# iPath Digital Market Access Strategy Report Innovate UK RTO

January 2025

**Company Number**: 05403766

**Registered address:**
3rd Floor
15 West Street
Brighton
East Sussex BN1 2RE

www.sehta.co.uk

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# 1. UK MARKET UNDERSTANDING INTRODUCTION

## 1.1 Context

Clinical Decision Support Systems (CDSS) are electronic tools that apply knowledge systems which use patient data to generate case-specific advice.[1] They are used across multiple care settings and specialities to support clinicians with making more evidence-based decisions. CDSS have shown to reduce errors and unwanted variation across the care pathway, as well as support shared decision-making.

Although CDSS help improve patient outcomes, none of these systems have embraced the crucial role of involving patients within the decision-making process.[2] The current decision-making process focuses only on clinical metrics, neglecting patient preferences and values. Digital Health Global Solutions (DHGS) are developing a personalised and intelligent companion chatbot platform, named Comprehensive Oncology MDT Patient Advocate Support System (COMPASS) to connect patients with Multi-disciplinary Teams (MDT's) during the clinical decision-making process in cancer care. An MDT is a group of health professionals work together to discuss the best treatment options to explore with a patient. A member of the MDT team then works with patients to outline the options discussed and decide the best treatment for them.

As part of the NHS long-term plan, mainstreaming digitally enabled care across the NHS is a key priority. The NHS aims to use decision support and artificial intelligence to help clinicians support patients with managing their health.[3]

## 1.2 Background on COMPASS

The COMPASS platform ensures that patients can input into the clinical decision-making process. The solution tailors its communication style and clinical information delivery to match each patient's unique information needs and preferences, empowering both patients and clinicians to make informed and shared decisions.

The platform consists of two key modules:

a) The patient advocate module
b) The MDT support module

The patient advocate module serves as a bridge between MDT and patients; MDTs are presented with patient profiles, preferences and clinical results whilst tailored information, from MDT meeting discussions and treatments, is delivered to patients to match their health literacy level and preferences. The module also supports patients in giving informed consent for treatment options. The MDT support module streamlines MDT meetings by triaging complex cases from standard cases, determining which need in-depth discussion and which only need to be listed. The integration of these two modules, as depicted in *Figure 1*, allows patients to be well-informed and actively participate in their cancer care decision-making process.



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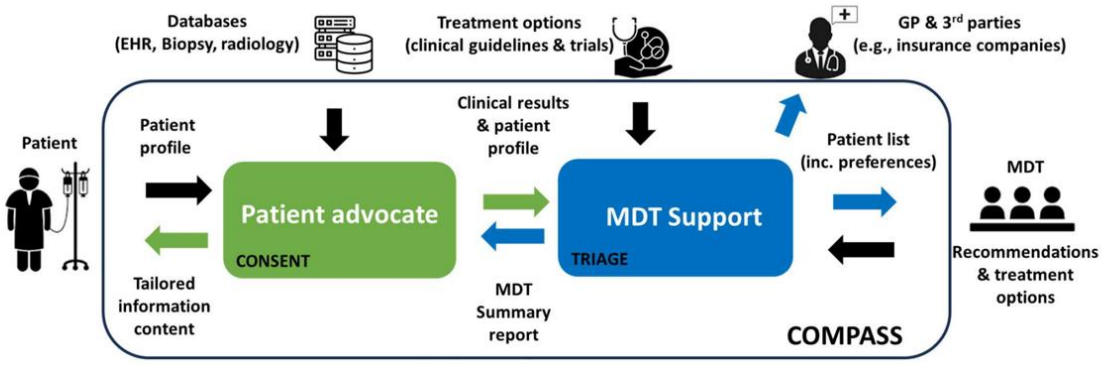


**Figure 1: The COMPASS solution acting as the bridge between patients and MDT.**

DHGS aim to develop the COMPASS platform in several stages; overtime the patient advocate demonstrator platform will include:

- Structured Q&A's for patients on common topics and eventual response to open-ended Q&A's
- Assessment of health literacy based on user interaction and content consumption patterns
- Personalised profiles for patients
- Recognition and response to emotional cues
- Adjustment of communication and information delivery based on patient profile and emotion
- Presentation of patient preferences to MDT
- Automation of MDT processes including the uploading of documents, generating reports, communicating outcomes to patients, triaging complex cases, offering second opinions

Following up on the reviews and discussions between DHGS and SEHTA, this report examines the gaps in knowledge and key questions that have been identified as follows:

- Current UK market for AI in MDT decision-making
- Application of COMPASS to different use cases
- Current market data for cancer, dementia and cardiovascular conditions from chronic kidney disease
- Current care pathway for decision-making in cancer care, dementia and cardiovascular conditions
- The benefits of connecting patients with MDT teams
- Investigation of the UK competitive landscape and competitor's pricing models
- Development of pricing strategies and pricing models applicable to the UK market

Overall, this report aims to assist DHGS with understanding the current market of decision marking and thereby optimise the platform for improving patient advocacy across some of the most prominent health conditions.



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# 2. CURRENT MARKET DATA AND CARE PATHWAY

It has been recommended to DHGS that they expand the use of the platform to dementia and cardiovascular (as a result of chronic kidney disease) care as well as their current focus on cancer care, due to the critical need for involving patients in the decision-making process when treating these conditions.

## 2.1 Cancer

### a. Cancer Prevalence

It is estimated that there are more than 3 million people living with cancer in the UK, with someone being diagnosed at least every 90 seconds. With 393,000 people diagnosed per year, the total number of cancer patients is likely to rise to 5.3 million people by 2040. *Figure 2* depicts the rate of cancer diagnosis.[4]

| Nation | Every year | Every month | Every week | Every day |
|---|---|---|---|---|
| **England (2021)** | 330,000 | 27,500 | 6,300 | 900 |
| **Scotland (2021)** | 35,400 | 2,950 | 680 | 100 |
| **Wales (2020)** | 17,500 | 1,460 | 330 | 50 |
| **N. Ireland (2021)** | 10,500 | 880 | 200 | 30 |
| UK | **393,000** | **32,800** | **7,500** | **1,080** |

**Figure 2: Rate of cancer diagnosis in the UK.[4]**

The demographics of cancer patients have evolved overtime, with cancer rates in 25–49-year-olds increasing by 24% between 1995 and 2019.[5] The majority of cases continue to reside in people over 50 years of age, with 9 in 10 cancer cases occurring in this age group. Figure 3 shows trends in cancer cases across different age groups and genders between 2017-2019. Cases were significantly greater in males than females, for individuals over 65. In contrast for age groups below 55, cases become more common in females than males.[6] The peak rate of cancer cases between 2017-2019, occurred within individuals aged 85-89 years old.

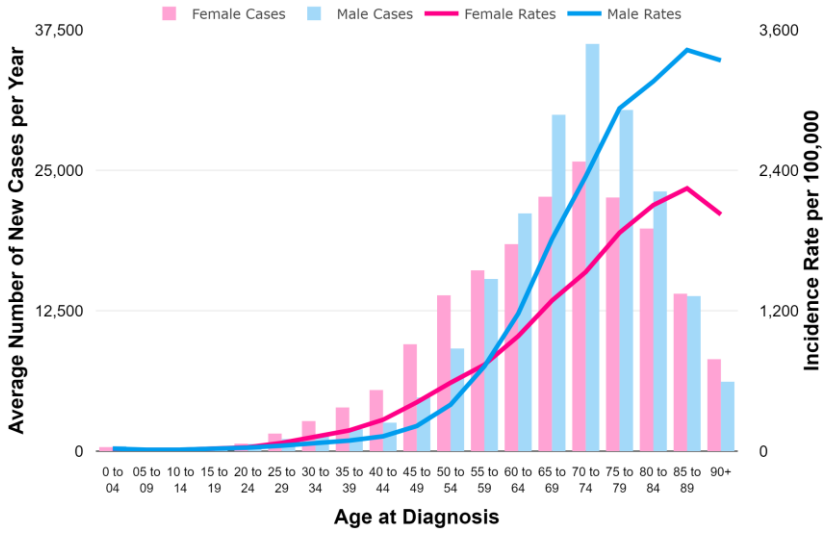


**Figure 3: Average number of new cases per year and age-specific incidence rates per 100,000 population, UK (2017-2019). For all cancers, excluding non-melanoma skin cancer. Reference: Cancer Research UK, https://www.cancerresearchuk.org/health-professional/cancer-statistics/incidence/age#heading-Zero, Accessed November 2024.**



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### b. Care Pathway

The current care pathway for cancer in the UK starts with awareness and prevention; through campaigns, posters and informed discussions the population is encouraged to make lifestyle changes such as quitting smoking and completing routine screenings to reduce their risk of cancer. The cancer pathway for each NHS Trust may defer slightly but a similar process is generally followed. The pathway described below is undertaken by University Hospitals Bristol NHS Foundation Trust.[7]

Individuals with suspected cancer are expected to immediately book an appointment with their General Practitioner (GP) to discuss ongoing symptoms. The GP then make an urgent 2 week wait referral to an NHS specialist for tests. The NHS cancer programme has also launched the Faster Diagnosis Framework which sets out the strategic approach for speeding up cancer diagnosis and improving patient experience.[8] Following investigation, a diagnosis is confirmed, and an outpatient appointment is arranged to discuss the patient's overall fitness, further investigations and/or treatment.

Based on tests and information provided by the patients, an MDT team meeting is held to discuss further potential investigations. The patient may then undergo further testing e.g. CT scans. After the holding of another MDT meeting, a member of the team has a discussion with patient about the outcome of the investigation, expectations, concerns and willingness to undergo recommended treatment options including surgery and/or chemotherapy/radiotherapy. To address concerns, a Holistic Needs Assessment (HNA) in the form of a questionnaire may be given to patients at any stage of the care pathway. A healthcare professional can then have a detailed discussion with patients to discuss their answers and develop a personalised care and support plan. Although patient concerns around diagnosis and treatment options are openly discussed throughout the pathway, patient involvement in the decision-making process and their interaction with MDT's is limited.

The NHS has set 31-day and 62-day targets for tackling cancer cases. Patients should start treatment within 62 days of the hospital receiving their urgent suspected cancer referral. Treatment should also begin within 31 days of doctors agreeing the treatment plan.

There are multiple initiatives in place across the UK to increase cancer awareness and provide support, including charities such Maggie's Centres, Macmillan Cancer Support and Cancer Research UK who host their own early diagnosis initiative. There are also various digital applications which support cancer journeys, including Oncopower which provides a community for cancer patients and allows second opinions from specialists at any time, as well as Becca which provides trustworthy information for anyone living with breast cancer.

## 2.2 Dementia

### a. Dementia Prevalence

It is estimated that there are currently 982,000 people living with dementia in the UK and this is projected to rise to 1.4 million in 2040[9] In September 2024, the diagnosis rate in England for Dementia was 65.5%. 65% of people aged 65 or over are estimated to have dementia.[10] 7.5% of the dementia patient population in the UK is living with young onset dementia where symptoms have occurred under the age of 65.[11] A comprehensive review by Breijyeh *et al.* on Alzheimer's disease demonstrates that women have a greater risk of developing dementia during their lifetime, with nearly two-thirds of Alzheimer's disease



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cases being women.[14] *Figure 4* shows the steep difference in projected dementia for women compared to men.

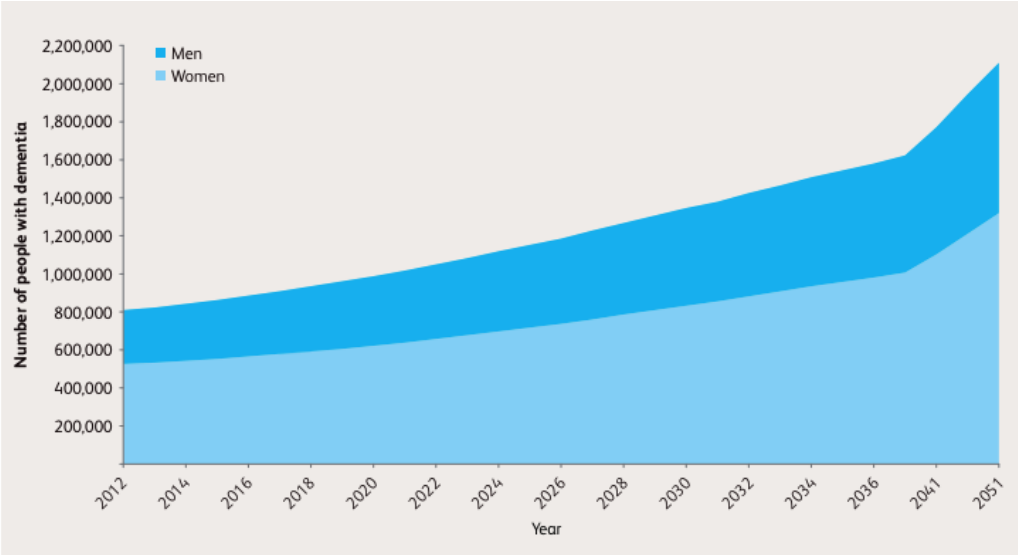


**Figure 4: The UK prevalence projection for Dementia across different age groups. Reference: Alzheimer's Research UK, https://dementiastatistics.org/about-dementia/prevalence-and-incidence/, Accessed September 2024**

The total cost of dementia in the UK is £42 billion per year and this is expected to rise to £90 billion a year with current care pathways. The requirement for continuous care or the development of complex needs, often leads to dementia patients moving to care homes. The care home sector is worth around £15.9 billion a year in the UK, with around 410,000 residents.[12] There is an estimation of around 5,500 different care home providers in the UK who collectively operate 11,300 care homes.

Alzheimer's disease is the most common type of dementia and is typically caused by the abnormal build-up of proteins, namely amyloid and tau.[13] This leads to a degeneration of cells in the brain, leading to a decline a thinking and independence in personal activities. Several risk factors for the disease include increasing age, genetic factors, head injuries, vascular diseases, infections and environmental factors.[14]

### b. Care Pathway

The dementia care pathway aims to support patients from the initial prevention stage to end-of-life care. Based on NICE guidelines, those with suspected dementia are expected to report symptoms to their GP who may then report the case to a dementia specialist.[15] The diagnosis involves initial assessment of cognitive, behavioural and psychological symptoms as well as a physical assessment including blood and urine tests, in a none-specialist setting. If dementia is still suspected, a memory assessment service is offered to arrange specialist investigating including neuropsychological assessment, brain scans or test of verbal episodic memory.

After a confirmed dementia diagnosis, the patient and their family/carer work jointly to develop their post-diagnostic care plan. This is reviewed every 12-months to ensure that it is still applicable and effective. It is the role of the care coordinator to ensure that any decisions made are patient-centric and facilitate patient choice and independence. Patients physical and mental health is monitored, and care is provided including housing provision, advocacy and dementia-friendly services to support independence, training and advice for carers and transport assistance. If care in the community or a care home is not possible, patients may be admitted to acute or general hospital inpatient care. End-of-life care is


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provided to support patients as they near the end of life and also offer psychological support to their family members and carers.

Dementia Friends is a programme that has been launched by Alzheimer's Society to help change people's perceptions of dementia, through face-to-face information sessions of the watching of online videos

## 2.3 Cardiovascular Conditions from Chronic Kidney Disease (CKD)

### a. Prevalence

According to Kidney Research UK, there are currently 7.2 million people in the UK with Chronic Kidney Disease (CKD).[16] Kidney damage typically leads to the increase production of hormones which control blood pressure, adding additional strain on the heart; over 50% of patients undergoing dialysis experience cardiovascular disease (CVD). In fact, people with CKD are 20 times more likely to die of cardiovascular disease than end-stage renal disease (NICE 2024). A review by Said *et al.* which studies the link between CKD and CVD, shows that both conditions share common risk factors including smoking, obesity, hypertension, diabetes mellites and dyslipidaemia.[17]

### b. Care Pathway

Cardiovascular disease is commonly diagnosed through various tests including blood work to measure cholesterol and blood sugar levels which may impact cardiovascular health, electrocardiogram to record the heart's electrical activity and stress tests to analyse how physical activity affects the heart in a controlled setting.[18] Healthcare providers devise treatment plans which may include lifestyle changes, medications, surgeries or active surveillance through the use of remote monitoring devices for cardiovascular disease.

Charities such as Kidney Care UK and Kidney Research UK support patients throughout their CKD journey. British Heart Foundation (BHF) hosts various support groups and communities to provide a safe space for patients to share their experiences and knowledge and actively involves patients in their research.

