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Cwm Taf Morgannwg
University Health Board

Population Health Management in Practice – A Review 2021-2026





Authors:

Gemma Northey, Consultant in Public Health

Samantha Roberts, Senior Public Health Practitioner

Maura Matthews, Senior Public Health Practitioner

Reviewed by

Dr Andrea Gartner, Principal Public Health Intelligence Analyst

Ciarán Slyne, Advanced Public Health Intelligence Analyst

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Executive summary

Introduction

This report was commissioned to collate and understand learning from several pilot population health management (PHM) projects undertaken across Cwm Taf Morgannwg University Health Board (CTMUHB) area since June 2022. As the first health board in Wales to have a data infrastructure capable of supporting a PHM approach, this learning is valuable to inform not only the next steps here in Cwm Taf Morgannwg (CTM) but also across the Welsh health system.

In total eight projects were reviewed, dating from June 2022 up until the present day. In a desktop review, project team members conducted analysis of project process evaluations, patient case studies, project data, qualitative interviews, surveys and questionnaires.

Key findings



1,210+
patients proactively
contacted



555+
patients referred
to targeted
interventions

Reduced the risk of winter exacerbations of chronic obstructive pulmonary disease (COPD) by increased compliance with NICE management guidance



Reduced the risk of crisis related to frailty and fuel poverty with an indicated benefit of a reduction in GP contacts and risk of A&E attendances as reported in the Taff Ely Outcomes Evaluation



Quantitative data from focus groups, semi structured staff interviews and case studies reporting patient benefits and acceptability of the PHM proactive approach



Enabled earlier, preventative intervention and better system coordination



Average project costs of £6000 per project from various sources (Primary Care Clusters, Local Public Health Team, Welsh Government Six Goals Fund) excluding PHM staffing costs



Recommendations

Embed PHM within routine service delivery



Strengthen the use of PHM data and analytics



Develop a PHM training and support programme



Improve evaluation and outcome measurement



Strengthen partnership working and referral pathways



Explore behavioural approaches to increase patient engagement



Consider longer-term funding and strategic alignment



Executive foreword

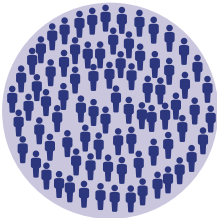
Population health management (PHM) provides an important opportunity to move health and care services towards a more proactive, preventative model of care. By using data and analytics to identify individuals at risk of poorer health outcomes, PHM enables earlier intervention, improved coordination of services, and better support for patients within their communities.



Cwm Taf Morgannwg University Health Board (CTMUHB) has been at the forefront of this work in Wales. As the first health board with the data infrastructure required to support a PHM approach, we have been able to pilot and test innovative approaches to identifying and supporting patients who may benefit from targeted interventions.

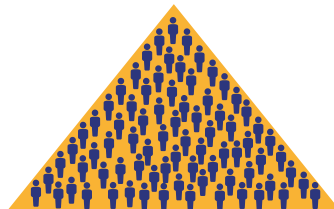
As we continue to transform how care is delivered, the learning from these pilots will help inform our future work both locally and across the Welsh health system. I would like to thank all those involved in delivering these projects and contributing to this review. Their commitment to innovation and collaboration is helping to shape a more proactive and sustainable approach to improving population health.

1.1 What is population health management?



Public Health

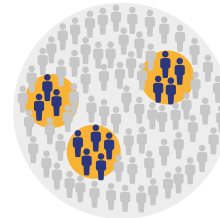
Is the science and art of preventing disease, prolonging life and promoting health and wellbeing, through the organised effort of society.



Population Health

Improves the health of an entire population.

It is about improving the physical and mental health outcomes and wellbeing of people, whilst reducing health inequalities within and across the population. It includes action to reduce the occurrence of ill-health, including addressing wider determinants of health delivering social justice and working with communities



Population Health Management

Improves population health by data-informed planning and delivery of proactive care to achieve maximum impact for the health and wellbeing of the population.

Linked datasets are used to segment, stratify and model the local 'at risk' and 'rising risk' cohorts that in turn are used to design, target and personalise interventions to deliver proactive care and proportionate universalism to reduce health inequalities.



Figure 1: Definitions

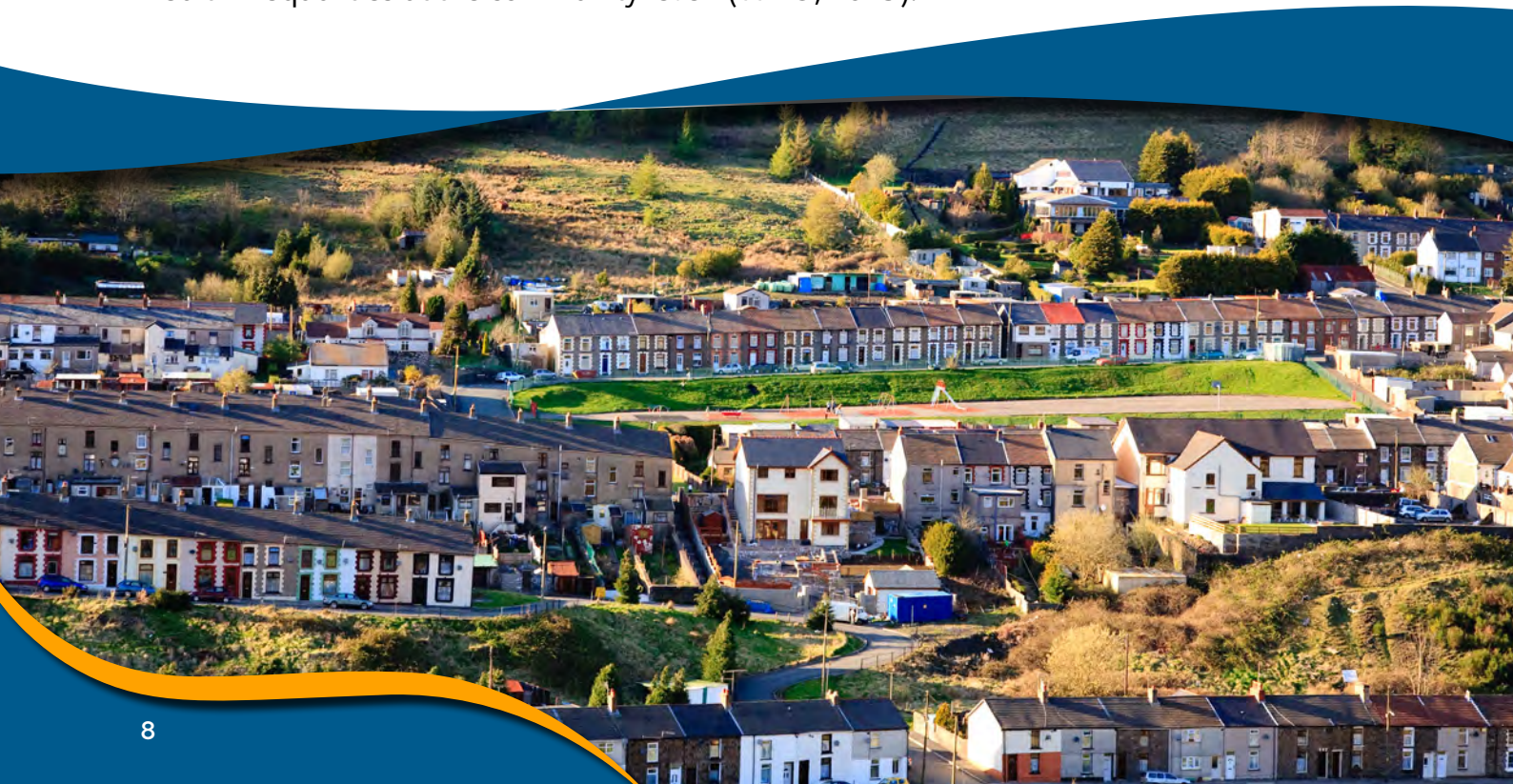
Population Health Management (PHM) is defined as:

“an approach that improves population health by data-informed planning and delivery of proactive care to achieve maximum impact for the health and wellbeing of the population. Linked datasets are used to segment, stratify, and model the local ‘at risk’ and ‘rising risk’ cohorts that in turn are used to design, target and personalise interventions to deliver proactive care and proportionate universalism to reduce health inequalities.”

(Welsh Government, 2026).

Models used to employ a PHM approach include population segmentation and risk stratification. Segmentation “is the process of dividing a population into groups based on criteria identified to meet the needs of each group” (CTMUHB, 2025). Risk stratification “groups individuals according to their risk of experiencing an adverse event, such as a particular health outcome or their healthcare utilisation” (CTMUHB, 2025).

