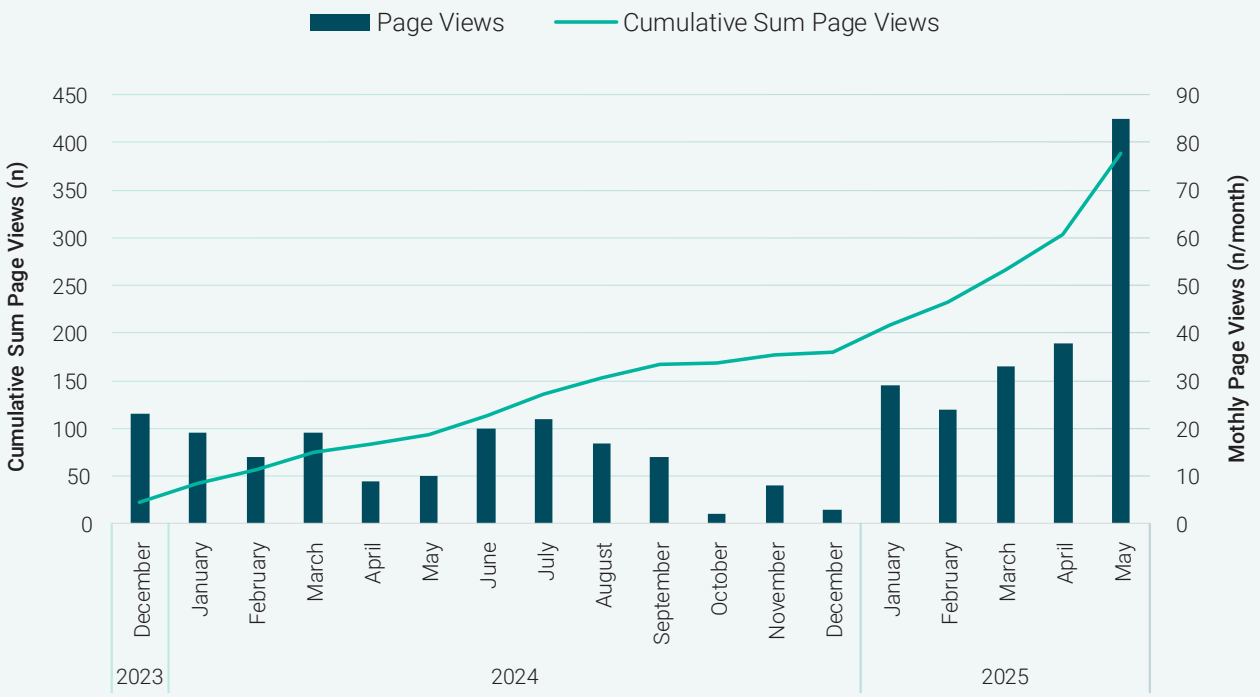


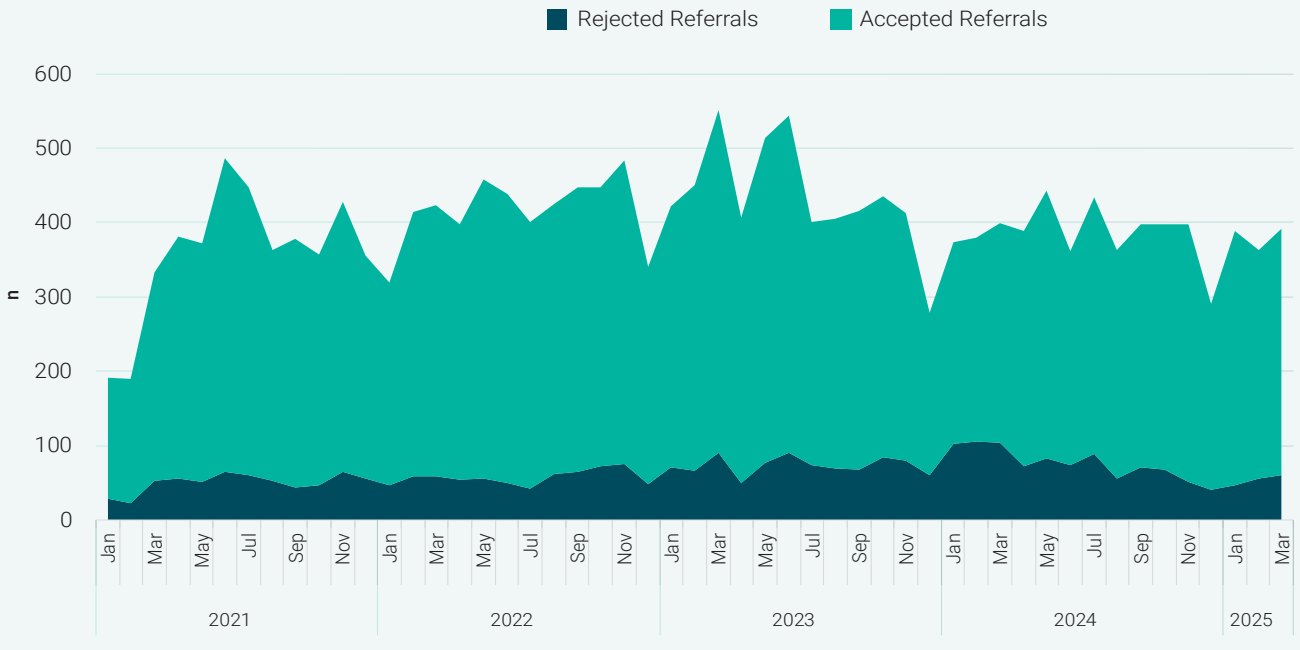
Figure 39. Cumulative and monthly page views for CHP rheumatology pages in HDUHB from launch of CHP in HDUHB in December 2023 to May 2025.



3.4.3.1.6 Trauma and Orthopaedics

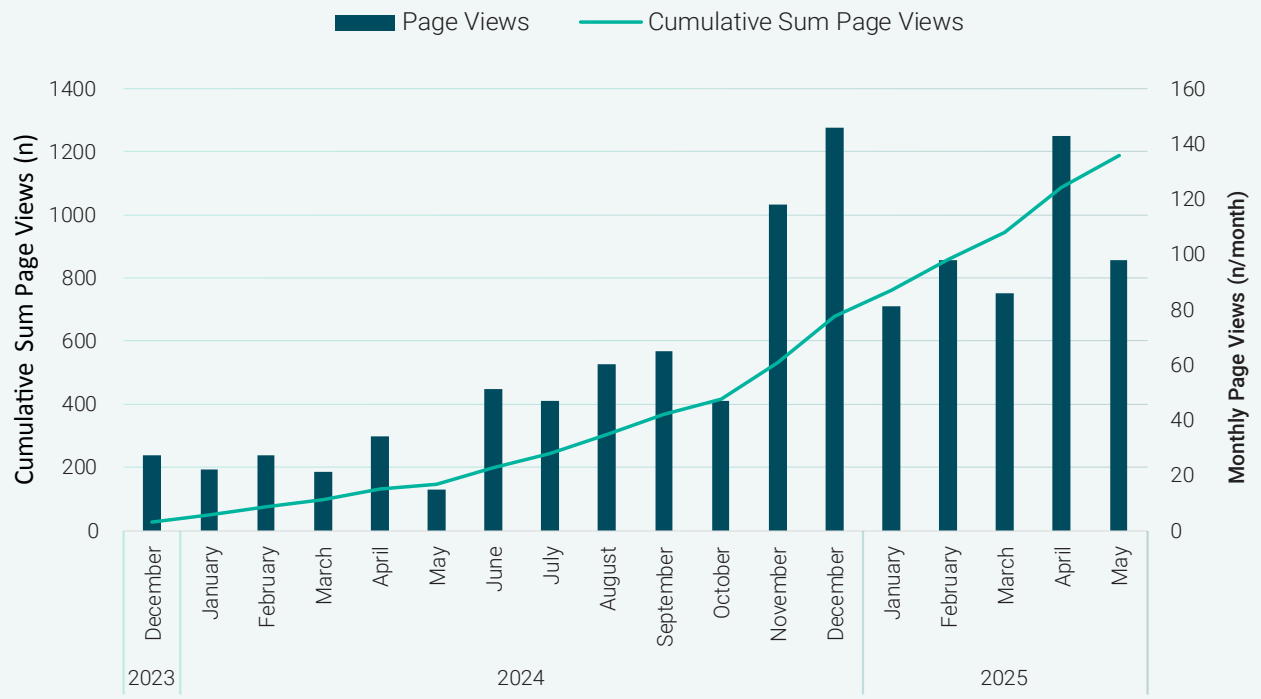
Trauma and Orthopaedics referrals and rejected referrals for CAVUHB are shown in figure 40 below. As can be seen in figure 40, HDUHB has a low percentage of rejected referrals into trauma and orthopaedics with around 15% of referrals being rejected. Cumulative and monthly CHP page views for trauma and orthopaedics services are shown in figure 41.

Figure 40. Monthly rejected and accepted referrals into trauma and orthopaedics services for HDUHB from January 2021 to March 2025.



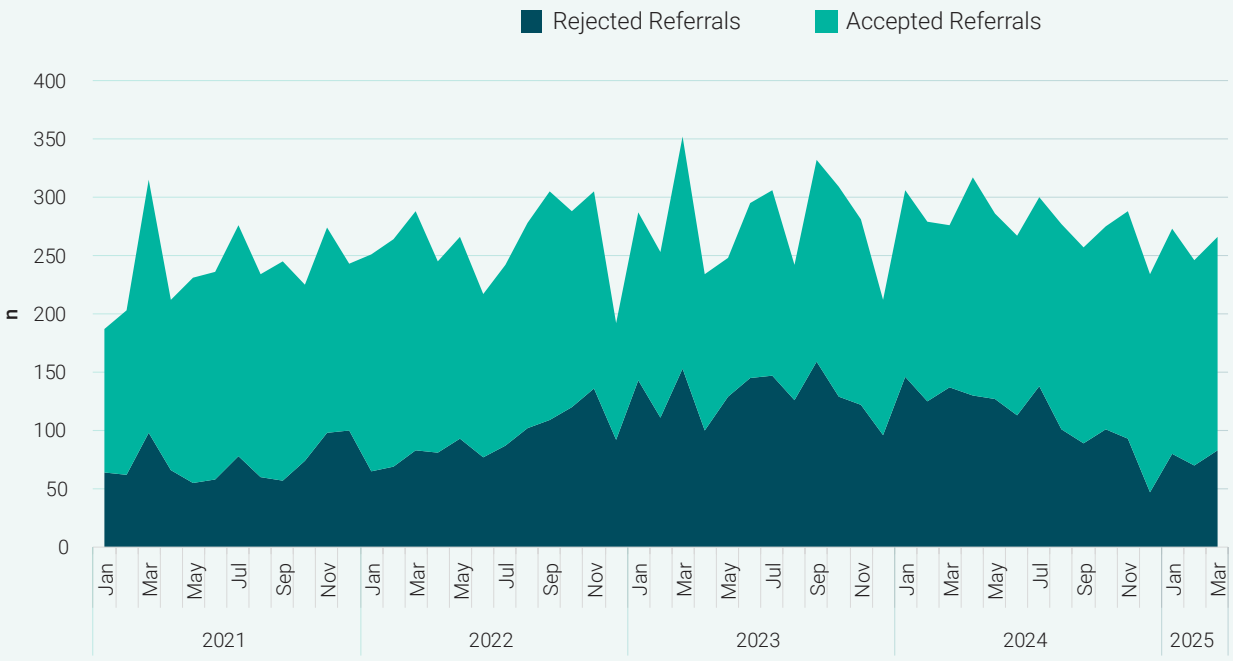
There were a relatively large number of views for the Trauma and Orthopaedics service when compared to over services in HDDUHB over the 18-month period to May 2025 in HDUHB, with around 1200 views.

Figure 41. Cumulative and monthly page views for CHP trauma and orthopaedics pages in HDUHB from launch of CHP in HDUHB in December 2023 to May 2025.



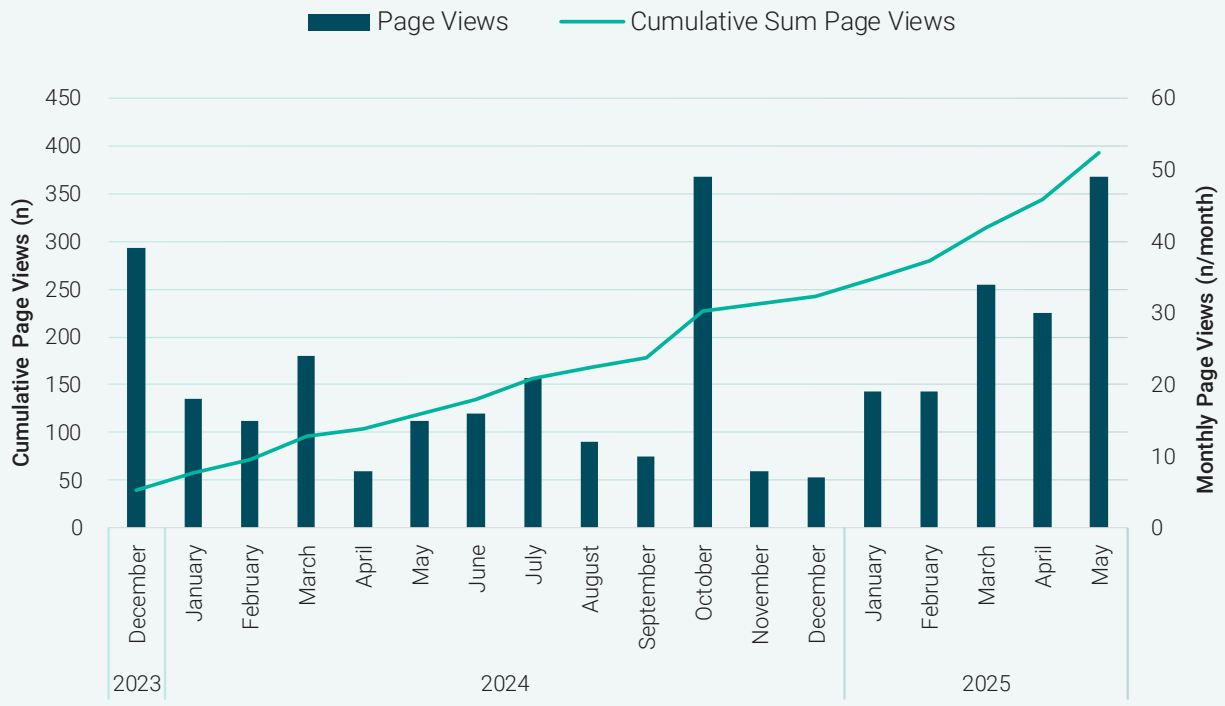
3.4.3.1.7 Urology

Figure 42. Monthly rejected and accepted referrals into urology services for HDUHB from January 2021 to March 2025.



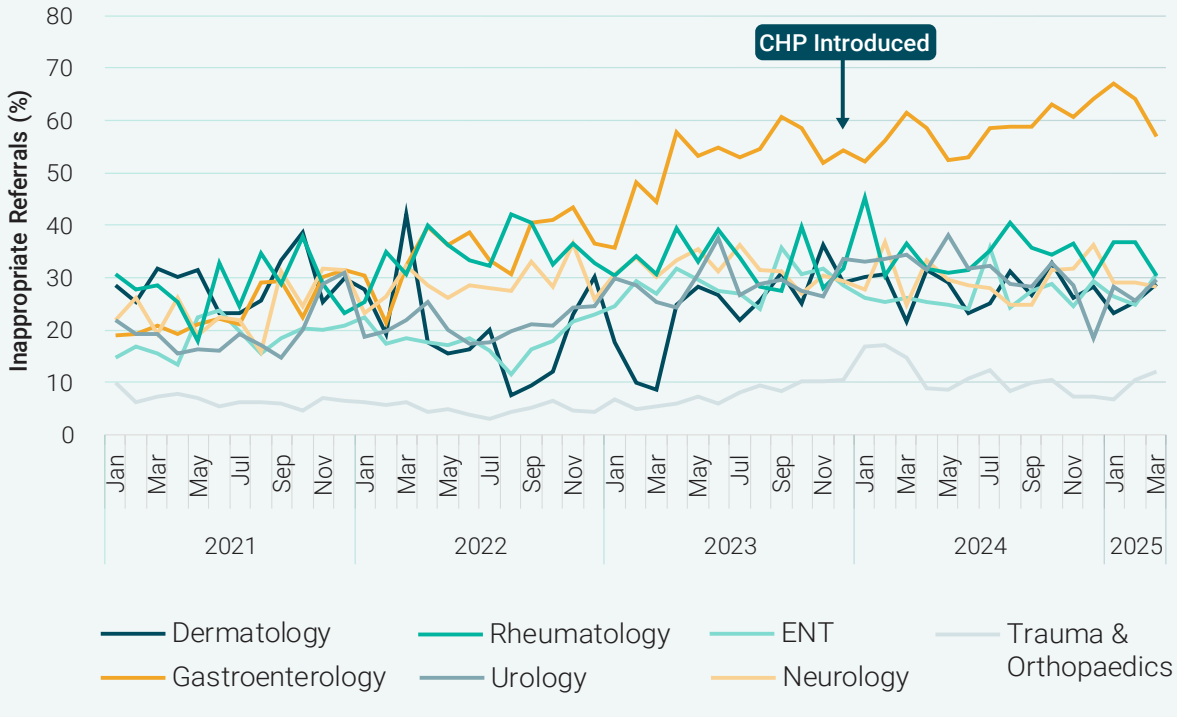
Urology referrals and rejected referrals for HDUHB are shown in figure 42 above. As can be seen in figure 42, HDUHB has around a quarter of its total referrals rejected. Cumulative and monthly CHP page views for trauma and orthopaedics services are shown in figure 43. Similarly to other pathways, HDDUHB has seen around 400 views in the 18-month period to May 2025 in HDUHB.

Figure 43. Cumulative and monthly page views for CHP urology pages in HDUHB from launch of CHP in HDUHB in December 2023 to May 2025.



3.4.3.1.8 Summary of the findings for referral rates across HDUHB

Figure 44. Percentage of total monthly referrals that are inappropriate for each of the specialisms in HDUHB.



Inappropriate referrals in HDUHB were driven primarily by the growth in inappropriate referrals into gastroenterology. This is highlighted in figure 44 above, which shows the percentage of inappropriate referrals in gastroenterology has tripled since 2021, from around 20% to around 60% of all referrals.

3.4.3.2 Referrals in HDUHB by Condition

Table 5. The fifteen most viewed pages in HDUHB and total page views.

Page Title	Page Views
Medical	408
Carpal Tunnel Syndrome	351
About HealthPathways	280
Surgical	255
Cardiology	251
Acute Care	242
Hormone Replacement Therapy (HRT)	207
Chest Pain	187
Heart Failure	182
Gynaecology	173
Women's Health	170
Mental Health and Addiction	168
Investigations	165
Child and Youth Health	160
Acute Presentations	157

3.4.3.2.1 Most viewed pathways in HDUHB

In addition to the 7 pathways explored to identify an impact of pathways on referrals in HDUHB, it was determined that the pathways that had the most engagement would be more likely to have an impact on referrals into secondary care. Total page views were included from December 2023 (when CHP went live in HDUHB) up until the end of May 2025.

The pathways related to specific conditions that can be included in the analysis are: Carpal Tunnel Syndrome, Hormone Replacement Therapy (HRT), Chest Pain and Heart Failure.

3.4.3.2.1.2 Carpal Tunnel Syndrome

The percentage of referrals for carpal tunnel syndrome that were accepted, removed without treatment or inappropriate in HDUHB were included from April 2022 to May 2025. The number of cumulative views of the carpal tunnel syndrome CHP page were also included (Figure 45).