# 3 BENEFITS OF SHARED DECISION MAKING

Multidisciplinary team meetings bring together healthcare professionals and specialists to discuss the best treatment options for patients. A study completed by the National Institute for Health and Care Research (NIHR) focused on MDT meetings for head and neck cancer in the North of England.[19] This study showed that patients are often presented with the team's preferred treatment for them, rather than a showcase of all potential available treatments. Although MDTs aim to make patient-centric decisions, there is very little engagement with patients during the decision-making process. This is troublesome as clinicians and patients may not share the same mindset on what is considered important when planning treatment and so factors such as patients wanting to continue activities they love whilst on treatment, may not be taken into account.

The involvement of patients during the clinical decision-making process is crucial for ensuring that patients can actively engage with developing their own treatment plan and give consent before pursuing treatment options.

National surveys conducted by the Care Quality Commission (CQC) show that 40% of people want to be more involved in decisions about their care.[20] Studies have also shown that people who are more involved in their decisions are likely to have fewer regrets about



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their chosen healthcare options, report having better relationships with clinicians and adhere better to treatment. A review by Chichua *et al.* on decision regret in cancer patients details that patients often make regretful decisions when they have been inadequately informed about the risks and benefits of their proposed treatment options, leading to decisional conflict.[21] The knowledge communicated to patients from clinicians and the questions raised by patients is highly dependent on the patient's health literacy.

The National Institute for Health and Care Excellence (NICE) highlights the following crucial benefits of shared decision-making:

- Through shared information, patients can have a good understanding of the benefits, harms and possible outcomes of different options.
- Gives patients independence and empowers them to make decisions about the treatment and care that is right for them at the time.
- Patient can choose to continue with their current treatment or choose no treatment at all.
- Patients can choose the extent to which they want to be involved in the decision-making process.
    - 

NICE has also formed the shared decision-making collaborative which involves collaboration between NICE and over 40 partner organisations and aims to encourage the making of clinical decisions that embody what matters to patients most.

Although patient involvement for dementia care may be considered difficult due to cognitive decline, a review by Mattos *et al.* shows that older adults with cognitive impairment can in fact communicate their values and choices regardless of cognitive decline.[22]

# 4 COMPETITORS

**Investigation of the UK competitive landscape and competitor's pricing models**

**Pricing model definition:** A method used by a business to determine the price of its products or services. It is a way to package and present goods and services to customers.

- Competitors:
    - Clinical Decision Support Systems:
        - Infoflex (Cancer) - £25.00 per user per month, Cloud deployment model = private cloud
        - Navify
        - Somerset Cancer Registry – Provided by NHS
        - Deontics - £2,400 a license a month. Cloud deployment model = public cloud, private cloud and hybrid cloud
    - Patient Decision Support Systems:
        - Owise – App available on NHS Library, freely available for download
        - VineHealth – Free, supported through NHS
    - Support Apps:
        - Oncopower
            - Community for cancer care patients, second opinions from specialists at any time with Ask-A-Doc, includes physicians, dietitians, social workers and therapists, resources on care and treatment (manage symptoms, understand treatment



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options, meditation and nutrition tools), daily check-ins, pill reminder, medical records storage
        - Breast Cancer Now - Becca
            - App to support those with breast cancer – trustworthy information for anyone living with or beyond primary breast cancer, inspiring stories, hints and tips
        - MySunrise
            - Information and support tool for patients and their families before, during and after treatment at their NHS cancer center
            - Locally configured NHS cancer support, personalised care, digital tools preparing for treatment, enabling virtual wards for oncology, patient initiated and personalised follow-up
        - The Cancer App
            - Helps patients stay in control of their care, appointments, medications and contacts
            - Important information in one place, general and cancer-specific information, medication (right dose at right time), easy to use, easy to input and update contacts
        - BYYOURSIDE
            - Information and advice, support with daily tasks, care for body and mind, track mood and pain
        - MyRenalCare
            - Supports patients and clinicians throughout the kidney disease journey, earlier diagnosis for patients, better data for clinicians
        - myHeart
            - App that allows patients to record activity diary, access educational courses, store and view ECG reports
    - Conversational AI Patient Support:
        - Belong.life - free of use
        - PROSCA
        - Wefight
        - RTA

- Differentiator between the iPath solution (COMPASS) and its competitors – the app tailors its communication style and clinical information delivery to precisely match each person's unique information needs and preferences, empowering both clinicians and patients to make informed and shared decisions, driving a paradigm shift towards patient-centric innovation.
    - Current clinical decision support systems to support MDT decision making do not involve patients within the decision-making process or are disconnected from MDT processes and only offer generalised information
    - Current decision process of solutions focuses only on clinical metrics, neglecting patient preferences and values



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- Current focus of COMPASS is cancer and chronic kidney disease but should expand the use of the platform to other disease areas including:
    - Chronic kidney disease with cardiology
        - CKD affects 1 in 10 people in the UK (Ref: British Heart Foundation)
        - 7.2 million people with CKD in the UK (Ref: Kidney Research UK)
        - Cardiovascular disease (CVD) is present in around 50% of patients undergoing dialysis (Ref: Nephrol Dial Transplant - Cardiovascular disease in dialysis patients)
        - 7,200,000 x 0.5 = Around 3,600,000 people have CVD due to CKD in the UK
    - Cancer care
        - 3 million people in the UK living with cancer (As of 2020)
        - Predicted to rise to 3.5 million in 2025, 4 million in 2030 and 5.3 million in 2040 (Ref: Macmillan cancer support)
        - There is a surge in UK cancer patients going private for treatment. Between 2018 and 2023, 282,560 people funded chemotherapy treatments through insurance (Private)
    - Dementia care
        - Around 982,000 people in the UK with dementia (Ref: Alzheimer' Society)
        - Projected to rise to 1.4 million in 2040 (Ref: Alzheimer's Society)
        - Cost of dementia in the UK is forecast to be £42 billion in 2024
        - 37% of care home residents self-fund their care
        - Care home facilities (Ref: Gov.UK):
            - Worth around £15.9 billion a year in the UK, with around 410,000 residents
            - Around 5,500 different providers in the UK operating 11,300 care homes for the elderly
    - Total market targeted = 7,544,000 million patients affected by the various conditions

# 5. Patient Support Programs

## 5.1 Patient Support Program framework

Patient Support Programs (PSPs) offered by pharmaceutical companies play a crucial role in enhancing patient care, particularly for chronic conditions like cancer and chronic kidney disease (CKD). In the U.K., these programs are designed to provide comprehensive support that goes beyond medication, addressing the emotional, educational, and practical needs of patients.


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## 5.2 Overview of Patient Support Programs

PSPs are structured initiatives that aim to assist patients throughout their treatment journey. They offer a range of services, including educational resources, financial aid, counselling, and access to healthcare professionals. In the U.K., these programs are often tailored to specific disease areas and are particularly prevalent in oncology and nephrology, given the complexities associated with cancer treatments and CKD management.

## 5.3 Cancer Patient Support Programs

For cancer patients, PSPs focus on various aspects of care. One of the primary goals is to improve adherence to treatment regimens. Many cancer therapies can have significant side effects, which may deter patients from completing their prescribed courses. By providing educational materials and counselling, these programs help patients understand their treatment and manage side effects effectively.

Moreover, cancer PSPs frequently include access to specialized nursing staff or case managers. These professionals can offer personalized support, answering patient queries, helping them navigate the healthcare system, and coordinating care among different providers. Such support is invaluable in alleviating the anxiety that often accompanies a cancer diagnosis.

Financial assistance is another critical component. Cancer treatments can be expensive, even within the NHS framework. PSPs may offer financial counselling or resources to help patients access available funding or support options, ensuring that financial barriers do not impede their treatment.

## 5.4 Chronic Kidney Disease (CKD) Patient Support Programs

In the realm of CKD, patient support programs similarly aim to enhance the quality of life for patients. CKD requires ongoing management, and the transition to dialysis or kidney transplantation can be particularly challenging. PSPs often include educational initiatives that empower patients to make informed decisions about their health, dietary restrictions, and lifestyle modifications.

Support groups are a common feature of CKD PSPs, providing a platform for patients to share experiences and coping strategies. These groups can significantly reduce feelings of isolation and anxiety, fostering a sense of community among individuals facing similar challenges.

In addition, pharmaceutical companies may offer home healthcare services as part of their CKD PSPs. These services can include home visits by healthcare professionals to monitor the patient's condition and adjust treatment plans as necessary. This personalized care can significantly improve patient outcomes and adherence to treatment protocols.



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## 5.5 Regulatory and Ethical Considerations

In the U.K., pharmaceutical companies are subject to stringent regulations regarding the promotion of their products and services. The Association of the British Pharmaceutical Industry (ABPI) sets guidelines that govern how PSPs are implemented. These regulations ensure that patient support is ethically delivered, focusing on patient welfare rather than merely promoting pharmaceutical products.

## 5.6 Conclusion

In summary, Patient Support Programs in the U.K. for cancer and chronic kidney disease represent a vital component of patient care. By addressing the multifaceted needs of patients—ranging from emotional support to financial assistance—pharma companies play a key role in enhancing treatment adherence and improving overall health outcomes. As the landscape of healthcare continues to evolve, these programs will likely become increasingly integral to the patient experience, ensuring that individuals receive holistic support throughout their treatment journeys.

# 6. Comprehensive Report of Patient Support Programs offered by Pharmaceutical Companies in the UK: Focus on Cancer and Chronic Kidney Disease (CKD)

## 6.1 Introduction

Patient Support Programs (PSPs) have become an essential component of healthcare delivery, particularly for chronic conditions such as cancer and Chronic Kidney Disease (CKD). These programs aim to enhance the treatment experience by providing patients with the necessary resources, education, and emotional support. This report outlines the nature of PSPs in the U.K., highlighting specific examples and their impact on patient care.

## 6.2 Overview of Patient Support Programs

PSPs are organized initiatives by pharmaceutical companies designed to assist patients in managing their health conditions. They encompass a variety of services, including:

- Educational Resources: Information about disease management, treatment options, and lifestyle changes.



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- Emotional and Psychological Support: Counselling services and support groups.
- Financial Assistance: Guidance on accessing funding and managing treatment costs.
- Adherence Support: Tools and services that promote adherence to prescribed therapies.
- Access to Healthcare Professionals: Personalized support from nurses or case managers.

## 6.3 CANCER PATIENT SUPPORT PROGRAMS

- Roche - Roche Patient Support

Roche has established a comprehensive PSP for cancer patients that includes several key elements:

- Personalized Support: Patients are assigned case managers who provide tailored advice and guidance throughout their treatment journey.
- Educational Resources: Roche offers detailed information about various cancer types and treatment protocols, helping patients understand the complexities of their conditions.
- Financial Guidance: The program assists patients in navigating financial assistance options and understanding their rights regarding NHS funding.

**2. AstraZeneca - AstraZeneca Patient Support**

AstraZeneca's PSP focuses on improving adherence among cancer patients:

- Nurse-Led Support: Trained nurses provide one-on-one support to address treatment-related concerns and side effects.
- Digital Tools: The program includes a mobile app that offers medication reminders, educational modules, and symptom tracking.
- Community Engagement: AstraZeneca organizes support groups that connect patients with others undergoing similar treatments, fostering a sense of community and shared experience.

**3. Novartis - Patient Support Program for Oncology**

Novartis offers a multifaceted approach to support cancer patients:

- 24/7 Helpline: A dedicated helpline staffed by healthcare professionals who can answer questions and provide support at any time.



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- Resource Allocation: Patients receive assistance in accessing additional resources such as transportation or home care services if needed.
- Holistic Care: The program emphasizes the importance of nutritional counselling and physical activity, recognizing their role in treatment efficacy.

## 6.4 Chronic Kidney Disease (CKD) Patient Support Programs

### 1. Bristol-Myers Squibb - BMS Kidney Support

Bristol-Myers Squibb offers a PSP focused on CKD management:

- Education and Awareness: The program provides information on CKD progression, treatment options, and the importance of lifestyle changes.
- Support Groups: Regular meetings allow patients to share experiences and coping strategies, reducing feelings of isolation.
- Personalized Care Plans: Patients receive tailored care plans that align with their specific needs and preferences.

### 2. Fresenius Medical Care - Kidney Care

Fresenius operates a comprehensive PSP aimed at CKD patients:

- Home Healthcare Services: The program includes home visits from healthcare professionals who monitor patient health and adjust treatment plans.
- Dietary Support: Offering nutritional counselling to help manage dietary restrictions associated with CKD.
- Patient Education Workshops: Regular workshops educate patients about self-management strategies and the importance of adherence to treatment regimens.

### 3. Amgen - Amgen Kidney Support

Amgen's PSP provides a robust framework for CKD patients:

- Access to Specialists: Patients can consult with nephrologists and dietitians through telehealth services.
- Financial Counselling: Assistance with understanding treatment costs and accessing available funding options.


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- Interactive Tools: The program includes digital platforms for symptom tracking and medication management.

### 6.5 Regulatory Framework

The operation of PSPs in the U.K. is governed by strict regulations set forth by the Association of the British Pharmaceutical Industry (ABPI). These guidelines ensure that PSPs prioritize patient welfare and adhere to ethical marketing practices. Pharmaceutical companies must demonstrate transparency in their initiatives and ensure that their programs are designed to genuinely support patients rather than primarily promote their products.

### 6.6 Conclusion

Patient Support Programs offered by pharmaceutical companies in the U.K. significantly enhance the quality of care for patients with cancer and CKD. By providing comprehensive support that addresses medical, emotional, and financial challenges, these programs empower patients to manage their conditions more effectively. As the healthcare landscape continues to evolve, the role of PSPs will likely expand, further integrating patient-centric approaches into chronic disease management.

## 7 Virtual Wards

### 7.1 Virtual Wards Operational Framework

NHS England's national guidance refers to these types of services as 'virtual wards', but local services can decide if they wish to be known as a 'virtual ward' or a 'hospital at home' (HaH) service.

Virtual wards allow patients of all ages to safely and conveniently receive acute care at their usual place of residence, including care homes.

There is growing evidence that when all core components of these services are delivered at scale for appropriate patients, they provide a better patient experience and can improve outcomes compared to inpatient care, and narrow the gap between demand and capacity for hospital beds by preventing attendances and admissions, shifting acute care into the community or reducing length of stay through early discharge. The virtual ward model has broad clinical support, including endorsement from professional bodies.

Virtual wards are now available in every integrated care system (ICS), although there is variation in the models and pathways they deliver. This is due to pre-existing service arrangements to address local need, and because national policy has supported a diversity of approaches to enable rapid expansion. Some local variation will remain appropriate; however, evaluation suggests that greater consistency nationally in the components of virtual wards would maximise benefits for patients and the wider system. Feedback also suggests that clinicians across the country are keen to better understand


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where this expansion has been most successful, to inform development of best practice models.

This framework supports consistency across the NHS and the relevant goals in line with the Year 2 urgent and emergency care (UEC) recovery plan and the 2024/25 priorities and operational planning guidance: maintaining virtual ward capacity and optimising occupancy so it is consistently above 80%. It also clarifies the expectations of virtual wards and how they should be developed over time to maximise benefits for patients and the NHS, by setting out:

- what virtual wards are and do, including step-up and step-down functions
- the core components of a 'good' technology-enabled virtual ward
- requirements for implementation and alignment with key partners
- the expected outcomes of virtual wards, including ensuring capacity is aligned with avoiding hospital attendances and admissions and/or reducing length of stay in inpatient wards

The framework has been developed in conjunction with the National Clinical Advisory Group, the Virtual Wards Steering Group and voluntary sector partners. It is intended for everyone involved in the planning, implementation, delivery and/or monitoring and evaluation of virtual wards, including providers and integrated care boards (ICBs).

As this framework updates two pieces of previously published guidance – 'Supporting information for ICS leads – enablers for success: virtual wards including hospital at home' and 'Supporting information: virtual ward including hospital at home', these documents have been withdrawn. We have published additional guidance specifically for acute respiratory illness, frailty and heart failure pathways. Other virtual ward pathways should be developed at a local level to meet population needs, including for children and young people (CYP) – see appendices 1 and 4.