Information-based decision making for service planning and intervention delivery at population level, rather than generically prescribed public health information campaigns arguably offer a more streamlined and targeted proposal to NHS Health Boards facing continued budgetary constraints and resource losses (George et al, 2025). The World Health Organisation highlight that “by focusing on the social determinants of health and psychosocial needs, population health management can help primary health care providers in adopting a holistic and proportionate universalism approach to address health inequalities at the community level” (WHO, 2023).



1.2 PHM in primary care

Primary care services provide a first point of contact for patients and account for more than 90% of contact with the NHS in Wales; it plays an important role in early intervention but is under increasing pressure due to rises in demand and capacity limitations (Wales Audit Office, 2018).

Prudent healthcare is a way of shaping the NHS in Wales to ensure it adds value, contributes to improved outcomes and is sustainable. One principle of prudent healthcare is to 'care for those with the greatest health need first, making the most effective use of all skills and resources' (Welsh Government, 2016).

PHM can support with understanding patient populations, their need and use of health care resources to improve population health. The PHM team in Cwm Taf Morgannwg University Health Board (CTMUHB) leads on the development and application of PHM approaches. Population segmentation (PS) is one method which has been implemented, that uses linked primary and secondary care data to group the population of CTMUHB into ten population segments. The segments broadly range from lowest to highest need, as shown in Figure two.



Population Segmentation groups together individuals with similar health care need; this can help us find specific groups of patients to target for preventative care.



Increasing health care utilisation and comorbidities

Low need, no chronic conditions		Low need, primary care only, single condition		Some need, primary care only, multiple conditions		Moderate need in one or more settings, few chronic conditions		High need in some settings		Highest need in most settings	
1	2	3	4	5	6	7	8	9	10		
Very low use, no chronic condition; younger	Low use, average primary care; younger	Managing single chronic condition in primary care; low use	Managing multiple chronic conditions in primary care	Higher A&E only, no chronic conditions; mostly young	Raised GP, higher prescription; some outpatients; 1 chronic condition; older	Higher GP, prescription, A&E; some outpatients; 1-2 chronic conditions	High emergency care; raised GP; higher outpatients; few chronic conditions; young	Highest need in most settings, not acute; oldest	Highest need in most settings including acute; oldest		

Figure 2: CTMUHB PHM segmentation

1.2.1 Demand pressures on primary care

Adopting PHM approaches is a strategic priority for CTMUHB primarily to shift from a reactive, illness-based system to a proactive, preventative one, ensuring long-term sustainability in the face of rising demand and financial constraints. This approach is designed to address high levels of chronic disease, an ageing population, and significant health inequalities by using data to target interventions more effectively.

2 Background

2.1 Evidence base for PHM approaches

A systematic review in the European Journal of Public Health found that approximately half of included studies reported statistically significant improvements in clinical indicators for conditions such as diabetes, hypertension and asthma when PHM models (e.g., risk stratification, care coordination, medication review) were used (McNamara et al., 2024)

PHM approaches have been used in recent years across England. Dorset Integrated Care System (ICS) (NHS England, 2022) used PHM to proactively target COPD patients and tailor the intervention delivery to the risk stratum using nurse lead or social prescriber lead interventions. Whilst Humber Coast and Vale ICS used PHM to proactively target patients and deliver a social prescription lead intervention, focusing on the “what matters” conversation (NHS England, 2022). Both case-studies are seen as early innovators in this field of study. “National Health Service (NHS) policymakers are eager to mandate the use of data analytics to inform healthcare planning and prevention, little is known about what happens in practice.” (George et al., 2025). Other case studies where PHM approaches have been used to ease winter pressures on A&E departments are those delivered through the Sollis and Gloucestershire Clinical Commissioning Group (CCG) partnership project. As part of their winter planning strategy, Gloucestershire CCG engaged Sollis to help build case finding reports to identify patient cohorts at high risk of attending A&E. One report identified older, higher risk patients with COPD. Another report identified older patients with left ventricular systolic dysfunction (LVSD). Identifying these cohorts helped the CCG to plan interventions, which aimed to reduce the risk of an emergency admission (Sollis, 2022). Abel et al., (2018) highlighted a complex intervention identifying broad criteria and providing patient centred goal setting, care planning, and community social prescribing in Frome. This study was associated with significant reductions in unplanned admissions to hospital.



2.2 Organisational steer

Two Acts have been passed which highlight Welsh Government’s use of legislation as a tool to improve population health, which identify the role of local organisations to ensure that these are met and delivered. The Wellbeing of Future Generations Act (2015) seeks to improve the “social, economic, environmental and cultural well-being of Wales”. The Act sets how public bodies must work together to improve the well-being of Wales. The Public Health (Wales) Act (2017) seeks to avoid preventable harms and encourage good health. Both Acts provide a national steer and requirement for the local delivery of population health as defined in Figure 1.

The Welsh Government's strategy for frailty focuses on proactive, integrated, and person-centred care to support older people to live independently and healthily. Aligned with "A Healthier Wales" and the "Age Friendly Wales" strategy, the approach emphasizes early intervention, community support, and managing complex needs to reduce inequality and enhance system resilience.

The recent Welsh Government strategy document "*Primary Care Model for Wales (PCMW)*," (2025) presents a community by design approach and identifies key roles for health boards in Wales to produce a health care system focused on prevention. It specifically mentions the role of embedding PHM approaches in care pathways, enabling PHM analytics to segment, stratify and proactively support rising high-risk cohorts. It promotes the commissioning of prevention bundles in chronic and urgent /same day care pathways.

PHM is supported by other key strategic approaches such as value-based health care (VBHC), which focuses on improving patient outcomes that matter most to individuals relative to the cost of delivering that care. It moves beyond measuring activity volume to measuring the effectiveness of care throughout the entire patient journey.

The importance of adopting a PHM approach in CTMUHB was first highlighted in the Director of Public Health's Annual Report "The Fifth Wave" (Nnoaham, 2017). The report called for an agreement across partnerships, collaborating for a shared vision, and harnessing collective resources to capitalise on new and innovative ways of working. Ensuring the whole partnership contribution is greater than the sum of its parts.

In 2018/19 CTMUHB conducted a pilot project on population health management. The "Rhondda Pilot" (Nnoaham and Cann, 2020) aimed to determine if it would be possible to collect primary, secondary and other data variables for the purpose of analysis and to better understand the health needs of its population. The pilot showed that multi-morbidity was a better predictor of healthcare utilisation and costs rather than the use of age alone (Figure 3).

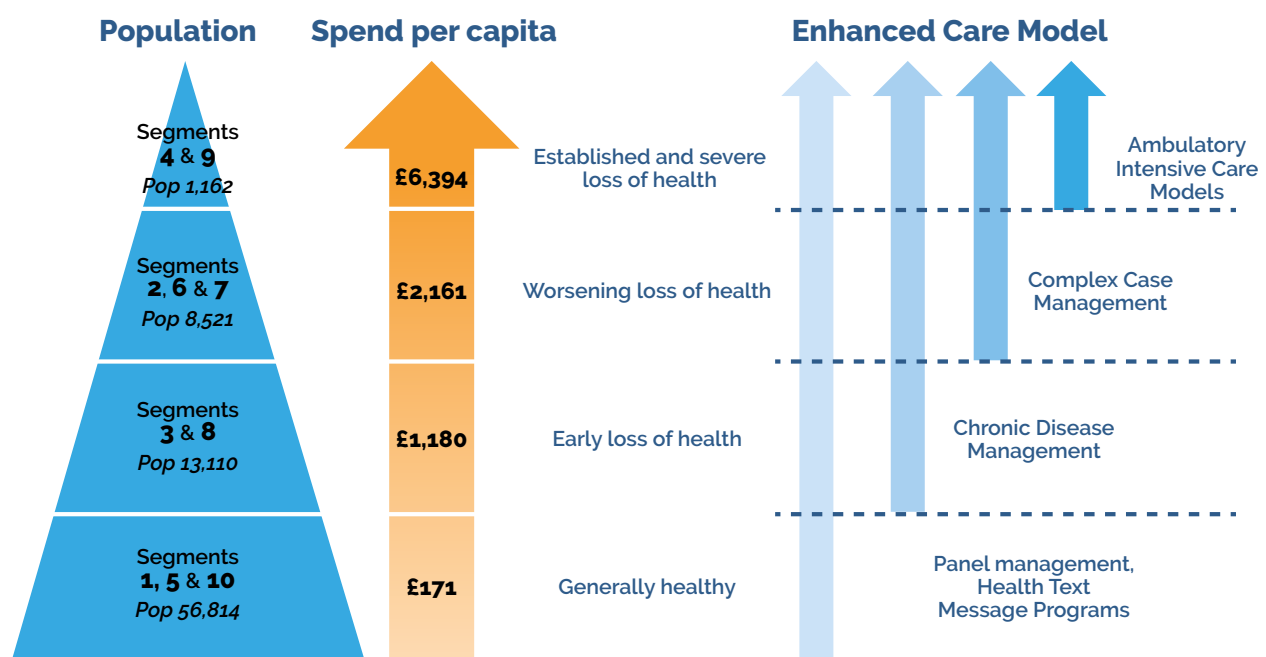


Figure 3: CTMUHB Segment Development with Cost per Capita (2020)

The PHM team in CTMUHB leads on the development and application of PHM data. The method implemented in CTMUHB links primary and secondary care data and groups the CTM UHB population into ten population segments (Figure 2). CTMUHB developed the data-driven CTM population segmentation model in-house and also published the work on the predictive ability of the model in an academic paper (Gartner et al, 2024). The segments range broadly from 'low need - no chronic conditions' to 'highest need in most settings - multiple chronic conditions'. This forms the CTM population segmentation (PS) model.