A trend towards fewer removed and inappropriate referrals was observed over time. With the mean monthly removed and inappropriate referrals lower in 2025 to May than in 2024 (Table 6). However, baseline numbers were low, with fewer than 2 referrals removed monthly, less than 1 of which was inappropriate.

Figure 45. Percentage of accepted, removed without treatment, and inappropriate referrals for carpal tunnel syndrome in HDUHB, against the cumulative views of the carpal tunnel syndrome CHP.

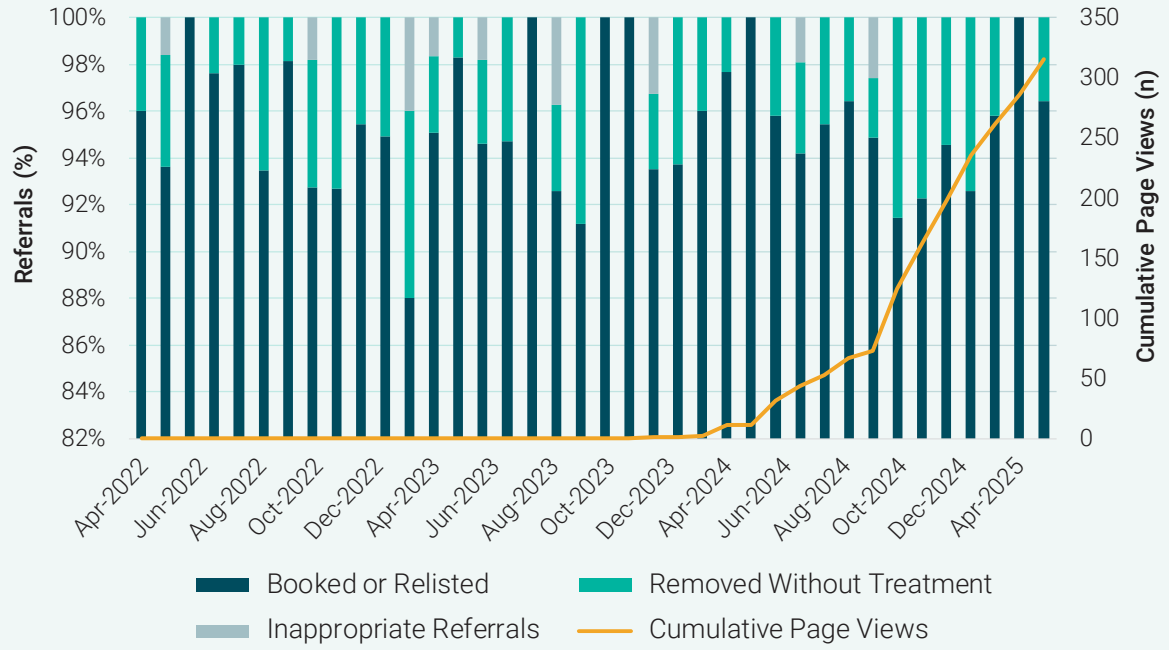


Table 6. Mean monthly referrals removed without treatment and mean monthly inappropriate referrals for carpal tunnel syndrome in HDUHB from April 2022 to May 2025.

	Monthly Removed Without Treatment (n)	Monthly Inappropriate Referrals (n)
April-Dec 2022	1.89 ± 1.17	0.22 ± 0.44
2023	1.92 ± 1.73	0.5 ± 0.90
2024	1.5 ± 0.90	0.25 ± 0.45
Jan-May 2025	1.2 ± 0.84	0 ± 0

Additionally, even though the carpal tunnel syndrome pathway is one of the most viewed in HDUHB, monthly views of the pathway were very low (mean 18.6 ± 15.9).

A trend towards fewer removed and inappropriate referrals was observed over time. With the mean monthly removed and inappropriate referrals lower in 2025 to May than in 2024 (Table 7). However, baseline numbers were very low, with fewer than 2 referrals removed monthly, less than 1 of which was inappropriate.

3.4.3.2.1.2 Chest Pain

The percentage of referrals for chest pain that were accepted, removed without treatment or inappropriate in HDUHB were included from April 2022 to May 2025. The number of cumulative views of the chest pain CHP page were also included (Figure 46). As can be seen in figure 46, there was a large decrease in the percentage of referrals removed without treatment and inappropriate referrals that coincided with the introduction of the chest pain pathway.

Figure 46. Percentage of accepted, removed without treatment, and inappropriate referrals for chest pain in HDUHB, against the cumulative views of the chest pain CHP page.

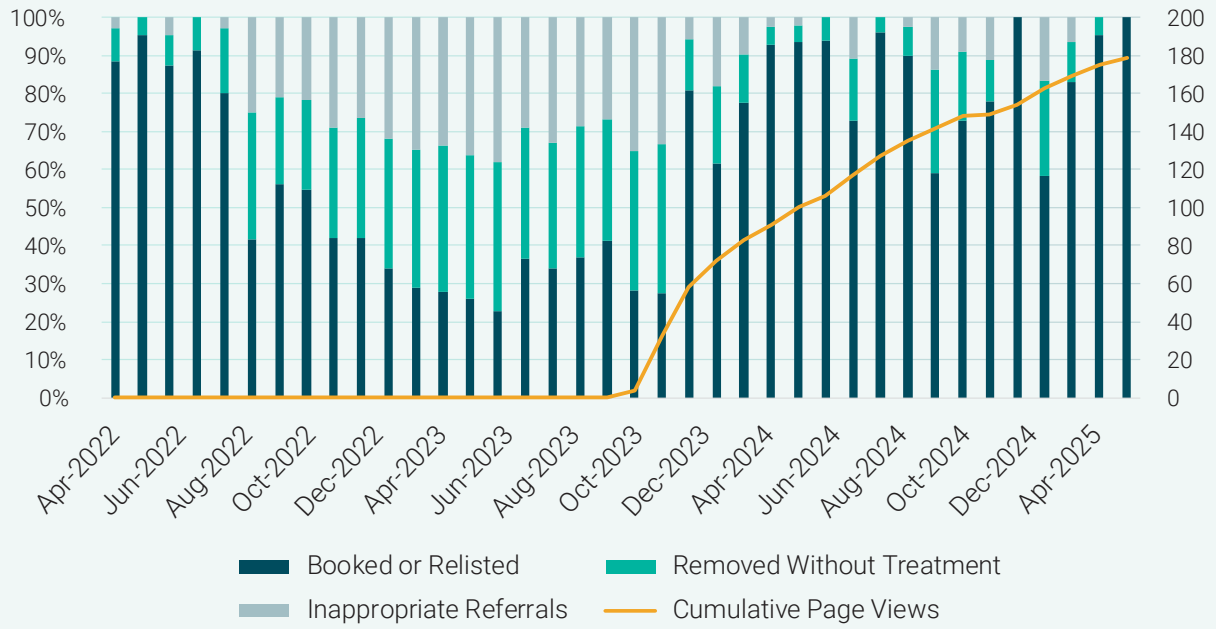


Table 7. Mean monthly referrals removed without treatment and mean monthly inappropriate referrals for chest pain in HDUHB from April 2022 to May 2025.

	Monthly Removed Without Treatment (n)	Monthly Inappropriate Referrals (n)
April-Dec 2022	11.3 ± 8.2	8.4 ± 9.1
2023	30.7 ± 6.7	27.9 ± 6.8
2024	3.7 ± 2.5	2.1 ± 2.0
Jan-May 2025	1.8 ± 2.2	1.0 ± 1.4

3.4.3.3 Summary of the findings for referral rates across HDDUHB

Comparative analysis of engagement data across health boards indicates that, while Cardiff and Vale University Health Board (CAVUHB) has demonstrated sustained utilisation of the CHP platform over its five-year implementation period, engagement within Hywel Dda University Health Board (HDUHB) remains relatively limited. Over an 18-month period, the average number of page views per service in HDUHB was approximately 500, suggesting that further work is required to embed the platform into routine clinical practice. This disparity highlights the importance of targeted engagement strategies and ongoing support to ensure consistent adoption across regions.

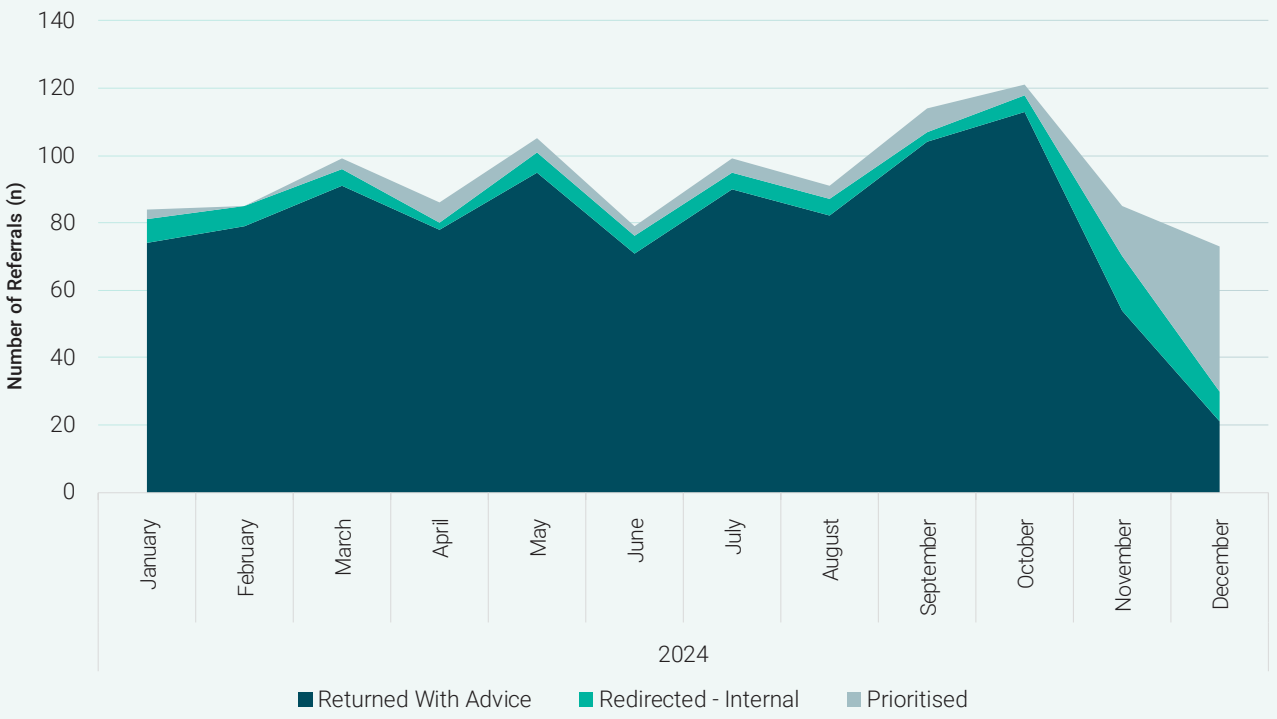
Referral data from HDUHB between January 2024 and the present corresponding with the period during which CHP has been live were analysed to assess changes in referral quality. Across most services, a non-significant reduction in the proportion of rejected referrals relative to total referrals was observed, suggesting a potential positive trend in referral appropriateness. However, Gastroenterology was identified as an outlier, with a significant increase in the percentage of rejected referrals during the same period.

These findings support the need for service specific evaluation and targeted pathway refinement to optimise the impact of CHP on referral processes. It is difficult to infer any significant impact of CHP on the quality of referrals into each specialism with the data provided. As there could be a number of external factors influencing referral quality. Overall when comparing the results of CAVUHB and HDUHB, HDUHB had a higher percentage of referrals accepted for dermatology and neurology in 2024, whereas CAVUHB had a higher percentage of accepted referrals in ENT, gastroenterology, rheumatology, trauma and orthopaedics and urology. Overall CAVUHB had a higher percentage of referrals accepted than HDUHB; 68% vs 66% of referrals.

3.4.4 Case Study: Headaches in Adults in SBUHB

Data on accepted and rejected referrals for headache in Swansea Bay Neurology were provided by Swansea Bay Digital Services from January 2024 to December 2024. Referrals were categorised as either 'Returned with advice', 'Redirected – internal' or 'Prioritised' (Figure 47). As can be seen in figure 47, a shift in the number of prioritised referrals was observed towards the end of 2024, which could be indicative of an improvement in the quality of referrals. Views for the 'Headache' CHP page in Swansea bay for the same period are shown in figure 48 below.

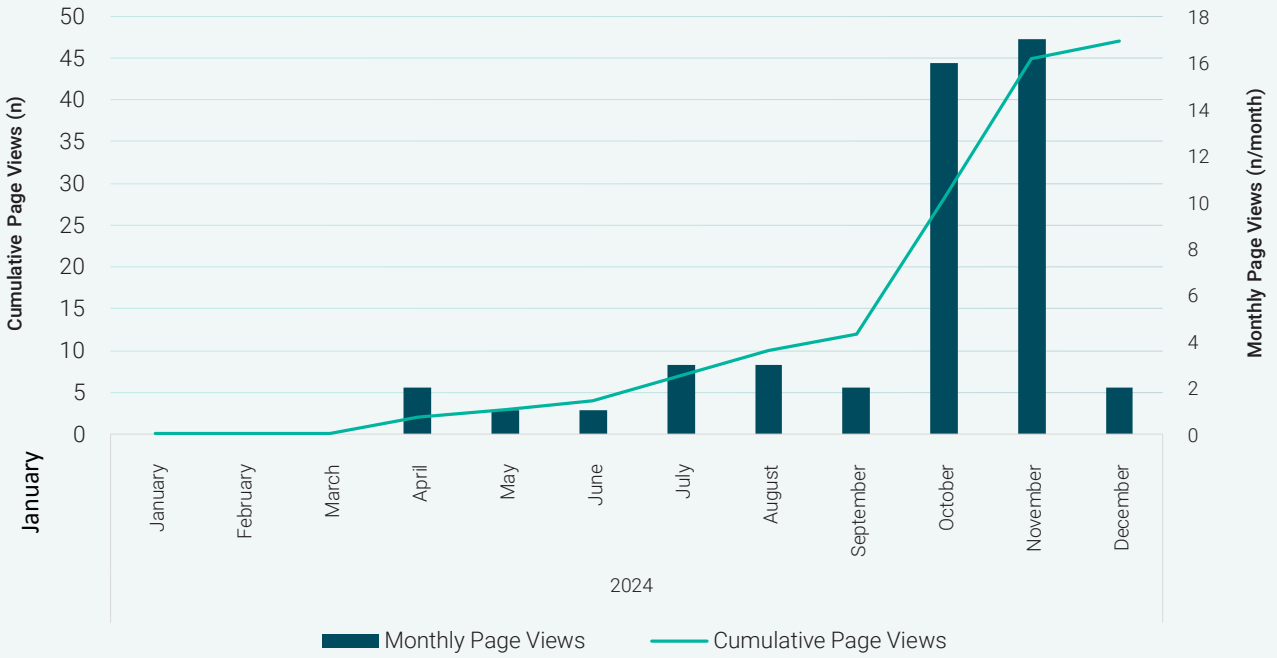
Figure 47. Monthly referrals into Swansea Neurology from January to December 2024, categorised as 'Returned with Advice', 'Redirected – Internal' or 'Prioritised'.



As can be seen in figure 48 below, a spike in views of the CHP headache page for SBUHB was seen in October and November 2024, coinciding with the start of an increase in prioritised referrals. However, it is not possible to establish causality, as other unknown factors could be present.

Although views of the headache pathway were low, with 16 and 17 views of the CHP in October and November, headache referrals were also quite low, with 15 and 43 'Prioritised' referrals in November and December respectively, it is possible that CHP could be contributing to the increase in appropriate referrals.

Figure 48. Monthly and cumulative page views of the SBUHB Headache pathway from January to December 2024.



3.4.5 Case Study: Audit of CHP Referrals

Several audits were conducted to determine how well the CHPs were followed. Data were provided by NHS Wales Performance and Improvement for seven audits that were carried out.

A sample of referrals were audited in haematology, gynaecology, dermatology, general surgery and urology in ABUHB, HDUHB and SBUHB. Referrals were audited to determine if the appropriate pathways had been followed, if the patient should have been referred to secondary care according to the pathway, and if the referrer followed the guidance in CHP if the quality of the referral would have been improved. The percentage of referrals audited that may have been avoided if CHP criteria were followed is shown in table 8.

As can be seen in table 8 from 2% to 54% of referrals could have been avoided depending on the specialism.

Table 8. Percentage of referrals that may have been avoided if CHP criteria was followed.

Health Board	Speciality	% of Referrals that may have been avoided if CHP criteria was followed*
ABUHB	Haematology	51% (72 of 141 referrals)
ABUHB	Gynaecology	5% (11 of 200 referrals)
ABUHB	Dermatology	2% (3 of 200 referrals)
HDUHB	Gynaecology	20% (33 of 165 referrals)
SBUHB	General Surgery – Gallstones	54% (39 of 71)
SBUHB	General Surgery – Hernias	24% (24 of 100 referrals)
SBUHB	Urology	28% (47/166)

3.4.6 Case study: The most popular pathways in terms of total views up until the end of May 2025:

Figure 49. The top 10 most popular pathways in each of the health boards and the Wales Collaboration site in terms of the total pathway views from launch until 31st May 2025.

ABUHB		CAVUHB		CTMUHB	
Page Title	**Page Views**	**Page Title**	**Page Views**	**Page Title**	**Page Views**
Medical	775	Abnormal Liver Function Tests	6591	Medical	587
Child and Youth Health	400	Headaches in Adults	6298	COPD	385
Headaches in Adults	395	Vitamin D Supplementation	5159	Surgical	356
Surgical	344	Hypertension	4817	Acute Care	234
Gynaecology	333	Faecal Immunochemical Test (FIT)	4572	Child and Youth Health	226
About HealthPathways	319	Hormone Replacement Therapy (HRT)	3848	Headaches in Adults	192
Haematology	316	Hyperlipidaemia	3590	Podiatry Assessment	191
Abnormal Liver Function Tests	312	Polycystic Ovarian Syndrome (PCOS)	3506	Women's Health	189
Dermatology	305	Dyspepsia and Heartburn	3137	About HealthPathways	171
Cardiology	295	Neck Lumps in Adults	3121	Acute Presentations	166

HDUHB		SBUHB		Wales Collaboration Site	
Page Title	**Page Views**	**Page Title**	**Page Views**	**Page Title**	**Page Views**
Medical	385	Medical	181	Hormone Replacement Therapy (HRT)	167
Carpal Tunnel Syndrome	334	Acute Care	131	Measles	132
About HealthPathways	270	About HealthPathways	127	Menopause	131
Cardiology	243	Vitamin D Supplementation	120	Atrial Fibrillation	126
Surgical	239	Postmenopausal Bleeding	101	Influenza Immunisation	124

HDUHB		SBUHB		Wales Collaboration Site	
Page Title	**Page Views**	**Page Title**	**Page Views**	**Page Title**	**Page Views**
Acute Care	234	Women's Health	96	Endometriosis	116
Hormone Replacement Therapy (HRT)	199	Child and Youth Health	90	Smoking Cessation	115
Chest Pain	183	Soft Tissue Lumps and Sarcoma in Adults	90	Heart Failure	112
Heart Failure	176	Gynaecology	87	Breast Lumps	110
Mental Health and Addiction	164	Acute Lumbar Back Pain in Adults	83	Hyperlipidaemia	109

During interviews and survey responses it was clear that the most popular pathways were those that had been localised with appropriate and up to date information, or if there was uncertainty regarding the most up to date guidance. It was intimated that the most popular pathways were those that were clearly written, with relevant localised information. The overall popularity of the system was affected by it not being clear which pathways will be complete and localised beforehand, with some pathways still containing information that is out of date, or from a different location e.g. one commented that some pathways they had tried to access still contain information from New Zealand.