- **Benefits of virtual wards**
- The virtual ward model has broad clinical support, including endorsement from professional bodies, and is underpinned by a growing evidence base that demonstrates patient, system and staff benefits when all core components are delivered at scale for appropriate patients.
- **Preventing admissions and attendances**
- Virtual ward models reduce hospital admissions and readmissions with knock-on impacts for emergency department (ED) presentations through the provision of timely consultant-led* multidisciplinary care (NHS England, 2024; Wessex Academic Health Science Network, 2022). This is not only the case for frailty models but also CYP virtual wards, with data from Providing Assessment and Treatment for Children at Home (PATCH) in Hillingdon showing significantly reduced admissions to the paediatric assessment unit after implementation (Health Innovation Network South London, 2024).
- * Consultant includes consultant physicians (surgeons, geriatricians, paediatricians), consultant practitioners (nurses, allied health professionals with consultant-level practice) and GPs (including GPs with extended roles). It does not include advanced practitioners.



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- **Southeast evaluation:** A 2023/24 evaluation of over 22,000 virtual ward admissions to step-up/admissions avoidance pathways across 29 sites found that 2.5 virtual ward admissions are associated with 1 fewer non-elective admission – equating, for these services alone, to over 9,000 avoided hospital admissions a year across the region. The most mature services can achieve a ratio of nearly 1:1.
- **Kent Community Health NHS Foundation Trust (KCHFT):** The frailty HaH service at KCHFT covers an area with a large population living with frailty, with over 6,000 residents in 275 care homes. Over the course of 2 years while the HaH service has continued to expand, medical hospital admissions and attendances of people over 75 have reduced by 25%.
- **Reduced hospital length of stay**
- Step-down virtual ward models reduce length of stay for specific cohorts (for example, chronic obstructive pulmonary disease and heart failure) (Eastern AHSN and Health Innovation Manchester, 2023; Chauhan U, McAlister FA, 2022).
- **Cost-effectiveness and productivity**
- The Southeast evaluation found that the annualised net benefit was £10.4 million for the 18 pathways analysed for non-elective admissions (and this does not include all virtual ward activity in the region). Local evaluations have also demonstrated cost savings (with these greatest for step-up functions (Wessex Academic Health Science Network, 2022)) from delivering care in people's homes with one report citing an average cost saving of £1,958 per patient compared to an inpatient stay in the UK, as well as productivity and efficiency savings through use of technology including remote monitoring (Health Innovation Network South London, 2024).
- **Northwest London (NWL) Virtual Hospital:** From April 2022 to April 2023, 4,311 patients were managed through NWL virtual ward pathways with an estimated 8,622 bed days saved and a £3,448,800 system saving. Technology is a key enabler for virtual ward pathways and 84% of these NWL virtual ward patients received technology-enabled care.
- **Southern Health NHS Foundation Trust:** The Southern Health NHS Foundation Trust HaH services used a simple modelling approach, Demand and Capacity 'lite', to understand how additional investment in the multiprofessional team increases capacity and number of HaH 'beds'. Their approach was useful to explore funding scenarios and understand how investment could increase patient-facing time.

- **Improved patient experience and choice**
- Feedback from patients is positive (Nunan J, et al 2022; Chen H, et al, 2024) and suggests that virtual wards support increased patient choice and personalised care as well as providing opportunities for family members to visit and engage with patients (Chua CMS, et al, 2022).
- **Improved patient outcomes and protection from avoidable harm**
- Outcomes for patients in a virtual ward are comparable to or better than those in inpatient care, including mortality and readmissions (Leong MQ, et al.



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2021; Norman G, et al, 2023). Frailty virtual wards reduce the risk of deconditioning and loss of independence associated with an emergency conveyance and admission to hospital, with these benefits greatest for admission alternative service models (Shepperd S, et al, 2021). By supporting individuals to stay out of hospital, virtual wards can also reduce the risk of hospital-acquired infections (Chappell P, et al, 2024).

- **Leeds, West Yorkshire Integrated Care Board:** Pharmacy input for the frailty virtual ward in Leeds has been instrumental in optimising medicines outcomes for patients and improving patient experience. Having pharmacy staff embedded at all levels of leadership ensures pharmacy professionals are collaborators in developing pathways, mitigating medicine-related risks and influencing future developments of the frailty virtual ward.

- **Improved staff experience**

- Virtual wards improve staff experience and retention (Health Innovation Network South London, 2024; Schultz K et al, 2021), and create opportunities for staff to undertake flexible and blended roles.

- **What is and is not a virtual ward?**

- A virtual ward is an acute clinical service with staff, equipment, technologies, medication and skills usually provided in hospitals delivered to selected people in their usual place of residence, including care homes. It is a substitute for acute inpatient hospital care. This definition is based on the World Hospital at Home Congress consensus definition (2023).

- Virtual ward services are fully responsible for the patient, providing medical, nursing and allied healthcare support through a multidisciplinary team (MDT). The support provided by the MDT may be delivered by several different teams working to deliver the virtual ward service.

- A virtual ward is defined by:

- effective governance and clinical leadership, with consultant physician/consultant practitioner/GP oversight

- operating hours (8am–8pm, 7 days a week at a minimum) and out-of-hours provision

- clear admission criteria and assessment processes

- personalised care and support planning and shared decision-making

- daily board rounds involving a senior clinical decision-maker, medical input and the wider MDT

- hospital-level diagnostics

- hospital-level interventions/treatment

- technology-enabled care, including remote monitoring

- pharmacy, medicine reconciliation and optimisation

- clear discharge processes, including monitoring of length of stay



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- A virtual ward is suitable for a range of acute conditions, including but not limited to respiratory problems, heart failure or exacerbations of a frailty-related condition for adults, and acute respiratory illness, gastroenteritis and neonatal jaundice for CYP. The case mix may range from patients who primarily require daily monitoring virtually or by phone and reviews to those who require multiple home visits within a day from a member of the MDT. The length of stay can be different for each person but is expected to be short (up to 14 days).
- The acuity of the patients differentiates virtual wards from other community services and should be high enough to warrant consultant physician/consultant practitioner/GP oversight, with clear lines of clinical governance and accountability in place as outlined in the Supporting clinical leadership in virtual wards guidance.
- A virtual ward is not a mechanism intended for:
- routine GP-led medical and urgent care
- proactive deterioration prevention
- standalone remote monitoring or virtual care
- safety-netting, for example when patients are medically optimised for hospital discharge/do not require acute care but their symptoms may change
- intermediate care and reablement
- a bridging care service for patients awaiting a care package
- standalone outpatient parenteral antimicrobial therapy (OPAT)
- standalone home-based end-of-life (EoL) care (although virtual wards may frequently refer patients to these services on discharge)
- standalone home intravenous or infusion therapy
- Although in practice some of the above functions/services may be delivered by the same staff as those working on virtual wards, or may overlap with the provision of virtual ward care for some patients, on their own they do not meet the definition of what a virtual ward is. For example, standalone OPAT services are not virtual wards but can be an enabler of virtual ward treatment as part of an MDT. Patients receiving OPAT are often not as acutely unwell as those admitted to a virtual ward, and their treatment may extend over a long time.
- **Assessing acuity**
- While no one method is consistently used to measure acuity in virtual wards, services should take steps to understand the level of acuity of the patients they support to maximise benefits for patients and system flow. The National Early Warning Score version 2 (NEWS2) for adults and the Paediatric Early Warning System (PEWS) for CYP are considered important, if not definitive, tools for identifying acutely ill patients who might be suitable for virtual ward care. Various providers are also developing their own tools to assess acuity based on interventions, the professionals involved, scoring systems and patient conditions.


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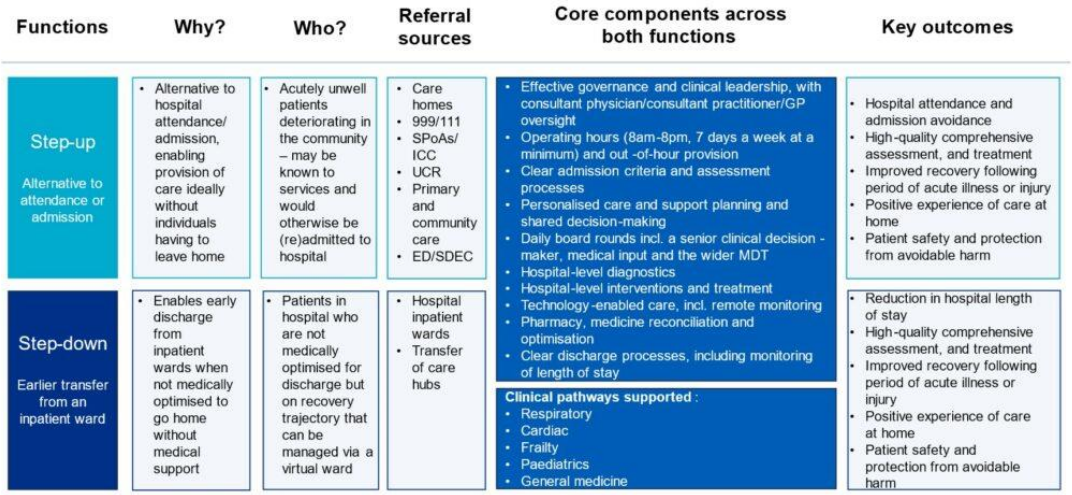
- Where a patient is referred from an inpatient ward, services may look at using clinical criteria to reside as another way to determine the suitability of a patient for a virtual ward.
- **What good looks like**
- **Core functions and components of virtual wards**
- Virtual wards serve 2 core functions:
- ‘step-up’ care is where a patient becomes acutely unwell and is offered the choice between being treated at home or in hospital. Patients are typically referred directly from their usual place of residence and can be admitted from sources such as a single point of access (SPoA), same day emergency care (SDEC) or ED
- ‘step-down’ care is where a virtual ward can facilitate an earlier discharge or transfer from an inpatient ward, enabling individuals who are not medically optimised for discharge to continue to receive medical treatment, oversight and diagnostics at home
- **Surrey Downs Health and Care Partnership (SDHCP):** The Integrated HomeFirst Service at SDHCP provides health and social care support to people in their homes as an alternative to a hospital admission or an extended acute stay. HomeFirst incorporates a virtual ward, urgent community response (UCR), Discharge to Assess (D2A) and a transfer care hub. By working together with a ‘one team’ ethos, the different services provide joined-up care across traditional boundaries and ensure both step-up and step-down referrals are made into the virtual ward.

**Figure 1: Overview of virtual wards, including functions, core components and key outcomes**




Providers should work towards ensuring all virtual wards deliver all of the core service components listed in Table 1. At a minimum, providers should ensure closer alignment of both step-up and step-down functions, and consider opportunities for integration and economies of scale when delivering the core components, which may require joint working between acute and community providers (for example, where providers may need specialist medical input from a neighbouring provider). This will increase the flexibility to match capacity and capability to fluctuations in patient needs and demand.



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**West Hertfordshire Teaching Hospitals NHS Trust:** The virtual hospital in West Hertfordshire is a system-wide collaborative project across primary, community, acute and the voluntary sectors that supports both step-up and step-down functions. Acting as a generic frailty model, patients are referred from a variety of services as well as case finding and then onboarded by the Virtual Hospital Hub. Patients can then receive the specialist care required for their condition (for example, cardiology, respiratory, frailty and pharmacy). In most situations, this involves the acute trust having respiratory and cardiology consultant-level virtual ward leads who have dedicated time (for example, 1 programmed activity weekly) to plan and deliver this activity in the context of an integrated MDT.

**City Healthcare Partnership Community Interest Company (CIC), Hull and East Riding:** This CIC provides a joined-up frailty virtual ward and urgent community response (UCR) service that uses a range of point of care testing, physiological measurement and imaging devices, and has access to wider diagnostics to support rapid clinical decision-making and patient management.

**North Cumbria Integrated Care NHS Foundation Trust**: British Red Cross holistic support workers are an integral part of the trust's HaH service. They address health inequalities by improving access to the service from a wider cohort of patients and improving their experience. Support workers attend daily board rounds as part of the multidisciplinary team (MDT) and undertake holistic assessment of patients to identify and meet any wider needs that might impact on patients' health outcomes and experience, including digital and health literacy, daily living needs and the safety of the home environment.

**Table 1: Core service components for providers delivering virtual wards**

| Core components | Key requirements and considerations for implementation |
|---|---|
| **Effective governance and clinical leadership, with consultant physician/consultant practitioner/GP oversight** | Virtual wards should have clear lines of clinical responsibility and effective and safe governance, with consultant physician/consultant practitioner/GP oversight for all patients, as outlined in the Supporting clinical leadership in virtual wards guidance. See appendix 2 for additional information on legal requirements.<br><br>The named consultant physician/consultant practitioner/GP for the virtual ward, which could be a doctor (including a medical consultant or a GP with an extended role), nurse or allied health professional (AHP) with consultant-level practice and knowledge and capabilities in the relevant specialty or care model, holds accountability for all patients admitted to the virtual ward |



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| | Where a patient is admitted from an inpatient ward, the accountability should be transferred before the patient leaves hospital unless the accountable clinician is the same individual in both care settings. The accountable clinician for the virtual ward may be the same person as the senior clinical decision-maker responsible for daily activities including board rounds, but this does not have to be the case.<br><br>Patients should be monitored to support early recognition of deterioration and appropriate escalation processes should be in place to maintain patient safety. Training on escalation processes should be provided to carers and staff as necessary.<br><br>Virtual wards should have processes in place to monitor clinical safety and incident reporting. This should capture learning on clinical safety, including digital clinical safety across service partners, with a route into system clinical governance. There should be regular monitoring of patient morbidity and mortality for the virtual ward, which should include reviews of clinical incidents and complaints.<br><br>Services should ensure patients and/or their carers are given information on who to contact if symptoms worsen, including out of hours. Information should adhere to the Accessible Information Standard. |
| **Operating hours (8am-8pm, 7 days a week at a minimum) and out-of-hour provision** | Virtual wards should ensure staffing for a minimum of 12 hours a day (8am-8pm), 7 days a week, with locally arranged provisions for out-of-hours cover and access to specialty advice and guidance as required.<br><br>Operating procedures should be in place to ensure support is available out of hours to manage deterioration and maintain patient safety 24 hours a day. In many cases this will involve integration of a virtual ward with existing interfaces (for example, GP out-of-hours services, community nursing, urgent community response (UCR) and NHS 111). Virtual wards should ensure that processes are in place for patients to access out-of-hours |



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| | services and that it is clear what support these services are able to provide to enable a seamless transition of care for the patient.<br><br>Virtual wards should continually review out-of-hours contracts to support any additional service demand that might emerge. This is particularly important when proactively identifying step-up demand that could be diverted from inpatient care. |
| **Clear admission criteria and assessment processes** | For all admissions to a virtual ward, a senior clinical decision-maker, under the oversight of a consultant physician/consultant practitioner/GP, should promptly assess patients to decide whether they should be admitted to a virtual ward. This may be in consultation with other specialty clinicians.<br><br>Assessment may include comprehensive geriatric assessment where indicated, calculation of NEWS2 score, Clinical Frailty Score (CFS) screening and 4AT rapid test for delirium in adults. These assessments may help risk stratify the appropriateness of virtual ward care but should not be used on their own to exclude a person from admission to a virtual ward. Paediatric early warning system (PEWS) could be used to support admission decisions for children and young people.<br><br>Admission criteria should reflect the acuity of virtual ward patients, and there should be policies in place to ensure equity of access in the admission and assessment processes and reduce health inequalities.<br><br>For patients transferring to a virtual ward from an inpatient ward (known in virtual ward terms as a 'step-down pathway', although patients will still require hospital-level care), hospital staff should proactively identify suitable patients, including during their twice daily ward rounds at a minimum. They should work with transfer of care hubs to support discharge to virtual ward care, in line with the Hospital discharge and community support guidance. The decision to admit a patient to a virtual ward will be made in conjunction with the senior |



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| | clinical decision-maker in the virtual ward.<br><br>Recognising when an individual might be in their final days or weeks of life can be a key role of a virtual ward. Appropriate assessment should occur in line with the Gold standard framework.<br><br>An assessment of a patient's holistic needs should be undertaken – or have been undertaken by/jointly with a transfer of care hub for patients transferring from an inpatient ward – to ensure that virtual ward care is adapted to the individual patient's circumstances and their wider needs. Holistic needs assessments should include a home environmental assessment, a falls risk assessment and a safeguarding assessment. An assessment of the needs of a patient's carer should also be undertaken to ensure they are properly supported, for example by reference to the carers' checklist |
| **Personalised care and support planning and shared decision-making** | Services should provide patients (and/or their carers) with adequate information to ensure informed consent for treatment on a virtual ward and make any reasonable adjustments required. If an individual lacks capacity to make informed consent, then their representative or a best interests assessor should be involved to advocate on behalf of the individual's interests and needs.<br><br>There must be a documented shared decision-making process with patients and/or carers consenting to admission with full awareness of the benefits and risks. This includes delivery of care in their home environment and carers' circumstances.<br><br>Personalised interventions, including co-produced care and support plans, should be agreed. Advance care planning conversations should occur to ensure what matters to patients is documented in a place that all staff can access and these advance care plans are respected in the event of patient deterioration. |