All but one GP practice agreed to be part of the population segmentation and risk stratification (PSRS) programme. Since March 2022, these practices have had access to PSRS data within the primary care information portal, supported by Digital Health and Care Wales (DHCW). As a population health organisation, CTMUHB is committed to working "with its communities and partners to improve health and wellbeing" (Nnoaham, 2021). Understanding the potential benefits of integrating a population health management approach could "facilitate sustainable healthcare transformation by targeting interventions that prevent ill health, improve care and support for people with ongoing health conditions, and reduce inequalities in health outcomes", (NHS Confederation, 2023).

The data driven segmentation model was developed through a data flow using the Secure Anonymised Information Linkage (SAIL) data bank. With data flowing into all bar one practices, strategic direction turned to the application of the data. "Although health and care integration and the population health approach are not entirely new concepts in the NHS, the concrete operationalisation of the strategies that link them is still largely missing in Wales." (Nnoaham, 2021).



2.3 Local context and need

The population of CTMUHB is increasing with the number of residents estimated at **449,346** in 2024. The **proportion of older people** (>65 years) has the highest increase and is **projected to rise by 19.5% in 2032, reaching over 115,000 by 2043** (StatsWales, 2025).

Large inequalities exist within the CTMUHB population with **51.9% of the population living in the two most deprived fifths in Wales**, the highest percentage of all health boards and much higher than 40% for Wales as a whole. The highest levels of deprivation lie mainly in the valleys to the north of the health board area. Small areas of 'deep-rooted' deprivation are those that have remained within the top 50 most deprived small areas in Wales for the last six publications of Welsh Index of Multiple Deprivation (WIMD) ranks (since 2005). Four of the twenty-two areas of 'deep-rooted deprivation' in Wales are in CTMUHB and include Caerau (Bridgend) 1, Pen-y-waun 2, Penydarren 1, Tylorstown 1. One CTM area is ranked in the top 10 most deprived areas of Wales (Caerau (Bridgend) 1) (WIMD, 2025).

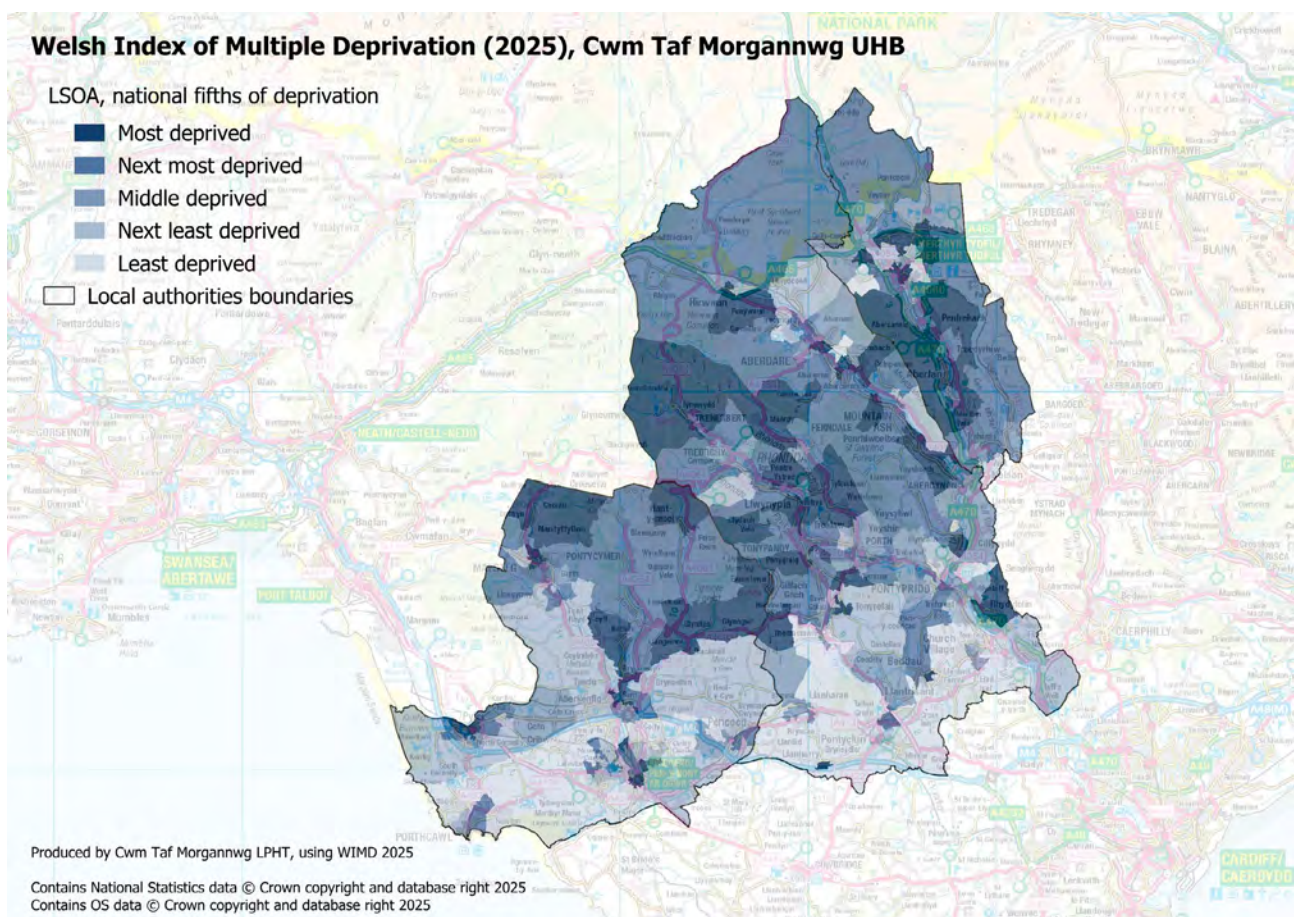
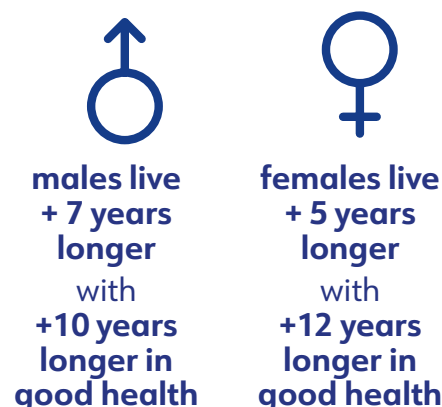


Figure 4: Distribution of Welsh Index of Multiple Deprivation LSOAs in CTMUHB

A significant gap in healthy life expectancy exists for both males and females in CTMUHB:

Males living in the least deprived areas live around 7 years longer and have around a decade more time in good health than those living in the most deprived areas. Females living in the least deprived areas live around 5 years longer and have around twelve years more time in good health than those living in the most deprived areas. Those in the more deprived areas are more likely to develop chronic conditions ten years earlier and report poorer health often described as bad or very bad (ONS, 2021). The proportion of children who are obese is higher in the most deprived quintile, compared to the least deprived quintile (PHW, 2025).

Compared to the most deprived areas, in the least deprived areas



Healthy lifestyle behaviours in CTMUHB are below the Wales average, with adults smoking and drinking more alcohol, exercising less, and having higher levels of overweight or obesity than in other parts of Wales (National Survey for Wales, combined data, 2021/22 & 2022/23).

Challenges in healthy lifestyle behaviours are also present among school-aged children and adolescents with statistically significantly lower rates than the Welsh average for physical activity, and active travel to school (School Health Research Network (SHRN), 2024).

CTMUHB has the highest prevalence of one or more child oral health-related quality of life (OHRQoL)* impacts related to dental caries (41.2%) (NHS Wales Dental Epidemiology Programme, 2024).