3.5 Impact on HCPs

3.5.1 The CHP 2025 Survey for Healthcare Practitioners

The CHP 2025 survey was delivered to HCP across Wales between June and August 2025. In total there were 127 respondents with 81 valid responses used in the evaluation.

The reasons for the invalid responses included were all attributed to the participants not filling out or completing the survey. Figure 50 shows a breakdown of these responses and from whom they were received.

Figure 50. Flow diagram of survey respondents.

3.5.2 Behavioural Analysis: Community HealthPathways (CHP)

Of the 81 valid responses 69 respondents (86.3%) were from primary care and 11 (13.8%) from secondary/tertiary care, with one respondent not answering the question.

3.5.2.1 Section one: Secondary Care Professionals

Nine of the eleven secondary care respondents stated their specific role: two were consultants, two were nursing, midwifery or health visiting staff, one was a GP, one a deputy director, three healthcare scientists and one manager.

These nine respondents also indicated that they were aligned to one of the following National Strategic Clinical Networks: Cancer (n=3), Critical Care (n=3), Musculoskeletal Conditions (n=1) neurological conditions (n=1) and women's health (n=1). Only three respondents stated that they had been involved in localising/writing a pathway for CHP (either in haematology, neurophysiology or review).

Table 9. Free Text Comments relating to how CHP has improved referrals (n=3)

1	Reduced unnecessary referrals
2	Standardisation and structure
3	We used to receive referrals for a diagnostic test to be conducted without specialist input. With the Healthcare pathways, patients are now receiving more conservative treatment from physio or orthopaedics before coming to us in diagnostic uncertainty. This will also have an impact on the orthopaedic surgical list with earlier treatment intervention

3.5.2.1.1 Impact of CHP on Secondary Care

For those working in secondary care who responded to the question (n=10) only three agreed or strongly agreed that CHP has improved the quality of referrals they receive due to reducing unnecessary referrals (n=2) and standardisation and structure (n=1). Five respondents selected the neutral response and two disagreed/strongly disagree that it had improved the quality of referrals. Response three in Table 9 highlights the potential for CHP to not only impact the quality of referrals but also facilitate earlier treatment interventions which could improve patient outcomes.

3.5.2.2 Section Two: Primary Care Professionals

The vast majority of the primary care respondents were GPs (n=51, 73.9%), five were clinical pharmacists, three were GP trainees with the remaining roles including practice nurse (n=2) or other nurse/HCA/technician roles. Figure 51 indicates that the health boards most typically referred into were Hywel Dda University Health Board (39.7%), Cardiff and Vale University Health Board (25%) and Aneurin Bevan University Health Board (17.6%).

3.5.2.2.1 Use of Community HealthPathways platform amongst Primary Care Professionals

Forty-eight (69.6%) of primary care respondents stated that they had used the CHP platform, with 21 (30.4%) indicating they had not.

Non-users' analysis

Of the 21 non-users, 12 (17.4%) stated that they had never heard of it, five (7.2%) stated that haven't had the time to use it, three (4.3%) stated they didn't know how to access it or needed further training, and one respondent stated they didn't see the value in using it.

When non-users were asked if they would be interested in using the CHP platform, just over three-quarters (n=16, 76.2%) said yes, four were unsure (19%) and one said no (4.8%).

Additional reasons provided by nine respondents through free text for not currently using the platform reflected lack of knowledge/awareness and difficulties in accessing or navigating the platform.

Figure 51. Number of Primary Care Respondents Referring into Health Boards.

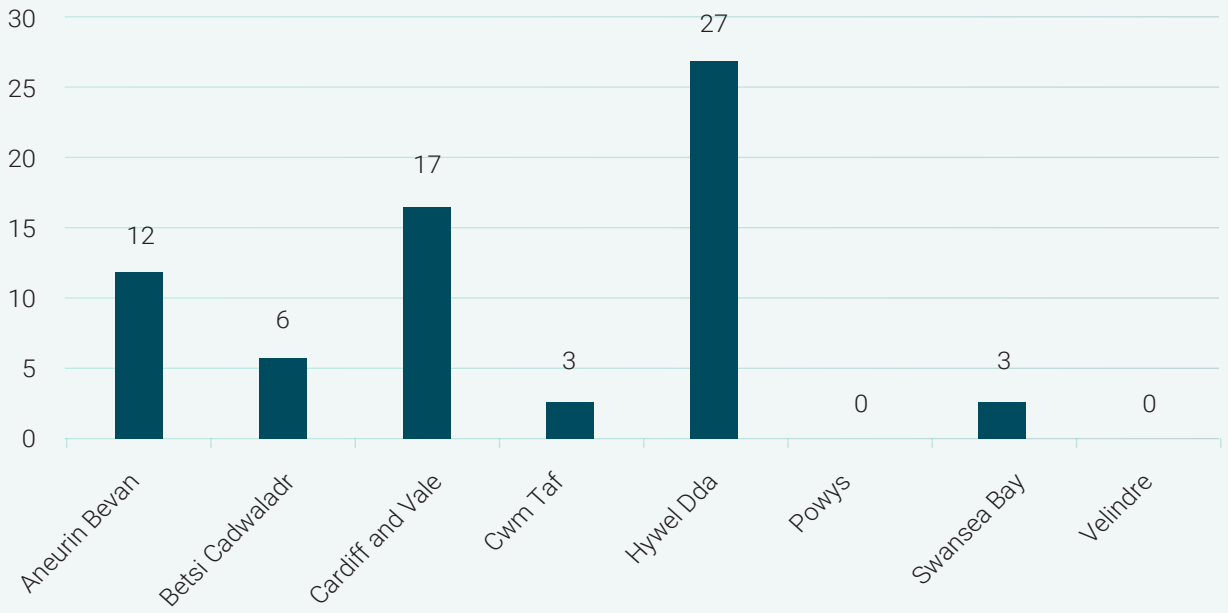


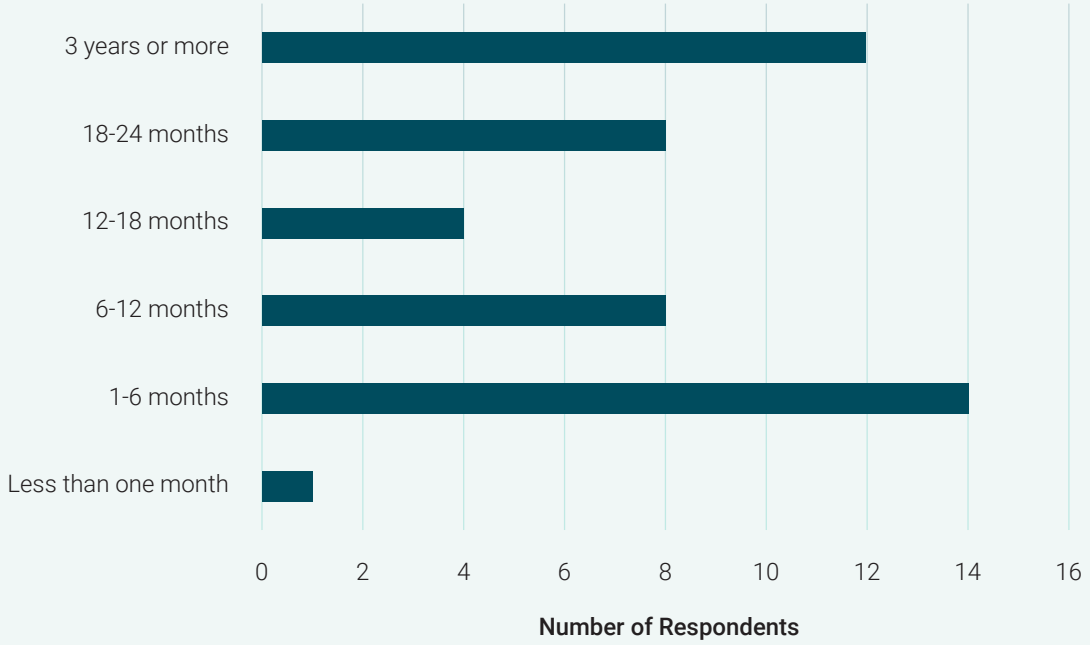
Table 10. Additional reasons given for not using the CHP platform (n=8)

1	I don't know what it is and there are too many pathways and very little capacity for any more work in primary care
2	I found it difficult to navigate and too much information to read through to find what I want
3	I have looked at the platform. I don't find it user friendly and easily accessible
4	I made a request for access but had no response
5	I tend to use NICE guidelines or the BMJ
6	I've tried to register a few times but have never been able to get access
7	It has been launched this week
8	Not heard of platform previously

CHP users' analysis

The length of time spent using the platform varied widely as indicated in Figure 52 below, with a fairly equal distribution of users up to twelve months (48.9%) and between twelve months and three years or more (51%). The biggest majority of users stated that they used the platform as needed/when required (n=21, 45.7%) with 12 respondents (26.1%) indicating they used it daily and 13 respondents (28.3%) indicating they used it weekly.

Figure 52. Length of time that respondents has been using CHP platform.

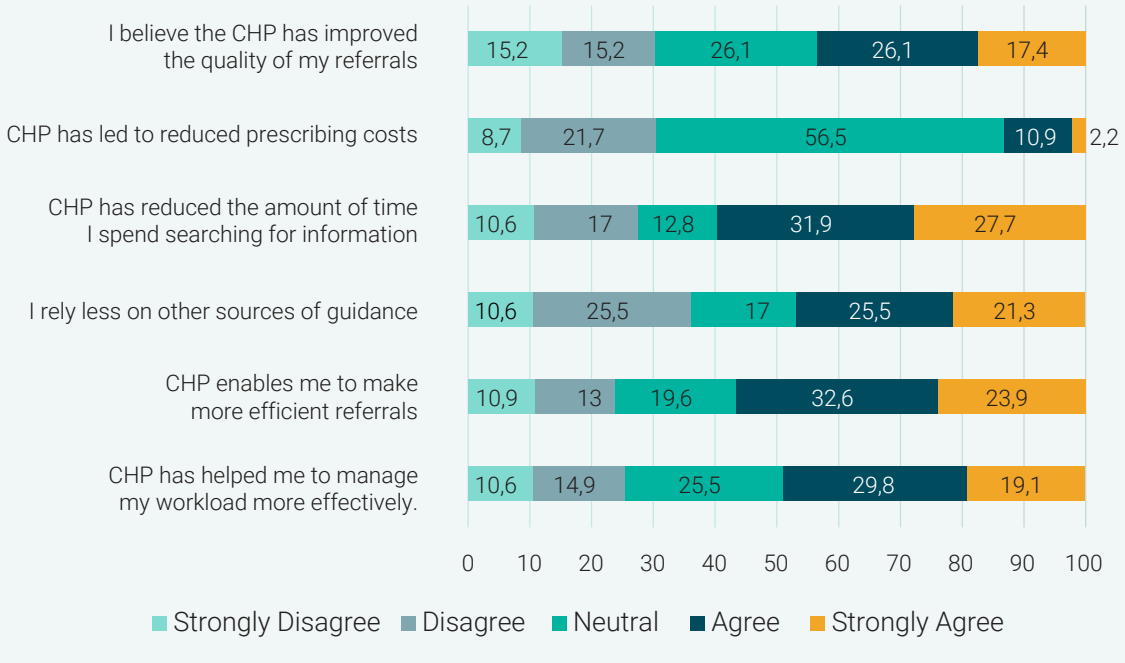


3.5.3 Behavioural Impact of CHP Platform

3.5.3.1 Impact on management of workload and referrals

Primary care professionals who had used the CHP platform reported strong levels of agreement to items linked to its potential to improve efficiency of workload although only 43.5% believed that using the platform has improved the quality of their referrals. As shown in Figure 53, 60% of respondents stated that the platform reduced the time spent looking for other information with 57% also agreeing that it helped make referrals more efficient. Whilst 46.8% of respondents also stated they relied less on other guidance since using the CHP platform, 36% of respondents stated that they still relied on other sources of guidance.

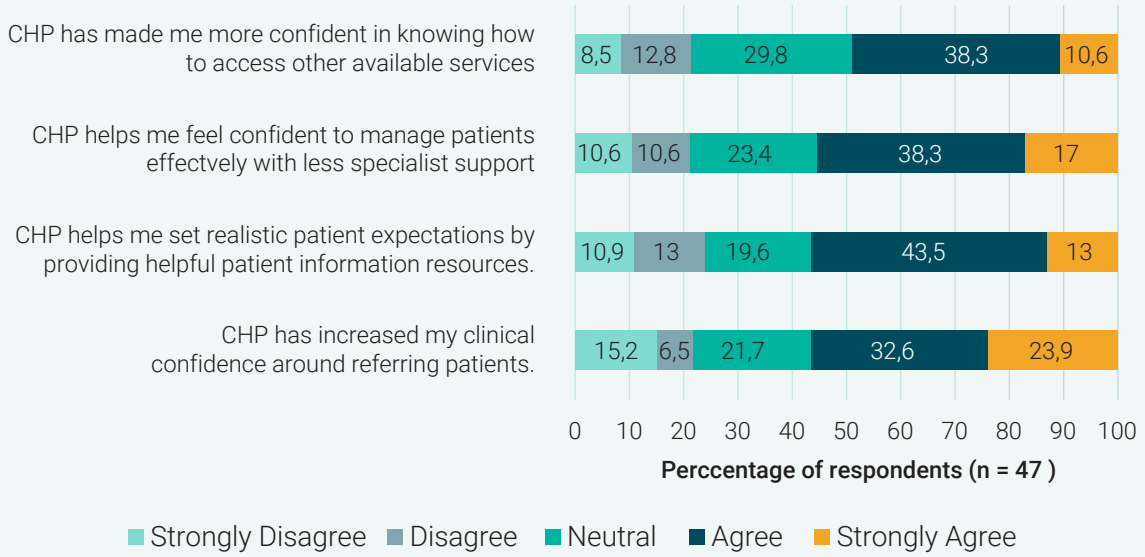
Figure 53. Impact of using CHP Platform on management of workload and referrals.



3.5.3.2 Impact on perceived confidence

Responses to the questions linked to the impact of the CHP platform on confidence around referring and managing patients effectively revealed that just over half of the respondents felt that engagement with CHP had increased their confidence with 56.5% of respondents stating that engaging with the CHP platform had increased clinical confidence around referring patients and had helped them set realistic patient expectations (Figure 54). However, a proportion of respondents did not agree that the CHP platform had helped improve confidence around referrals and managing patients with around a fifth of respondents disagreeing or strongly disagreeing with this set of statements.

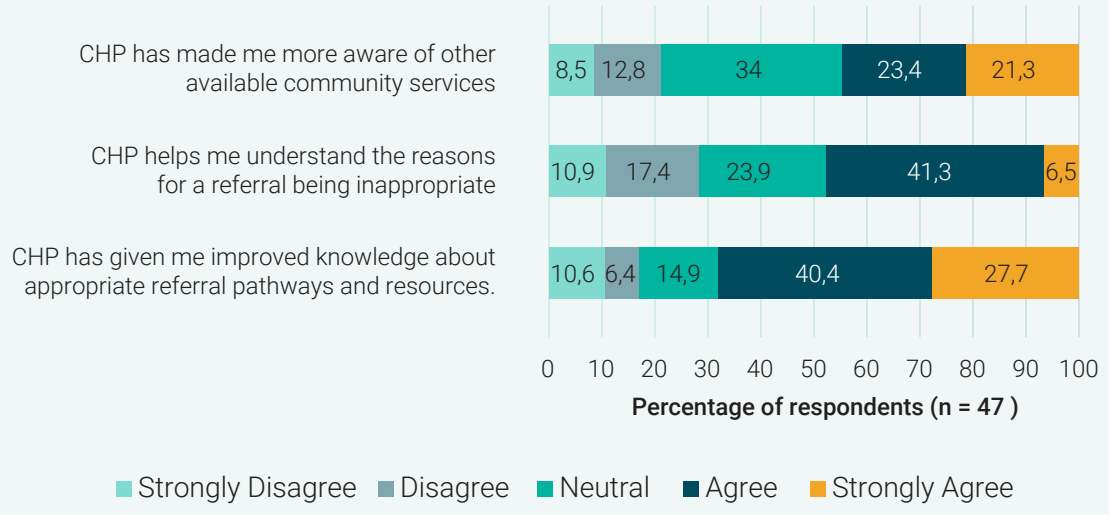
Figure 54. Impact of using CHP Platform on perceived confidence of primary care professionals.



3.5.3.3 Impact on knowledge and understanding

Responses to questions exploring whether using the CHP platform increased knowledge, understanding and awareness around referral pathways were overall positive. The majority of respondents (68.1%) reported that the CHP platform had improved their knowledge of appropriate referral pathways and resources, and almost half of respondents (47.8%) felt that it has helped them understand the reasons for inappropriate referrals or that it had made them more aware of other available community services (44.7%).

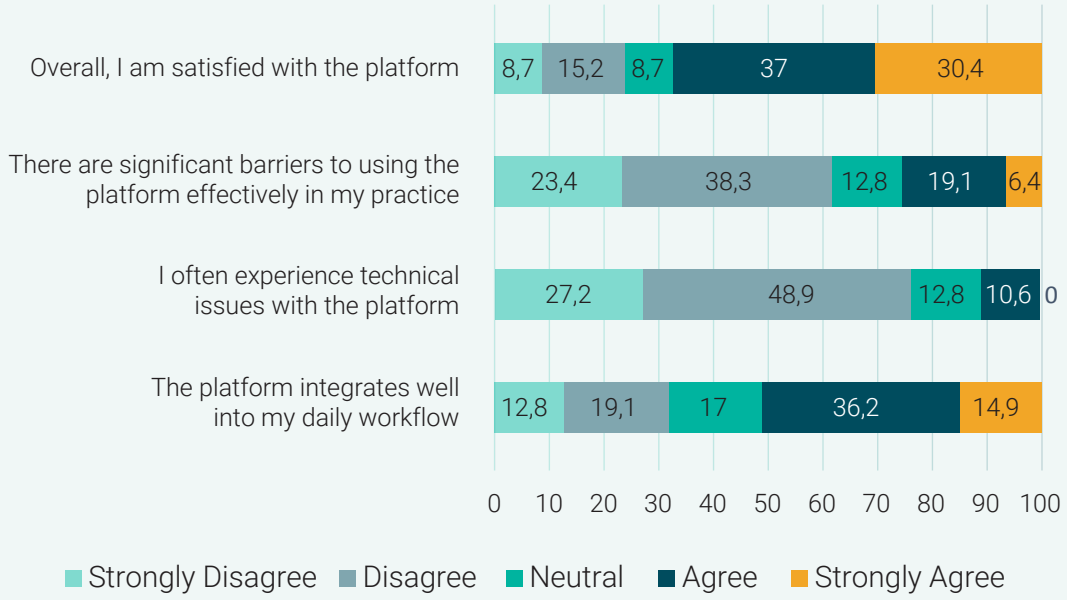
Figure 55. Impact of using CHP Platform on knowledge and understanding.



3.5.3.4 Overall user experience measures and free text data

Overall satisfaction with the CHP platform was fairly high with 67% of respondents indicating satisfaction although just under a quarter of respondents (23.9%) were not satisfied overall. The vast majority of respondents disagreed that there were significant barriers to using the platform or that they experienced technical issues, with half of respondents (51.1%) stating that the platform integrated well into their daily workflow.

Figure 56. Overall satisfaction with the platform.