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| | Care should otherwise reflect of any previously agreed advance care plan |
| **Daily board rounds involving a senior clinical decision-maker, medical input and the wider MDT** | Board rounds should be overseen by a senior clinical decision-maker, occur daily, include medical input and be supported by a dedicated multidisciplinary team (MDT) encompassing a variety of disciplines as would be the case in a hospital (that is, consultant physicians/GPs, physicians, registered nurses, AHPs, advanced clinical practitioners, pharmacists). The MDT should include other relevant professionals when required, including social care teams, mental health and voluntary sector organisations.<br><br>When tasks are delegated to non-NHS staff, including social care, local services should ensure sufficient funding arrangements are in place. A record of interventions and treatments should be accessible to all appropriate professionals involved in a patient's care |
| **Hospital-level diagnostics** | All virtual wards should ensure patients have access to tests and urgent diagnostics as they would in a hospital (for example, blood tests, CT scan, X-ray and MRI) to allow for responsive and timely decision-making, in line with national guidance on access to diagnostics on virtual wards.<br><br>When setting up pathways to access tests and urgent diagnostics, services should work closely with local pathology networks to ensure appropriate clinical governance, and to avoid hospital admissions for the sole reason of accessing a test. Virtual wards may partner with care settings such as SDEC and community diagnostics centres, and should work with ICB transport leads to ensure patients can access transport to and from these settings as required. They should also consider how samples taken at home will be transported to the laboratory.<br><br>Virtual ward staff kit bags should include portable medical devices, such as in vitro point |



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| | of care testing and point of care ultrasound devices, to enhance assessments and accelerate clinical decision-making |
| **Hospital-level interventions/treatment** | Virtual wards should offer in-person visits to a patient's usual place of residence in conjunction with care management and monitoring, which can be technology-enabled. There should be access to advice and guidance from other specialists, consultant-level reviews and medicines management and optimisation. Appropriate in-person therapies should be available, such as intravenous and subcutaneous fluids, intravenous diuretics, therapy, nebulisers and oxygen. The MDT may also provide at home services, such as physiotherapy, occupational therapy, assessment and delivery of equipment to improve independence and reduce risk of harm |
| **Technology-enabled care, including remote monitoring** | All virtual wards should have the capability and capacity to use technology-enabled monitoring, where appropriate, to improve access to information that supports clinical decision-making, and support remote consultation and connections between the patient and their care team. Technology should not be used to deliver virtual care where face-to-face care is required. Services should be able to support patients, carers and care home staff with the use of technology and offer alternatives to prevent digital exclusion.<br><br>Electronic patient record (EPR) configuration should support delivery of virtual wards by enabling access to information across all delivery partners. This should also provide read/write functionality and enable the flow of clinical information from referral, assessment, admission, care delivery (including visibility of remote monitoring data) and discharge or ongoing transfer of care.<br><br>Where electronic prescribing and medicine administration (ePMA) and e-prescribing systems are not integrated with provider EPRs, these should be optimised to reduce the risks of medical error; support |



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| | process improvement; and enable integration across service partners |
| **Pharmacy, medicine reconciliation and optimisation** | There should be equitable access to pharmacy, with dedicated pharmacy professionals involved in daily board rounds and MDT meetings as required, and in the delivery of comprehensive assessments.<br><br>Virtual wards, particularly their step-up functions, should have access to medicine 'grab bags' to ensure timely access to appropriate treatments.<br><br>Processes for prescribing and deprescribing, dispensing and delivering medicines should be clearly defined and signed off by the organisation's chief pharmacist or equivalent. Where possible, medicines should either be delivered to the patient's usual place of residence or e-prescribing used to dispense medicines to a local pharmacy to limit travel.<br><br>On discharge from a virtual ward, relevant information about changes to a patient's medicines should be shared with the patient's GP and community pharmacy. This could be shared via a summary care record |
| **Clear discharge processes, including monitoring of length of stay (up to 14 days)** | Virtual wards should agree the estimated discharge date for a patient on admission based on clinical judgement and in discussion with the patient and/or their carer. Patients should be discussed daily to identify whether they still require acute care or should be discharged. Decisions should support the safe and timely discharge of people in line with the Hospital discharge and community support guidance.<br><br>The length of stay can differ for each person, but is expected to be short (especially where a virtual ward admission for diagnostics and rapid treatment replaces an ED attendance) and up to 14 days. Services should monitor length of stay to ensure it is appropriate for both patients' needs and local demand and capacity |



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| | considerationsServices should ensure early discharge planning, including early referral to transfer of care hubs for anyone likely to require an additional package of support on discharge. Suitable arrangements should be made for transferring care from the virtual ward to alternative pathways, including those led by primary, community or social care. This includes rehabilitation and reablement services as outlined in the Intermediate care framework for rehabilitation, reablement and recovery following hospital discharge; long-term condition management services (including NHS @home services); and EoL and specialist palliative care services.<br><br>There should be appropriate communication with patients and carers to ensure they understand the discharge process and are aware of onward referrals or required further management by other services |

**Devon Integrated Care System:** The virtual ward in Devon conducted a pilot to reduce potential health inequalities associated with virtual wards; further develop their relationship with the voluntary, community and social enterprise (VCSE) sector; and improve the experience of patients and their carers. As a result, patients were able to get the support they needed to use digital equipment, which had a positive impact on clinical capacity and reduced the need to bring patients back to the hospital for digital support.

**End-of-life patient story:** Pat has advanced dementia and is admitted to a frailty virtual ward after a sudden deterioration at home. Assessment, including point of care testing, identifies that she is very unwell. After discussion with her husband and daughter who have power of attorney, it is decided to proactively manage her EoL needs and not actively treat her current acute illness, as per her previous wishes. Some EoL medications are prescribed for use should she become distressed and a prescription sheet is issued. She is promptly discharged following a short stay, and referred back to her GP and to the community nurses who support both her and her family. She dies peacefully at home 4 days later.

**Operational and implementation requirements for integrated care boards**

All ICBs should consider the best practice activities in Table 2 and collaborate with relevant services and partners across their system to support their delivery. This includes improving access to virtual wards and use, with a focus on frailty, acute respiratory illness, heart failure and CYP.

**Table 2: ICB requirements for implementation**

| **1. Lead and co-ordinate strategic oversight and planning** |
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| 1a.Dedicated leadership | Good practice suggests having ICB leadership (that is, an executive lead, clinical leads and UEC operational lead) in place to provide appropriate governance and risk management of the delivery of virtual wards at a system level, as well as ensure that there is oversight of the growth, quality and use of virtual wards alongside wider UEC and system management. |
| 1b. Capacity and demand planning and management | To maximise the impact of virtual wards, virtual ward capacity should be strategically co-ordinated and delivered at a place and system level alongside existing out-of-hospital and physical hospital capacity, ensuring it is used as efficiently and productively as possible. Having a capacity and demand plan for virtual wards across the ICS can be useful, one that considers both CYP and adults and prioritises key UEC demands as well as suitable discharge arrangements including links with social care. This plan can then link into other system capacity and demand plans, including for all out-of-hospital services at ICB level in addition to Better Care Fund plans. ICBs should consider how to support the flow of operational data, including real-time capacity, to ensure accurate occupancy data is available as part of provider capacity and UEC capacity management across the system. |
| 1c.Digital transformation and use of data and technology | Good practice suggests virtual wards and their unique requirements are considered as part of wider ICB digital strategies, addressing any variability in digital maturity across all service providers, based on the What Good Looks Like framework. The use of digital technologies (for example, medical devices, diagnostic equipment, remote monitoring equipment) can enhance the efficiency of virtual wards as part of system-wide approaches to achieve economies of scale (see the Digital clinical safety strategy). ICBs should consider how to enable effective access to care information across service partners, including transfer of information from remote monitoring devices and remote diagnostic test results (including imaging), allowing patient information to be recorded remotely and supporting interoperability of EPR systems. Improved data quality and access to operational data support wider UEC system capacity management. |
| **2. Lead on alignment of referral pathways and improving system flow** | |
| 2a. Referrals and flow | ICBs, providers, services and all relevant system partners should work together locally to improve the flow of referrals to virtual wards. This includes supporting providers to |



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| | educate and support case finders and referrers, such as NHS 111, 999, primary care, community care, care homes, acute respiratory infection hubs, transfer of care hubs, inpatient settings, the voluntary sector and social care. ICBs are responsible for ensuring population and live maintenance of the information in the Directory of Services to support safe and effective referrals into virtual wards, which may require regional input to support consistency. |
| 2b. Streamlining access to step-up virtual wards | ICBs could consider the operational alignment of virtual wards with UEC to support the development and expansion of virtual wards that provide an alternative to hospital attendance or admission, particularly when accessed directly from home. Where possible, ICBs should encourage utilisation of a single point of access (SPoA) or an integrated care co-ordination (ICC) centre to maximise the use of virtual wards along with other services across a system (for example, UCR, respiratory infection hubs, SDEC, acute frailty and falls services). Good practice suggests that integrating or aligning UCR and virtual ward services can support a pathway approach and the sharing of resources. |
| **3. Lead on ensuring equitable and sustainable service provision across a system** | |
| 3a.Reducing unwarranted variation | ICBs are uniquely placed to develop a consistent offer of virtual wards and pathways across the system, in line with the functions and core components outlined in this framework. This includes implementing consistent ICS-wide admission and discharge criteria. ICBs could consider provider collaboratives to deliver virtual wards across community, secondary and primary care. |
| | Health inequalities measures should be embedded to enable equitable virtual ward access, experience and outcomes across different population groups with protected characteristics, including age, sex, race or membership of a health inclusion group. |
| 3b. ICB funding and long-term planning | The funding of virtual wards should be reflected in ICB planning to ensure their sustainability, with virtual wards built into ICB long-term strategies and expenditure plans. |
| **4. Lead on supporting workforce planning and capability with providers and places** | |



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| 4a.Supporting workforce capacity and capability | Workforce capacity and productivity can be supported by enabling providers to share staff flexibly across services as required (for example, through sharing agreements and 'passport' arrangements). In some instances, planning and investment will be needed to ensure the right specialist care can be provided across the system. ICBs can support providers to match workforce capacity to demand, following the principles of safe, sustainable and productive staffing. This should follow National Quality Board guidance on safe staffing with a triangulated approach using evidence based tools, professional judgement, comparison with peers and monitoring alongside clinical outcomes. |
| | ICBs should explore how training provision (for example, advanced clinical practice courses and training on remote clinical assessment) and opportunities can be shared across providers to support staff to develop the skills and competencies outlined in the Capabilities framework, to accompany the eLearning on the Learning Hub. |
| | Developing partnerships within local communities, including with the independent sector and other local organisations, has proven to support the capability building, particularly to ensure a diverse skill mix is available to meet holistic needs. This includes partnerships with the local authority, social care, care homes and others across the voluntary, community and social enterprise (VCSE) sector. ICBs can explore the development of plans to enable training and career routes through virtual wards, to support staff recruitment to and retention in virtual wards in line with the NHS Long Term Workforce Plan. |

**Data, outcomes and metrics**

As systems expand virtual wards, robust and consistent data is needed to assess progress in scaling services and build evidence about their effectiveness. Data should be systemically gathered on clinical effectiveness, patient safety, patient and carer experience, staff experience and resource use for virtual wards.

The ambition is to automate the flow of a new Minimum Data Set (MDS) via the Federated Data Platform (FDP), which will provide daily operational data providers and systems require as well as data for secondary use and evaluation. Data will continue to be collected via the Virtual Wards Situation Report until providers supply a patient-level flow via the FDP and the Faster Data Flows Programme.

A set of recommended virtual ward indicators and outcomes that aligns with the MDS are listed in Table 3, and should be used by service providers and ICBs to develop an understanding of the activity and impact of their virtual wards. Evaluation and research show that outcome metrics are more likely to be achieved where services are mature and



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delivered at scale and in line with the core components in Table 2 above and the operational metrics in Table 3.

The operational metrics in Table 3 can be further developed and combined with interdependent measures and outcomes across wider services and pathways (for example, ambulance referrals into UCR services and subsequent onward referrals into virtual wards) and can be used as complementary metrics. Existing local data collections and wider collection mechanisms (for example, patient surveys) should also be used to understand the impact of virtual wards.

**Table 3: Virtual ward recommended indicators and outcomes**

| | **Categories** | **Overarching indicators (1)** | **Improvement area indicators (2)** |
|---|---|---|---|
| **Operational/process metrics** | | | |
| 1 | Effective governance and clinical leadership | ICS clinical lead at board level.<br><br>Provider clinical lead at board level. | Staff survey and feedback of working in a virtual ward.<br><br>CQC well-led rating ICS MDT clinical reference group.<br><br>Safe and effective out-of-hours provision. |
| 2 | Equity of access | Operating hours (8am-8pm, 7 days a week at a minimum) and out-of-hours provision.<br><br>ICS wide admission criteria. | Access rates across geography cost-effectiveness.<br><br>Patient demographic data (for example, age, ethnicity, gender and deprivation measures) and how patient demographics compare to those of the local community. |
| 3 | Productivity | Occupancy.<br><br>Accepted and rejected referrals.<br><br>Balance of step-up to step-down referrals. | Patient throughput.<br><br>Length of stay Referrals from home/care homes.<br><br>Referrals from 999/NHS |



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|---|---|---|---|
| | | | 111/SPoAs/ICC.<br><br>Referrals from ED and SDEC.<br><br>Referrals from UCR.<br><br>Referrals from primary care. |
| 4 | Virtual ward scale and maturity | ‘Beds’ capacity per 100,000 population.<br><br>Assessment against UEC recovery matrix and other relevant tools/checklists. | Increased workforce productivity.<br><br>MDT workforce.<br><br>Patient audits including review of NEWS2 scores and similar tools. |
| **Outcome metrics** | | | |
| 5 | Attendance and admission avoidance (step-up care only) | Emergency admissions and attendances for acute conditions.<br><br>Emergency readmissions within 30 days of discharge from a virtual ward. | 4-hour ED wait times Ambulance response times.<br><br>Increased productivity in hospital services.<br><br>Cost-effectiveness.<br><br>Patient experience and choice. |
| 6 | Reduction in hospital length of stay (step-down care only) | Admissions from inpatient wards (and not medically optimised for discharge).<br><br>Hospital bed occupancy reduction for key cohorts.<br><br>Emergency readmissions within 30 days of discharge from a virtual ward. | Increased productivity in hospital services.<br><br>4-hour ED wait time.<br><br>Cost-effectiveness.<br><br>Length of stay in a hospital. |
| 7 | High-quality comprehensive | Admissions to a virtual ward.<br><br>Numbers of home visits and | Provision of comprehensive geriatric assessment. |



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| | assessment, and treatment | video consultations.<br><br>Numbers of diagnostic tests delivered.<br><br>Provision of remote monitoring as required by patients. | Routine collection of NEWS2, CF and 4AT scores as appropriate.<br><br>Provision of holistic assessment to identify wider needs including digital literacy and capacity to use remote monitoring equipment.<br><br>Provision of assessment of an individual's home environment (for example, falls risk assessment).<br><br>Health status improvement.<br><br>Advanced care planning where appropriate. |
| 8 | Improved recovery following period of acute illness or injury | Proportion of older people (65 and over) still at home 91 days after discharge from hospital.<br><br>New admissions to care homes following treatment on a virtual ward.<br><br>Referrals to recovery services, VCSE or other community services. | Provision of remote monitoring (and support to use equipment), treatments and interventions.<br><br>Proportion offered rehabilitation during or following discharge from a virtual ward.<br><br>Health status improvement. |
| 9 | Positive experience of care at home | Friends and Family Test indicators.<br><br>Survey and feedback mechanisms for patients and carers. | Carers assessments completed.<br><br>Provision of assessment of an individual's home environment, ensuring |



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| | | | |
|---|---|---|---|
| | | | appropriate safeguarding procedures are in place to protect CYP, vulnerable adults and/or carers.<br><br>CQC inpatient survey. |
| 10 | Patient safety and protection from avoidable harm | Deaths attributable to problems in healthcare.<br><br>Severe harm attributable to problems in healthcare or wider concerns (for example, safeguarding). | Incidence of healthcare associated infection and falls in hospital.<br><br>Patient safety incidents and alerts. |

Notes:

1. Overarching indicators cover the category as broadly as possible and are high-level outcomes/metrics. Some indicators will not be achieved immediately after implementation of a virtual ward; they are more for achievement in the medium to long-term.