Trend data for avoidable and treatable mortality rates have shown an overall decrease since 2001 in CTMUHB and nationally, but there is a recent increase in CTMUHB for 2023. All Local Authorities in CTMUHB had a higher proportion of residents reporting their health as bad or very bad compared to the Wales average (ONS, 2021).

The prevalence of chronic diseases including cardiovascular diseases, respiratory diseases, diabetes and rheumatoid arthritis is projected to increase significantly in the next five years in CTMUHB. Patients with chronic conditions are more likely to have an emergency admission. (Primary Care Segmentation data, 2024).



3. Aims and scope of the review

3.1 Review Objectives

The objectives of this review are to

- Assess delivery of PHM projects to date.
- Understand outcomes and impact.
- Identify learning and good practice.
- Understand opportunities for further development.

3.2 Scope

The review covers all PHM implementation projects delivered in CTMUHB between June 2022 and January 2026. A total of eight projects were reviewed. Economic cost evaluation is outside the scope of this review although project costs are given where relevant.

Following early discussions with primary care partners, the decision was taken to limit the scope of PHM projects to sit within existing services and pathways to minimise additional burden to primary care. As such, all projects examined in this review are designed to sit within the services offered in and around primary care at the time.

4. Method

This was a desktop review carried out by comparing and reviewing evaluation reports of all eight PHM projects conducted in CTMUHB between January and February 2026. In compilation of those eight process evaluations, fourteen semi- structured interviews, patient surveys, six project team focus groups were carried out. This review contains further analysis of those findings. Six main themes, eighteen subthemes were derived using thematic analysis in line with Braun and Clarke (2006).

All projects targeted patients living in recognised areas of deprivation whereby patients living in the most deprived quintile (as defined by Welsh Indices of Multiple Deprivation, 2019) were included and where resources allowed patients living in the top two most deprived quintiles (as defined by Welsh Indices of Multiple Deprivation, 2019) were included in the project cohort.

Consideration should be given to the model of intervention delivery. Although several methods of intervention have been tested; including community based multidisciplinary teams, frailty and chronic condition nurse led care planning, in-practice nurse-led care and community-based charity-led care, all projects within this review used existing services for intervention pathways.



5. Overview of PHM projects reviewed

Project Name	Target Population	Main Intervention	Delivery Partners	Timescale	Outcomes	Cost
The Backward Look	Previous patients of the Community Health and Wellbeing Team or Integrated Care Teams	Map previous patients to CHWT or ICNT to their segments in order to understand any patterns and be able to infer future referrals	CHWT, ICNT GP Practices throughout CTM	August '22- July 23	The findings from this work provided insight into the relationship between MDT referrals and population segments particularly regarding the exploration of proactive work with patients in segment 4, to support a preventative approach.	
Taff Ely Fuel Poverty Winter Pressures	Those living in two most deprived fifths in Taff Ely, managing chronic conditions at risk of fuel poverty. In segments 3,4,6,7,8,9 or 10.	Proactively identify patients at risk of fuel poverty and following a "what matters" based conversation and refer through project pathway to intervention such as Frailty and Chronic Condition team, NEST, Warm hubs etc The model included case list generated by the practice and triaged by the Frailty Team nurses for assessment and referral to support services.	Taff Ely Primary Care Cluster Taff Ely GP Collaborative Taff Ely Frailty and Chronic Condition Team Nest (WG) RCT Warm Hubs RCT Resilience Team	Winter '22- 23	625 patients successfully contacted 196 patients referred to an intervention. 117 to Frailty Service 26 to RCT Together 43 to NEST 25 to other support	Multiple funding sources

Project Name	Target Population	Main Intervention	Delivery Partners	Timescale	Outcomes	Cost
Bridgend East Reducing Emergency Admissions	Patients living in the two most deprived fifths in the Bridgend East Primary Care Cluster area, with one or more chronic conditions and aged 50 years and over. In segments 3,4,6,7,8,9 or 10.	Identified patients received a "what matters" conversation with a member of staff from the practice and referred to appropriate support to prevent an emergency admission. The model included case lists generated by the practice and patients contacted by practice staff (trained non-clinical staff) for onward referral to support services.	Bridgend East Cluster GP Practices. Third Sector Organisations Integrated Community Team	Winter '23	139 patients successfully contacted 45 patients referred to an intervention. 19 to ICNT 19 to Healthy Homes 12 to social prescribing	£1,000
North Cynon COPD	Those living in recognised areas of deprivation in North Cynon, managing COPD at risk of winter exacerbations.	Practice nurse-led support through "what matters" based conversations and information on the COPD hub app. Patients were referred on to further support services as deemed appropriate by the Practice Nurse with the aim to keep patients well over the winter period. The model included case lists generated by the practice with clinical oversight and assessment from the Practice Nurses.	North Cynon Cluster GP Practice Nurses. Virtual Ward Pulmonary Rehabilitation Team Wellbeing Co-ordinators Help Me Quit	Winter '23	256 patients successfully contacted and provided with nurse-led support. 61.7 % received a flu vaccine. 58.2% received a rescue pack. 69.8% had a least 2 onward referrals.	£15,000

Project Name	Target Population	Main Intervention	Delivery Partners	Timescale	Outcomes	Cost
Meddyfga Glan Cynon Surgery Frailty Project	Patient of Glan Cynon GP Practice living with frailty aged 40 or over, segments 4 and 7, have a mild, moderate or severe eFi score.	Patients were triaged by the GP lead, care discussed through a 'What Matters' based conversation and referral made to the multi-disciplinary CHWT as appropriate. The CHWT consists of professionals from health, social care and the third sector.	Meddyfga Glan Cynon Surgery CHWT Third Sector Organisations	Winter '23-24	83 patients successfully contacted. 21 patients referred to an intervention. 15 to CHWT 2 to First Contact Physio 4 to other services	£5,000
Taffs Well Frailty	Patients registered with Taffs Well Medical Practice, live in the three most deprived fifths, aged 40 or over, segments 4 and 7, have a mild, moderate or severe eFi score, have a circulatory condition, stroke/TIA, diabetes, osteoporosis, or arthritis.	Case lists were generated by the practice following agreed criteria developed with the Population Health Management Unit and a GP from Taffs Well Medical Practice. The case lists were screened by a GP at Taff's Well Medical Centre, patients received notification of identification, were contacted by the Practice colleagues to discuss their needs and offered referral to the Community Health and Wellbeing Team. Patients referred into the Community Health and Wellbeing Team following contact had an appointment with the team and an individualised care plan was developed.	Taffs Well Medical Practice Community Health and Wellbeing Team Care and Repair	Winter '24	25% of patients referred were appropriate referrals for the CHWT. Patients were referred onwards by the CHWT to a range of partner organisations* including Occupational therapy, Physiotherapy, Pharmacy, Social work, Therapies technician and Care and Repair.	£5,000

Project Name	Target Population	Main Intervention	Delivery Partners	Timescale	Outcomes	Cost
South Cynon Multimorbidity	Patients registered with one of the five GP Practices in the South Cynon Cluster area, living in the most deprived fifth, aged 40 or over, segments 4 and 7 with a diagnosis of multimorbidity and have a fit, mild, moderate or severe eFi score.	Case lists were generated by the five GP practices following agreed criteria developed with the Population Health Management Unit, South Cynon GP Cluster Lead and CHWT GP. Patients were triaged by the CHWT GP lead, care discussed through a 'What Matters' based conversation and referral made to the multi-disciplinary CHWT as appropriate. The CHWT consists of professionals from health, social care and the third sector.	GP Practice in North Cynon Community Health and Wellbeing Team WISE service Third sector organisations	Spring '25	88 patients successfully contacted. 32 patients referred to an intervention. 28 to CHWT 2 to WISE Service 2 to other services	£5,000
Bridgend West COPD	Those living in recognised areas of deprivation in Bridgend West Cluster area, aged 50 or over, segments 4 and 6, managing COPD at risk of winter exacerbations.	Case lists were generated by the three GP practices following agreed criteria developed with the Population Health Management Unit, and the Bridgend West GP Cluster Lead. This model used a Population Health Management approach to reduce winter exacerbation of COPD in the Bridgend West Primary Care Cluster. Patients were contacted by the Practice Nurse for a proactive, in-depth assessment with education and support for self-management provided. Referral to other support services made as deemed appropriate.	GP Practices in the Bridgend West Cluster Pulmonary Rehabilitation Team Speech and Language Team COPD Dietician NERS BAVO Community Navigators Help Me Quit Drug and alcohol single point of access (DASPA)	Winter 2025-26	Project ongoing	£5000