3.5.3.5 Reasons for not recommending the CHP platform

Thirteen respondents (28.3%) stated that they would not recommend CHP to other healthcare professionals. Out of the thirteen HCPs who would not recommend the platform, 6 referred into HDUHB, 3 into CAVUHB, 2 into ABUHB, 1 into SBUHB and 1 into CTMUHB, indicating dissatisfaction was not localised to a specific health board. Eleven out of the thirteen provided further details in the form of the free text comments below.

I would advise any doctors new to the area it was available however there are many different platforms which can be used. I think to some extent it has been used to by secondary care to try to impose guidelines on GPs. Often there is no information on topics I am looking for.

Hasn't helped our practice.

Having practice-wide login details makes for hard-to-remember login details and a non-editable password that already creates a barrier to deciding to access the resource - i.e. needing to look up the clumsy login details or search emails or ask the Practice manager. Why not link the login process to eg user Nadex numbers and passwords?
ii) On the few early occasions where I initially tried to look up a pathway or guidance on a specific issue, I either could not find a relevant pathway or had an "under construction" type response. I have quickly given up using the site.

It is very good for certain conditions - I use it mainly for looking up vitamin D deficiency treatment options. The pathways do not clarify what is contractually expected of GPs.

It is yet another system, yet another way for referrals to be rejected.

It may be an education issue for the user - I find it cumbersome and hard to navigate. Most times I use it , the page is not adapted for local use. I therefore do not use it very much at all. Perhaps if I used it more, I would learn to use it efficiently, but currently I hardly ever use it. My colleagues seem to find the

same, they don't seem to use it much and I don't hear them say it is useful. Perhaps an educational session at PTLS/PT4L would help.

It's awful. Can't find anything. The generic letters from certain specialities that say 'refer to the pathway' are not specific enough to be able to work out what they recommend. Cannot find anything there about neurophysiology alternatives for example.

Password protected. Needs to be removed. Not sure what is and isn't on it. One of many pathways/protocols/guidance we are drowning in. Needs to be integrated fully in all the other systems we use.

The platform is being updated but there are still HP's not adopted- there's no point wasting time then. It also takes away clinician autonomy. If HP were to be followed to the letter of the law there would have been several ca's missed and not referred. It's a very expensive way of beating GP's and batting work back to GMS - have you not thought that this is helping to drown primary care and shift work WITHOUT backfill/LES to cover it- we are mugs to adopt HP imho and 2ry care must be laughing all the way to the common room.

The whole premise misunderstands how we work in General Practice. It overcomplicates the referral process. The onus should be on secondary care to organise and manage investigations of patients for whom we have concerns. We cannot be responsible for navigating multiple different pathways for each individual speciality or condition. We do not have the time or resources to check to see if a specific pathway is published for every single clinical condition we might encounter. We are medical professionals, trained to manage patients. We shouldn't be expected to have to cross-reference our knowledge against a catalogue of guidelines and criteria before making a referral.

This is another layer of 'guidance' which at best creates additional work and at worst is used as an excuse to reduce appropriate referrals getting to the right place. It seems to have been developed on the understanding that GPs have poor knowledge and there is limited evidence for this. Poor referral quality is driven by factors such as lack of time, clinical pressure. This platform does nothing to address this and could make it worse.

3.5.3.6 Suggestions to improve the platform for developers

Finally, thirteen respondents had suggestions for the developers to improve the platform and these are shown below:

A search bar to find the relevant clinical issue or diagnosis that then suggests which pathway to follow. The long lists currently are too slow to read through and not logically presented.

As mentioned above re: login.

Enabling automatic login for Eolas having logged into Health Pathways. It's annoying to currently have to login to Eolas separately after logging into HP.

Integration to clinical systems or into the referrals templates.

It is more useful when I have access to two physical screens on the desktop (not always the case). I appreciate that this is more of a hardware/resource issue, thank you.

It needs to be pulled asap, unless there's a funding stream that accompanies the suggestions made by HP. It will help sink GMS until we're all HB employees - at which point we will say 25 patient goodbye we've followed HP now we need a break. IT also paves the way to eliminate GP's so you're doing a good job completely demoralise the exhausted GP workforce. You've created a monster- how to reign it in is your problem.

Make up to date for this health board most are not updated as yet.

Needs to be clearer what is available. If you don't know what is on it or not unlikely to look. I think the user interface could be improved and need to remove password protection to allow instant access which should be integrated.

Needs to be fully integrated into GP IT system - system one or EMIS with a click of a button, to encourage GP participation.

Some pathways are clearer than others. Some contain multiple links which make it harder to navigate. Some parts of the site still contain information from when it was adopted from NZ. Please see the following link: https://apps.nhslothian.scot/refhelp/ This is a website used in Scotland but the pages are, in my opinion, clearer and easier to navigate.

Some pathways have not yet been adapted for Cardiff and vale- continue to update for each health board

The pathways need to specify what GPs are contractually obliged to do in a primary care setting and not be used as a tool by secondary care to bat back referrals. The breadth of conditions covered is too broad and needs more focus. Password access to the health pathways is a hindrance when I can access NICE CKS directly.

Up to date contact numbers for EPAU/gynae please!

3.5.4 Usability Analysis

3.5.4.1 System Usability Scale (SUS) Analysis

This section provides an in-depth analysis of the System Usability Scale (SUS) scores from 46 participants. The SUS was administered to assess the overall usability of the CHP platform. SUS is a standardised, reliable measure of perceived usability, with scores ranging from 0 to 100, where higher scores reflect greater usability.

The benchmark interpretation for SUS scores is as follows:

- Scores above 68 are considered "above average."
- Scores above 80 indicate "excellent" usability and user satisfaction.

In this evaluation, SUS scores ranged from 10 to 100, revealing a wide spectrum of user perceptions:

- Low SUS Scores: Several participants scored well below the 68 benchmark, with the minimum score being 10. This suggests that some users encountered significant usability challenges, possibly due to navigation complexity, unclear workflows, or lack of integration.
- High SUS Scores: A number of participants rated the platform very highly, with the maximum score reaching 100. These users perceived the system as intuitive, efficient, and well-suited to their tasks.

The overall mean SUS score was 66.52, placing the CHP just below the accepted average of 68 and within the "Marginal" acceptability range. The median score of 73.75 is notably higher than the mean, indicating that at least half the users had a more positive experience than the overall average suggests.

This discrepancy highlights the presence of outliers on the lower end and contributes to the observed standard deviation of ±24.21, which reflects substantial variability in the dataset.

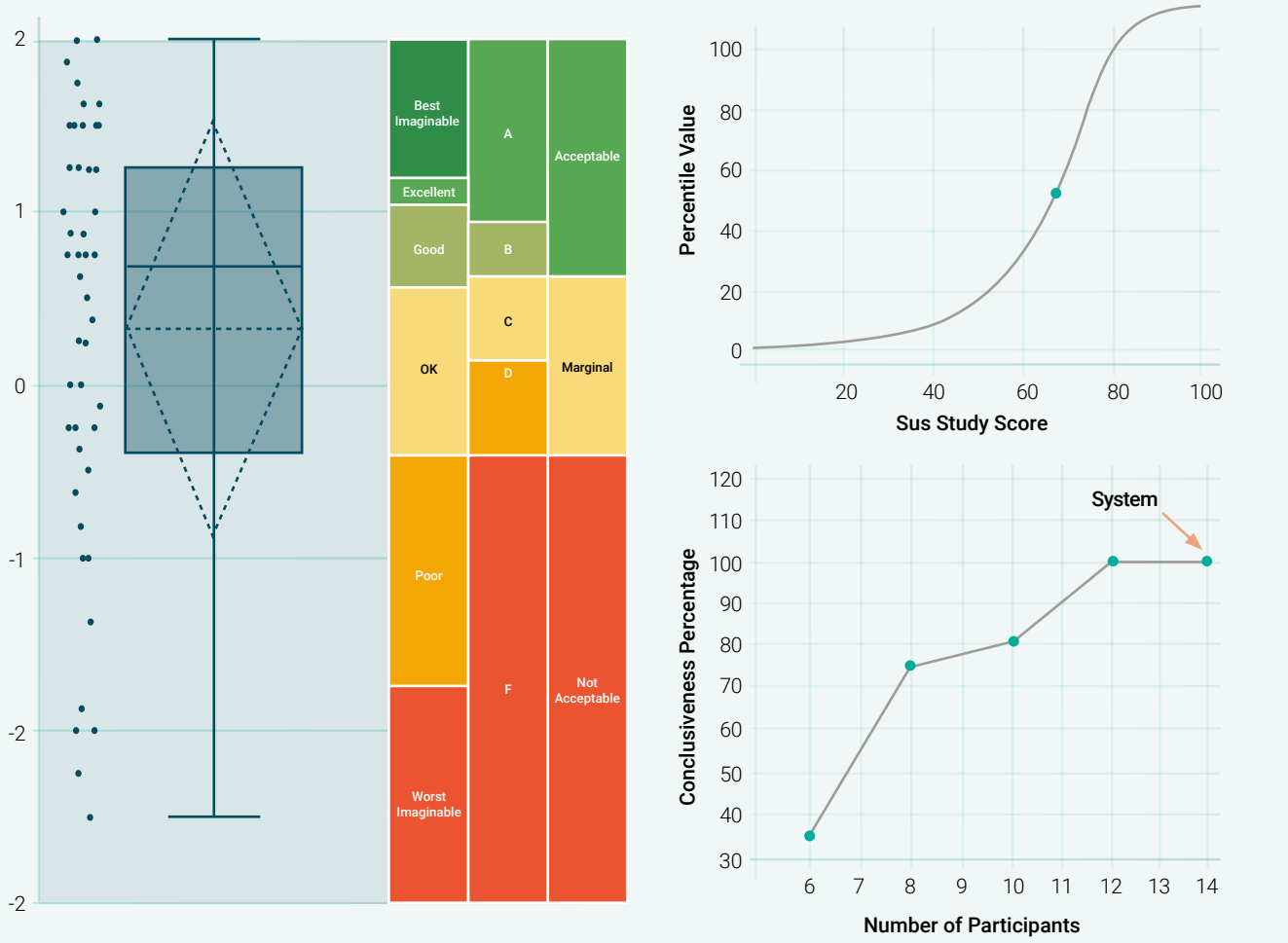
As shown in Figure 57, the percentile curve places the CHP near the 45th percentile, meaning it performs below average in comparison to other systems evaluated using SUS across industries.

It is worth noting that benchmark SUS datasets are broad, and a comparison with digital health-specific tools could provide more targeted insights.

Despite the lower mean, the dataset's conclusiveness is strong. As shown in Figure 57, precision analysis indicates that the SUS estimate would have met the desired confidence with 14 responses; with N = 46, the estimate is more than sufficiently precise. Indicating that the results are sufficiently stable and additional responses are unlikely to alter the overall findings significantly.

As with many platforms serving broad user groups, variability in scores is expected. This suggests that while the platform may be intuitive and efficient for some, others, particularly those with different workflows, expectations, or technical backgrounds, may face usability barriers.

Figure 57. SUS Scores analysis.



3.5.4.2 Qualitative Feedback:

The qualitative responses provide detailed suggestions for platform enhancement. These were thematically grouped into the following categories:

1. Integration and Interoperability

- Multiple users requested integration with GP IT systems such as EMIS or SystmOne.
  "Needs to be fully integrated into GP IT system – SystmOne or EMIS with a click of a button, to encourage GP participation." – A participant said
- Calls for single sign-on functionality, particularly between Health Pathways and Eolas.
  "Enabling automatic login for Eolas having logged into Health Pathways. It's annoying to currently have to login to Eolas separately after logging into HP." – A participant said
- Suggestions to embed the platform into clinical workflows or referral templates.
  "Integration to clinical systems or into the referrals templates." – A participant said

2. Navigation and Interface Design

- Participants noted that the interface is not intuitive, with some describing it as "unclear" or "hard to navigate."
  "Needs to be clearer what is available. If you don't know what is on it or not, unlikely to look." – A participant said
- A search function was suggested to streamline pathway discovery and reduce reliance on long, unreadable lists.
  "A search bar to find the relevant clinical issue or diagnosis that then suggests which pathway to follow. The long lists currently are too slow to read through and not logically presented." – A participant said
- Some users expressed frustration with password protection acting as a barrier to quick access.

"Remove password protection to allow instant access which should be integrated." – A participant said.

3. Content Quality and Maintenance

- Concerns were raised about outdated or inconsistent content, especially regarding health board-specific resources.
  "Some pathways have not yet been adapted for Cardiff and Vale – continue to update for each health board." – A participant said.
- Several users highlighted the need for accurate contact information, especially for services like EPAU/Gynae.
  "Up-to-date contact numbers for EPAU/ gynae please!" – A participant said.
- The presence of legacy content from New Zealand was flagged as confusing and unhelpful.
  "Some parts of the site still contain information from when it was adopted from NZ." – A participant said.

4. Practical Considerations

- One participant noted that using the platform was more effective when two physical monitors were available.
  "It is more useful when I have access to two physical screens on the desktop (not always the case)." – A participant said.
- Others stressed the need to clearly define what is expected from GPs, to avoid misuse of the system by secondary care as a gatekeeping tool.
  "The pathways need to specify what GPs are contractually obliged to do… and not be used as a tool by secondary care to bat back referrals." – A participant said.

5. Emotional Response

- A small number of participants expressed frustration and burnout, noting the platform as a source of pressure in an already strained primary care system.
  "You've created a monster – how to reign it in is your problem. It completely demoralises the exhausted GP workforce." – Participant

3.5.4.3 User Experience Questionnaire (UEQ) :

To complement the SUS, the UEQ short version was used. The UEQ-S captures perceived experience across two higher-order dimensions, Pragmatic Quality (usefulness, clarity, efficiency) and Hedonic Quality (stimulation, novelty), using eight bipolar items scored from –3 (very negative) to +3 (very positive).

In practical interpretation, means between –0.8 and +0.8 indicate a neutral evaluation, values above +0.8 indicate a clearly positive experience, and values below –0.8 indicate a clearly negative one. Table 11 shows the mean scores per item, while Table 12 and Figure 58 illustrate the mean scores for each scale.

Table 11. UEQ mean, variance, and SD of both scales items.

Item	Mean	Variance	Std. Dev	No.	Negative	Positve	Scale
1	↑ 1.1	3.5	1.9	46	obstructive	supportive	Pragmatic Quality
2	→ 0.8	3.5	1.9	46	complicated	easy	Pragmatic Quality
3	→ 0.6	3.9	2.0	46	inefficient	efficient	Pragmatic Quality
4	→-0.6	3.9	2.0	46	confusing	clear	Pragmatic Quality
5	→ 0.0	2.3	1.5	46	boring	exciting	Hedonic Quality
6	→ 0.7	3.0	1.7	46	not interesting	interesting	Hedonic Quality
7	→ 0.3	2.7	1.6	46	conventional	inventive	Hedonic Quality
8	→ 0.0	2.6	1.6	46	usual	leading edge	Hedonic Quality

Table 12. UEQ Scales Mean Scores.

Short UEQ Scales	
Pragmatic Quality	→ 0.451
Hedonic Quality	→ 0.261
Overall	→ 0.356

The UEQ-S results from 46 respondents indicate a neutral-to-weak experience overall. The Overall mean is 0.356 with a 95% confidence interval (CI) of 0.038–0.674, which falls short of the +0.8 threshold for a clearly positive impression. When split by dimension, Pragmatic Quality averages 0.451 (CI 0.152–0.751) and Hedonic Quality 0.261 (CI −0.159–0.681).

As shown in Table 11, users judge CHP as supportive (mean 1.087) and somewhat easy (0.761), with modest efficiency (0.587). However, they rate the system not clear: the "clear" item is negative at −0.630 with a CI of −1.200 to −0.061, making it the single most decisive finding in the data. This clarity deficit suppresses perceived efficiency and ease and explains why neither scale reaches clearly positive territory. On the affective side, reactions are muted rather than poor. "Interesting" trends positive (0.652), while "exciting," "inventive," and "leading-edge" cluster around zero (0.043, 0.326, 0.022). In the official benchmark for this dataset, as shown in Figure 59 & Table 14, all three scales are classified "Bad," meaning they lie within the worst 25% of results compared with other products. Variability is moderate (SD ≈ 1.0–1.5 across scales), so perceptions differ across individuals.

Figure 58. UEQ Scales Mean Scores.

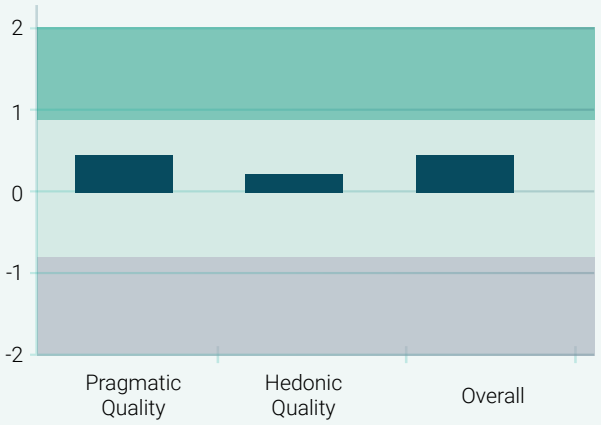


Figure 59. UEQ Scale Scores by Benchmark Category.

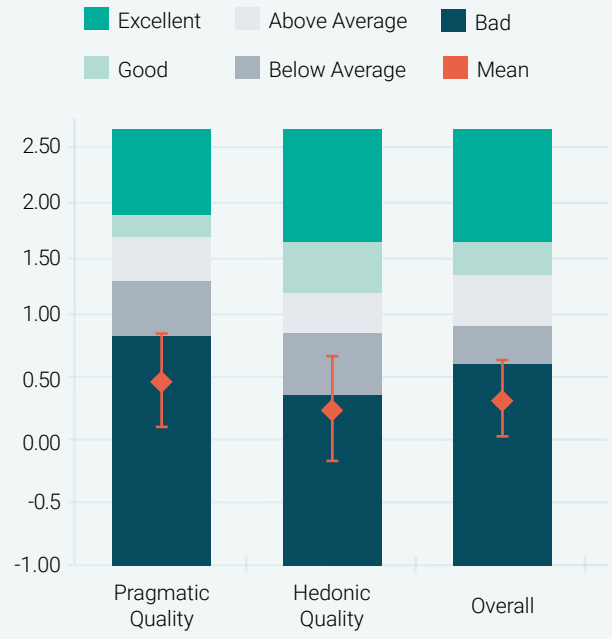


Table 13. UEQ Confidence Intervals per Scale.

Confidence intervals (p=0.05) per scale						
Scale	**Mean**	**Std. Dev**	**N**	**Confidence**	**Confidence Interval**	
Pragmatic Quality	0.451	1.036	46	0.299	0.152	0.751
Hedonic Quality	0.261	1.453	46	0.420	-0.159	0.681
Overall	0.356	1.100	46	0.318	0.038	0.674

Table 14. UEQ Scale Scores in comparison to Benchmark.

Scale	Mean	Comparison to benchmark	Interpretation
Pragmatic Quality	0.451086957	**Bad**	In the range of the 25% worst results
Hedonic Quality	0.260869565	**Bad**	In the range of the 25% worst results
Overall	0.36	**Bad**	In the range of the 25% worst results

Synthesising these findings, the experience of CHP users can be summarised as functionally helpful but cognitively effortful.

The CHP appears to have the right content and capabilities to support care pathways, yet it exacts a mental-model tax that depresses perceived clarity. Participants describe the interface as "unclear" or "hard to navigate," ask for a search bar to avoid long lists, and call for integration/SSO to fit clinical workflows, all of which are exactly the kinds of issues that depress SUS and UEQ-S clarity/efficiency.

