Title:	**Community Spirometry Pilot: South HSCP**
Date:	**November 2024**
Responsible Director:	**Tim Eltringham**
SRO(s)	**Dr Phillip Hulme, Dr Emily Broadis**
Authors	**Emily Broadis, Consultant Public Health Medicine** **Rebecca Turner, Programme Manager, Healthcare Public Health** **Rachel Cunningham, Programme Support Officer, Healthcare Public Health**

1 Overview

1.1 Purpose

The purpose of this paper is to provide a mid-pilot evaluation of the South Ayrshire Community Spirometry pilot and outline key recommendations to be taken forward by the project team to ensure the continued development and improvement of the service over the remainder of the pilot period.

1.2 Pilot Aim

By the end of June 2026, 1000, high quality spirometry investigations will be delivered in community settings across South Ayrshire in order to support Primary Care in the diagnosis and management of Chronic Obstructive Pulmonary Disease (COPD) as early as possible.

1.3 Background and Introduction

Spirometry testing is recognised as the gold standard for the diagnosis, assessment and monitoring of COPD (NICE Guideline, 2019). However, since its removal from the GP contracts in Scotland, the provision of spirometry is no longer standardised, resulting in there being no universal, high-quality pan-Ayrshire spirometry service.

Within the acute setting spirometry is delivered by the Medical Physiology department with outpatient referrals coming via respiratory consultants. The waiting list for a hospital spirometry testing in October 2024 was approximately 17 weeks and at present there is no capacity for medical physiology to deliver community clinics. In Primary Care, not all General Practices continued to provide a spirometry service after it was removed from the GMS contract, resulting in a gap in provision for some areas.

An inadequate spirometry service presents the following issues for those living with COPD;

1. Decline in lung function is more rapid in the early stages of COPD, therefore delay to diagnosis could result in people not getting the benefit of early treatment or presenting acutely with an exacerbation or complication as their first diagnosis of the disease.
2. Diagnosing COPD without the use of spirometry can result in misdiagnosis, which risks inappropriate treatment pathways with potential for side effects and waste of resources.

The number of people hospitalised with COPD in Ayrshire and Arran is above the National average, with higher admission rates recorded within areas of greater socio-economic deprivation (SBOD, 2019). Taking an average over the years 2019-2022, the incidence of COPD in Scotland was 136.8 per 100,000, compared to 172.4 per 100,000

across Ayrshire and Arran. Within South Ayrshire during this period, the incidence was 125.6 per 100,000.

The following challenges surrounding spirometry testing existed in South Ayrshire in 2024;

1. Spirometry was not available to everyone who lives in South Ayrshire, with one third of the practices no longer offering spirometry testing. Some of the practices that were not offering spirometry also had some of the highest percentages of people living in the SIMD 1 and 2 postcode areas. Inequity to access of services worsens existing health inequalities.
2. There was no quality assurance for the spirometry tests carried out in primary care with respect to;

   - Who is performing and interpreting the spirometry tests
   - Continued education and training for staff involved
   - Quality of the machines and calibration

3. South HSCP Improvement and Innovation Funding was accessed to develop a Community Spirometry Pilot across South Ayrshire that would aim to address the challenges outlined above.

1.4 Methodology & Design

The pilot utilised quality improvement methodology and adopted a social determinants of health lens to addressing health inequalities and identifying inequities to healthcare access. It was underpinned by the principles of value-based medicine and Caring for Ayrshire.