6. Key findings

6.1 Reach and coverage

Primary Care Clusters, Cwm Taf Morgannwg UHB

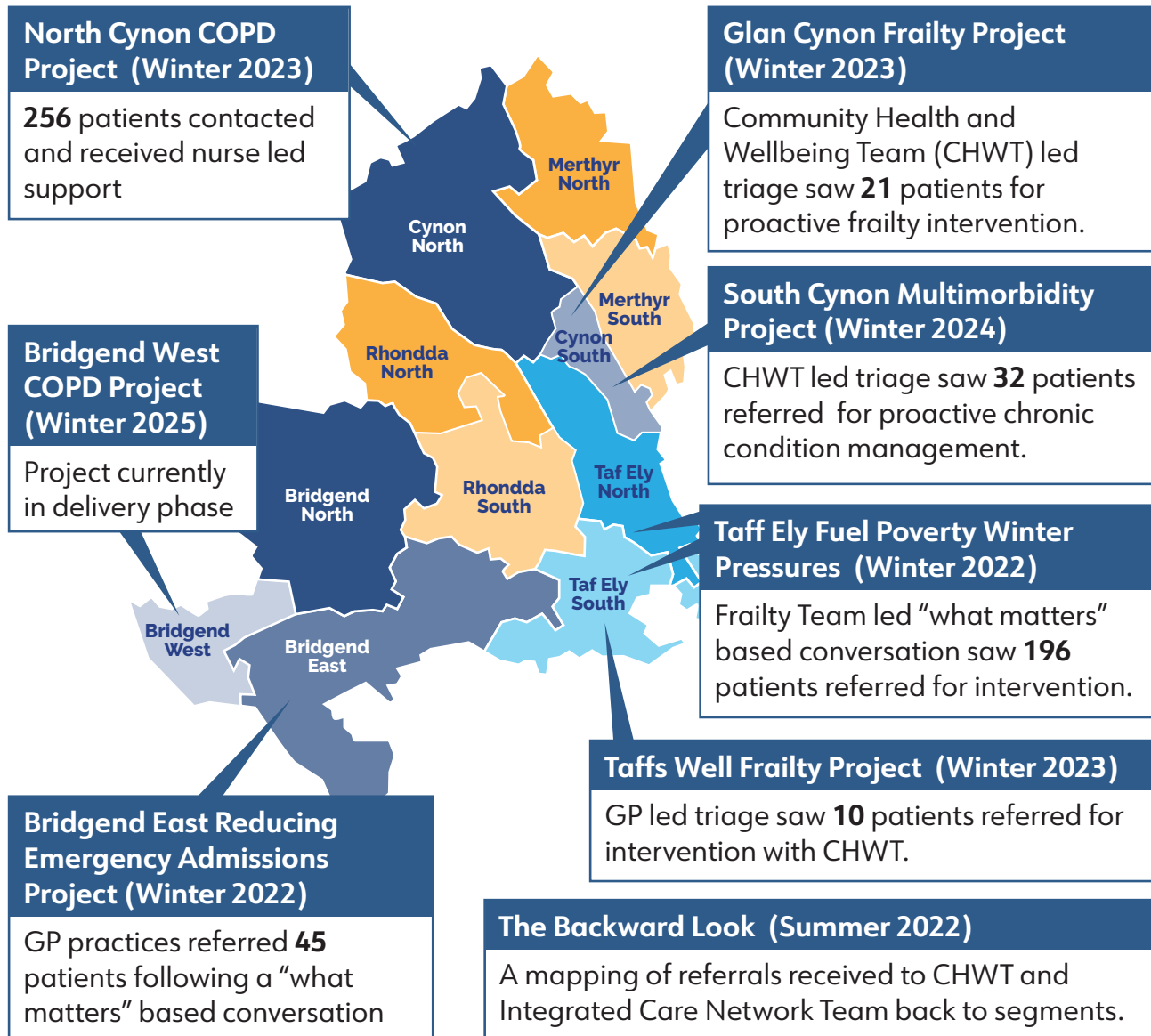


Figure 5: Distribution of PHM projects across CTMUHB

The above map highlights the eight PHM projects that have been conducted in partnership with five GP collaborations, covering four of the CTMUHB Primary Care cluster areas. In total 1206 patients have been proactively contacted and over 560 have received an intervention to help manage their condition.

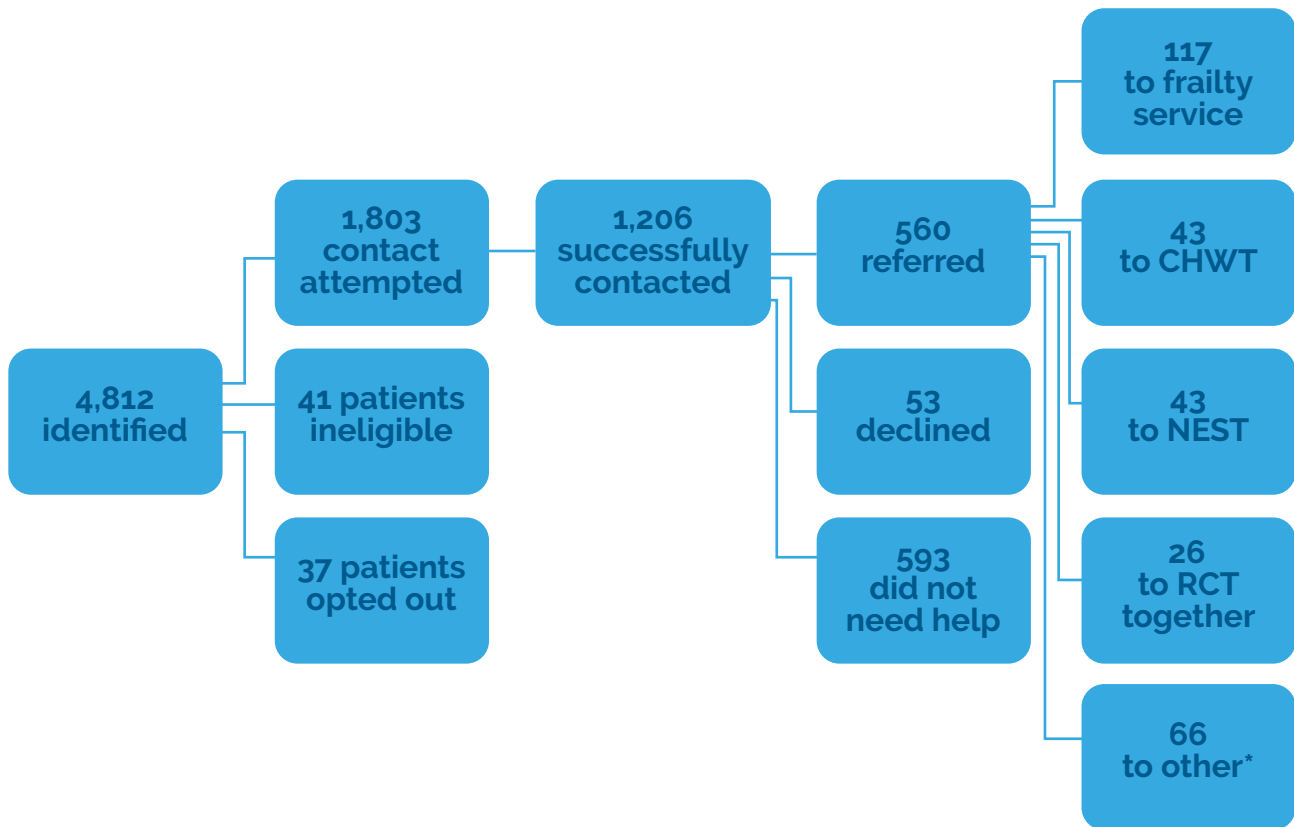


Figure 6: Summary of PHM project participant outcomes

Note - *Other includes social services, Integrated Care Network Team, Healthy Homes service, social prescribing, physiotherapy, occupation therapy, Care and Repair and WISE

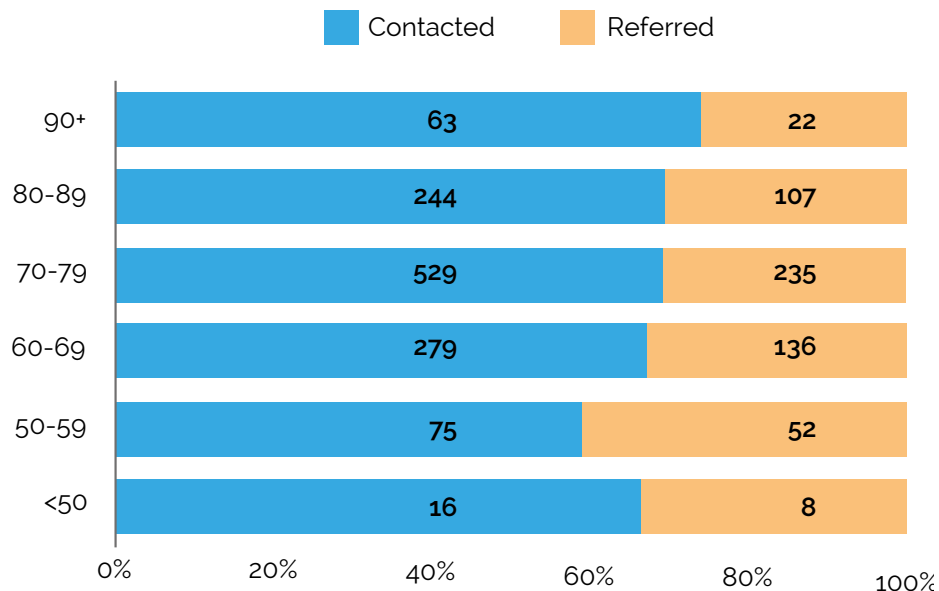


Figure 7: Number of patients contacted and referred in all PHM projects by age.