3.5.4.4 Conclusion and Recommendations for Improvement

The CHP platform has demonstrated utility in supporting users to complete healthcare related tasks. However, evaluative findings indicate that many users experience challenges in navigating the system, often describing it as confusing and difficult to follow. While the platform functions as intended, its usability is hindered by a lack of clarity, which necessitates additional cognitive effort from users and may impede task efficiency.

The primary concern identified is the ambiguity within the user interface and pathway structure. Users frequently report uncertainty regarding their current position within a pathway, the subsequent steps required, and the meaning of specific terminology used throughout the system.

To address these issues, the foremost priority should be enhancing the clarity and navigability of the CHP interface. This includes making each procedural step more explicit, employing clearer and more consistent language, and ensuring that the design accommodates the diverse needs of its user base. Following these foundational improvements, further refinements, such as optimising information retrieval mechanisms and streamlining the visual layout are likely to significantly enhance the overall user experience.

3.5.5 Staff Interviews: Qualitative Analysis

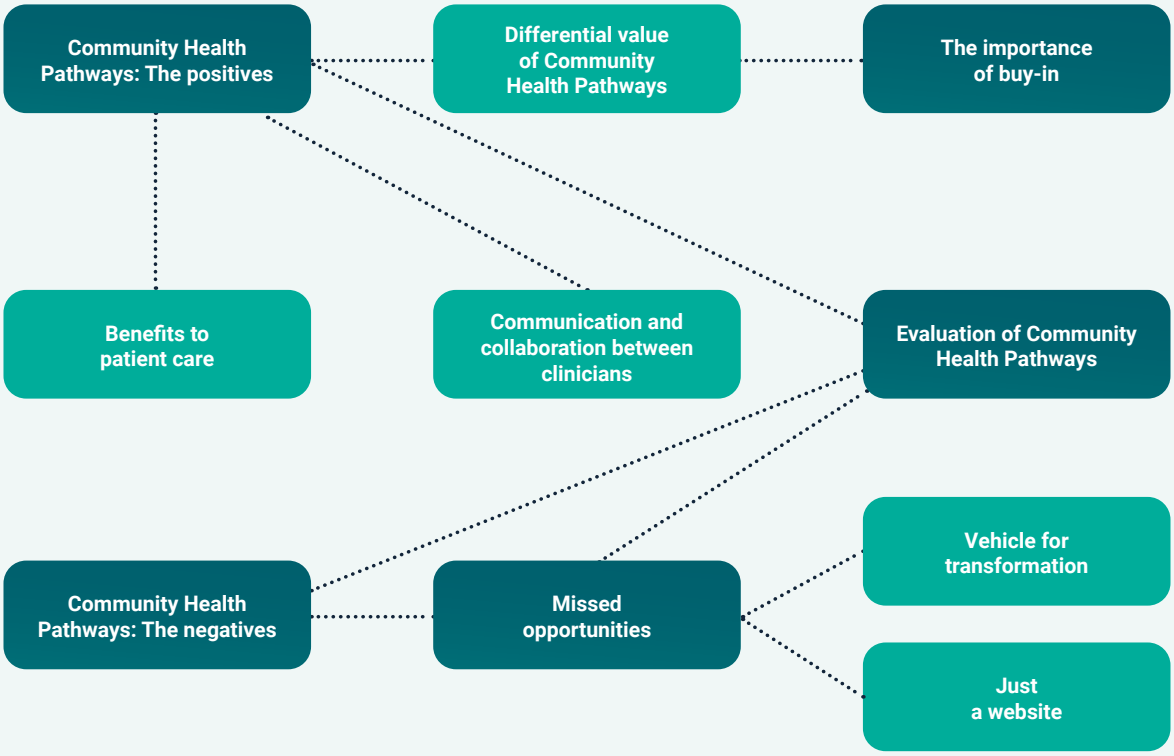
18 participants took part in semi-structured interviews on Microsoft Teams. The sample comprised of five commissioners, six primary care clinicians, and seven secondary care clinicians, though four of the five commissioners also used CHP in their clinical work. Interview questions were informed by the following research questions are detailed in Appendix 4-6:

- Do clinicians recognise CHP as a valuable tool in their daily work?
- Does CHP have an impact on the speed of decision making – or the amount of clinical time spent searching for information?
- Does CHP help clinicians set realistic patient expectations by providing useful patient information and resources?
- Does CHP have an impact on productivity, such as reduced demand on secondary care and reduced prescribing costs?

3.5.5.1 Results of the staff interviews

Following thematic analysis of the data, five themes were identified (Figure 60). These related to the positives and negatives of CHP, missed opportunities related to CHP, the importance of buy-in from stakeholders for the success of the platform, and considerations for the evaluation

Figure 60. Thematic map of themes, subthemes, and relationships between themes relating to Community Health Pathways. Themes are denoted using circles and sub-themes are denoted using rectangles.



3.5.3.2 Theme 1: Community Health Pathways: The positives

Many of the participants interviewed recognised the actual or potential benefits of CHP in their own clinical practice or that of their colleagues in different sectors or specialties. These benefits included having access to an up-to-date repository of evidence-based information, the downstream impact of this on referrals and patient access to treatment, and the opportunity to collaborate with other clinicians during the pathway development process.

3.5.3.2.1 Sub-theme 1: Benefits to patient care

CHP was associated with a number of benefits to primary care clinicians during their consultations with patients. Primary care participants reported that it was useful and reassuring to have a standardised repository of up-to-date information, which is in line with the current evidence base. In particular, having necessary information in one place was seen as a benefit that was unique to CHP. Outside of CHP, e-mail is the primary method for communication of important information, such as updates to NICE guidelines. These e-mails can easily be overlooked if they are received during busy times or lost in busy in boxes. Other relevant information might be found on internet or intranet pages, meaning that it is difficult to find the correct information within the time constraints of a standard GP appointment. CHP provided easy access to all of the relevant information in one place, meaning that it was the preferred resource for a number of participants and had replaced other resources in their daily practice.

"My vision […] of health pathways is that […] it would be […] almost like the single point of truth […] that clinicians in primary care – GPs, nurses can go to receive evidence-based up-to-date information to make an informed decision about a referral."

Commissioner 4

An additional unique benefit of CHP related to the localisation of pathways. Participants reported that it was useful to be able to access information that was relevant to their context without having to work out how to adapt national guidelines to their local services.

"It has helped me to be more confident because considering that I know that this has been made locally, so I would assume that whatever has been written in that has been resourced accordingly because a lot of times when national guidelines when you're following it, you don't know whether that particular aspect is available here or not."

Primary Care Stakeholder 3

Interviewees recognised that CHP could also directly impact patient experience and care by standardising the treatment received by patients seen by different clinicians in different locations across Wales.

Participants from all stakeholder groups – primary care, secondary care, and commissioner – also recognised the potential benefits to patient care outside of primary care consultations. If CHP led to a decrease in the number of inappropriate referrals and an increase in the number of high-quality referrals sent to secondary care, capacity within secondary care services would be increased. This increased capacity could be used to diagnose patients and initiate treatment more quickly.

3.5.3.2.2 Sub-theme 2: Differential value of Community Health Pathways

Throughout the interviews, participants reflected on the fact that the actual or potential benefits of CHP would be different for different groups of clinicians and within different specialties.

Within primary care, clinicians reported that CHP was most useful for rarer conditions, or conditions where guidelines can change frequently, due to factors such as anti-microbial resistance. Participants also reported that the platform was potentially more useful to clinicians during training, those with less experience, or locum clinicians who may not be familiar with the local context in which they are working.

From a secondary care perspective, CHP may be more useful within specialties where there are high volumes of referrals, particularly where those referrals may be of low quality. Additionally, the potential utility of the platform might be increased in specialties where there was no existing interface between primary and secondary care.

3.5.3.2.3 Sub-theme 3: Communication and collaboration between clinicians

An additional benefit, or potential benefit, of CHP was the opportunity to collaborate with clinical colleagues and the facilitation of communication between primary and secondary care.

During the process of developing and localising pathways, participants appreciated the opportunity to collaborate with their colleagues from primary and secondary care, respectively. The process provided insight into the challenges faced by those in each sector and provided context for reservations or resistance that may arise. Participants also reported that pathway development and localisation represented a useful opportunity to collaborate with, and understand the experiences of, professionals from different health boards.

"I think the co-production element is really useful. […] I think through that process it really makes you scrutinise the existing pathways and actually provides opportunity to see where things may or may not be working, both from a primary and secondary care perspective."

Secondary Care Stakeholder 2

There were some reports that CHP could help to foster communication between primary and secondary colleagues during the referral process; primary care clinicians could reference pathways in their referrals and secondary care colleagues could direct colleagues to appropriate pathways when responding to inappropriate or low-quality referrals. Some secondary care stakeholders reported that CHP was being used in this way and that CHP was a useful resource to which to direct colleagues. However, there was some reservation from a number of primary care stakeholders that CHP was being used as a tool to reduce and decline referrals without helpful conversation.

3.5.3.3 Theme 2: Community Health Pathways: The negatives

Despite positive feedback about the benefits of CHP, participants also noted some negative points about the platform.

Both primary and secondary care clinicians reported that the 'rigidity' of the pathways was a barrier to the utility of the platform. Some primary care clinicians reported that they are generalists and are presented with a diverse and complex range of clinical presentations on any given day. They required a level of flexibility within referral processes and within communication with secondary care clinicians that was not supported by CHP. Secondary care clinicians reported that the rigid pathway structure was a barrier to pathway development and localisation. As pathways were required to be structured or formatted in a specific way, information relevant to a specific condition may not be conveyed in a way that is optimal.

Primary care participants, in particular, reported that they often feel 'bombarded' with new technologies or tools that they should use in consultations with patients. GPs reported that they are extremely time-poor and have a lot to achieve within a very short consultation window. Therefore, any time that they invest in familiarisation with, and use of, new technologies must be outweighed by benefits to patient care.

Usability issues were one factor which limited the potential value of CHP, according to some primary care stakeholders. Participants reported that having to use a password to log in to the platform each time was a barrier to use and that integrating CHP into existing GP notes systems would make the platform more valuable. Other simple user experience features were also seen as sub-optimal. For example, some users found it difficult and time-consuming to navigate to the desired pathway as there were many drop-down boxes to navigate. These difficulties were further compounded by the fact that not all conditions currently have a pathway and that users can spend time navigating to a pathway that has not been developed yet. One participant highlighted that even 30 seconds, added up over all of the consultations across the day, would lead to a significant amount of time spent on CHP. Therefore, the value of the platform has to be worth the time investment.

"I appreciate the premise for 'this is how we do things around here', just by its interface and the way that sometimes everything's laid out, I don't find it as easy on the eye or as efficient to get to where I'd sometimes want to and until it's comprehensive it becomes a bit infuriating that you open [it] up and navigate to what you want to look at, find it's not still being localised."

Primary Care Stakeholder 6

Another usability issue which led to resistance from primary care stakeholders related to the information contained within pathways. The quantity of information within each pathway was reported as a barrier to use, as scrolling through each pathway within a consultation is time-consuming. Moreover, the pitching of some of the information within pathways was reported by primary care participants as inappropriate and 'patronising'. For example, participants reported that pathways may contain information on how to take the history of their patient – a step which trained and experienced GPs do not have to be told to complete. They expressed that very short and simple pathways with key red flags, points for consideration, and concise flow diagrams would be more suitable for their level of knowledge and useful within the given time constraints.

"Personally, I would like a just a flow diagram, […] just one picture, one page. This is how you manage a certain [condition] in primary care and if that doesn't work then you refer."

Secondary Care Stakeholder 6

A number of participants reported concern about having to turn away from patients to consult CHP during consultations; this was not viewed as a good use of time that could have been spent conversing directly with patients. One participant even reflected that turning away from patients to consult CHP could undermine the patients' confidence and trust in the care they have received. Conversely, however, other primary care participants noted that patients were amenable

to their GP stopping to consult CHP once they had explained to those patients that they were clarifying the most up-to-date guidance and referral pathways.

"You've got to say to patients, 'Oh, hang on, just stop, I'm just going to try and get into this app and find the right thing and see whether there's a pathway for it and then scroll down through all the history and all the thing to see if there's any other management options we've not used.' You've not got time. And then basically you turn your back on the patient and they just have to sit there."

Primary Care Stakeholder 2

3.5.3.4 Theme 3: Missed opportunities

3.5.3.4.1 Sub-theme 1: Vehicle for transformation

Throughout interviews with commissioners and primary and secondary care stakeholders, there were explicit and implicit reflections on what the aim of CHP was and what it should be. Was it a method for communicating current practice, best practice, or a vehicle through which to change practice?

"I don't know that we know what we're trying to do with it. I think it's got potential to be a vehicle for transformation and change. But it's not necessarily seen as that."

Commissioner 2

There were participants – particularly secondary care stakeholders who were involved in the development and localisation of pathways – who were very clear that CHP was simply a tool to document and standardise current care. However, it was also noted that this was a difficult task to achieve for pathways where existing guidelines cannot, or have not, been realised.

It was also seen by some as a missed opportunity if CHP were not used as a vehicle through which to transform care but simply as a method of 'writing down a broken pathway'. Some participants who had been involved in activities around writing pathways to transform care within their own specialties felt hampered by the process of adapting those pathways for CHP.

There were also participants who reported that, whilst it was not the explicit aim of CHP to transform care, the act of reflecting on current care whilst recording it during pathway development and localisation had indirectly led to change through existing governance structures.

"It's not the remit of health pathways to improve the pathways, but the good thing about it I feel anyway, is that we're able to identify where there are gaps and where there are improvements needed and then that should go through our normal channels for making those changes."

Secondary Care Stakeholder 1

3.5.3.4.2 Sub-theme 2: 'Just a website'

As detailed in previous themes, participants recognised the actual and potential value of CHP within clinical practice. However, some participants also noted that in its current form, as a repository of information, there were some potential missed opportunities.

In addition to conveying localised information on referral pathways, participants suggested that the potential utility of CHP could be increased if it was a digitised referral platform, which was integrated into existing GP systems.

"It's just a website - phone this number or refer in this way. What it needs to be is far more linked to DHCW […] so that you could then […] click this button and it automatically sends the referral"

Secondary Care Stakeholder 7

If CHP was also set up to collect data on referrals made through the platform, evaluation of the platform would be facilitated, but CHP could also be used to plan and divert resources based on need. This could be one way through which CHP could help to transform, rather than document, pathways.

Finally, some participants reported that CHP would be useful as a patient-facing platform, which could help to facilitate co-production and patient-centred care.

3.5.3.5 Theme 4: The importance of buy-in

Participants recognised that a key predictor of the success of CHP is clinical buy-in.

Clinicians within primary care are the target audience for CHP and the aims of CHP cannot be met if GPs do not engage with it. This was recognised by participants from all three stakeholder groups and many reflected on methods of getting GPs engaged with CHP. Potential methods of increasing and ensuring primary care engagement include overcoming some of the usability issues and barriers to use, ensuring that all conditions have a pathway, including pathways in GP contracts, and using a 'carrot and stick' approach to engagement.

Experts from each secondary care speciality need to be bought in order for pathways to be written and localised and to ensure that they are as accurate as possible. There is evidence that not all secondary care clinicians are bought in to this process, which can lead to longer waits for pathways to come online.

Finally, participants recognised that those who are not using CHP or involved in the development and localisation of pathways are simultaneously the hardest to reach and the ones that potentially need to be reached most.

"There are many different types of GP out there, and the ones who are really engaged with CHP [through] pathway development […] will see it as a real positive and they will fully engage and they will extol its virtues all day long. They're not the ones we need to reach."

Secondary Care Stakeholder 5

3.5.3.6 Theme 5: Evaluating Community Health Pathways

Participants from all three stakeholder groups highlighted a number of potential barriers to the evaluation of CHP.

Participants reported that the data needed to successfully measure the effectiveness and value of CHP is not being routinely collected. The platform automatically captures the number of views on each pathway. However, the characteristics of those viewing the pathways, or their reasons for doing so, are not recorded, thus limiting the utility of that metric. Potentially useful metrics identified by interview participants included data on the number of referrals made, the quality of those referrals, the number of referrals considered but not made, and patient experience measures.

Additionally, contextual, qualitative data on the actual and potential utility of the platform, which might not be accurately conveyed using quantitative data were considered important. Any considerations around the key metrics for evaluating CHP are further complicated by the questions surrounding the actual aims of CHP, as highlighted in Theme 3.

A number of participants also reported that even with appropriate data being collected, it would be very difficult to demonstrate a causal effect of CHP on referral numbers and quality. This was because of the complexity of primary care, secondary care, and the referral context within and across specialties, but also because there are many different initiatives or projects running at any one time which could be having an effect on referrals.

Finally, participants reported that this might not be the appropriate time to evaluate the effectiveness of CHP. Participants viewed CHP as a tool in its early stages, which hasn't had the opportunity to fully embed into clinical practice. Not all of the pathways have been developed and localised and not all clinicians are aware of the platform.

"It would have been useful to have a full evaluation when the platform was working to its full potential and embedded. So, we're trying to evaluate a platform that isn't finished."

Commissioner 1

Due to these barriers, participants emphasised that absence of evidence should not be conflated with evidence of absence of the value and effectiveness of CHP.

3.6 Value of Community Health Pathways

3.6.1 Value of CHP to Patients

A number of patient benefits to the CHP platform were highlighted in the results: The HCP survey highlighted the potential impact of CHP on patients, with 50.3% of respondents agreeing that CHP made them feel more confident to manage patients more effectively with less specialist support. 56.5% of respondents agreed that CHP had helped them to set realistic patient expectations by providing helpful resources

The value to the patient was reflected in the interviews, where having all of the necessary information in one place was seen as a benefit unique to CHP. This benefit has meant CHP is now preferred for the majority of staff interviewed and has replaced other sources of information.

The standardisation and localisation of pathways was also noted by stakeholders from all groups as having the potential to improve patient care outside of primary care consultations, potentially increasing capacity in secondary care.

However, some primary care HCPs reported negatives, such as having to turn away from the patient to consult CHP, which some participants did not view as a good use of time, with the potential to undermine patients' confidence in the care they receive. However, other interviewees noted that this was not a problem for them, with patients amendable to their GP consulting CHP if it was explained they were clarifying the most up-to-date guidance.

Some evidence supported the hypothesis that CHP leads to more appropriate referrals. This could directly benefit patients, with potentially reduced times to diagnosis or treatment, due to a reduction in the time that could be accrued due to referral rejection, communication between primary and secondary care, with suggestions for conservative treatment options before progressing to an appropriate referral. CHP could allow individuals to undertake these conservative options directly from primary care, thus removing a step in the diagnostic/treatment pathway.

3.6.2 Value of CHP to HCPs

The majority of primary care HCPs that responded to the survey found value in the platform, with 60% of respondents agreeing that the platform reduced the time spent looking for other information with 57% also agreeing that it helped make referrals more efficient (n = 48). Whilst 46.8% of respondents also stated they relied less on other guidance since using the CHP platform, 36% of respondents stated that they still relied on other sources of guidance.