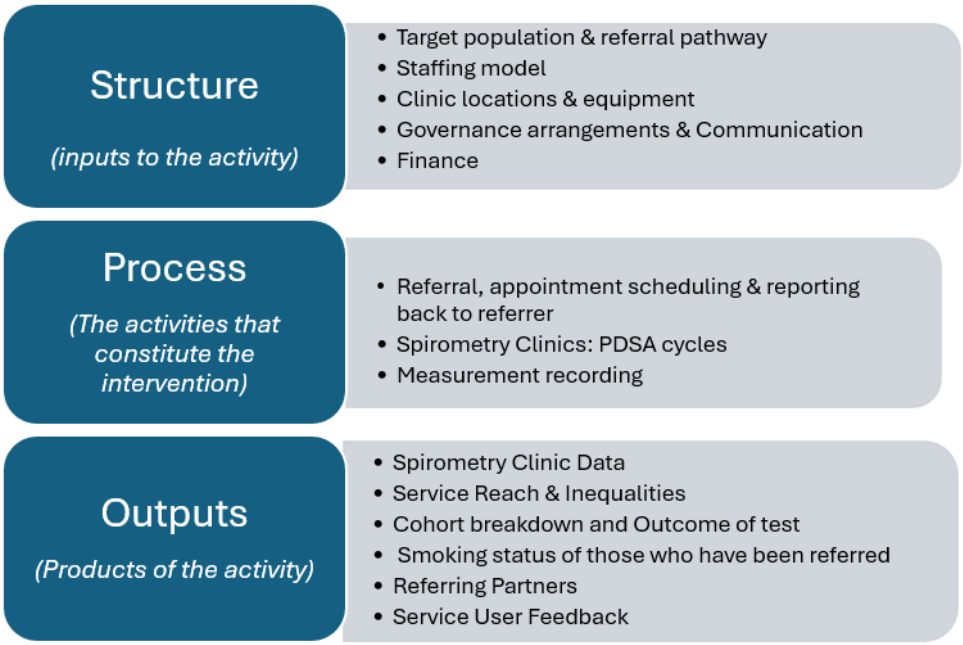
Key aspects of the pilot design include;

- A clearly articulated pathway for referral, testing, interpretation, reporting and governance for people with COPD or awaiting diagnostic testing in the community.
- A quality improvement approach to the development and evaluation of a service.
- Quality assurance with regards to staff skills, competencies, and training, as well as machine calibration and maintenance.
- Delivery of spirometry testing as close to home as possible.
- Consideration of the socio-economic determinants of health to ensure equity of access
- Mapping of the support services for COPD self-management that could be available to run alongside a spirometry service, increasing the value of the appointment for the individual and any accompanying people.

1.5 Evaluation design

The Donabedian model of evaluation provides a robust framework for assessment of the three key aspects of healthcare service delivery and improvement and has been used to provide assurance to partners and key stakeholders of a structured approach to identifying the key recommendations for the remainder of the pilot.