The diagram above shows the proportion of patients referred to an intervention by age group ranged from 41% of 50-59 years old being referred compared to 26% of patients aged over 90 years old. In addition, there was not a stark difference in referral rate by increasing age.

6.2 Outcomes for patients and communities

6.2.1. Patient experience

Most patients referred for an intervention reported they had benefited from the treatment and support received. Commonality was observed amongst chronic condition types, whereby COPD and frailty patients were more likely to accept an intervention; when compared to those living with multimorbidity, who perceived themselves to be adequately managing their conditions. In this patient group further piloting of additional behavioural support mechanisms is needed.

"... helped to manage my appointments, arranged medication I would have otherwise missed and got me seen by the right professionals"

Patient 26 Taff Ely Winter Pressures

"Patients seemed to find the project helped, especially over the winter period"

Health Professional 3
North Cynon Project

6.2.2 Social outcomes

Prior to identification and intervention, commonality can be observed whereby patients across all projects reported feeling isolated. As a result of PHM projects, patients disclosed they were able to get back into the community, evidenced through patient case studies.

"... Dad is becoming lonely, I was provided with information regarding various community groups that he would be really interested in"

Patient Relative 10 Taff Ely Project

6.2.3 Patient empowerment

Through a holistic approach to care with a "what matters" conversation at the core of all triages, patients were empowered to take control of their own intervention pathways evidenced through patient case studies.

"I was really grateful for the call from the nurse today, she really took the time to answer my questions... I understand how to manage my COPD better"

Patient 8 North Cynon COPD Project



6.3 Impact on primary care services

6.3.1 Changes in demand

In reviewing the qualitative data gathered for project evaluations, it can be observed that PHM projects allowed for a change in demand, particularly in periods of high demand. With early identification of patients at risk of increased use of health care services due to a deterioration of their chronic condition/s, demand is met sooner before they reach a crisis point and managed closer to home.



...“making contact with referred services has been very useful. I can still keep my car and attend appointments for my health. And I know where to go in the future if I need anything more”

Patient 8 Taff Ely Winter Fuel Project

6.3.2 Improved care coordination

Further evidence can be observed in the value of enhanced resource allocation ensuring that resources are allocated based on measured needs, leading to more sustainable and cost-effective services.

...“ I have not been able to access my bath and have been struggling to stand at the kitchen units to prepare food, I have been waiting for social services for the past year. The nurse sent a message out to social services and I was seen within 10 days.”

Patient 3 Taff Ely Winter Pressures

6.3.3 GP workload impact

Qualitative data gathered shows that PHM projects were able to redirect patients away from GP care to the most appropriate care for them, therefore reducing demand for GP time.

...“ And I think it actually reduced the amount that was on the doctor's list as well with the chest, because they knew that I was going to be giving them a ring. So they would wait for me to call rather than them trying to book an appointment with the doctors. So, so yes, I don't think it had a, a negative impact on anything. It had obviously a positive for the doctors.”

Health Professional 1 North Cynon Frailty

6.3.4 Earlier intervention and gaps in services

Patients reported throughout the evaluations having the earlier intervention had helped them realise they were struggling along when there was help available. PHM projects had identified an unmet need in the community, where family were often striving to meet that need themselves.

...“ Been useful to have someone professional and outside of the family to help see things that we were missing. Caring for dad has been made simpler. It’s useful to plan ahead. And I don’t just have to wait for a GP or appointment, I now know where I can get support available to me and dad.”

Patient 36 Taff Ely Project

Staff also reported that the PHM projects had allowed them to identify and engage with patients that had fallen through gaps in service due to constraints on services Covid-19 had placed.

...“ A lot of them, um, hadn’t had the annual review for quite some time. They’d been missed through the Covid, um, because a lot of them were shielding so they didn’t come to the surgery. So it was a good chance to catch up with them as well. And yes bring them all up to date, and particularly with the guidelines changing as well, so up to current practice.”

Health Professional North Cynon COPD



6.4 Impact on health inequalities

6.4.1 Contribution to reducing inequity

Following working through the PHM approach process, project staff found it to be systematic and helped to reach those patients most at need.

...“ Many patients reported they feel ‘forgotten’ about and often have a high level of unmet needs. Patients often reported they are reluctant to ‘bother’ anyone despite concerns having potential to escalate and have larger negative health outcomes longer term for them. ...Using PHM promoted fairness – rather than waiting for GP referral or adhoc case-finding”

Health Professional 1 Taff Ely Fuel Poverty Winter Pressures



Other staff reported projects reached patients with unmet need.

...“ The project seems to have helped find those who have fallen between the gaps of services or would face long waits.”

Health Professional 4 Taff Ely Fuel Poverty Winter Pressures

All projects focused on patients living in areas of recognised deprivation. Intervention services reported differences in PHM patients to the “services as usual” due to this focus. Patients were not accessing services and living with poorer health outcomes.

...“ they were better for us with what the outcomes were that we had, but and they weren’t accessing services. I think they were the ones that really didn’t know what was out there.”

Health Professional 6 South Cynon Multimorbidity

6.5 System and partnership impact

6.5.1 Integration across sectors

Across projects, we also saw enhanced ways of working whereby patients who have been on long waiting lists were prioritised for care through cross sectional team working.

... "I had received a telephone call out of the blue and was asked if I needed any assistance. I have not been able to access my bath and have been struggling to stand at the kitchen units to prepare food, I have been waiting for Social Services for the past year. The nurse sent a message out to social services and I was told I'd be seen within 10 days. Extremely happy and grateful for the assistance."

Patient 78 Taff Ely Fuel Poverty Winter Pressures

6.5.2 New pathways

In development and delivery of PHM projects, health care professionals reported learning of new interventions suitable for patients and developing new referral pathways from which patients will benefit.

"Social prescribing wasn't one I knew of. So that was a good one for me. I feel like the people who did take it up will, you know, benefit from it because it's not something we do in our COPD reviews."

Health Care Professional 4 North Cynon COPD

6.5.3 Data system use

All projects shared that the use of PHM data was feasible and acceptable. All agree that the PHM approach allowed project teams to target resources in a timely and effective way. It allowed project teams to reach the patient target cohort group through one system.

"I think it would have been really difficult if we didn't have the population segmentation because I think we would have had to do reports on patients' previous exacerbations. We would have probably had to target the people that we felt were more at risk, more frail, had more previous exacerbations. And people that had, um, lots of consultations. We would have to go through their medication. I just, I think it would have been like long winded and we probably wouldn't have got to the right patients if we hadn't had population segmentation. "

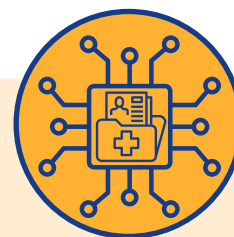
Health Care Professional 3 North Cynon COPD

However, most agree support was needed when designing the patient project cohort and further support was needed to navigate the DHCW PHM portal front end interface. Time, understanding, digital constraints all coexist within practices in the creation of the patient list, meaning support from the PHM team was required to deliver all pilot projects.

7. What worked well

7.1 Using linked patient data

Using patient linked secondary and primary care data accessed via the primary care portal provided rapid, current, customisable, and specific case lists for practices to triage. Segmenting data based on need (e.g., demographics, comorbidities), allowed for upstream targeting for specific support for patients with chronic illnesses (e.g. focus on segments four). Feedback from practice staff confirmed that they would not be able to combine the required combination of variables using only their clinical patient record systems (Vision or EMIS). The proportion of patients referred on to support services having been identified through case list generation, were far higher than the usual care pathway. For example, the South Cynon Multimorbidity project referred over 36% of the identified patients on the case list for further support. Feedback from primary care and community staff corroborated that the data had helped to identify the correct patients and reduced inappropriate referrals.