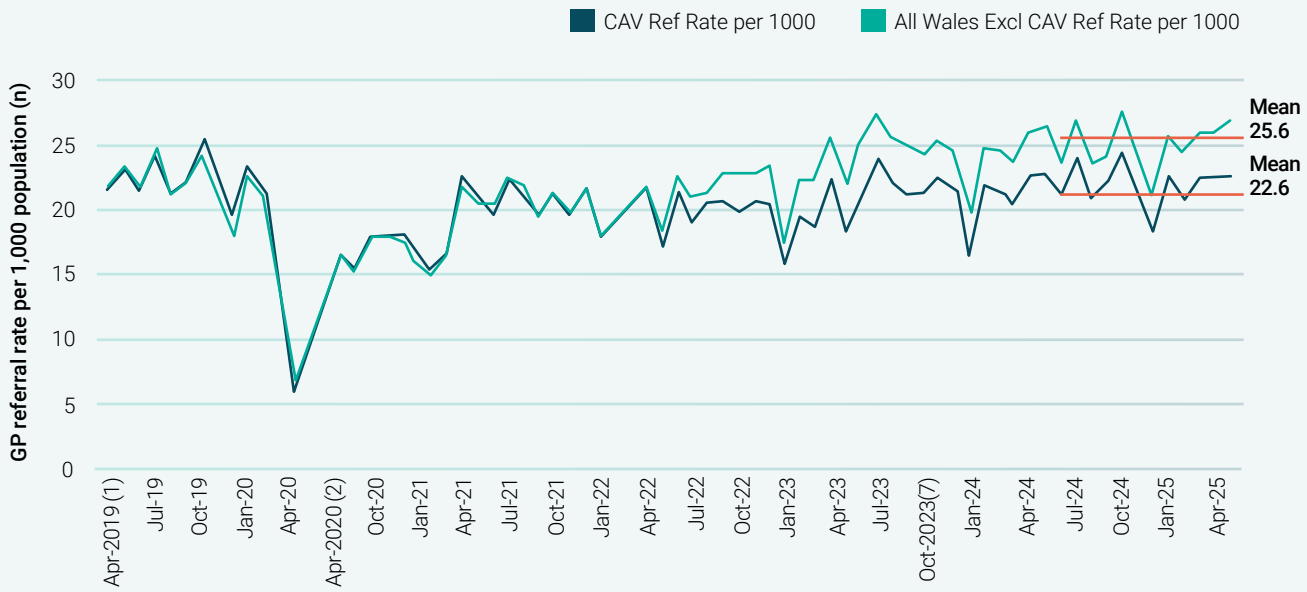
Qualitative data collection and analysis activities aimed to assess the value of CHP to clinicians in their daily practice and to provide contextual information on their experiences of using the platform. Following analysis of interview data with 18 commissioners, primary care stakeholders, and secondary care stakeholders, five themes were identified within the data. Participants reflected on the positive aspects of CHP, particularly benefits to patients care and increased opportunities for collaboration between primary and secondary care clinicians, and that these benefits may differentially impact clinicians based on career stage and speciality. Participants also reported a number of negatives associated with CHP, including burden and usability issues. A number of missed opportunities and suggestions for how CHP could be made more valuable were also reported by participants. Finally, participants recognised that buy in from executives and clinicians was important to the success of CHP and that there were a number of barriers to the evaluation of CHP.

Overall, many participants recognised the value of CHP as a repository of evidence-based, localised information with the potential to standardise patient experience and positively impact capacity within secondary care. However, despite the potential value CHP was also seen to have a number of negative aspects, and a number of missed opportunities were identified. These, in addition to potential barriers to evaluation of the platform, limit the ability to determine the effectiveness and value of CHP. Usability analysis provided insight into the barriers to using the platform, indicating that using it is cognitively effortful, with participants describing the interface as "unclear" or "hard to navigate".

3.6.3 Value of CHP to the NHS in Wales

Several case studies showed an apparent improvement in referral rate or quality after the introduction of CHP. Evidence indicated a divergence in the total referrals in CAVUHB of around 3 referrals per 1,000 population compared with the rest of Wales from early 2022 (Figure 61).

Figure 61. Comparison of referrals per 1,000 population in CAVUHB compared to the rest of Wales.



Based on available data, the difference in the total number of referrals in Cardiff and Vale University Health Board (CAVUHB) is estimated at 18,715 per annum. Applying an indicative unit cost of £170 per referral, as referenced in NHS England costing guidance (2024), this equates to a potential annual resource release of approximately £3,181,550. It is important to note, however, that this figure should be interpreted with caution. Unit costs can vary significantly depending on referral type, clinical specialty, and local service configurations, and the cited figure represents an average estimate rather than a precise valuation.

Moreover, while a reduction in referral volume has been observed, this divergence cannot be attributed solely to the implementation of the CHP platform. Other contextual factors such as changes in clinical practice, service redesign, or external policy interventions may also contribute, either wholly or in part, to the observed differences.

Extrapolating this model across Wales, a reduction of three referrals per 1,000 population would result in an estimated 90,421 fewer referrals annually. Using the same average unit cost of £170 per referral, this would correspond to a projected resource release of £15,371,570.

Again, these figures are indicative and should be interpreted within the broader context of health system variability and the multifactorial nature of referral trends. Further evaluation is required to isolate the specific contribution of CHP to these outcomes and to validate the economic impact across different health board settings.

Additionally, the impact on the quality of referrals could incur resource release by reducing unnecessary staff time. A handful of case studies in this report support this, with data showing a decrease in the number of referrals that were removed other than treated and inappropriate referrals for chest pain after the introduction of the chest pain pathway in HDUHB, and for headache referrals after the introduction of the headache pathways in SBUHB.

Additional benefit to the NHS in Wales could also be provided through the impact on primary care. Responses to the survey were positive towards CHP in supporting more efficient workflows, with 60% stating it has reduced the time they spend searching for information and 57% agreeing that it has helped them to make more efficient referrals. However, there was also frustration from some HCPs, with some believing that it hinders their consultations, with some pathways missing or incomplete, and usability issues such as having to scroll through each pathway, which might contain overly simple guidance such as how to take a patient history.

There were some reports that CHP could help to foster communication between primary and secondary colleagues during the referral process; primary care clinicians could reference pathways in their referrals and secondary care colleagues could direct colleagues to appropriate pathways when responding to inappropriate or low-quality referrals. Some secondary care stakeholders reported that CHP was being used in this way and that CHP was a useful resource from which to direct colleagues. However, there was some reservation from a number of primary care stakeholders that CHP was being used as a tool to reduce and decline referrals without helpful conversation.

3.7 Conclusions

Although CHP has grown steadily since its adoption, a large proportion of HCPs are either unaware of it or need more support to use it effectively. In addition to this, users find the interface challenging to navigate effectively, which impedes the ability for HCPs in primary care to use the platform efficiently. Some evidence points towards an impact of CHP on reducing the number of referrals into secondary care, and there are also case studies which support an improved quality of referrals into secondary care, which is supported by the opinions of HCPs. However, more and better-quality data are needed to confirm this.

Evidence from the literature review indicated that there was not a like-for-like platform that provides the functionality of CHP. During interviews, GPs discussed other sources of information or guidance that are used such as NICE guidelines or the British Medical Journal (BMJ), which HCPs use to ensure they are following the latest evidence-based recommendations. However, these guidelines are developed externally, and as such do not require a comparable level of resource to CHP. However, CHP has a different intended functionality, and provides localised pathways as opposed to evidence which is generalisable.

Engagement with CHP has increased over time in terms of both the pathways developed and the page views for each of the HBs. All of this data is in the uptake section. During the interviews, secondary care participants were asked how much time they spend on writing pathways, with answers varying from 30 minutes a week to a couple of hours a week. Anecdotal evidence supported the reduction in resources for the national approach, and sharing by default, which allowed pathways to be developed much quicker for the HBs following the national approach as opposed to the local approach.

Overall user satisfaction with the CHP platform was good. The majority of clinicians that took part in the survey we overall satisfied with the CHP platform, with 67% of respondents indicating satisfaction. The majority of clinicians that took part in the survey and that were interviewed recognise CHP as a valuable tool in their daily work. However, there are a number of barriers and limitations for clinicians in primary care to recognising CHP as a valuable tool. Several clinicians mentioned that pathways can be overly fastidious or patronising, for example providing guidance on how to take a patient history. A common theme was also regarding the lack of localisation, or not knowing if a pathway will be complete and contain useful information beforehand, thus discouraging use of the platform.

Opinions on the impact of CHP on patient engagement varies, with some clinicians believing it improves patient reassurance, through knowing that the latest guidance is being followed, whereas others believe that having to turn to the resource takes away from patient interactions. In the HCP survey, 56.5% of respondents agreed CHP has helped them to set realistic patient expectations by providing helpful patient information resources. The survey showed that overall, respondents perceived CHP to positively impact the decision-making process, with 60% of respondents agreeing that the platform reduced the time they spent looking for other information, with 57% also agreeing that the platform made referrals more efficient (n = 48). In addition, there is some evidence that CHP impacts referral quality, both qualitative and quantitative, although it is difficult to quantify the extent of the impact, and this could be specific to certain specialisms/conditions. Overall, the percentage of referral acceptance in CAVUHB was higher than in HDUHB. CHP has been live for several more years in CAVUHB, with thousands more page views per month, indicating that CHP could have contributed to superior quality of referrals, although there are other factors between HBs that could equally contribute, and it should be noted that no improvement was observed in the percentage of accepted referrals in CAVUHB since the introduction of CHP.

Several case studies presented in this report show favourable patterns of changing referral quality that coincide with CHP introduction. However, these are localised to specific conditions, with little or poor evidence of an impact at a wider level. Overall referral data appears to show a reduction in the referral rate into CAVUHB compared to the rest of Wales, with a divergence occurring around early 2022.

This could be indicative of CHP influence, although there could be other contributing factors. The relatively fewer referrals into CAVUHB has been included in the value section with the potential impact on resource release. Survey data was not supportive of CHP reducing prescribing costs, with only 12.9% of HCPs agreeing that CHP has led to reduced prescribing costs.

However, integration issues such as clumsy login processes were also reported as a barrier to adoption. Opportunities should be explored to minimise password requirements for more seamless workflow, such as linking the login process to e.g. user Nadex numbers and passwords. Although other systems such as Accurx or eConsult offer integration with GP systems, these systems do not provide equivalent functionality to CHP.

3.7.1. Strengths and weaknesses of the current offering

Table 15. Strengths and weaknesses of CHP.

Strengths	Weaknesses
Provides valuable localised guidance and pathways for primary care.	Lack of integration with other NHS systems.
Promotes collaboration between HCPs.	Lack of data to effectively measure impact.
The national approach to pathway development improves the speed and efficiency at which pathways can be developed.	Lack of clear purpose – what is the goal of CHP? What is the issue that CHP is there to resolve?
Generally a high satisfaction amongst end users was reported.	Generally low usability scores indicate many users find it challenging to navigate the platform.

3.7.2 Limitations

As part of the evaluation there were several limitations and barriers that were encountered when delivering the evaluation. These include:

3.7.2.1 Data access

One of the key limitations was the access to data and the speed at which data become available. It was found that whilst trying to gather data for the evaluation, the data was often difficult to obtained and it was not always clear who the right person at each institution was the correct person with access and permissions to the data.

3.7.2.2 Lack of Available Data and Data Quality

A lack of data was available to demonstrate the impact of CHP on patient referrals. Although some case studies were included demonstrating changes in referral patterns that coincide with the introduction of pathways, it was not possible to demonstrate causality. A lack of referrals data from CAVUHB at a condition level impeded the comparisons that could be made, which could have provided more conclusive data on the impact of CHP on referral quality.

3.7.2.3 Lack of variation in user perspective

One important limitation of the qualitative findings relates to the representativeness of the sample. Whilst it is not the aim of qualitative analyses to provide objective, and unbiased findings, it is important to ensure that a diverse and representative group of voices are included in the sample. In this case, interview participants were mostly very involved with CHP, and many had been involved in developing and localising pathways. Therefore, the views of participants in this sample may not fully reflect those of the wider clinical population across Wales.

3.7.2.4 Small sample size of HCP survey

Due to the relatively small sample size of the HCP survey (48 users who were HCPs in primary care), results should be interpreted with caution.

3.8 Recommendations

Based on this evaluation, several key recommendations are made:

Implementation, Visibility and Engagement
A central theme emerging from this evaluation is the importance of enhancing stakeholder understanding and engagement with the CHP platform. Many of the recommendations focus on increasing awareness of the platform's purpose and functionality, and on fostering user confidence and active participation, which are essential for maximising its utility and impact within the healthcare system.

Recommendation 1: Promotion of CHP across Wales

Awareness of the CHP platform remains low among HCPs, limiting its potential to contribute to service transformation. To address this, a national communications strategy is recommended, incorporating targeted materials and local engagement initiatives across health boards to promote uptake. Crucially, the programme's success and sustainability depends upon active Executive-level oversight and sponsorship to ensure strategic alignment, resource prioritisation, and integration within broader organisational transformation efforts.

Recommendation 2: Promotion of CHP Locally

To maximise the impact and cost-effectiveness of the CHP platform, targeted promotional efforts are recommended in regions exhibiting lower levels of engagement. For instance, Swansea Bay University Health Board (SBUHB) has demonstrated comparatively limited utilisation, as reflected in reduced page view metrics twelve months post-launch. In addition to a national communications strategy, it is advised that each health board implement mechanisms to systematically monitor platform engagement.

Such monitoring would facilitate the identification of areas with suboptimal usage, enabling the

deployment of tailored interventions to enhance awareness, uptake, and integration of CHP into routine clinical workflows. Effective monitoring is contingent upon the implementation of individual user logins (see Recommendation 11), which would allow for accurate tracking of engagement patterns at the user level.

Recommendation 3: Reframing the Strategic Purpose

Clarifying the intended purpose and strategic objectives of the CHP platform is essential to fostering meaningful engagement among healthcare professionals. Evaluation findings indicate that many clinicians remain uncertain about the rationale for the platform's implementation and its relevance to their clinical practice.

Current pathway development efforts should move beyond documenting existing practice and instead adopt a transformative approach that actively reimagines service delivery. This requires convening primary care, secondary care, General Practice Committee Wales (GPCW), and local authority representatives in a shared space to co-design integrated pathways. CHP should not be seen as a "quick fix" to reduce referrals. Instead, it should be positioned as:

- A clinical communication tool
- A mechanism to reduce unwarranted variation
- A platform to support equitable access to care

To support the widespread adoption and effective utilisation of the Platform (CHP), it is recommended that concise and accessible informational resources—such as leaflets and digital materials be developed and disseminated across all health boards.

These resources should clearly communicate the platform's objectives and emphasise its potential benefits, particularly in relation to enhancing clinical decision-making, streamlining referral processes, and improving patient care. Tailoring content to highlight the relevance and utility of the CHP for individual stakeholders will be critical in fostering engagement and integration into routine practice.

Recommendation 4: Embed CHP in Operational Pathways

A lack of operational ownership has been identified as a key barrier to the effective implementation of the CHP Platform. To overcome this challenge, the platform should be formally integrated into routine clinical practice, with explicit support from secondary care services. Furthermore, alignment with existing service redesign initiatives and triage models is essential to ensure coherence with broader system transformation efforts and to facilitate sustainable adoption across care settings.

Recommendation 5: Improved Governance

Robust and clearly defined governance structures should be established to ensure effective oversight and accountability. These structures must incorporate mechanisms for shared accountability among stakeholders, transparent reporting lines to enhance operational clarity, and alignment with national digital and clinical strategies.

Such governance arrangements are essential for fostering coordinated decision-making, maintaining strategic coherence, and supporting the integration of CHP within broader health system transformation initiatives.

Recommendation 6: Training

To optimise the effective utilisation of the platform by HCPs, it is essential to implement comprehensive onboarding and training mechanisms. Evidence gathered through direct engagement with HCPs highlights a prevalent perception of inadequate training and a lack of confidence in navigating the platform and accessing key functionalities. Accordingly, it is recommended that standardised training resources, including user-friendly guides, be developed and made readily accessible.

These materials should be tailored to accommodate varying levels of digital literacy and offered in multiple formats to address diverse learning preferences.

In addition, HCPs should have access to designated trainers or support personnel capable of providing hands-on guidance and responding to specific queries. The contact details and availability of these support resources should be clearly communicated and easily retrievable within the platform or associated documentation.

Recommendation 7: CHP champions

To support the effective implementation and sustained utilisation of the CHP platform, it is recommended that each health board designate one or more CHP representatives, referred to as "CHP Champions." These individuals would be responsible for engaging with both primary and secondary care teams to raise awareness of the platform, provide education and training, and facilitate the collection of relevant data where appropriate.

The presence of dedicated CHP Champions is expected to enhance stakeholder understanding, promote consistent usage, and support the ongoing evaluation of the platform's impact.

Data and Evaluation

The evaluation has identified that the availability and quality of routine data related to referrals and referral outcomes remain limited and inconsistent across health boards, posing challenges for robust analysis. To address these limitations and support future evaluations and progress reporting on the utilisation of the CHP platform, a series of recommendations have been developed.

These recommendations aim to improve data collection practices, enhance data accessibility, and establish standardised metrics for assessing referral quality and platform impact.

Recommendation 8: Data quality

A key finding of the evaluation is the widespread absence of robust, standardised data on referral activity and referral quality across health boards. This limitation significantly constrains the ability to assess the impact of the CHP platform.

Consequently, it is recommended that systematic data collection practices be established within each health board to generate high-quality, consistent data on referral processes. These data should be directly aligned with key performance indicators (KPIs) associated with the CHP platform. To accurately assess the clinical utility and impact of CHP, it is recommended that pathway engagement data, such as page views be systematically contextualised alongside appointment and referral rates.

This triangulated approach enables evaluators to distinguish between passive usage and meaningful clinical adoption, thereby providing a more robust understanding of how CHP influences decision-making, service demand, patient flow and service transformation priorities.

Furthermore, it is advised that data collection be integrated into the pathways themselves, enabling real-time evaluation of the platform's effectiveness. For example, embedded prompts such as, "Has this pathway enabled you to make a more appropriate referral?" could be used to capture user feedback and assess alignment with the platform's intended goals.

Recommendation 9: Continued Evaluation

Building on the findings of this evaluation, it is recommended that a structured framework be developed to support the ongoing assessment of the CHP platform. This framework should incorporate clearly defined, measurable objectives linked to KPIs, thereby enabling continuous monitoring of platform effectiveness and alignment with intended outcomes.

Notable variation exists across Health Boards (HBs), particularly in engagement and communication strategies and in secondary care triage practices. Future evaluations should examine the extent to which these variations influence platform uptake, clinical behaviours, and patient outcomes.

Sustained evaluation efforts will be critical to inform strategic decision-making, guide iterative

development, and ensure that the platform continues to deliver value across the healthcare system.

Future evaluations should:

- Involve key stakeholders early, including those with deep implementation knowledge.
- Be co-designed with operational and clinical leads.
- Include KPIs that reflect real-world impact, not just usage metrics.

Usability

Usability of the CHP platform emerged as a key theme during the evaluation. Feedback from users highlighted several areas where enhancements could improve the overall user experience and facilitate more effective engagement with the platform.

Based on this, a number of further recommendations have been proposed to address usability concerns and support the development of a more intuitive and accessible interface for HCPs.

Recommendation 10: Review of CHP Interface to improve Usability

A common theme amongst participants was the difficulty navigating the CHP platform, which some users found confusing and difficult to follow. It is recommended that the layout and interface of the platform is reviewed to improve ease of use and efficiency of using the platform.

Recommendation 11: Single Sign in for Practices

To optimise the usability of the platform within clinical environments, it is recommended that enhanced integration and single sign-on (SSO) capabilities be implemented. These improvements should be designed to align with existing clinical workflows, thereby reducing friction in user access and promoting seamless interaction with digital systems.

Recommendation 12: Learn from International Experience

Valuable insights can be derived from the evaluation work undertaken in New South Wales. Comparative analysis of these findings should inform future considerations, particularly with respect to:

- The scalability of the intervention;
- Its alignment with population health priorities;
- The design and implementation of governance models.