2. Improvement area indicators are included to target those groups not covered by the overarching indicators and/or where independent emphasis is merited. These improvement areas include both sub-indicators (for outcomes/metrics already covered by the overarching indicators but meriting independent emphasis) and complementary indicators (extending the coverage of the category).

**Appendix 1: virtual wards for children and young people**

Virtual wards should be broadened to cover all ages and meet the specific needs of CYP.

Virtual wards for CYP have a positive impact on admissions, bed days and ED/paediatric assessment unit attendance and reattendance (Grout J et al, 2022). Furthermore, for CYP and their parents/carers, virtual wards can avoid the costs associated with attending appointments in secondary care (travel, childcare) and need to take time off work and miss time in education.

Virtual wards for CYP are now well-established across England for the treatment of a wide range of conditions including:

- viral-induced wheeze
- asthma
- upper and lower respiratory tract infections
- neonatal jaundice
- bronchiolitis



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- infections requiring intravenous antibiotics
- croup
- gastroenteritis

When designing virtual wards for CYP, systems should consider the specific needs of CYP including the safeguarding requirements, early warning systems to spot deterioration in children, technology requirements and the support needs of children's parents/carer(s).

**Appendix 2: virtual wards and supporting carers**

Unpaid carers should be recognised as equal partners in care who can provide vital information about the person with care and support needs. To support carers and mitigate any potential risk associated with virtual wards that unpaid carers will be asked to pick up more caring responsibilities, virtual wards must be designed in such a way that enables professionals to:

- identify unpaid carers
- signpost carers to carers' assessments and further support, such as advocacy and respite care
- involve carers as equal and expert partners in care
- be aware of carer rights under the Care Act and young carer rights under the Children and Families Act. These acts work together so that carers of all ages, and the people they support, can get the assessment and support they need
- have informed discussions with carers about the choices available for care and their right to choose the level of care they provide, including no care if they are unable or unwilling to provide any care
- ensure that carers have access to information about what to do if: they are no longer able to provide care on a virtual ward or their needs or those of the person receiving care increase

The impact on paid carers should also be recognised, including the potential for increasing social care needs for people living in care homes and those with a domiciliary care package. Should any tasks arising from virtual ward care be delegated to non-NHS staff including social care staff, local services should ensure sufficient funding arrangements are in place.

**Appendix 3: legal requirements – indemnity**

All healthcare professionals have a legal and professional requirement to hold adequate and appropriate clinical negligence indemnity cover, either through their membership of an NHS scheme via their NHS employer or arranged directly.

NHS Resolution has confirmed that NHS care within a virtual ward commissioned to be provided by an NHS organisation will be covered by one of its clinical negligence schemes.

In England most providers of NHS services are covered for clinical negligence risks by one of the state indemnity schemes run by NHS Resolution. NHS services provided by hospital trusts are indemnified under the Clinical Negligence Scheme for Trusts (CNST) while NHS services provided by general practice (that is, a GP practice, the main business of which is the provision of NHS primary medical services under a GP contract) are indemnified under the Clinical Negligence Scheme for General Practice (CNSGP). Independent sector


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providers (social enterprises and independent providers) that are direct members of the CNST are also covered under the CNST where they have been contracted to deliver NHS healthcare services commissioned by an ICS or NHS England as part of cover arrangements. However, not all social enterprises or independent providers are members of CNST – healthcare professionals should check with the organisation concerned if in doubt.

It is important that all clinicians understand what their NHS duties are and operate within the scope of their practice and their employed role. In line with their clinical competence and practice parameters, staff should safely take on higher levels of clinical acuity and complexity that may not have traditionally been part of their roles or delivered in the community.

**Appendix 4: further reading and resources**

**Improvement resources and Future NHS network**

- Getting It Right First Time (GIRFT) virtual wards
- Gold Standard Framework for end of life care
- ICS intelligence functions toolkit
- Integrated urgent and emergency care pathway maturity self-assessment
- What Good Looks Like framework
- Virtual Wards Network (on the Future NHS platform)

**National virtual wards guidance**

- Access to diagnostics on virtual wards guidance
- A guide to setting up technology-enabled virtual wards
- Pathway-specific guidance for acute respiratory illness virtual wards, frailty virtual wards and heart failure virtual wards
- Supporting clinical leadership in virtual wards – A guide for ICS clinical leaders
- Virtual wards enabled by technology: Guidance on selecting and procuring a technology platform

**Safety**

- Digital clinical safety strategy
- National Quality Board guidance on safe staffing
- Patient Safety Incident Response Framework and supporting guidance

**Pharmacy**

- Guidance on pharmacy services and medicines use within virtual wards (including hospital at home)
- The Royal Pharmaceutical Society: Interim professional standards for hospital at home including virtual wards, pharmacy services



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**Resources produced by voluntary, community and social enterprise (VCSE) partners**

- Carers UK Carers' checklist and advocacy guide
- The British Red Cross's Virtual inequality? Investigating risk, responsibility and opportunity on virtual wards (also known as Hospital at Home) for health inequalities

**Wider community or urgent and emergency (UEC) guidance and frameworks**

- Hospital discharge and community support guidance
- Intermediate care framework for rehabilitation, reablement and recovery following hospital discharge

# 8 REGULATORY PATHWAY OF THE PRODUCT

**Intelligent:** CDS systems need to be evidence based and address real-world clinical decisions that would benefit from best practice support. Self-generated data can be used to guide iterative improvement.

**Interpretable:** CDS systems need to consider the healthcare professional's knowledge of the topic, use clear and unambiguous content, and demonstrate validity and reliability of recommendations by linking to relevant explanations or evidence.

**Integrated:** CDS systems need to be designed to complement workflows. Integration with clinical systems can increase impact by embedding decision support in clinical workflows.

**Impactful:** CDS systems need to consider the experience of users, improve productivity and outcomes, and be clinically safe with mitigations made to reduce potential risks.

**Interoperable:** CDS systems need to interpret clinical data from systems to minimise manual data entry and present result data within relevant clinical systems by using open application programming interfaces (API) whenever possible. Where a relevant computable knowledge library is available, the CDS system should be configured to import high quality knowledge objects coded using global knowledge standards (Wyatt and Scott, 2020).

**Inclusive:** CDS systems need to consider a broad range of end users, be based on trusted clinical data that is representative of the target population and help minimise health inequities by standardising care.

## Requirement for Standards

### 8.1 DIGITAL TECHNOLOGY ASSESSMENT CRITERIA – DTAC

NHSX beta launched the Digital Technology Assessment Criteria (DTAC) from October 2020 to January 2021. Feedback was gathered from over 800 developers, innovators, trade and
membership organisations, digital technology assessors, buyers and commissioners, clinicians, and other interested parties (NHS Transform Directorate, 2022).

The proposed idea behind the DTAC is to equip local and national NHS and social care teams with the guidance needed to evaluate and make decisions on which health technologies they should procure or recommend to patients. With so many health apps and



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digital technologies available for use, the DTAC is vital in the decision-making process of digital technology
procurement in the UK. The DTAC will be used to evaluate all types of digital health technologies which includes:

- Public facing health apps
- Digital systems e.g., electronic patient records

The NHS (which includes hospitals, CCGs and national bodies) and social care will be encouraged to use the DTAC to assess digital health technologies. Using the criteria outlined by the DTAC, health organisations can access suppliers during their procurement process or as part of a due diligence process. DTAC is a **mandatory process** that ensures that new digital technologies meet the minimum requirements of healthcare organisations.

The criteria set out by the DTAC are focussed on 5 core areas and are as follows:

- Clinical safety - assessed to ensure that baseline clinical safety measures are in place and that organisations undertake clinical risk management activities to manage this risk.
- Data protection - assessed to ensure that data protection and privacy is 'by design' and the rights of individuals are protected.
- Technical assurance - assessed to ensure that products are secure and stable.
- Interoperability - assessed to ensure that data is communicated accurately and quickly whilst staying safe and secure.
- Usability and accessibility - products are allocated a conformity rating having been benchmarked against good practice and the NHS service standard.

Buyers and those considering health technologies should ask the developer to complete the DTAC and provide the evidence required as requested in the form. The latest edition of the form can be found at: https://transform.england.nhs.uk/key-tools-and-info/digital-technology-assessment-criteria-dtac/.

The DTAC form is not a general form. A DTAC form should be completed specifically for each interested purchaser. However, a DTAC should be completed, and evidence produced for each section to act as a template when approaching buyers. The DTAC only answers questions concerning the 5 criteria set out by the DTAC. It does not answer any questions related to the efficacy and effectiveness of a DHT.

Several standards are referenced in the DTAC form. The below sections clearly define all the necessary standards that need to be complied to by the DHT and what evidence is required to satisfy the 5 accessible criteria set out by the DTAC in the previous section.

There is a section in the DTAC form detailed around the Value Proposition of the technology. It is important to note that this section is not assessed. Questions in this section include:

- Who is the product for?
- What does it do?


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- What are the benefits?
- User journey (where data flow information needs to be included)

a) **Clinical safety**

The company will need to undertake Clinical Risk Management activities (for your technology and third-party products that are used) in compliance to **DCB0129** which is the standard that applies to organisations that are responsible for the development and maintenance of health IT systems. A health IT system is defined as '"product used to provide electronic information for health and social care purposes".

The company will also need to produce a **Clinical Safety Case Report and Hazard Log** that complies with **DCB0129** which should include:

- summary of product and intended use
- summary of clinical risk management activities
- summary of hazards identified with the required and appropriate mitigation.

The company will need to identify their Clinical Safety Officer.

b) **Data protection**

This section does apply to Origon Health Hub as the product does process patient held data and/or any identifiable data.

The company will need to use the registration self-assessment tool to confirm whether it is required to register with the Information Commissioner Office (ICO). The registration self-assessment tool can be found at the following link - https://ico.org.uk/for-organisations/data-protection-fee/self-assessment/. If iPath Digital are not required to register as a result of the self-assessment, evidence of this will need to be attached.

If iPath Digital are required to register with the ICO, then evidence of registration to ICO will need to be provided. Under the Data Protection (Charges and Information) Regulations 2018, individuals and organisations that process personal data need to pay a data protection fee to the ICO, unless they are exempt.

The company will need to identify their Data Protection Officer. A Data Protection Officer is only required if the core activities of the technology involve processing health data, which is the case for iPath Digital.

iPath Digital must ensure compliance with the standards set out in **the Data Security and Protection Toolkit (DSPT)** which is updated annually. All health and care organisations are expected to implement the **10 National Data Guardian (NDG) standards** for data security. These standards are designed to protect sensitive data, and also protect critical services which may be affected by a disruption to critical IT systems (such as in the event of a cyber-attack):

1. Personal confidential data
2. Staff responsibilities


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3. Staff training
4. Managing data access
5. Process reviews
6. Responding to incidents
7. Continuity planning
8. Unsupported systems
9. IT protection
10. Accountable suppliers

More information on the 10 NDG standards can be found at the following link: https://digital.nhs.uk/cyber-and-data-security/guidance-and-assurance/data-security-and-protection-toolkit-assessment-guides.

The company will need to complete a **Data Protection Impact Assessment (DPIA)** which shows that the technology is compliant with the requirements set out under GDPR (General Data Protection Regulations).

Questions on where data is stored and processed will also need to be answered with the key question being whether the data is stored and processed in or outside of the UK.

c) **Technical security**

The DHT must meet the industry best practice standards. The following pieces of information will need to be provided by the company:

- Cyber essentials certificate (which is incorporated in the NHS DSPT under NDG Standard 9 – IT Protection)
- Summary report of an external penetration test that includes the Open Web Application Security Project (OWASP) Top 10 vulnerabilities from the last 12 months which can be found at the following link - https://owasp.org/www-project-top-ten/.
- Security review of the custom code
- Confirmation that all privileged accounts have Multi-Factor authentication (MFA)
- Confirmation that logging and reporting requirements have been clearly defined
- Confirmation on whether the product has been load-tested

d) **Interoperability criteria**

This section is assessed based on specific use cases and the needs of the buyers, as well as the standards used within the NHS and social care.

Evidence that iPath Digital's Application Programme Interfaces (API's) set out the **healthcare standards of data interoperability** will need to be provided if the technology


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exposes its API's or integration channels for other consumers. Other evidence will also be required, and they are as follows:

- Evidence that demonstrates that the API's are relevant to the use case of the product
- Confirmation that iPath Digital follow Government Digital Services Open API Best Practice
- Confirmation that the API's are documented and freely available
- Evidence that third parties have reasonable access to connect

Some examples of healthcare standards of data interoperability include:

- **Health Level Seven International (HL7)** - a standard for medical informatics exchange between healthcare providers. Its applicable area includes order entry of many kinds, test result reporting, prescriptions, Admit/Discharge/Transfer of patient, etc.
- **Fast Healthcare Interoperability Resources (FHIR)** - the global industry standard for passing healthcare data between systems.

Further guidance on whether a DHT exposes API's or integration channels for other consumers is provided on the NHS website developer portal and Government Digital Services.

If the product does not have any APIs, then there will be a need to explain why the product does not have any that fulfil the needs of the potential buyer.

iPath Digital will need to confirm whether the technology uses the patient's NHS number to identify patient record data via NHS login.

Evidence will be required on whether the product has the capability for read/write operations with electronic health records (EHRs) **using industry standards for secure interoperability.** Examples of these include:

- **OAuth 2.0** - the industry-standard protocol for authorization. OAuth 2.0 focuses on client developer simplicity while providing specific authorization flows for web applications, desktop applications, mobile phones, and living room devices
- **TLS 1.2** - Transport Layer Security (TLS), like Secure Sockets Layer (SSL), is an encryption protocol intended to keep data secure when being transferred over a network

If the iPath Digital product is able to integrate with wearables or other personal health devices (i.e. blood pressure monitors, blood glucose monitors etc.), then the developer must show evidence compliance with **ISO/IEEE 11073 Personal Health Data (PHD) Standards.** More information regarding this standard can be found at - https://www.iso.org/obp/ui/#iso:std:iso-ieee:11073:-00103:ed-1:v1:en.



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e) **Key principles for success – Usability and Accessibility**

This section is scored in relation the **NHS Service Standard** (https://service-manual.nhs.uk/standards-and-technology/service-standard) – which help teams develop technologies that address the different needs of health service users and navigate the complexities of delivering digital services in Health and Care.

There are 17 points (the last 3 being healthcare specific – in bold) that need to be addressed and they are as follows:

1. Understand users and their needs in context of health and social care
2. Work towards solving a whole problem for users
3. Provide a joined up experience across all channels
4. Make the service simple to use
5. Make sure everyone can use the service
6. Create a team that includes multidisciplinary skills and perspectives
7. Use agile ways of working
8. Iterate and improve frequently
9. Respect and protect users' confidentiality and privacy
10. Define what success looks like and be open about how your service is performing
11. Choose the right tools and technology
12. Make new source code open
13. Use and contribute to open standards, common components and patterns
14. Operate a reliable service
15. Support a culture of care
16. Make your service clinically safe
17. Make your service interoperable

## 8.2 NICE Evidence Standards Framework

A framework exists that describes the level of evidence needed to demonstrate the effectiveness and value for digital technologies that have different functions and risks. The NICE evidence standards framework (ESF) for digital health technologies was created by NHS England, the National Institute for Health and Care Excellence (NICE), Public Health England, MedCity and DigitalHealth.London. The evidence standards framework covers **evidence standards for effectiveness and economic impact** (NICE, 2022).

It is important to note that the NICE ESF is not mandated for the commissioning of new DHTs, but it is heavily recommended that the NICE ESF is used by companies to understand how the UK health and care system evaluates DHTs. The NICE ESF is used by


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some evaluators and innovation teams within the NHS to evaluate whether a DHT should be commissioned/purchased.