7.2 Reducing health inequities

All projects targeted the most deprived fifths of the population (top 40%) with chronic conditions, and evidence suggests these populations are more at risk of exacerbations, deterioration, and emergency admissions. A PHM approach supported the CTMUHB goals of reducing health inequities and helped to mitigate disparities across different geographies or demographic groups (Marmot, Inverse Care Law, Proportionate Universalism)



7.3 Patient benefits

Review of the evidence for the seven PHM projects implemented in CTMUHB across four primary care cluster areas reported significant benefits to patients by improving health outcomes through proactive care that addressed root causes, including social determinants. Patients benefitted from enhanced preventive care, personalized management for chronic diseases, increased access to services, and improved care coordination, resulting in better quality of life, evidenced through the project process evaluations.





7.4 Identification of unmet need

The PHM approach developed across the projects delivered in CTMUHB improved patient identification and the management of unmet health needs. Linked primary and secondary care patient data was used to identify high-risk cohorts and tailor interventions to their specific needs. By moving to a proactive rather than a reactive model, patients were not relying on ad hoc contact with a health professional or experiencing a crisis or exacerbation before receiving required support. Projects empowered patients to self-manage their chronic condition better and improved outcomes for conditions like COPD, multimorbidity and frailty.

Evidence that a PHM approach to patient identification has resulted in management of unmet health need and overall patient benefit.



7.5 Leadership across CTMUHB and Wales

The commitment of senior leaders in the health board and in primary care to PHM principles and the will to test this new approach in practice was essential to implementation of all the projects within this report. Dedicated support from the PHM team was also vital to design and testing of models of delivery within primary care. This leadership encompassed an appreciation of the necessity of embedding all PHM capabilities within the system that needed to be addressed prior to delivery of projects.

CTMUHB in this way has been able to demonstrate the feasibility of applying PHM approaches that other areas in Wales will be able to learn from and will continue to work towards building the evidence base for outcomes in Welsh populations.



7.6 Workforce models and resource management

PHM projects were developed using existing community services rather than creating new novel care pathways. This ensured better use of current services especially during periods of high demand for primary care services such as during winter periods. Most projects were run during a time of high pressure on services; a PHM collaborative approach allowed a redistribution of health need to meet demand. The PHM projects facilitated enhanced resource allocation ensuring that resources were allocated based on measured needs, leading to more sustainable and cost-effective services.

The Taff Ely Outcomes Evaluation indicated taking a PHM approach to managing frailty referrals can reduce GP contacts in primary care and A&E attendances.



7.7 Partnership working

Collaborative development of projects from all partners and key stakeholders involved in project scoping and delivery contributed to the success of projects. Quantitative and qualitative data from focus groups, semi structured staff interviews and case studies reported patient benefits and acceptability of PHM approach to staff.

Staff who participated in PHM projects reported a greater understanding of PHM and were more likely to be involved in further PHM projects.



7.8 Evaluation

Mixed method evaluation methodology was applied to research findings. Project findings have been presented through poster presentations at the Cwm Taf Morgannwg University Health Board Research conference. The Taff Ely project was used as a case study as an example of good practice for the Public Health Wales, *Prevention Based Health Care Framework* strategy and in the *Social Prescribing Case Studies Report*.



8. Challenges and limitations

8.1 Data quality and coding

Whilst PS data uses all Quality and Outcomes Framework (QoF) conditions available at the time, it does not include all conditions diagnosed in primary care and relies on patients being accurately coded in the system. This means that some patients may not be identified in case lists. Data flow schedules into SAIL also cause a time delay and this means that excluded patients need to be removed from case lists, which is time consuming for staff. Some patients are lost when the project encryption is removed, which means some patients may be missing from the GP portal. We currently have all, but one GP practice signed up to allow the use of their data in PHM.

There are challenges with quality assurance of PS data produced, and at times, communication issues when data quality issues were identified. Without having full access/control over the data it can be difficult to identify the cause of inaccuracies within the data.

There is currently little flexibility in the variables in the data flows, as all variables and definitions need to be agreed in specifications in advance with all partners. Sometimes there is a need to change the data fields, for example replacing the electronic frailty index with the newly improved version. This makes it difficult to respond to requests to make changes or add new data fields and can lead to delays.

Due to the fixed filtering within the primary care information portal, it can be difficult for practices to create complex cohort selections.

There are challenges with PHM project data not being fully coded during implementation in the system, meaning that patients could not easily be followed up over-time for evaluation analysis.

8.2 Timeliness of data

The data infrastructure used and current quarterly data flow schedules of primary care data into SAIL mean there is a time delay in the system. There are often additional delays due to quality issues in the data received which makes scheduling of data processing challenging. Relying on external partners and their capacity to process data in several stages to moving deadlines can cause additional delays getting the data into the GP portal. This means that the data can be 3 or more months out of date. Only direct data flows of GP practice data could help with these delays.

Due to data time lag, the importance of an additional screening step to match against inclusion criteria has proven vital, for example, ensuring deceased patients are not contacted.

8.3 Quantifying financial benefits and savings

It was difficult to quantify the actual reduction in GP contact time and emergency emissions from the PHM projects delivered due to time constraints, data issues and project evaluation limitations.

8.4 Information Governance (IG) issues

Robust information governance arrangements are rightly needed to keep the data safe. There have been delays in IG documents being reviewed, and complex issues arose around CTMUHB employed staff working with GP practices in the current data architecture. These documents are time consuming to create and review for staff involved and cause delays to project timetable if not scheduled correctly. The need for clinical overview of lists generated can create resource problems for GP practices.

8.5 Resources, capacity and funding

There is limited resource allocation within General Practices to conduct PHM projects. All capacity is spent on meeting daily demand. Projects have had to find ways to work in existing care pathways and interventions based in community settings to refer those patients identified through for appropriate care closer to home. Alternatively, projects have had to fund additional capacity within practices to allow practice based interventions to take place; however when using this project model we have incurred project delivery delays if capacity decreases in practices for unplanned absences, such as long term sickness, where staff delivering projects are reallocated to mainstream business, as we saw in the North Cynon COPD and in the Bridgend West COPD projects.

PHM projects to date have only been able to secure short term, low-cost, unsustainable funding from various sources such as the CTMUHB Local Public Health Team underspend and cluster funding. Short-term funding for PHM projects hinders long-term strategic goals by creating “stop-start” cycles, limiting the ability to demonstrate, full, sustainable impact.

There was some difficulty in matching the patient list generated by segmentation data to clinical resource available to meet demand within the resources and capacity permitted of funding and time constraints.

Another limitation with resource allocation is the variability of expertise amongst primary care staff in using the primary care portal to generate patient lists.

8.6 Variation of delivery methodology between projects

There was variability in compliance of agreed project delivery methodology in all delivery settings to ensure validity and re-creatability of project results. As part of the projects, project staff currently input whether patients have been contacted and the outcomes of the interventions, but the data is often recorded inconsistently.

8.7 Organisation of current health care systems

There is a lack of agreed strategic direction for PHM at a national level, including where best to focus resources (High Risk Vs Rising Risk). In addition, health board service contracts are not designed to enable PHM approaches which has resulted in complex and challenging information governance procedures having to be developed. There are also limitations to the scope of how PHM delivery models can be incorporated into current services/ pathways.

9. Key learning

Essential to the project's success has been:

9.1 Co-production

Project cohort design that has been coproduced with PHM team input and medical professional collaboration has led to designing a cohort that targets patients most likely to benefit from the intervention.



9.2 Evidence based

All cohort design and project intervention pathways have been planned through evidence-based decision making, ensuring that both are accurate and make best use of resources.



9.3 Evaluation planning

Learning from project delivery has highlighted agreed project measures at outset of project delivery with all partners is essential so accurate measurement can take place.



10. Strategic recommendations

10.1 Embed PHM within routine service delivery

CTMUHB should consider embedding PHM approaches within existing services, rather than delivering them solely through time-limited pilot projects. This may include piloting PHM within established community services, such as frailty or chronic condition pathways, to enable proactive identification and support of patients as part of routine care.



10.2 Strengthen the use of PHM data and analytics

Further development of PHM data systems and analytical capacity is recommended to support the identification of high-risk and rising-risk patient cohorts. Improving accessibility, usability and timeliness of data within the primary care portal will help practices make greater use of segmentation and risk stratification to support proactive care planning.



10.3 Develop a PHM training and support programme

To support wider adoption, a structured PHM training programme should be developed for primary care and community staff. This should include practical guidance on using the PHM data portal, developing patient cohorts, and implementing PHM interventions within existing care pathways.



10.4 Strengthen partnership working and referral pathways

Building on the successful partnership working demonstrated within the projects, continued collaboration between primary care, community services, social care and the third sector should be supported. Developing clearer referral pathways and shared understanding of available services will enhance coordinated care for patients with complex needs.