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Appendices

Appendix 1: Indicative Project Timelines

Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
Pre-study: Set up and contracting									
Task 1.1: Stakeholder Identification									
Task 1.2: Stakeholder Meetings									
Task 1.3: Evaluation Plan Dev									
Task 2.1: General Project Oversight									
Task 3.1: Literature review									
Task 4.1: Data Permissions									
Task 4.2: Data Collection									
Task 5.1: Data Analysis: Datasets									
Task 5.2: Data Analysis: Behaviour									
Task 6.1: Quality Standards									
Task 6.2: Treatment pathways									
Task 6.3: Usability									
Task 7.1: Final Report									
Task 7.2: Final Report Review									
Quality Assurance									
Post-study - Publication									
Post-study - Archiving									

Appendix 2: TriTech/ATiC CHP Survey HCP Questions

Staff Survey Questions for Evaluating Community HealthPathways (CHP)

Start of Block: Introduction

Q1 Evaluation of Community HealthPathways What is the purpose of the evaluation?

 TriTech and UWTSD's Assistive Technologies Innovation Centre (ATIC) are carrying out a service evaluation of the Community HealthPathways (CHP) platform. We are seeking health care professionals across Wales to help us evaluate the platform. We want to find out if you have used CHP, if you recommend, and if you believe it has had a positive or negative impact on your practice. To do this we need healthcare professionals who have used CHP to complete this short survey.

  What happens if I agree to take part?

 Taking part is voluntary. You will be asked to answer some questions about what you think about CHP which should take no longer than 5 minutes of your time. You can change your mind about participating at any point during the survey by simply closing your browser.

  What happens to the information I give you?

 All data collected will be anonymous, cannot be traced back to you, and will be stored securely in line with data protection regulations.

 For further information please read this information sheet. If you have any questions, please feel free to contact Dr Gareth Davies at gareth.davies14@wales.nhs.uk

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Q2 By clicking on the "I Agree" button below, you acknowledge that you have read and understood this information sheet and agree to participate in the online survey.

- o I Agree
- o I Don't Agree

End of Block: Introduction

Start of Block: Demographics - Secondary care

Q38 Which area do you work in?

- o Primary Care
- o Secondary/Tertiary Care

Q39 What best describes your role?

- o Consultant
- o Specialty Doctor
- o Associate Specialist
- o Specialist Registrar
- o House Officer
- o Nursing, Midwifery and Health Visiting Staff
- o Other (please state) _____

Start of Block: Demographics - Secondary care

Q38 Which area do you work in?

- o Primary Care
- o Secondary/Tertiary Care

Q39 What best describes your role?

- o Consultant
- o Specialty Doctor
- o Associate Specialist
- o Specialist Registrar
- o House Officer
- o Nursing, Midwifery and Health Visiting Staff
- o Other (please state) _____

Q40 Which National Strategic Clinical Network are you most Aligned to in your Occupation?

- o Cancer
- o Cardiovascular Conditions
- o Child Health
- o Critical Care, Trauma and Emergency Medicine
- o Diabetes
- o Gastrointestinal Conditions
- o Maternity and Neonatal Services
- o Musculoskeletal (MSK) Conditions
- o Neurological Conditions
- o Respiratory Conditions
- o Women's Health

Q41 Have you been involved in localising / writing a pathway for Community HealthPathways?

- o Yes
- o No

Q42 If yes, could you please provide more information on your involvement

_____

_____

_____

_____

_____

Q44 I believe Community HealthPathways has improved the quality of referrals I receive

- o Strongly Agree
- o Agree
- o Neutral
- o Disagree
- o Strongly Disagree

Q48 Could you please give examples of how it has improved referrals

_____

_____

_____

_____

_____

Q43 If you are willing to be contacted about taking part in an interview about your experiences of using the platform please type your email address in the box below. Please be assured your email will not be linked to your survey data.

_____

_____

_____

_____

_____

End of Block: Demographics - Secondary care

Start of Block: Demographics - primary care

Q3 What best describes your role?

- o General Practitioner
- o General Practitioner Trainee
- o Practice Nurse
- o Advanced Practice Nurse
- o Clinical Pharmacist
- o Physician Associate
- o Advanced Practice Provider
- o First Contact Practitioner
- o Other (Please state) _____

Q4 Which Health Board do you typically refer into?

- o Aneurin Bevan University Health Board
- o Betsi Cadwaladr University Health Board
- o Cardiff and Vale University Health Board
- o Cwm Taf Morgannwg University Health Board
- o Hywel Dda University Health Board
- o Powys Teaching Health Board
- o Swansea Bay University Health Board
- o Velindre University NHS Trust

End of Block: Demographics - primary care

Start of Block: Screening Question + Non-users

Q6 Have you used the Community Health Pathways platform?

- o Yes
- o No

Q7 Please tell us why you do not use the platform?

- ☐ I am not aware of it/I have never heard of it
- ☐ I use another platform to get information (please provide name of platform).
- ☐ The platform does not provide the information that I need.
- ☐ I haven't had the time.
- ☐ I don't know how to access the platform / need further training.
- ☐ I don't see the value in using the platform.
- ☐ Other (please state)

Q8 Would you be interested in using the Platform?

- o Yes
- o No
- o Not Sure

Q9 If you would like to tell us anything else about your reasons for not using the Platform please do so here.

_____

_____

_____

_____

_____

Q47 If you are willing to be contacted about taking part in an interview about your experiences of using the platform please type your email address in the box below. Please be assured your email will not be linked to your survey data.

_____

_____

_____

_____

_____

End of Block: Screening Question + Non-users

Start of Block: Users

Q10 How long have you been using the Community HealthPathways Platform?

- o Less than 1 month
- o 1- 6 months
- o 6 - 12 months
- o 12 -18 months
- o 18 - 24 months
- o 3 years or more

Q11 How often do you use the Community HealthPathways Platform?

- o Daily
- o Weekly
- o Monthly
- o As needed/when required

Q12 The Community HealthPathways platform has helped me to manage my workload more effectively.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

Q13 Community HealthPathways enables me to make more efficient referrals.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

Q15 Since using Community HealthPathways I rely less on other sources of guidance.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

Q16 Community HealthPathways has increased my clinical confidence around referring patients.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

Q17 Community HealthPathways helps me set realistic patient expectations by providing helpful patient information resources.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

Q18 Community HealthPathways has given me improved knowledge about appropriate referral pathways and resources.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

Q19 Community HealthPathways helps me understand the reasons for a referral being inappropriate

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

Q20 Community HealthPathways help me feel confident to manage patients effectively with less specialist support.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

Q21 Community HealthPathways has made me more aware of other available community services.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

Q22 Community HealthPathways has made me more confident in knowing how to access other available services.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

Q23 Community HealthPathways has led to reduced prescribing costs.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

Q24 Community HealthPathways has reduced the amount of time I spend searching for information.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

Q25 The platform integrates well into my daily workflow.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

Q26 I believe Community HealthPathways has improved the quality of my referrals

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

Q27 I often experience technical issues with the platform

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

Q28 If you agree, please specify the technical issues:

_____

_____

_____

_____

_____

Q29 There are significant barriers to using the platform effectively in my practice.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

Q30 If you agree, please specify the barriers:

_____

_____

_____

_____

_____

Q31 Overall, I am satisfied with the platform.

- o Strongly Disagree
- o Disagree
- o Neutral
- o Agree
- o Strongly Agree

Q32 Would you recommend Community HealthPathways to other health care professionals?

- o Yes
- o No

Q33 If no, please specify why not:

_____

_____

_____

_____

_____

Q34 I have suggestions for the developers to improve the platform.

- o Yes
- o No

Q35 If yes, please specify your suggestions:

_____

_____

_____

_____

_____

End of Block: Users

Start of Block: Usability & UX Questions

Q39 In this final section, we will gather feedback to evaluate the usability of the platform and your experience with it.

Q36 Based on your experience using the Community HealthPathways platform, please indicate how much you agree or disagree with each of the following statements (1= Strongly Disagree, 5 =Strongly Agree).

	1	2	3	4	5
I think that I would like to use Community HealthPathways frequently.	○	○	○	○	○
I found the Community Health Pathways platform unnecessarily complex.	○	○	○	○	○
I thought the Community HealthPathways platform was easy to use.	○	○	○	○	○
I think that I would need the support of a technical person to use the Community HealthPathways platform.	○	○	○	○	○
I found the various functions in the Community HealthPathways platform well integrated.	○	○	○	○	○
I thought there was too much inconsistency in the Community HealthPathways platform.	○	○	○	○	○
I imagine that most people would learn to use the Community HealthPathways platform very quickly.	○	○	○	○	○
I found the Community HealthPathways platform very awkward to use.	○	○	○	○	○
I felt very confident using the Community HealthPathways platform.	○	○	○	○	○
I needed to learn a lot of things before I could get going with the Community HealthPathways platform.	○	○	○	○	○

Q37 For each pair of adjectives, please select the option that best describes your experience with the Community HealthPathways Platform.

-3 -2 -1 0 1 2 3

	1	2	3	4	5	6	7	
Obstructive	○	○	○	○	○	○	○	Supportive
Complicated	○	○	○	○	○	○	○	Easy
Inefficient	○	○	○	○	○	○	○	Efficient
Clear	○	○	○	○	○	○	○	Confusing
Boring	○	○	○	○	○	○	○	Exciting
Not Interesting	○	○	○	○	○	○	○	Interesting
Conventional	○	○	○	○	○	○	○	Inventive
Usual	○	○	○	○	○	○	○	Leading Edge

Q38 If you are willing to be contacted about taking part in an interview about your experiences of using the platform please type your email address in the box below. Please be assured your email will not be linked to your survey data.

_____

_____

_____

_____

End of Block: Interviews

Appendix 3: TriTech/ATiC CHP Survey GP Letter

Help Shape the Future of Community Health Pathways in Wales

Dear [Enter Name],

The TriTech Institute is currently conducting a national evaluation of **Community HealthPathways.** It is vital that we get feedback from Health Care Professionals (HCPs) in primary care about their experiences of using the platform and impact it has had on their clinical practice. The findings will play a key role in informing future decisions about the continued funding and availability of Community Health Pathways across Wales. Please circulate this information to your staff.

Your input is essential.

Please take a few minutes to complete the survey using the QR code or link below. Your feedback will directly contribute to the value case being developed for NHS Wales.

Survey Link:

English

https://uwtsdyrathrofa.eu.qualtrics.com/jfe/form/SV_8pMbWMBHdNUPq6y

Welsh

https://uwtsdyrathrofa.eu.qualtrics.com/jfe/form/SV_6o3xPY6er7VQoyq

All responses are anonymous, and no personally identifiable information will be collected.

Interested in Sharing More?

We are also looking to conduct short interviews with HCPs who are willing to share more in-depth insights into how Community HealthPathways has influenced their work.

If you're open to being contacted for a brief interview, please reach out to:

Dr Gareth Davies

Gareth.Davies14@wales.nhs.uk

Survey English:

Survey Welsh:

Appendix 4: Primary Care HCP Interview Questions

Community HealthPathways Primary Care Staff Interview Questions

Introduce self, explain the purpose and structure of the interview, explain that the interview will be recorded for transcription purposes but will not be linked to any identifiable information. Ask if there are any conflicts of interest to be declared.

COMMUNITY HEALTHPATHWAYS

1. **Can you briefly introduce yourself and describe your role in patient care?** Do you use the CHP platform? (Catches "What do they use it for?", "How long have they been using it?" and “How often do they use it?”) (If Yes)
2. **Has CHPs had an impact on the way that you practice?** (Catches "How?", "What did they think about it?" and “What impact has it had?”)
3. **Has CHPs had an impact on how you refer patients?** (Catches "Has it had an impact on the quality of your referrals?" and "Has it had an impact on how efficiently you can make a referral?")
4. **Has this had any impact on patient outcomes?** (Catches "If so, how?" and "Can they give any examples?")
5. **How would you describe the overall design, layout, and ease of navigation of the CHP Platform?** (Catches "What did they think?" and "What didn't they like about it?")
6. **Were there any specific areas where you experienced difficulties or found barriers in using the platform?** (Catches "What did they think?" and "What didn't they like about it?" and "Barriers")
7. **Has CHP had an impact on the way you interact with patients?** (Catches "What did they think?" and "What did they like about it?")
8. **Is there anything you’d like to add or suggest to improve the CHP platform?** What features would you like to see to better support your work? (Catches "What do they think could be improved?" and "Is there anything they'd like to add?")
9. **Would you recommend the CHP platform to other health care professionals?** Catches "What did they like about it?" and "What didn't they like about it?")

(If No)

10.Why don’t you use the CHP platform? (Catches “Have they used it at all?” and “What didn’t they like about it?” and “Barriers”. “Is there another tool or platform they use that is preferable?”)

Appendix 5: Secondary Care HCP Interview Questions

Community HealthPathways Secondary Care Staff Interview Questions

Introduce self, explain the purpose and structure of the interview, explain that the interview will be recorded for transcription purposes but will not be linked to any identifiable information. Ask if there are any conflicts of interest to be declared.

COMMUNITY HEALTHPATHWAYS

1. **Can you briefly introduce yourself and describe your role in patient care?** Are you familiar with CHP? (Catches "In what context are they familiar with CHP?")
2. **Have you been involved in localising / writing a pathway?** (Catches "Explain your role?" and "Was it a valuable experience?")

(if yes)

3. **How have you found the process of writing a pathway?** (Catches "Can this process be improved upon?", "If so, how?" and "Has this process enabled you to collaborate more freely with other HCPs?")
4. **How much of your time is taken up in localising/writing a pathway?** (Catches "How many hours per week? / per pathway?")

(all)

5. **Has CHPs had a recognisable impact on the quality of your referrals?** (Catches "How?", "Can you give any examples?" and "What impact has it had?")
6. **Has this had any impact on patient outcomes?** (Catches "If so, how?" and "Can they give any examples?")

Appendix 6: Community HealthPathways Literature Review

Community HealthPathways Commissioner Interview Questions

Introduce self, explain the purpose and structure of the interview, explain that the interview will be recorded for transcription purposes but will not be linked to any identifiable information. Ask if there are any conflicts of interest to be declare

COMMUNITY HEALTHPATHWAYS

1. Can you briefly introduce yourself and describe your role in commissioning Community HealthPathways (CHPs)? (Catches "What do they use it for?", "How long have they been using it?" and "How often do they use it?")
2. Are you provided with access to information on the uptake and implementation of CHP?

(if yes)

3. Are you happy with the medium and type of information that is provided? (Catches "Is information useful for making decisions?", "What is their preferable way for receiving information?")
4. Do you think there is additional information that could be provided that would be valuable in guiding commissioning decisions? (Catches "Are there other useful metrics they would like to see provided?" "Would they like to see more data on deprivation, clinical data, outcomes? Etc.)

(if no)

5. What information would you like to receive that would be useful in guiding commissioning decisions?

(all)

6. Does CHP related insight enable Health Boards to prioritise and allocate resources more efficiently? (Catches "In what way has CHP helped to allocate resources more efficiently?", "Can they give any examples?", "If not, why not?")

Appendix 7: Community HealthPathways Literature Review

Community HealthPathways Literature Review

1.Introduction

Most patient contact in the NHS happens in primary care but the services have become under pressure due to increased demand and a lack of workforce capacity. It has been recognised that changes are needed to ensure there are sustainable services that play a key role in healthcare in NHS Wales (Auditor General for Wales, 2018).

Primary care are the services that provide the first point of contact to 90% of people with the NHS in Wales. The core element of primary care is general practice however, many more services fall under its remit including dentistry, pharmacy and optometry (Welsh Government, 2023). Primary care also co-ordinates access to community services to meet the needs and wellbeing of the population. From 2016 to 2017, NHS Wales spent £1.39 billion on primary care services, accounting for approximately one fifth of the total spending on healthcare by the NHS in Wales (Auditor General for Wales, 2018).

Primary care in Wales is facing mounting pressures that challenge its ability to meet the needs of the population effectively. These issues include workforce shortages, rising demand due to an ageing population, inequalities in access, and digital transformation challenges (Welsh Government, 2023). One of the most persistent issues is the staff retention of GPs and other primary care professionals. As of December 2024, there are 370 active GP practices, and 1,579 full-time fully qualified GPs, which is a decrease of 1.1% and 0.5% respectively since December 2023 (Welsh Government, 2025).

Many primary care practices report difficulties retaining staff to consistent levels (Auditor General for Wales, 2018). In England, the backlog of care arisen from the COVID-19 pandemic has led to more patients presenting later and with more complex conditions (BMA, 2025). The shift in demand puts greater strain on primary care teams, as more comprehensive and longer consultations are needed, often without a proportional increase in workforce or resources.

Patient access to primary care services remains a key challenge. A 2022 survey Wales found that over a third of patients experienced difficulty getting GP appointments when needed (Welsh Government, 2022). The knock-on effect of this leads to delayed diagnoses, increased use of emergency services, and frustration among patients and staff.

The long waits for referrals to secondary care persist, partly due to inefficiencies or gaps in referral pathways. These delays can lead to deterioration in patients' conditions and higher overall treatment costs (Bevan Commission, 2025).

The adoption of digital tools in primary care, including e-referral systems, video consultations, and electronic health records accelerated during the COVID-19 pandemic (Welsh Government, 2020). However, digital maturity remains uneven across Wales (Digital Health and Care Wales, 2023). There is also limited integration between digital platforms used in primary and secondary care, which can fragment care and hinder continuity. The Welsh Government has acknowledged the need for a more coordinated digital strategy to support universal access and equitable digital transformation (Welsh Government, 2021).

1.1 Effectiveness of Health Information Technology in Enhancing Clinical Pathways

Health information technology (HIT) has become a vital component of modern healthcare delivery. This is partly driven by significant investments and policy initiatives. In the UK, £4.2 billion was committed in 2016 to improve IT infrastructure in the NHS (Neame, Chacko, Surace, Sinha, & Hawcutt, 2019). Amid the rise of electronic health records, computerised

provider order entry, and clinical decision support (CDS) systems, attention has increasingly turned to how these tools can be utilised to support clinical pathways (Wachter, 2016).

Clinical pathways can be defined as care plans that are standardised, multidisciplinary, and tailored to specific patient populations and local contexts (Rotter, et al., 2010).

Clinical pathways and HIT both aim to improve the quality and efficiency of care. Using pathways has shown to reduce complications, shorten hospital stays, and lower costs when implemented in paper-based formats (Rotter, et al., 2010). With the development of HIT, there is increasing interest in whether digital tools can enhance the implementation and effectiveness of these pathways.

A systematic review was carried out looking at the effects of implementing clinical pathways through HIT (Neame, Chacko, Surace, Sinha, & Hawcutt, 2019). The review included 44 studies and aimed to determine the effectiveness of HIT-supported clinical pathways. They found that most studies, particularly those integrating CDS tools (used in 56.8% of studies) had positive effects on process measures such as adherence to recommended care protocols, improved documentation, and better resource utilisation. HIT tools such as electronic health record-integrated order sets, electronic checklists, and performance dashboards were used to standardise care, improve communication, and provide real-time decision support.

However, the quality of evidence regarding objectively measured patient outcomes remains limited. The review showed that 21 studies (47.7%) reported on this primary outcome, and 15 (34.1%) demonstrated improvements such as reductions in mortality, myocardial infarction, or improved glycaemic control (Neame, Chacko, Surace, Sinha, & Hawcutt, 2019). A GRADE assessment rated the evidence for improved patient outcomes and process quality as very low quality, citing concerns over risk of bias, lack of randomisation, and indirectness (Balshem, et al., 2011).

2.Community HealthPathways

HealthPathways is a web-based clinical guidance and referral support tool which is designed to assist clinicians in primary care to deliver consistent, evidence-based care in collaboration with specialists in their local area. It was first developed in Canterbury, New Zealand, and has since been implemented in over 50 regions across New Zealand, Australia, and the United Kingdom (McGlynn, Ní Shé, Liaw, Jackson, & Harris-Roxas, 2024). The implementation of HealthPathways has aimed to improve the consistency and integration of care, particularly at the interface between primary and secondary services.