The NICE evidence standards frameworks for Digital Health Tech (which is aligned with regulatory requirements) gives very good information on the type of information you will need and the risks of your device.

The NICE ESF answers questions that are not answered through the DTAC self-assessment form. By going through the process of identifying and producing the evidence required for the NICE ESF, iPath Digital will answer a key question often posed by potential buyers – **what is the efficacy and effectiveness of the technology, and does it do what the developers have described?**

Each tier has its own set of evidence standards that the DHT must meet.

The diagram below shows the different evidence tiers (NICE, 2022).

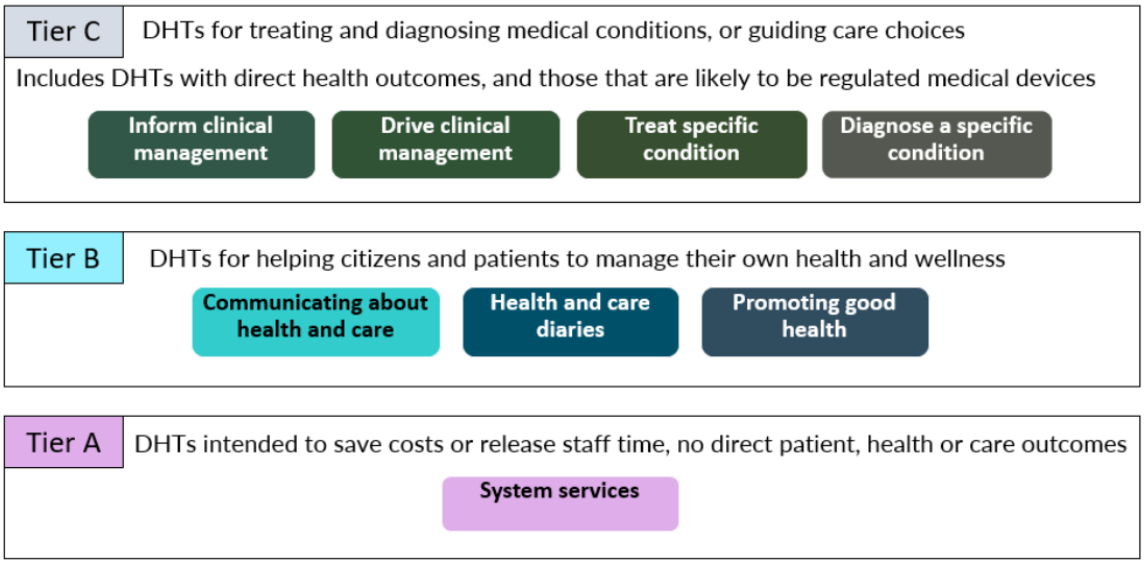


**Figure 5: Evidence tiers for DTAC. Adapted from (NICE, 2022).**

Below is the table of the evidence standards developed by NICE. There are a total of 21 standards under 5 groups that Tier B DHTs will need to comply to and provide evidence for. Standard 14 has not been included in the table as this only applies to Tier C DHTs. More information on how iPath Digital can meet each standard can be found at: https://www.nice.org.uk/corporate/ecd7/chapter/how-to-meet-the-standards.



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**Table 1: NICE ESF evidence standards for Tier B DHTs. Adapted from (NICE, 2022).**

| | |
|---|---|
| **Design Factors** - The 9 standards identify key aspects of the design process that impact the DHT's value to the health and care system, including ensuring the technology has the appropriate technical standards for safety and reliability. | 1: the DHT should comply with relevant safety and quality standards |
| | 2: incorporate intended user group acceptability in the design of the DHT |
| | 3: consider environmental sustainability |
| | 4: consider health and care inequalities and bias mitigation |
| | 5: embed good data practices in the design of the DHT |
| | 6: define the level of professional oversight |
| | 7: show processes for creating reliable health information |
| | 8: show that the DHT is credible with UK professionals |
| | 9: provide safeguarding assurances for DHTs where users are considered to be in vulnerable groups, or where peer-to-peer interaction is enabled |
| **Describing value** - The 4 standards apply across all tiers and provide information to build the value proposition of the DHT. | 10: describe the intended purpose and target population |
| | 11: describe the current pathway or system process |
| | 12: describe the proposed pathway or system process using the DHT |
| | 13: describe the expected health, cost and resource impacts compared with standard or current care or system processes |
| **Demonstrating performance** - Standards 15 to 16 are designed to help ensure that the DHT meets its performance expectations. | 15: show real-world evidence that the claimed benefits can be realised in practice |
| | 16: the company and evaluator should agree a plan for measuring usage and changes in the DHT's performance over time |
| **Delivering value** - The 2 standards apply to DHTs in all tiers and show how DHTs should demonstrate their value for money. | 17: provide a budget impact analysis |
| | 18: for DHTs with higher financial risk, provide a cost-effectiveness analysis |
| **Deployment considerations** - The 3 standards help to ensure that the claimed benefits of the DHT can be realised in practice, and apply to all 3 tiers. | 19: ensure transparency about requirements for deployment |
| | 20: describe strategies for communication, consent and training processes to allow the DHT to be understood by end users |
| | 21: ensure appropriate scalability |

## 8.3 CQC - Quality of Social Care Services

The Care Quality Commission (CQC) inspect social care services (e.g., care homes, domiciliary care etc.) and give ratings to care homes based on inspection reports of the services – Outstanding, Good, Requires Improvements and Inadequate. The overall rating given by CQC is based off five key questions. Each of these five key questions also have further granular criteria which contributes to the scoring of a care home. The five key questions and their criteria are shown below in Table 2. More information regarding the criteria and ratings characteristics can be found in a document produced by the CQC called “KLOEs and ratings characteristics for adult social care services” (CQC, 2017). The



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following link also contains an example of an “Outstanding” report from the CQC of a care home: https://www.cqc.org.uk/location/1-2038698671?referer=widget3.

**Table 2: CQC ratings key questions and criteria (CQC, 2020)**

| Key Question | Criteria |
|---|---|
| Is it safe? | Safeguarding and protection from abuse<br>Managing risks<br>Suitable staff and staff cover<br>Medicines management<br>Infection control<br>Learning when things go wrong |
| Is it effective? | Assessing needs and delivering evidence-based treatment<br>Staff skills and knowledge<br>Nutrition and hydration<br>How staff, teams and services work together<br>Supporting people to live healthier lives<br>Accessible premises<br>Consent to care and treatment |
| Is it caring? | Kindness, respect and compassion<br>Involving people in decisions about their care<br>Privacy and dignity |
| Is it responsive? | Person-centred care<br>Concerns and complaints<br>End of life care |
| Is it well-led? | Vision and strategy<br>Governance and management<br>Engagement and involvement<br>Learning, improvement and innovation<br>Working in partnership |

To sell to a UK care home, the technology has to be UKCA marked, functional and show value for money. There must be a really good reason for why the care homeowner would replace an existing system. Ideally it should also integrate with other software used by the home. When buying a technology, care homeowners must consider the effect the product would have on their CQC rating based on the criteria highlighted in Table 2. In addition to this, the CQC have fundamental standards which must be adhered to by all care homes. They can be found at the following link: https://www.cqc.org.uk/guidance-providers/regulations-enforcement/regulations-service-providers-managers.

# 9 PROCUREMENT

There are many routes to market for companies interested in supplying to the NHS (Healthcare UK, 2018). They are as follows:

- Dynamic Purchasing Systems (DPS)
- Directly to trusts or primary care organisations



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- Via NHS Supply Chain (NHSSC)
- Via collaborative purchasing arrangements
- Government tenders and contracts
- NHS Shared Business Services (NHS SBS)
- National framework collaborations and contracts

## 9.1 DYNAMIC PURCHASING SYSTEMS – DPS

The DPS is a new procurement initiative for the adoption of innovation here in the UK. It is being widely promoted by NHS England as part of the use of digital health technologies to support the provision of healthcare. The main initiatives of NHS England are to encourage suppliers to register with DPS.

The main differences between DPS and a framework is shown below in Table 2.

**Table 2: Differences between the DPS and a framework**

| Framework | DPS |
|---|---|
| • Single opportunity for suppliers to join<br>• Fixed number of suppliers at award<br>• Pricing determined up front<br>• Selection and award questions<br>• Direct award permitted<br>• More work required up front in terms of applications for the framework | • Suppliers can apply to join at any point<br>• Unlimited suppliers<br>• Pricing developed by the customer at call for competition stage<br>• Selection only questions<br>• No direct award permitted<br>• Less work required up front |

**The benefits of using a DPS over a framework are:**

- Flexibility
- Simpler and quicker process
- Automated and streamlined electronic process
- Filtering of supplier issue
- Dynamic
- More efficient
- Scalability



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The two relevant DPS for IPath Digital are **Spark DPS** (managed by the Crown Commercial Service) and the **Health & Social Care Apps DPS** (managed NHS London Procurement Partners).

The main goal of the Spark DPS is to facilitate proven technological creativity and innovation within the public sector marketplace. Through Spark DPS, customers will be able to access proven new technology innovations which have the potential to solve current public sector problems. As it is now a “dynamic” system, suppliers have a more flexible and agile route to market as the system can be tailored to government needs at any time. Overall, the Spark DPS provides an efficient structure and approach to find potential solutions for specific public sector needs.

The Spark system aims to provide solutions to problems from the old framework by easing the barriers to entry and help SMEs get access to the public/NHS market. The Spark DPS has a scope which consists of 8 key technology areas which are:

- Internet of Things
- Artificial Intelligence and Automation
- Engineering and Material Improvements
- Transport
- Simulate and Enhanced Environments
- Data
- Wearables
- Security

NHS London Procurement Partners (LLP) manage some of the DPSs from specific Lots. They are as follows:

- Language services
- Minor works and maintenance
- Non-emergency transport and other transport
- Health and social care apps
- Apprenticeship training providers

A full list of suppliers awarded under each sub-category of this DPS can be found at https://healthappsdps.orcha.co.uk/.

## 9.2 DIRECT TO TRUSTS OR PRIMARY CARE ORGANISATIONS

To directly sell to trusts or primary care organisations, the company must first identify the right contact of the trust or primary care organisations. This will usually be clinicians, the procurement team and the finance team of the associated NHS organisation. Each trust has the freedom of choice when making purchases from a manufacturer or distributor (Healthcare UK, 2018).



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Selling directly to trusts or primary care organisation has many benefits such as reduced competition, direct contact with trusts and direct contact with clinicians that are purchasing the product. However, it is difficult to identify the right buyer or decision maker that is needed to make the direct sale. In addition, each trust operates slightly differently making direct sales to trust difficult as they do not all work the same (Healthcare UK, 2018).

## 9.3 NHS SUPPLY CHAIN

Every NHS organisation can use the NHSSC (NHS Supply Chain) as an end-to-end supply chain service. The NHSCC manages the sourcing, delivery and supply of healthcare products, services and food for NHS Trusts across England and Wales.

One of the new operation model's aims are to improve efficiency of supplying to the NHS through NHSSC. This is done through the utilisation of procurement category towers that have a specific focus (e.g. medical consumables, capital expenditure etc.) to give suppliers easier access.

The category towers are listed below:

- Medical Consumables
    - Ward Based Consumables
    - Sterile Intervention and Associated Consumables
    - Infection Control and Wound Care
    - Orthopaedics, Trauma and Spine, and Ophthalmology
    - Rehabilitation, Disabled Services, Women's Health and Associated Consumables
    - Cardio-Vascular, Radiology, Audiology, Pain Management
- Capital Equipment and Services
    - Large Diagnostic Capital Equipment Including Mobile and Services
    - Diagnostic, Pathology and Therapy Technologies and Services
- Non-Medical
    - Office Solutions
    - Food
    - Hotel Services

These procurement category towers are now contracted to specific supply chains. Suppliers will now have a single point of contact that has specialist knowledge of a specific product category. Contracts for the medical category towers have been awarded to the central NHS Supply Chain Team, DHL Supply Chain Ltd, NHS Collaborative Procurement Partnership (CPP), Health Solutions Team Ltd. Contracts for the capital towers have been given to DHL Supply Chain Ltd and Akeso and Company Ltd (Healthcare UK, 2018). These companies deal


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with the Tendering processes for the award of the Framework Contracts, and it is these companies that, once awarded a Framework Contract, are NHS Approved Suppliers.

There are other companies that can help with healthcare supplies and distribution within the UK such as Bunzl Healthcare and DCC Vital (Healthcare UK, 2018).

Selling via the NHSSC provides companies with a platform to promote their product. NHS buyers have access to a database which contains the product's details. However, the database represents how competitive the market is making it difficult to stand out due to the large pool of options that the buyer has. To get into this database, the company would also have to go through an extensive tender process (Healthcare UK, 2018).

More information on the Category Tower Service Providers can be found at: https://www.supplychain.nhs.uk/categories/.

## 9.4 COLLABORATIVE PURCHASING ARRANGEMENTS

NHS organisations may work together with other local organisations to make regional purchasing agreements which saves them money as they would benefit from economies of scale. The advantage of going through this route is that you can sell to several trusts at the same time. However, in the event of a successful agreement, each individual trust will still need to sign off on the contract. Also, although the trusts are working together, they don't not all have the same amount of interest nor the same budget making it difficult to negotiate in some cases (Healthcare UK, 2018).

A collaborative procurement partnership has been formed through four procurement hubs (NHS Commercial Solutions, NHS North of England Commercial Procurement Collaborative, East of England NHS Collaborative Procurement and NHS London Procurement Partnership). This partnership operates in the procurement category tower which covers:

- Sterile intervention equipment and associated consumables
- Orthopaedics, trauma and spine, and ophthalmology
- Rehabilitation, disabled services, women's health and associated consumables
- Corporate function

## 9.5 HEALTH SYSTEMS SUPPORT FRAMEWORK

The Health Systems Support Framework has a specific scope which can be divided into 9 different service categories as follows:

- Enterprise-wide Electronic Patient Record Systems (for Acute, Community and Mental Health Hospitals)
- Shared or Integrated Care Records
- Informatics, analytics and digital tools for Population Health, Business and Clinical Intelligence
- Tools and applications that support direct patient care



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- Surveys
- Transformation and Change Support
- Patient empowerment and activation
- System Optimisation
- Workforce Development

The most relevant categories (with their accredited supplier lists) to IPath Digital are:

- Patient empowerment and activation - https://www.england.nhs.uk/hssf/supplier-lists/#patient-empowerment-and-activation
- Enterprise-wide Electronic Patient Record Systems (for Acute, Community and Mental Health Hospitals) - https://www.england.nhs.uk/hssf/supplier-lists/#enterprise-wide-electronic-patient-records-systems-for-acute-community-and-mental-health-hospitals
- Shared or Integrated Care Records - https://www.england.nhs.uk/hssf/supplier-lists/#shared-or-integrated-care-records
- Informatics, analytics and digital tools for Population Health, Business and Clinical Intelligence - https://www.england.nhs.uk/hssf/supplier-lists/#informatics-analytics-and-digital-tools-for-population-health-business-and-clinical-intelligence

As this is a framework opportunity, new suppliers can only be considered to the framework when a new procurement process opens up. New procurement opportunities are published via the government's "Find a Tender" service at - https://www.find-tender.service.gov.uk/Search.

## 9.6 G-Cloud Framework

Any company that supplies cloud services can apply to sell on the G-Cloud framework (an agreement between suppliers and the government where all the suppliers agree the same terms when applying). The G-Cloud framework provides customers from the UK public sector to find and purchase cloud services. The G-Cloud framework agreement runs for 12 months with an option to extend the agreement by a maximum of 12 months (Crown Commercial Service, 2022).

If a company is successful in their application to be on the G-Cloud framework, their service will be listed on the Digital Marketplace - https://www.digitalmarketplace.service.gov.uk/g-cloud/suppliers?_ga=2.145983412.1205525347.1596037285-714280332.1585644376.

The Digital Marketplace is managed by the Crown Commercial Service (CCS) who's role is to improve the government's commercial and procurement activity.