Figure 1: South Ayrshire Community Spirometry Pilot in the Donabedian Model



2 Structure: *Inputs to the activity*

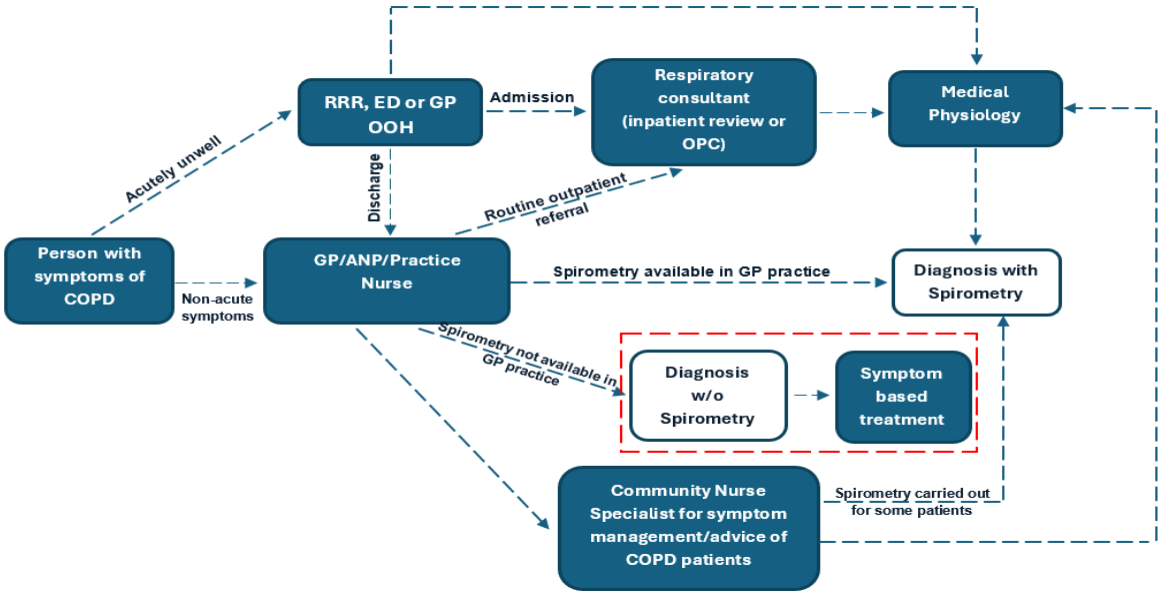
2.1 Target Population

The target population for this pilot includes those people living within a South Ayrshire GP catchment area who:

1. Have already received a diagnosis of COPD without spirometry testing
2. Are newly suspected to have COPD but have not received a spirometry test

A process mapping exercise was undertaken during the initial scoping phase of the pilot. This provided information on the existing spirometry pathway and identified any gaps in provision for those in this cohort (indicated on the pathway below in Figure 2).

Figure 2: Spirometry Pathway in November 2024



Clear inclusion criteria were developed and circulated to referring clinicians to ensure appropriate referrals, these were: new symptoms suggestive of COPD; or previously diagnosed with COPD without a spirometry test.

There has been a total of 220 referrals into the service within the reporting period. Consultation activities with referring partners prior to the launch of the service included information on the referral criteria and intended population, and this supported the implementation of the referral process and documentation.

After the first quarterly highlight report it was noted that reversibility was being captured at point of testing, but not recorded as a measure of this project. This has since been included and future reports allow an estimate of those who also have elements of reversibility to their obstructive airway flow, helping to build a clearer picture of the type of pathology seen within this cohort.

2.2 Staffing Model

A range of different staffing models were scoped during the exploratory and development phases of the pilot. Key stakeholders and partners were consulted through the development of an Expert Reference group (See Appendix 1). The following options for staffing a community spirometry service in South Ayrshire were explored:

a. Recruitment to temporary/fixed term posts
b. Offering spirometry clinic shifts through NHS Ayrshire & Arran's staff nurse bank
c. Offering additional hours to practitioners (Practice Nurses and Health Care Support workers) within South Ayrshire GP practices

Recruitment to temporary/fixed term posts (option a) was considered a less desirable staffing model for this pilot for several reasons; the length of time associated with recruitment, lack of interest in short term posts, and difficulty in establishing an appropriate organisational structure (including line management) within existing teams.

Option b was established as an option but did not require to be utilised.

An invitation went out to all South Ayrshire GP practices to identify whether there were any staff already performing spirometry testing who would be interested in additional hours, as per option c. This identified a practice nurse and a healthcare support worker who have been able to support the three established clinics through additional hours (both staff members are contracted part-time).

This model has worked well for several reasons:

- A lengthy recruitment process was avoided. An expression of interest approach was taken and went out to all South Ayrshire GP practices.
- This identified staff quickly, enabling organisation of relevant training and inductions at considerable pace, and in turn the establishment of clinics.
- Existing line management arrangements were utilised for the staff, and key relationships with project, administration and clinical physiology teams were established to ensure appropriate support and training.
- The pilot was able to access staff who already had experience in carrying out spirometry testing, resulting in fewer training needs.

Training requirements were met in partnership with NHSAA Clinical Physiology team, ensuring quality assurance of staff knowledge and skills as well as familiarity with the devices being used. Training opportunities were arranged with the Highly Specialist Clinical Physiologist and ongoing clinical support remains available through this team.

Significantly, this staffing model does not provide any resilience for the service, therefore through periods of leave and unplanned absence, clinics cannot run. It also does not

provide a sustainable staffing solution for a permanent service and - should a pan-Ayrshire roll out be recommended at the conclusion of the pilot - the appropriate organisational structure would need to be established to accommodate permanent posts and consideration of service resilience.