10.5 Improve evaluation and outcome measurement

Future PHM initiatives should include agreed outcome measures at the outset to enable more consistent evaluation of impact. This should include measures relating to patient outcomes, service utilisation, patient experience and potential system benefits such as reduced emergency admissions or GP demand.



10.6 Explore behavioural approaches to increase patient engagement

Further work should be undertaken to explore behavioural science approaches to increase patient engagement with proactive PHM interventions, particularly among patients who perceive their conditions to be well managed or who may be reluctant to engage with services.



10.7 Consider longer-term funding and strategic alignment

Short-term funding limits the ability to demonstrate the full impact of PHM initiatives. Consideration should be given to more sustainable funding arrangements and greater alignment with wider strategic priorities, including prevention, value-based healthcare and reducing health inequalities.



11. Conclusions

This review demonstrates that PHM approaches can be successfully implemented in primary care to support a more proactive, preventative model of care. Across eight pilot projects in CTMUHB, PHM and segmentation using linked data have enabled case-finding of patients at likely risk of worsening health outcomes. This allowed practices and partner organisations to proactively contact patients and provide targeted support earlier before deterioration or crisis occurred.

The projects delivered clear benefits for patients. Many received timely support for chronic conditions such as COPD, frailty and multimorbidity, alongside assistance with wider determinants of health including fuel poverty, housing, and social isolation. Patient feedback indicates that proactive contact improved awareness of available support, increased confidence in managing health conditions and helped individuals remain independent for longer. The PHM approach also enabled services to identify previously unmet need, particularly among patients living in areas of deprivation who may not routinely engage with services.

There were also benefits for primary care and the wider system. By proactively identifying and supporting patients at risk of deterioration, projects helped improve care coordination, strengthen partnerships across health, social care and the third sector, and redirect patients to the most appropriate services. Early findings suggest this approach may reduce pressure on GP appointments and avoidable emergency care, particularly during periods of increased seasonal demand.

Importantly, the projects demonstrated that PHM approaches can be delivered using existing services and partnerships, often at relatively low cost, when supported by appropriate data infrastructure and collaborative working. However, the review also highlights key challenges including data timeliness, information governance requirements, workforce capacity, and reliance on short-term funding.

Overall, the findings indicate that PHM provides a promising framework for improving population health outcomes, addressing health inequalities, and supporting sustainable primary care services. Building on the learning from these projects, there is an opportunity to further embed PHM approaches within routine service delivery, strengthen evaluation and develop a more coordinated strategic approach to prevention across the health system.



Glossary

BAVO	Bridgend Association of Voluntary Organisations
CCG	Clinical Commissioning Group
CHWT	Community Health and Wellbeing Team
COPD	Chronic Obstructive Pulmonary Disease
CTM	Cwm Taf Morgannwg
CTMUHB	Cwm Taf Morgannwg University Health Board
DASPA	Drug and Alcohol Single Point of Access
DHCW	Digital Health and Care Wales
GP	General Practitioner
IG	Information Governance
ICNT	Integrated Care Network Team
ICS	Integrated Care System
NERS	National Exercise Referral Scheme
NHS	National Health Service
OT	Occupational Therapist
PHM	Population Health Management
PHW	Public Health Wales
PS	Population Segmentation
QoF	Quality and Outcomes Framework
RCT	Rhondda Cynon Taf
SAIL	Secure Anonymised Information Linkage
WHO	World Health Organisation
WG	Welsh Government
WISE	Wellness Improvement Service

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Appendix • Case studies

A patient journey

Ian's story

Project: Glan Cynon Frailty



Background

Ian lives with partner, Claire and son, loan in a rented house. Not left house in 4 years. There is a history of recent falls and Ian has poor mobility. Ian relies on his family for support for most activities of daily living. There is a concern over mobility, ability to carry out activities of daily living and accessing the community. Ian has a history of type 1 diabetes (+neuropathy), cerebral vascular accident 1992, IHD/angina, alcoholism and currently in segment four of the CTMUHB Segmentation Model.



Patient presentation

Ian's family helps him with his activities of daily living. Claire sorts shopping, meals and cleaning. Ian currently struggles with walking, getting to toilet, washing (shower over bath). Currently Ian doesn't use any walking aids, not able to walk much, needs support to mobilise. Claire and loan report that Ian had had several falls and averages a couple a week; reporting that "legs give way and he has lost feeling in his feet."

Ian currently sleeps downstairs in living room, he reports poor sleep quality and naps regularly. Ian has commode. There are rails on stairs and backdoor.

Ian is keen to access community again. Ian's medications are currently delivered all in original boxes. Ian also reports he feels his mood is low at times due to physical limitations.



Support provided

Following identification using a PHM approach and triage with a GP. Ian was referred to the Community Health and Wellbeing Team (CHWT) for case management.

Following initial triage from the CHWT GP a referral to the district nurse team to update the Ian's blood tests. The CHWT Occupational Therapist made an at home assessment, where they were able to observe the family is very supportive and loving. The only bathroom is upstairs, so Ian has to bum shuffles up the stairs and family lift into bath. There is very poor manual handling by family putting both the Ian and the family at risk, and the Ian is unaware of foot catching underneath him. The OT observed Ian's bed was soiled, he is unable to get out of bed independently. It was clear that the family doing their best to help, but struggling.

Ian is also no memory retention.

As a result of the at home assessment a mobile commode, bed lever/strap, urine bottles, bed raiser, chair raisers were all arranged. The family were supplied ReTurn to help with transfers, and reviewed with family and working well. Manual handling support and plan provided to family. Referrals were made to GP and Social Services for family support. Further referral to healthy homes, due to fire risk, steps to access property, and benefits assessment. Referral to District Nurse for assessment regarding continence support. Referral to Care and Repair for home adaptations. Referred to COTs regarding front access to the property and shower adaptation.

Pharmacy team also carried out a at home medication review and changes to prescription delivery made to make at home medicine management easier for the family.

Social Services colleagues carried out an at home assessment. Claire and loan happy to continue being his carers. Keen to stay in current property and continue downstairs living. Referral made to Carers Project for support.

District Nurses also carried out a continence assessment. Occupational Therapist follow up visit found that the adaptations made to bed and sofa had made transfers much easier and the family were much more relaxed. Arrangements were in place for the fitting of a new kitchen.

Patient feedback

"The difference the girls coming in has made to me, Ian and loan, I can not tell you. They have helped us to keep looking after Ian where he is comfortable. We didn't realise how much we were struggling along. Now with the help from team we are more happy as a family. And all this from one phone call!"



A practice perspective



Background and rationale

The project emerged from discussions at a cluster meeting focused on identifying ways to support primary care capacity during the winter period. COPD patients were identified as a priority group due to the significant workload they generate through seasonal exacerbations. With winter-pressure funding available, the practice chose to pilot a proactive, nurse-led intervention to support this cohort.

Working collaboratively with the Public Health Team, the practice used population segmentation to identify the most appropriate patient group. This approach provided a targeted and efficient method for producing an evidence-based cohort list, avoiding the need for manual searches through past exacerbations, frailty markers, consultation history, and medication profiles.



Patient engagement and response

Patients received a letter informing them of their upcoming proactive telephone appointment. This pre-notification ensured they were prepared and understood the purpose of the call.

The practice reported:

- No negative feedback from patients about the calls.
- Only a single query verifying the nurse's identity, which was easily resolved.
- Patients were generally happy to engage in the consultations.

Benefits for patients and practice

For Patients:

- Improved preparedness heading into the winter season.
- Access to updated rescue packs and personalised self-management plans.
- Earlier recognition and escalation of symptoms, reducing the risk of deterioration and hospital admission.

For the Practice:

- Reduced demand on GP and nurse appointments by supporting patients to manage exacerbations earlier.
- Likely reduction in unplanned care episodes.
- Enhanced confidence that high-risk COPD patients were appropriately supported before winter pressures intensified.





Use of population segmentation

The practice viewed population segmentation as crucial to the feasibility and precision of the project. Without it, identifying the correct patient cohort would have required manually reviewing multiple data points, which would have been time-consuming and potentially inaccurate.



Impact on practice workload

The project increased practice workload, and delivery was only possible because:

- A practice nurse agreed to work overtime.
- External funding covered the additional staffing costs.



Achievement of project outcomes

The practice believes the project successfully met its intended outcomes, including:

- Providing proactive seasonal support to COPD patients.
- Enhancing patient knowledge and preparedness.
- Achieving positive engagement from patients.



Future opportunities

The practice expressed interest in applying a similar model to other groups, including:

- Frailty
- Obesity
- Future winter COPD cohorts



Reflections and learning

The practice noted that starting the project one month earlier would have aligned better with seasonal COPD trends.



GIG
CYMRU
NHS
WALES

Bwrdd Iechyd Prifysgol
Cwm Taf Morgannwg
University Health Board