Below is a list of services grouped by lots (and the respective categories) that can be sold on the G-Cloud framework (Crown Commercial Service, 2022):



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- **Lot 1: Cloud hosting** - Infrastructure as a Service (IaaS) and Platform as a Service (PaaS) that can help you do at least one of the following: deploy, manage and run software and/or provision and use of processing, storage or network resources.
    - archiving, backup and disaster recovery
    - compute and application hosting
    - container service
    - content delivery network
    - database
    - NoSQL database
    - relational database
    - data warehousing
    - load balancing
    - logging and analysis
    - message queuing and processing
    - networking (including Network as a Service)
    - Platform as a Service (PaaS)
    - infrastructure and platform security
    - distributed denial of service attack (DDOS) protection
    - firewall
    - intrusion detection
    - protective monitoring
    - search
    - storage
    - block storage
    - object storage
- **Lot 2: Cloud software** - Software as a Service (SaaS) applications, usually accessed over the internet or private network and hosted in the cloud.
    - accounting and finance
    - analytics and business intelligence
    - application security
    - collaborative working
    - creative, design and publishing
    - customer relationship management (CRM)


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  - electronic document and records management (EDRM)
  - healthcare
  - human resources and employee management
  - information and communication technology (ICT)
  - legal and enforcement
  - marketing
  - operations management
  - project management and planning
  - sales
  - schools, education and libraries
  - software development tools
  - transport and logistics
- **Lot 3: Cloud support** - Cloud support to help set up and maintain cloud software or hosting services.
  - ongoing support
  - planning
  - quality assurance and performance testing
  - setup and migration
  - security services
  - training
- **Lot 4: Provision for large scale transition projects with the same scope as Lot 3** – Cloud support. Suppliers for Lot 4 will have to provide for all these category types listed under Lot 3 for larger projects. Lot 4 is different to Lots 1-3 as it will not be shown on the Digital Marketplace and requires much more work at the application stage.

G-Cloud 13 went live on the 9th of November 2022 with an end date on 8th of November 2023 (Crown Commercial Service, 2022). The end date of G-Cloud 13 has now been extended to 8th of November 2024 (GOV.UK, 2023). The application instructions for G-Cloud 13 can be found at the following link: https://www.gov.uk/guidance/g-cloud-suppliers-guide

## 9.7 CLINICAL DIGITAL SOLUTIONS FRAMEWORK

NHS LPP has established the Clinical Digital Solutions Framework which covers the following 9 lots/categories (NHS LPP, 2023):

  - Patient Administration System Solutions



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- Electronic Health and Care Record Solutions
- Pathology System Solutions
- Radiology System Solutions
- Pharmacy System Solutions
- AI and Automation Solutions
- Patient Support System Solutions
- Specialist Clinical System Solutions
- Shared Care Record System Solutions

The category that is most aligned with the IPath Digital solution is “Patient Support System Solutions”.

The framework contract runs between 01/04/21 and 31/03/25.

The list of current suppliers on this framework are as follows (NHS Commercial Solutions, 2023):

| | |
|---|---|
| Advanced Digital Innovation (UK) Ltd | Insource Ltd |
| Advanced Health and Care Ltd | Inspirata Europe Ltd |
| Agfa Healthcare | InterSystems Corporation |
| Ascom (UK) Ltd | IQVIA |
| Ascribe Ltd Trading as EMIS Health | Medisoft Ltd |
| Becton Dickinson UK Ltd | Meditech UK |
| Bramble Hub Ltd | Mela Solutions Ltd |
| BT Enterprise | Omnicell |
| Cambio Healthcare Systems Ltd | Orion Health Ltd |
| Cerner Ltd | Patients Know Best |
| CGI IT UK Ltd | Philips Electronics UK Ltd |
| Change Healthcare UK Holdings Ltd | QuadraMed Europe |
| Civica UK Ltd | RioMed Ltd |
| Clevermed | Sectra |
| CliniSys Solutions Ltd | Access UK Ltd (formerly Servelec) |
| Dedalus (prev EntServ / DXC) | Silverlink Software Ltd |
| Epic Systems Corporation | Smart Reporting GMBH |
| Extramed | Solidsoft Reply |
| GE Medical Systems Ltd | Soliton IT Ltd |
| Graphnet Health Ltd | System C Healthcare Ltd |
| Harlow Printing Ltd | Technidata |
| HD Clinical | TPP (The Phoenix Partnership) |
| Hyland Software UK Ltd | UlgenTec NV |
| IMS Maxims | UKElsevier |
| Insight Direct (UK) Ltd | WellSky International Ltd |



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## 9.8 NHS Shared Business Services - Healthcare Clinical Information Systems Framework

The NHS Shared Business Services (NHS SBS) is a provider of procurement services, finance, ICT and employment services to the NHS and other public sector organisations. To express an interest in any procurement opportunities provided by NHS SBS, businesses will need to register through their EU Supply system (https://nhssbs.eu-supply.com/login.asp?B=NHSSBS).

The NHS SBS has several different framework agreements that fall under 4 separate categories (NHS Shared Business Services, 2023):

- Business services framework agreements
- Construction and estates framework agreements
- Digital and IT framework agreements
- Health framework agreements

The category that is most relevant to the IPath Digital project is the Digital and IT Framework agreements. The Digital and IT Framework Agreements aim is to support the NHS to improve patient and social care through the application of technology and digital transformation (NHS Shared Business Services, 2023).

There are currently 12 existing frameworks in the Digital and IT Framework Agreements' portfolio. These are shown in the figure below.

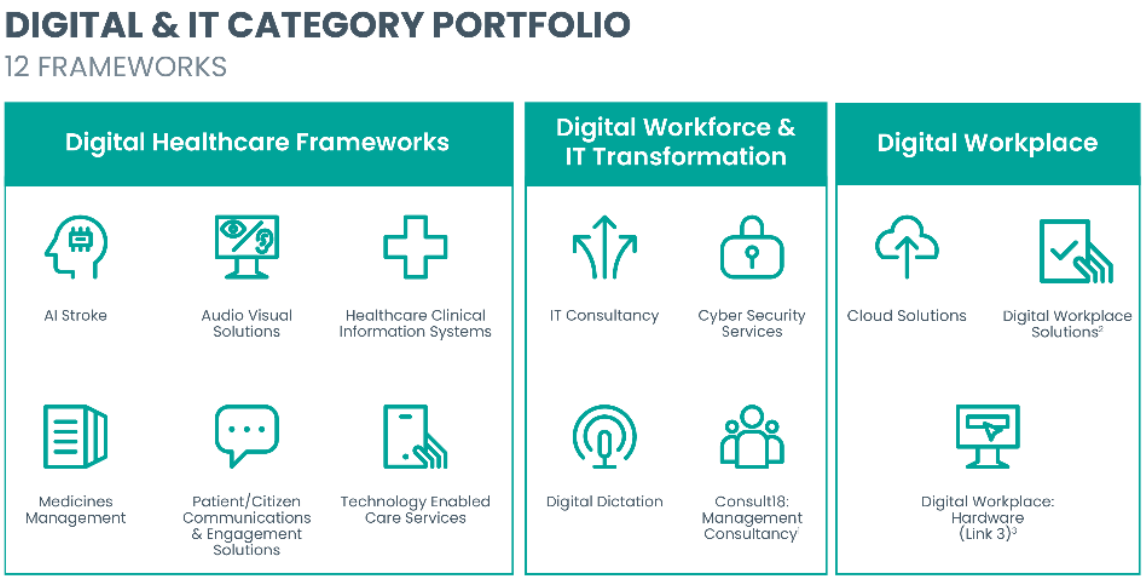


**Figure 6: Digital and IT Framework agreements portfolio. Adapted from (NHS Shared Business Services, 2023).**

The framework most relevant to the IPath Digital project is the Patient/Citizens Communications and Engagement Solutions.



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## 9.9 NHS Provider Selection Regime

The Provider Selection Regime (PSR) is a strategic framework that will be implemented and replace the current procurement framework on the 1st January 2024 under the Health and Care Act 2022. The PSR are a new set of rules revolving around the procurement of healthcare services by the following authorities in England:

- NHS England
- ICBs
- NHS Trusts and NHS Foundation Trusts
- Local authorities and combined authorities

The purpose of introducing the rules of the PSR are to:

- Increase flexibility and transparency in the procurement of healthcare services
- Support greater integration and establishment of collaborations
- Ensure that all procurement decisions are made in the best interests of patients/users

The three provider selections under the PSR rules are as follows (NHS Engand, 2023):

- "**Direct award processes (A, B, and C)** - these involve awarding contracts to providers when there is limited or no reason to seek to change from the existing provider; or to assess providers against one another, because:
- the existing provider is the only provider that can deliver the health care services (direct award process A)
- patients have a choice of providers and the number of providers is not restricted by the relevant authority (direct award process B)
- the existing provider is satisfying its existing contract, will likely satisfy the new contract to a sufficient standard, and the proposed contracting arrangements are not changing considerably (direct award process C).
- **Most suitable provider process -** this involves awarding a contract to providers without running a competitive process, because the relevant authority can identify the most suitable provider.
- **Competitive process -** this involves running a competitive process to award a contract."

The key changes under the PSR are:

- Streamlined provider selection process – allows commissioners to efficiently assess and select the providers that best meet their patient's needs.



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- Clear list of decision-making circumstances to inform procurement decisions – making it easier to integrate and enhance collaboration across services which is in line with the formation and mandate of ICSs and associated ICBs.
- Emphasis on provider quality and outcomes – providers will be evaluated on their capacity to deliver services but also at their track record of reaching positive outcomes for patients.
- Transparent performance metrics – to enable commissioners to make data-driven decisions based on performance indicators like patient satisfaction, clinical outcomes and adherence to best practices.
- Inclusion of patient feedback – for commissioners to gain further insights into the quality of care provided from a patient standpoint.

## 9.10 HEALTH SYSTEMS SUPPORT FRAMEWORK

The Health Systems Support Framework has a specific scope which can be divided into 9 different service categories as follows:

- Enterprise-wide Electronic Patient Record Systems (for Acute, Community and Mental Health Hospitals)
- Shared or Integrated Care Records
- Informatics, analytics and digital tools for Population Health, Business and Clinical Intelligence
- Tools and applications that support direct patient care
- Surveys
- Transformation and Change Support
- Patient empowerment and activation
- System Optimisation
- Workforce Development

The most relevant categories (with their accredited supplier lists) to IPath Digital are:

- Patient empowerment and activation - https://www.england.nhs.uk/hssf/supplier-lists/#patient-empowerment-and-activation
- Enterprise-wide Electronic Patient Record Systems (for Acute, Community and Mental Health Hospitals) - https://www.england.nhs.uk/hssf/supplier-lists/#enterprise-wide-electronic-patient-records-systems-for-acute-community-and-mental-health-hospitals
- Shared or Integrated Care Records - https://www.england.nhs.uk/hssf/supplier-lists/#shared-or-integrated-care-records


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- Informatics, analytics and digital tools for Population Health, Business and Clinical Intelligence - https://www.england.nhs.uk/hssf/supplier-lists/#informatics-analytics-and-digital-tools-for-population-health-business-and-clinical-intelligence

As this is a framework opportunity, new suppliers can only be considered to the framework when a new procurement process opens up. New procurement opportunities are published via the government's "Find a Tender" service at - https://www.find-tender.service.gov.uk/Search.

## 9.11 CLINICAL DIGITAL SOLUTIONS FRAMEWORK

NHS LPP has established the Clinical Digital Solutions Framework which covers the following 9 lots/categories (NHS LPP, 2023):

- Patient Administration System Solutions
- Electronic Health and Care Record Solutions
- Pathology System Solutions
- Radiology System Solutions
- Pharmacy System Solutions
- AI and Automation Solutions
- Patient Support System Solutions
- Specialist Clinical System Solutions
- Shared Care Record System Solutions

The category that is most aligned with the IPath Digital solution is "Patient Support System Solutions".

The framework contract runs between 01/04/21 and 31/03/25. The list of current suppliers on this framework are as follows (NHS Commercial Solutions, 2023):

| | |
|---|---|
| Advanced Digital Innovation (UK) Ltd | Inspirata Europe Ltd |
| Advanced Health and Care Ltd | InterSystems Corporation |
| Agfa Healthcare | IQVIA |
| Anya Health | Medisoft Ltd |
| Ascom (UK) Ltd | Meditech UK |
| Ascribe Ltd Trading as EMIS Health | Mela Solutions Ltd |
| Becton Dickinson UK Ltd | Omnicell |
| Bramble Hub Ltd | Orion Health Ltd |
| BT Enterprise | Patients Know Best |
| Cambio Healthcare Systems Ltd | Philips Electronics UK Ltd |
| Cerner Ltd | QuadraMed Europe |
| CGI IT UK Ltd | RioMed Ltd |
| Change Healthcare UK Holdings Ltd | Sectra |
| Civica UK Ltd | Access UK Ltd (formerly Servelec) |
| Clevermed | Silverlink Software Ltd |



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| | |
|---|---|
| CliniSys Solutions Ltd | Smart Reporting GMBH |
| Dedalus (prev EntServ / DXC) | Solidsoft Reply |
| Epic Systems Corporation | Soliton IT Ltd |
| Extramed | System C Healthcare Ltd |
| GE Medical Systems Ltd | Technidata |
| Graphnet Health Ltd | Tortus AI |
| Harlow Printing Ltd | TPP (The Phoenix Partnership) |
| HD Clinical | Ufonia |
| Hyland Software UK Ltd | UlgenTec NV |
| IMS Maxims | UKElsevier |
| Insight Direct (UK) Ltd | WellSky International Ltd |
| Insource Ltd | |

## 9.12 NICE MEDTECH FUNDING MANDATE

The MedTech Funding Mandate policy was introduced in 2021 to help accelerate and support the uptake of NICE approved MedTech products in the NHS (products that have gone through the process to get NICE medical technologies guidance (MTGs) or NICE diagnostics guidance (DGs)). As stated in the MedTech Funding Mandate Policy 2022/23 Guidance (NHS, 2022), the following criteria has been set up to ensure that adoption of new MedTech products would not create burdens on providers and commissioners:

i. “are effective: demonstrated through a positive NICE MTG or DG;

ii. are cost saving within three years: NICE modelling demonstrates a net saving in the first three years of implementing the technology;

iii. are affordable to the NHS: the cost should not exceed £20 million in any of the first three years.”

## 9.13 THE NICE EVA PROCESS

NICE have developed a new early value assessment (EVA) approach to assess technologies that address unmet needs and contribute to the priorities set out in the NHS Long Term Plan. NICE EVA publications utilise expert opinions (gathered by NICE) to provide insight on which technologies could provide the most value to the NHS.

NICE identify priority areas for health and social care that would benefit from evaluation. The current area selected for consideration are:

- mental health - priority clinical areas
- cardiovascular - predicting risk of heart failure
- early cancer detection
- medical technologies that boost healthcare capacity

If a technology is listed in a NICE EVA Guidance, the technology is then recommended for early use in the NHS alongside an evidence generation plan. Once the evidence outlined in the evidence generation plan is complete, NICE will be able to make a full recommendation to use the technology.



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## 9.14 PUBLISHED NICE EVA GUIDANCE ON ACUTE RESPIRATORY INFECTIONS

A NICE EVA guidance was published on 12th October 2023 on virtual ward platform technologies for acute respiratory infections at the following link - https://www.nice.org.uk/guidance/hte13.