The recent GP survey carried out as part of this evaluation has identified a further primary care staff member who would be interested in carrying out spirometry testing to support the remainder of the pilot.

2.3 Clinic locations & equipment

A scoping exercise was undertaken to identify possible clinic locations across South Ayrshire, incorporating consideration of SIMD profiles and accessible links to public transport.

The project team carried out site visits and risk assessments of all proposed locations. When presented to the Expert Reference Group it was felt that carrying out the clinics in community health buildings would serve to mitigate some of the risks identified within the target population. Room availability was a limiting factor with regards to clinic location, with many of the Health Board buildings being at capacity, however established clinics are now delivering from Girvan Community Hospital, Arrol Park, Fullarton Medical Practice and Temple Hill Medical Practice.

Three Spirolab UK Spirometers with Software were purchased, these were used for staff training and delivery of the pilot. Feedback from staff has been positive with regards to the quality and ease of use of the equipment.

2.4 Governance arrangements and Communication

Key performance indicators, baseline measures, milestone tracking, and risk monitoring have provided the foundation for the quarterly highlight report, which is circulated to the following groups;

- SA Community Spirometry Pilot Expert Reference Group
- South Ayrshire HSCP Directorate Management Team
- Public Health Department Directors Leadership Team
- Healthcare Public Health Oversight Group
- Public Health Governance Group
- Respiratory Managed Clinical Network
- Other forums at request (e.g., NHSAA Corporate Management Team)

The project group also have links to the National COPD sub-group of the Respiratory Specialty Delivery Group, which is facilitated by the Centre for Sustainable Delivery. Spirometry Services is their first priority, highlighting that this is a challenge replicated across other health boards in Scotland. Any learning from this National group will continue to be fed into this pilot, and learning from the pilot will be shared back to the National group.

2.5 Finance

Funding for this Pilot has been approved through the South Ayrshire Health and Social Care Partnership Improvement and Innovation fund, with an expected cost of approximately £60 per spirometry test.

The pilot programme continues to deliver within the projected spend, with no significant changes anticipated for the remainder of the pilot period.

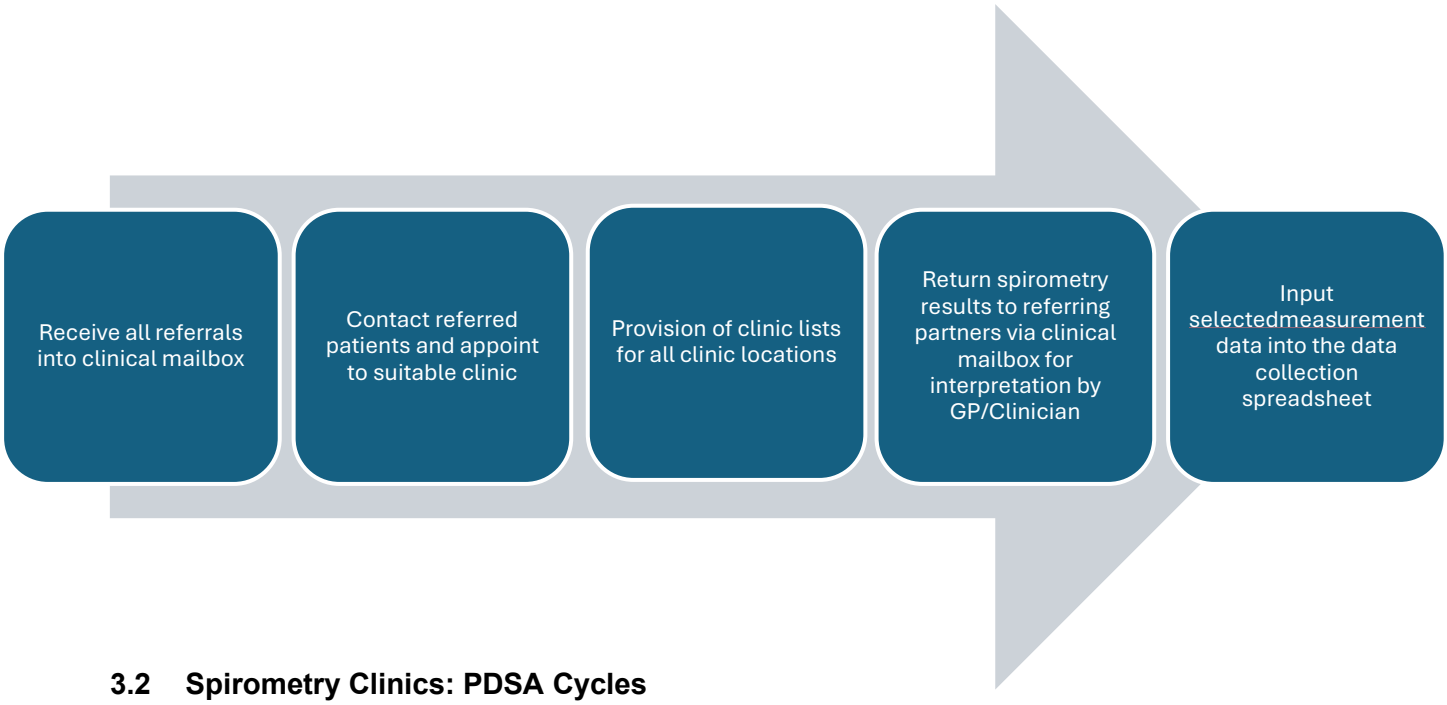
3 Process *(The activities that constitute the intervention)*