A 2021 study highlighted the findings from 21 evaluations of HealthPathways. In the study, they identified seven common impact areas that the system has, including increased awareness and use, adoption of best practice care, appropriate use of services, improved referral quality, consistent care management, enhanced patient pathways, and healthcare cost reduction. They found that while evidence exists across all seven domains, most studies focused on uptake and awareness (Senanayake, et al., 2021). The variability in methods of the studies found in the review, and limitations in the data collected have made it difficult to isolate HealthPathways' specific impacts from broader system-level changes (Senanayake, et al., 2021).

Another study by Kruys and Harper (2024) discussed how HealthPathways, facilitates evidence-based care and contributes to consistent clinical management across jurisdictions. The development process they performed was led collaboratively by hospital and primary care clinicians, and was noted to foster trust, align priorities across sectors, and build clinician ownership. This supported uptake and behavioural change in clinical practice (Kruys & Harper, 2024).

Multiple findings suggest that HealthPathways positively influences referral quality and appropriateness. In the Senanayake et al. review, improved referral practices were one of the most frequently evaluated outcomes. HealthPathways helps GPs ensure patients receive the correct care at the right time and

place, thereby reducing unnecessary referrals and improving triage outcomes. In regions with robust implementation and training support, specialists have reported greater satisfaction with the clarity and relevance of referrals received through pathways-aligned processes (Senanayake, et al., 2021).

Evidence for the use of the Community Health Pathways digital referral pathway centers on its ability to improve referral quality, streamline care coordination, and support clinical decision-making, though the literature emphasizes implementation factors and user experience rather than direct patient outcomes.

A mixed-methods study of HealthPathways in the UK found that use of online, evidence-based care pathways increased over time, supporting decision-making and referral processes in both primary and secondary care. Key facilitators included leadership, established networks, and integration into existing systems, while barriers included resource availability and variance in pathway use. The study concluded that early implementation showed promise for improving referral processes, but highlighted the need for further research on patient outcomes and broader stakeholder engagement (Akehurst et al., 2018).

A systematic review of electronic community resource referral systems in the U.S. reported that such platforms, when integrated into clinical workflows and electronic medical records, facilitated connections to social and community resources.Successful implementation was associated with strong clinic-community partnerships and up-to-date resource directories. However, technical challenges, costs, and the sensitive nature of social needs were noted as barriers. The review emphasized that EMR integration and automation were advantageous, but called for more robust implementation science and outcome studies (Drewry et al., 2023).

Additional studies on digital referral and decision-support systems indicate that these tools can improve the appropriateness and prioritization of referrals, enhance data quality, and transform workflows, provided that user engagement and iterative feedback are prioritized (Mariotti et al., 2022, Warren et al., 2012). However, the evidence base is still developing, and most studies focus on process measures and clinician perspectives rather than direct clinical outcomes.

In summary, the current evidence supports the use of Community Health Pathways digital referral pathways for improving referral processes, decision support, and care coordination, but further research is needed to establish their impact on patient outcomes and health system efficiency (Akehurst et al., 2018, Drewry et al., 2023, Mariotti et al., 2022, Warren et al., 2012).

2.1 Experiences of Healthcare Professionals with HealthPathways

HealthPathways has consistently been viewed positively by healthcare professionals across various regions, including New Zealand and Australia. McGeoch et al. (2015) found that the vast majority of general practitioners (90–95%) in Canterbury, New Zealand, rated the platform as easy to use and reported that it contributed to improvements in both the quantity and quality of care delivered in the community. Additionally, around half noted improved relationships with both patients and hospital clinicians following HealthPathways adoption (McGeoch, McGeoch, & Shand, 2015).

Similarly, in a broader evaluation in Australia and New Zealand, clinicians widely acknowledged the tool's value in enhancing primary care management and referral practices. General practitioners were especially likely to use the platform frequently, with usage varying by region. For example, GPs in New Zealand were 73% more likely to have used the platform 10 or more times in the past month compared to those in Victoria, Australia (Goddard-Nash, et al., 2020).

A local study by Gill et al. (2019) in the Barwon region of Victoria, Australia, reported increasing adoption of HealthPathways among general practitioners over a two-year period (2014 to 2016), with usage rising from 67% to 77%. GPs reported improvements in several key areas: understanding of local services, clinical confidence, and patient management. HealthPathways was also credited with saving time and improving consultation efficiency. Usage patterns varied with experience

level, with junior GPs using the system more frequently than senior GPs. The study also identified barriers to uptake, such as lack of awareness or simply forgetting to consult the platform during patient interactions. The authors conclude that HealthPathways has demonstrable potential to improve access to care and promote timely, appropriate referrals (Gill, et al., 2019).

HealthPathways has also proven its utility during critical public health events. A study in North Coast New South Wales analysed HealthPathways pageviews as a proxy for perceived value and trust. Significant spikes in traffic to the system were observed during key events, including COVID-19 lockdowns, natural disasters, and influenza seasons. The paper suggest that clinicians turn to HealthPathways as a timely and reliable source of localised information during periods of heightened uncertainty (Tretheway, Visser, & Mollard, 2024).

Despite the generally positive outlook, uptake and engagement levels vary depending on several contextual factors. Goddard-Nash et al. (2020) found that integration into clinical systems, such as eReferral software, is a key facilitator of frequent use.

Clinicians noted that when HealthPathways is embedded seamlessly into workflows, its use becomes routine. On the other hand, the lack of integration can act as a barrier to adoption (Goddard-Nash, et al., 2020). The study highlights the importance of targeting a wider group of users, including allied health professionals, trainees, and registrars.

While the platform enjoys high levels of satisfaction, some concerns were reported. In the Canterbury survey, GPs and nurses raised minor issues about the increasing volume and complexity of the website content, which some felt could lead to longer consultations (McGeoch, McGeoch, & Shand, 2015). Others expressed discomfort with the prescriptive nature of some pathways, suggesting they could be perceived as limiting clinical autonomy. Additionally, hospital clinicians, although generally supportive, showed slightly lower engagement rates compared to GPs. However, about 60% reported that HealthPathways had improved the quality of referrals and their working relationships with general practice (McGeoch, McGeoch, & Shand, 2015).

The literature suggests that HealthPathways is well-regarded by a broad range of healthcare professionals for its ease of use, clinical relevance, and ability to support integrated care. It is particularly valued in general practice for standardising referral processes and improving communication with secondary care. However, challenges related to platform complexity, integration into existing workflows, and the need for broader engagement across the healthcare workforce remain important considerations for future implementations.

2.2 Challenges in Implementing and Scaling HealthPathways

The implementation and scaling of HealthPathways have been met with a range of challenges. These include contextual misalignment, resource demands, inconsistent engagement, limited interoperability, governance complexities, and a lack of robust evaluation mechanisms.

One of the core challenges lies in the failure to adequately address the adaptable elements surrounding the HealthPathways intervention. While the online portal and its library of clinical pathways has been well developed, insufficient consideration is often given to local organisational dynamics, clinician workflows, and cultural readiness for implementation. In the Southern Health Region of New Zealand, for example, implementation was hindered by a lack of planning, limited clinician engagement, and minimal tailoring to the local context. The implementation climate and inner setting were not appropriately addressed, resulting in poor uptake and resistance from clinicians (Stokes, Tumilty, Doolan-Noble, & Gauld, 2018).

Successful implementation has been shown to rely heavily on intensive engagement with local clinicians, particularly GPs. In Queensland, the rollout of HealthPathways was deeply resource-intensive, requiring sustained collaboration between hospital services and primary health networks (PHNs). The collaboration

facilitated the co-development of pathways and served to build trust between traditionally siloed sectors of the health system (Love, 2019). During the COVID-19 pandemic in Sydney, existing relationships and mature governance structures enabled a rapid and coordinated scale-up of HealthPathways, underscoring the importance of prior investment in relational infrastructure (McGlynn, et al., 2023).

However, engagement remains inconsistent, particularly among senior clinicians. A qualitative study found that while newly qualified doctors and registrars appreciated the structured guidance offered by HealthPathways, many established GPs were either unaware of the platform or reluctant to integrate it into their workflow (Saldanha, et al., 2025). Time constraints, competing digital tools, and resistance to change were identified as key barriers. The study also noted that peer recommendations and targeted training could help overcome these barriers.

Technical limitations further constrain HealthPathways' impact. The platform often exists as a standalone web portal, disconnected from the electronic health record systems used in general practice. The lack of integration poses a significant barrier to adoption, as clinicians are required to shift between systems during consultations, disrupting workflow efficiency. Saldanha et al. (2025) stressed the importance of improving digital interoperability, calling for enhanced integration between HealthPathways and existing practice management software to promote seamless access and usage (Saldanha, et al., 2025).

Effective governance also plays a critical role in supporting large-scale implementation. Queensland Health provided funding, strategic direction, and licensing, while allowing localities to adapt and implement HealthPathways according to regional needs. The they used model was important to foster collaboration across PHNs and Hospital and Health Services. To build shared commitment to system change (Love, 2019). In contrast, the lack of structured oversight and coordinated planning contributed to poor implementation outcomes in the New Zealand health region (Stokes, Tumilty, Doolan-Noble, & Gauld, 2018).

Despite widespread interest, quantitative evidence demonstrating HealthPathways' impact on clinical outcomes, referral efficiency, or cost-effectiveness remains limited. Although some jurisdictions report anecdotal improvements, there is a general lack of rigorous evaluation and performance monitoring (Love, 2019), (McGlynn, et al., 2023). The literature highlights that successful implementation and scaling of HealthPathways depends on a combination of technical, relational, and contextual factors.

2.3 Economic Value of HealthPathways

A growing body of literature has begun to assess the economic impact of HealthPathways implementation across different health systems. The early evidence points to potentially significant cost savings, improved referral appropriateness, and reduced use of low-value care.

An economic analysis in Mackay, Queensland, found that the implementation of HealthPathways for diabetes care led to a 27% improvement in referral appropriateness. In contrast, the control group (urology), for which no pathway was available, saw a 15% increase in inappropriate referrals. Importantly, these improvements did not lead to negative health outcomes or increased hospital costs (Blythe, et al., 2021).

The analysis projected that if HealthPathways were scaled across all relevant chronic disease areas in Queensland, the health system could save hundreds of thousands of dollars per condition per year by avoiding unnecessary specialist referrals. However, the authors emphasised the need for more rigorous evaluations using patient-level data to determine the full cost-effectiveness of the program (Blythe, et al., 2021).

Outpatient costs in Mackay were examined across four disease groups with varying levels of HealthPathways implementation. The authors found that, over a three-month period, there were significant cost savings for conditions with well-established clinical pathways. For example, cardiology and diabetes pathways yielded estimated savings of $10,270 and $30,360 respectively, while conditions

with minimal or no pathway support (urology and respiratory) incurred higher costs (Blythe, et al., 2021).

Despite increased per-visit costs for some conditions (e.g., diabetes and respiratory), the total costs were lower due to fewer unnecessary referrals. The authors concluded that comprehensive pathway implementation can lead to net economic benefits, even in the short term (Blythe, et al., 2021).

A broad economic model developed by Health Economics Consulting NZ estimated the net value of implementing HealthPathways in a hypothetical country with a population of 5 million. Using data from multiple jurisdictions (Australia, New Zealand, England, and Wales) and Monte Carlo simulations, the study projected a five-year net economic saving of approximately $442.92 million, corresponding to a return on investment (ROI) of $9.76 returned for every $1 invested (Al-Murani, 2024).

A UK-based study evaluated the impact of HealthPathways on musculoskeletal radiology referrals. After implementation, referrals for MRI and ultrasound scans dropped significantly. MRI knee scans decreased by 82%, lumbar spine MRIs by 70%, and shoulder ultrasounds by 92%. This translated to a recurring annual saving of approximately £374,424 in imaging costs. Importantly, the reduction in diagnostic imaging was not accompanied by increased referrals to orthopaedic or physiotherapy services, indicating that care quality was maintained while reducing unnecessary service utilisation. These results suggest that HealthPathways can help curb overuse of expensive diagnostics, with sustained economic benefits (Davies, et al., 2023).

The economic evaluations to date suggest that HealthPathways can deliver significant cost savings by improving referral appropriateness, reducing unnecessary diagnostic and specialist service use, and enabling better care in the community. While results vary depending on the level and quality of implementation, studies across Australia, New Zealand, and the UK consistently point to positive economic impacts when pathways are fully integrated and actively used by general practitioners. However, further research is needed to fully quantify the long-term cost-effectiveness and health system impacts of HealthPathways.

3.HealthPathways: Alternative Systems

While HealthPathways is a widely adopted platform for supporting clinical decision-making, localised referral management, and care coordination, alternative digital systems exist that operating in adjacent spaces. Platforms are currently in use in the NHS and in wider healthcare that vary in focus from point-of-care CDS systems to structured referral management and integrated care platforms. Some tools that may be used as alternatives, and are currently widely used as CDS and referral management system include UpToDate, NHS Pathways, BMJ Best Practice, and emerging digital triage and referral tools such as Cinapsis and eConsult. The appendix highlights a full breakdown of the comparison of HealthPathways to potential alternative systems, focusing on the scope, customisation, content, target audience, access, and cost of each. While system-costings were not able to be obtained, the table includes costs for individual licences where the information is available.

3.1 UpToDate

UpToDate is a subscription-based CDS system designed to provide physicians with concise, evidence-based recommendations at the point of care. It was first developed by physician experts, and it presents comprehensive topic reviews that synthesise the latest research into practical guidance for diagnosis, management, and treatment. The real-world use of UpToDate was analysed in 2013 through a survey of clinicians in north-west England. The findings demonstrated that UpToDate is used in a wide range of clinical scenarios and positively influences decision-making, benefiting patients, healthcare professionals, and institutions alike (Addison, Whitcombe, & Glover, 2013).

While UpToDate offers generalised, global evidence-based clinical content with minimal local adaptation, HealthPathways is designed to align specifically with local healthcare system

structures, referral protocols, and service availability. HealthPathways supports clinical management and streamlining referral appropriateness within the primary-secondary care interface. UpToDate on the other hand, is more of a standalone clinical knowledge resource without direct integration into local referral processes. Therefore, while UpToDate works well as a comprehensive clinical reference, HealthPathways provides a more operational, system-integrated approach to care coordination and resource optimisation at the local level.

3.2 BMJ Best Practice

BMJ Best Practice is a web-based, subscription-based CDS tool that provides healthcare professionals with evidence-based, continually updated summaries covering a broad range of medical conditions. It is designed to support decision-making at the point of care, offering structured guidance on diagnosis, prognosis, treatment, and prevention. Unlike more traditional reference tools, it aims to present pre-digested clinical information in a concise and accessible format. According to a systematic evaluation carried out in 2016, BMJ Best Practice ranked among the top point-of-care information summaries, alongside UpToDate and DynaMed, in terms of editorial quality, evidence-based methodology, and breadth of disease coverage. (Kwag, González-Lorenzo, Banzi, Bonovas, & Moja, 2016).

BMJ Best Practice offers globally relevant, generalised clinical content, while HealthPathways is specifically designed to reflect local clinical practice and referral structures. HealthPathways guides GPs in clinical decision-making and integrates system-level logistics, such as referral protocols and service availability, tailored to the local health district. BMJ Best Practice does not provide this operational linkage or customisation for regional care coordination. Furthermore, while BMJ Best Practice is primarily used for clinical reference and continuing education, HealthPathways functions more as an embedded workflow tool that facilitates care delivery across primary and secondary settings. While both tools support evidence-based practice, they serve different roles; BMJ Best Practice as a comprehensive clinical knowledge source and HealthPathways as a locally contextualised care integration platform.

3.3 DynaMed

Similarly, DynaMed is another CDS tool offering evidence-based summaries designed for use at the point of care. It aims to deliver the latest medical information that curated through a systematic review. According to an evaluation conducted through the North-East Consortium for Health Information (NECHI) in the USA, DynaMed was found to be a viable alternative to UpToDate, especially when considering financial sustainability, accessibility, and institutional purchasing decisions. NECHI highlighted DynaMed's ease of access, strong editorial methodology, and cost-effectiveness as key strengths that could influence adoption by for those seeking reliable and affordable point-of-care tools (Hayes, 2012).

Within the NHS, DynaMed has not seen the same widespread adoption as UpToDate or BMJ Best Practice. NHS England has historically leaned towards BMJ Best Practice , although DynaMed is available to some institutions in the UK, it is not currently a standard, nationally funded tool across the NHS or NHS Wales.

Compared to HealthPathways, DynaMed also provides comprehensive clinical guidance with a global focus but lacks local customisation. While DynaMed excels in breadth of evidence and continuous updates, it does not offer the embedded, operational functionality or region-specific care coordination that defines HealthPathways. Therefore, DynaMed is also best suited for clinical knowledge support, while HealthPathways serves as a system-integrated workflow tool bridging primary and secondary care.

3.4 NHS e-Referral Service

The NHS e-Referral Service (e-RS) is a national digital platform that GPs and other referrers use to book referrals electronically into hospital and community-based services in England. It includes advice and guidance features that allows clinicians to seek specialist input without making a full referral. A

study by Beck-Sander et al. (2023) evaluated the impact of the advice and guidance use via e-RS in a dermatology department over a 45-month period. The found that mandatory advice and guidance triaging improved referral-to-treatment performance compared to national averages and reduced unnecessary face-to-face appointments. The number of advice and guidance requests rose substantially during and after the COVID-19 pandemic, and the system effectively supported clinicians in managing cases more appropriately in primary care (Beck-Sander, Efstathiadou, Woo, Cooper, & Mitchell, 2024).

While both e-RS and HealthPathways systems aim to streamline care and reduce unnecessary referrals, HealthPathways is a clinical knowledge platform designed to guide decision-making at the point of care, whereas e-RS is an operational platform for managing the referral process and enabling clinician-to-clinician communication. In practice, HealthPathways can complement e-RS by helping GPs determine whether a referral or advice and guidance is appropriate and by directing them to the correct service or pathway.

3.5 Consultant Connect

Consultant Connect is an app-based communication platform designed to give clinicians real-time access to specialist advice through phone calls and messaging, helping avoid unnecessary referrals and improve care efficiency. Consultant Connect is widely used across NHS England. A study described its implementation in a UK mental health trust, showing that 70% of advice calls resulted in patients being treated in the community, avoiding hospital referrals or admissions. The platform supported connections across 53 specialties and demonstrated utility in improving physical health outcomes for patients with mental illness (McMullen, et al., 2022).

In comparison, HealthPathways serves a different yet complementary function. Rather than facilitating real-time clinician-to-clinician interaction, it provides GPs with locally tailored, evidence-informed clinical pathways to support decision-making and referrals. While HealthPathways guides what should be done and where a patient should go, Consultant Connect enables instant confirmation or escalation of clinical decisions via expert input. Consultant Connect supports more dynamic, case-specific advice, whereas HealthPathways provides standardised narrative guidance to support consistent practice.

4.Conclusions

This review highlights the distinct roles and characteristics of various digital clinical support and referral systems. HealthPathways is unique in its emphasis on local customisation, providing region-specific clinical and referral pathways. Platforms such as UpToDate, BMJ Best Practice, DynaMed, and ClinicalKey serve as broad clinical decision support tools, offering evidence-based content, however there is minimal local tailoring. Systems like e-RS, Accurx, Consultant Connect, eConsult, and askmyGP focus primarily on streamlining workflow, communication, and referral management. The cost of these systems varies significantly depending on factors such as licensing model, scale of deployment, and regional arrangements. While many tools are offered free within the NHS, commercial platforms typically operate on subscription-based models. The landscape is diverse, with each system offering distinct benefits aligned to different aspects of clinical support and patient care.

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