The Care Pathway for virtual ward care (specifically for people with acute respiratory infection including chronic obstructive pulmonary disease) can be found in the guidance note published by NHS England at - https://www.england.nhs.uk/long-read/guidance-note-virtual-ward-care-for-people-with-acute-respiratory-infection-including-chronic-obstructive-pulmonary-disease/

The recommendations state that virtual ward platform technologies can only be used to monitor people over the age of 16 with acute respiratory infection if they have been referred for hospital admission or are admitted to hospital and their condition is stable or improving but needs ongoing monitoring. The technologies must have the appropriate regulatory approval and DTAC approval. The guidance document also states that virtual ward platform technologies should have the following key features (NICE, 2023):

- "interoperability with electronic patient record systems and associated medical devices
- appropriate regulatory approval for associated medical devices (devices must also meet local testing standards and be validated for use in a place of residence)
- validated accuracy in people with black or brown skin for devices that measure oxygen saturation
- risk-stratified alerts (for example, red, amber or green) for healthcare professionals for when readings go outside of the agreed range (alerts can be based on device-measured vital signs or questionnaire responses)
- trend-based alerts (to increase specificity) if they are using continuous-monitoring wearable devices
- patient interface with an easy to use, user-centred design"

As part of NICE's scoping process for the EVA guidance, 20 companies were identified, and 13 companies provided specific information on their technology. These 13 companies have fulfilled the key features requirements that virtual ward platform technologies should have. They are as follows:

- Clinitouch (Spirit Health)
- Current Health (Current Health)
- Doccla Virtual Ward solution (Doccla)
- DOC@HOME (Docobo)
- Feebris (Feebris)
- Huma (Huma)
- Inhealthcare Digital Health Platform (Inhealthcare)



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- Lenus COPD Support Service (Lenus Health)
- Luscii (Luscii Healthtech)
- RespiraSense Hub (PMD Solutions)
- Virtual Ward Technologies (Virtual Ward Technologies Ltd)
- VitalPatch remote patient monitoring solution (MediBioSense Ltd)
- Whzan Blue Box (Solcom)

To get to a full recommendation, further clinical and economic evidence on the following will need to be gathered (NICE, 2023):

- "length of virtual ward or hospital stay
- hospital admission and readmission rates
- number of alerts when using a virtual ward (including false-positive and false-negative alerts)
- costs and resource use (including virtual ward service delivery costs)
- patient and carer experience and acceptability (including carer burden)
- demographics of the people admitted to a virtual ward (including information relating to health inequalities)
- healthcare professional experience and acceptability
- number of contacts with other healthcare providers, such as GP visits, home visits and calls to 111"

The EVA publication also described the implementation considerations for virtual ward platform technologies (specifically in the application for acute respiratory infections). As per the document, the guidance states the following implementation considerations (NICE, 2023):

- To enable safe and effective implementation of these technologies, the evidence generation study should ensure:
    - Interoperability of the virtual ward platform with local health records, so that healthcare professionals have timely access to data from ongoing patient monitoring.
    - Healthcare professionals have adequate training in the use of these technologies.
    - Clear information and adequate support is provided to patients and their carers.
- Key challenges to implementing the collection of sufficient data to inform evaluations include:
    - Cost and resource requirements of collecting data and implementing the required standards and definitions.


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- Heterogeneity in possible virtual ward models, which may include multiple treatment pathways, step-up and step-down care models and differences in admission criteria. This also includes potential differences in technologies used, for example, whether technologies offer continuous or intermittent monitoring, and what level of adherence is achieved for wearable devices.
- Low levels of occupancy in virtual wards that are yet to fully roll-out or reach their target capacity may mean that conclusions from early operations may not be transferrable to later, more mature operating models and activity levels.
- The development of standardised definitions and guidance for recording virtual ward spells and the relationship to inpatient care. For example, early step-down virtual ward recording differed in whether the inpatient episode ended on transfer to a virtual ward or on discharge back to primary care. Adequate guidance and recording standards would need to be developed and taken up by virtual ward operators.
- The ability to set up and maintain data flows to automate and submit required data, and the compatibility of electronic patient records and other systems used to collect data. Interoperability of clinical informatics systems is important for safe and effective implementation, and subsequent evaluations of outcomes. However, virtual ward providers may need resources and time to set up such data sources.
- Technologies and systems used to facilitate virtual wards should have appropriate licencing and standards.
- Implementation may have an additional burden on clinical staff, for example, the need to have training before implementation, data collection and follow up.

## 9.15 Establishment of ICSs

In July 2022, the Health and Care Act 2022 was completed with ICSs being legally established. Each ICS will have its own ICB (integrated Care Board) and an ICP (Integrated Care Partnership) which manages the region governed by the ICS (NHS Digital, 2022). The ICP acts as a statutory committee between the ICB and each of the local authorities, care providers and other key partners within the geographical region the ICS manages. The responsibilities of the ICB and ICP are shown below (NHS Confederation, 2022):

- The ICB is responsible for –
  - planning NHS services, including ambulances, primary care, mental healthcare, hospital (acute), community and specialist care.
  - reporting to NHS England with regards to NHS Spending and ICS performance.
- The ICP is responsible for –
  - public health
  - social care
  - wider issues impacting the health and wellbeing of the local populations



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The ICSs will now replace the CCGs (Clinical Commissioning Groups) to act as the new centres of leadership for healthcare at the regional level (NHS Digital, 2022).

ICSs are “local or regional partnerships between healthcare commissioners, provider organisations, and the wider local authority and other local organisations involved in health and social care service provision in England". There will be 42 ICSs who will each provide leadership for the 42 different regions (Tussell, 2022).

The overall aim of all 42 ICSs is (NHS Confederation, 2022):

- Improving population health and healthcare
- Tackling unequal outcomes and access
- Enhancing productivity and value for money
- Helping the NHS to support broader social and economic development

ICSs have been formed to address the fragmented nature of the health and social care by being the centre of leadership across local networks of healthcare bodies. Different parts of health and social care being managed by different authorities i.e., CCGs and local authorities leading to the fragmented nature and inefficient care pathways (Tussell, 2022).

The different ICSs will all be at different stages of integration. Some ICSs will be more integrated and digitally mature compared to others and this will influence the procurement process for suppliers. Not only will the supplier have to engage and cater to the needs of the local providers, but there will also be a need for the supplier technology to adhere to the needs of the ICS and the strategy outlined by the ICBs. Generally, there will also be a much higher demand on how the technology would help ICSs to improve their integration further (Tussell, 2022).

There are also several companies that are on the accredited supplier lists for shared or integrated care records which is also of relevance to the IPath Digital project due to the legal establishment of ICSs (Integrated Care Systems). A list of these companies can also be found at - https://www.england.nhs.uk/hssf/supplier-lists/#shared-or-integrated-care-records.

## 9.16 Social Prescribing

Social prescribing is a holistic approach to healthcare that has gained significant attention in the United Kingdom (UK) in recent years. It involves the referral of individuals by healthcare professionals from local agencies (e.g. GPs, pharmacies, hospital discharge teams, social care services) to non-medical services and activities within the community to support their overall wellbeing and address social, emotional, or practical needs that may impact their health (NHS, 2022).

The concept behind social prescribing is based on the recognition that many health issues are interconnected with social determinants such as housing, employment, education, loneliness, and lifestyle factors. By addressing these underlying social factors, social prescribing aims to improve individuals' physical and mental well-being, enhance their quality of life, and reduce the burden on healthcare services.


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The main targets for social prescribing include those:

- With long-term or chronic conditions
- That need mental health support
- That are isolated causing loneliness
- That have complex social needs

The process of social prescribing typically involves a healthcare professional, such as a general practitioner (GP), assessing a patient's needs beyond their medical condition. If it is determined that the individual could benefit from non-medical support, they are referred to a link worker or social prescribing coordinator. Link workers are trained professionals who act as a bridge between healthcare services and community resources.

Once referred, the link worker engages in a conversation with the individual to understand their interests, concerns, and goals. Based on this assessment, the link worker then signposts or connects the person to appropriate community services and activities. These services can include a wide range of options such as:

1. Physical activities: Exercise classes, walking groups, sports clubs, dance classes, gardening projects, etc.
2. Arts and creativity: Art therapy, music groups, drama workshops, creative writing, photography, etc.
3. Support groups: Peer support networks, self-help groups, bereavement support, addiction recovery groups, etc.
4. Volunteering opportunities: Community projects, charity work, mentoring programs, befriending services, etc.
5. Education and learning: Adult education courses, language classes, vocational training, workshops on specific skills, etc.
6. Healthy lifestyle programs: Cooking classes, nutrition advice, weight management programs, smoking cessation support, etc.
7. Well-being and mental health services: Counselling, mindfulness sessions, stress management workshops, meditation groups, etc.

The link worker maintains regular contact with the individual, providing ongoing support, monitoring progress, and making adjustments as needed. They may also collaborate with other healthcare professionals, community organizations, and social services to ensure a coordinated and holistic approach to the individual's care.

Social prescribing is seen as a way to empower individuals, promote self-care, and enhance community engagement. It recognizes that health is influenced by a range of factors beyond medical interventions and aims to address the root causes of health issues rather than simply treating symptoms. By connecting people to appropriate community resources, social prescribing promotes social inclusion, reduces isolation, and supports individuals in taking control of their own health and well-being. This is illustrated below in Figure 7.



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**Figure 7: The Social Prescribing Model developed by NHS England in partnership with key stakeholders. Adapted from (NHS England, 2023).**

In the UK, social prescribing has gained substantial recognition and support from the National Health Service (NHS) and government agencies. It is viewed as a valuable complement to traditional healthcare services and an effective means of reducing healthcare costs while improving patient outcomes and satisfaction. Many local areas in the UK have implemented social prescribing programs, and there is ongoing research and evaluation to further understand its impact and refine its implementation.

Social prescribing makes up a key component of the Universal Personalised Care (which is a key part of the NHS Long Term Plan). NHS England has committed resources to building the necessary infrastructure to facilitate social prescribing and better personalised care in primary care so that at least 900,000 people will be referred to social prescribing by 2023/24 (NHS, 2022).

As of 2022, there were 70 Social Prescribing Programmes and over 450 Social Prescribing Link Workers in London. Figure 8 shows the London Social Prescribing Map which maps out all the Social Prescribing services as well as other service models, key contacts for networking and good practice sharing across London (Transformation Partners in Health and Care, 2022).



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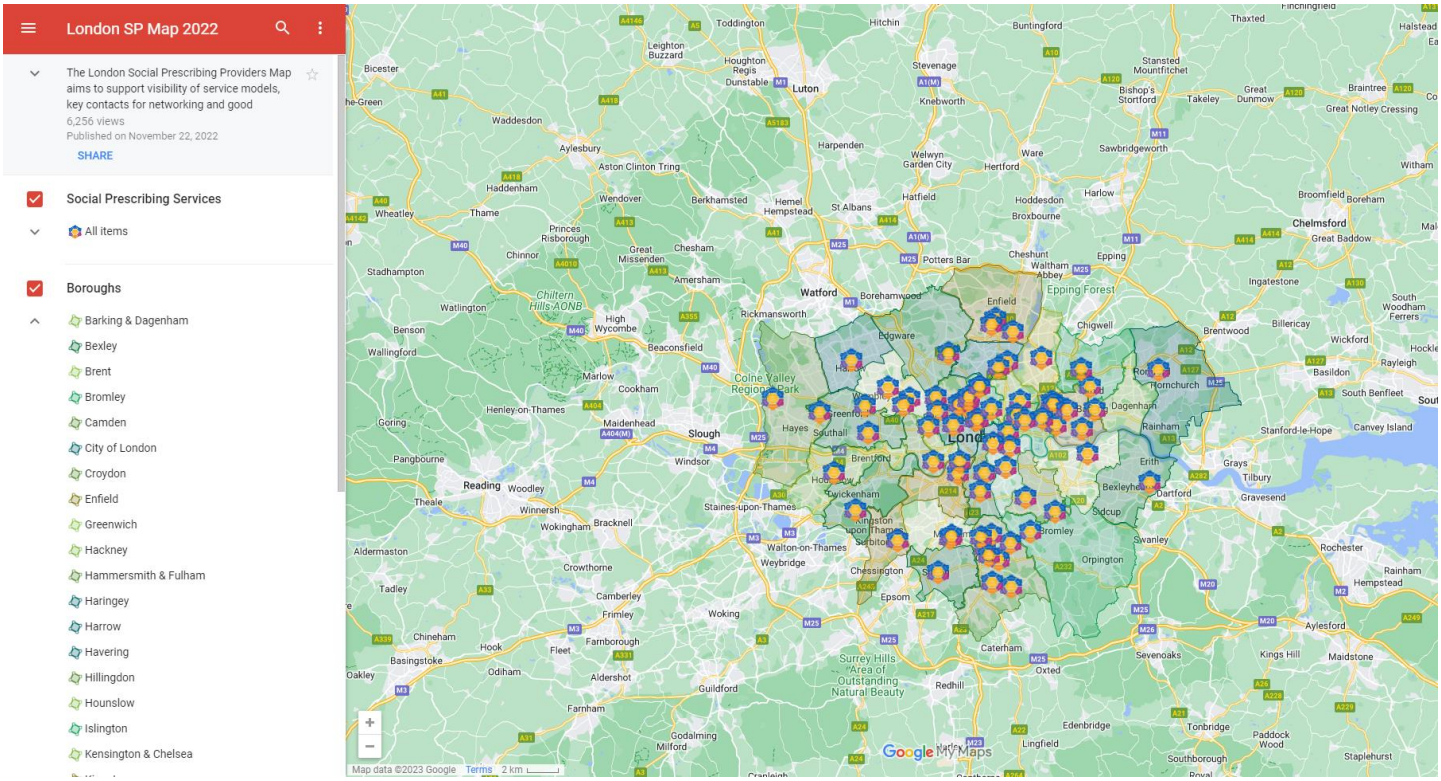


**Figure 8: The London Social Prescribing Map. Adapted from (Transformation Partners in Health and Care, 2022).**

The overall aim for the NHS is to build an infrastructure for social prescribing in primary care. Targets are set for Primary Care Networks (PCNs) to ensure that people will benefit from personalised care. Additional contract requirements for PCNs are added in every year to further embed social prescribing into primary care and to expand its reach to the local populations. In 2022/23, an additional contractual requirement for PCNs to provide a "proactive social prescribing service" which means that PCNs must work with a population experiencing health inequalities to proactively offer social prescribing interventions (NHS England, 2023).

In 2023/24, the main target will be to digitise personalised care and support planning across multiple settings of care (including social care). As stated in the "Network Contract Directed Enhanced Service" document published by the NHS in March 2022 (NHS, 2022), a new contractual requirement will be added to achieve the target of digitising personalised care and support planning: "By 31 March 2024, a PCN must have worked with other PCNs, their commissioner and local partners, to implement digitally enabled personalised care and support planning for care home residents."

## 10. Partner Search

Search criteria: MDT, digital health, Oncology, cardiovascular, dementia

- **GPDQ (UK)** – Multichannel provider of MDT primary care in the community
- **Virtual Health Labs (UK)** - Digital health start-up with two initial products - both with some traction. An intelligent conversational agent to help people with behavior



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change, and an immersive virtual reality experience to help people with cancer cultivate self-compassion.

- **Rosch projects (Now EALTRAUK Ltd)** – Digital platform to support cancer services
- **IRhythm Inc (UK)** – Digital healthcare company redefining the way cardiac arrhythmias are clinically diagnosed by combing our wearable biosensing technology with cloud-based data analytics and machine-learning capabilities
- **VAR Healthcare (Germany and Norway)** – practical digital tool for decision support in nursing practice. By making knowledge easily accessible, its impact is positive on focus areas like patient safety
- **DNV IMATIS Ltd (Norway)** - Norwegian developer of digital health solutions that help clinical, operational and administrative teams work together more efficiently through the provision of real-time communications and data within hospitals and across community healthcare providers. We also enable patients to be more engaged in their care journey through patient focused tools.
- **Card Medic Limited** - CardMedic is a unique, cost-effective and multi-award-winning app that improves communication between caregivers and patients across any barrier, including foreign language, deafness, blindness, cognitive impairment, poor literacy levels, or PPE.
- **Adherium Europe Ltd (New Zealand)** – Manufacturers of the Hailie Digital Inhaler platform, to monitor inhaler use, technique and feedback to clinical teams
- **Co-opts Ltd (UK)** - We are building digital tools for mental health practitioners to improve access and outcomes for patients.
- **Escavo –** Develop mobile applications and clinical decision support tools for healthcare professionals
- **Kinetikos Health** - Kinetikos Health is a digital health company on a mission to revolutionise the standard of care for Movement Disorders. We instantly translate patients´ movement data into clinical insight for accurate assessment and treatment monitoring, while improving quality of life through continuum care.
- **Advanced Expert Systems Ltd -** Artificial Intelligence (AI) company based in Derby, UK. established in 1989 and has been operating successfully in the Healthcare markets for more than 20 years and defence markets for more than 30 years. Renowned innovator and developer of AI systems for defence and unique AI Clinical Decision Support Systems (CDSS) for the Healthcare markets using AI technology.
- **Shaddari Inc. (Canada) -** Shaddari is a precision medicine company. We offer a clinical decision support software to hospitals, allowing doctors to predict the effects of drugs before administering them to their patients.
- Medifit Instruments Ltd - We currently develop and market digital health monitoring technology. We specialise in technologies for the real-time monitoring of Autonomic Nervous System as well as cardiovascular and hypertension monitoring and screening.
- Prowellness - ProWellness develops innovative software solutions for chronic diseases management, including e.g. diabetes, cardiovascular and heart diseases, chronic respiratory conditions. In the UK we operate via our UK subsidiary, ProWellness UK Ltd; our clientele includes e.g. NHS hospitals.


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# 11. REFERENCES


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