3.1 Referral, appointment scheduling & reporting back to referrer

A referral form and referral guidance document (appendices 2 & 3) were developed in partnership with members of the Expert Reference Group and circulated to all GP practices in South Ayrshire. Engagement with GP practices on the referral process was undertaken through Practice and Cluster meetings, with advice to run EMIS searches for eligible people to refer, and to utilise the service for those with new symptoms.

Administrative support for the pilot is currently being provided by the administration team at Girvan Community Hospital (GCH). A Standard Operating Procedure (SOP) has been developed for all administrative activities (Appendix 4) relating to the service to ensure quality assurance and resilience. Figure 3 below, details the administrative requirements of the pilot, which includes emailing test results back to the referrers via the clinical mailbox. The spirometry test interpretation and follow up remains the responsibility of the referring clinician.

Figure 3: Admin process undertaken by Girvan Community Hospital team



3.2 Spirometry Clinics: PDSA Cycles

Standard Operating Procedures have been developed for all clinic locations in partnership with key stakeholders, including both practitioners who deliver the tests (Appendices 5, 6 & 7). On site inductions were provided to spirometry testing staff along with provision of relevant SOPs.

Four PDSA cycles have been carried out to date: one at the initial process mapping exercise and three at clinics. Each cycle has highlighted areas for improvement which are being taken forward in collaboration with stakeholders, administration colleagues, and staff delivering the service (Appendix 9).

3.3 Measurement recording

A detailed measurement plan (Appendix 10) was developed during the initial planning phase of the pilot detailing outcome and process markers, providing a blueprint for the information and data that is now captured and collated for the quarterly highlight report. The administration team populate the data collection spreadsheet, including results from the spirometry test print out.

4 Outputs (*Products of the activity)*

4.1 Spirometry Clinic Data

As of 30th September, there have been a total of 237 appointments booked, with 160 spirometry tests completed across the four clinic sites; Girvan Community Hospital, Arrol Park, Fullarton Medical Practice and Templehill Medical Practice (it should be noted that the Templehill clinic commenced in late September 2025, and therefore only had one clinic during the reporting period). 44 appointment slots were unfilled during this time period.

Table 1: Clinic attendance across the three sites

Clinic Attendance	Number of people	Percentage*
Number of appointment slots available = 281		
Appointment slots un-booked	44	16%
Number of appointments made = 237		
Appointments attended	170	72%
Appointments DNA	26	11%
Appointments rescheduled	41	17%
Appointments attended = 170		
Tests completed	160	94%
Test not completed	10	6%

** The denominator for each row = the number in the greyed-out row above*

To identify the number of clinics required, the project team had to estimate the number of appointments that would be needed based on the expected numbers of referrals per practice size.

As expected, there was an initial high influx of referrals of people who had previously been diagnosed with COPD without a spirometry test. These were identified by GP practices carrying out a retrospective review of their patient lists. Once this back log of people had been referred, there continued to be a steady number of new referrals (newly presenting symptomatic), and this number was lower than the retrospective cohort.

It is likely that high number of un-booked appointments (16%) represent this change in referral indication, and this was picked up in the most recent PDSA cycle which recommended a review of clinic frequency. As a result of this review the Arrol Park clinics were reduced by one clinic per month. This in turn facilitated the launch of the final clinic in Troon at the end of September, with the same staff member delivering at Temple Hill Practice once a month.

4.2 Service reach and Inequalities

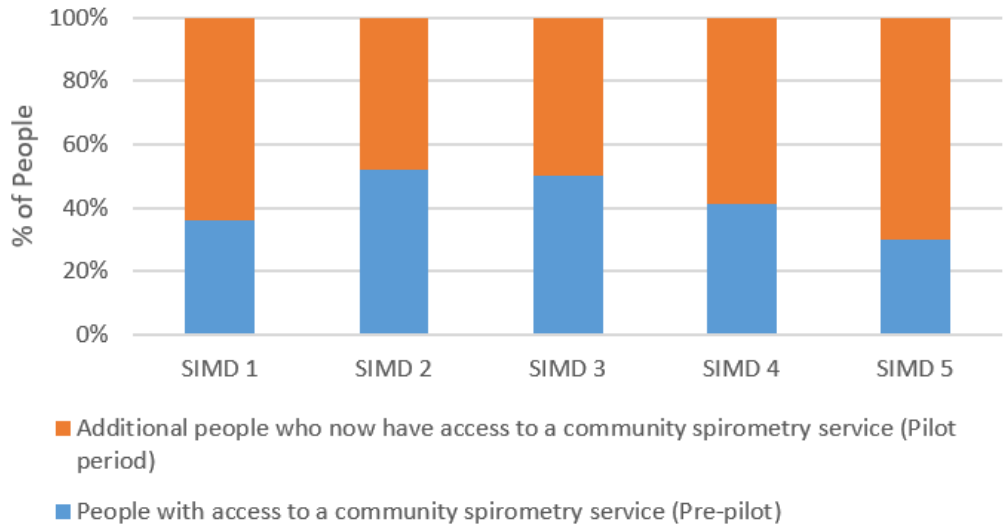
In late 2024, six of the 18 GP practices in South Ayrshire no longer provided in-house spirometry testing following its removal from the GMS contract, creating an inequity in terms of access to this service in South Ayrshire. Increasing equitable access to spirometry for the population is one of the key challenges that the pilot aims to address.

Respiratory conditions, particularly COPD, disproportionately affect deprived populations. The reasons for this are multifactorial and include increased exposure to risk factors such as high rates of smoking, air pollution and poor housing conditions in these populations (COPD Health Inequalities Improvement Programme | NHS Confederation). Therefore, when measuring equitable access, access to populations most in need of the service must be considered.

Since the launch of the pilot in January 2025, all 18 GP Practices in South Ayrshire are now either referring into the service or offering in-house spirometry (or both). When the population is described by SIMD profile it can be seen that there has been increased access to spirometry testing across all SIMD profiles, with the greatest increase noted in SIMD 1 followed by SIMD 5 (Figure 4).

In September 2025, the project team also sent out an invitation to all GP practices within East Ayrshire and North Ayrshire that had people living in the South Ayrshire postcode, to offer them the option to refer into the pilot.

Figure 4: Access to Community Spirometry testing in South Ayrshire by SIMD profile

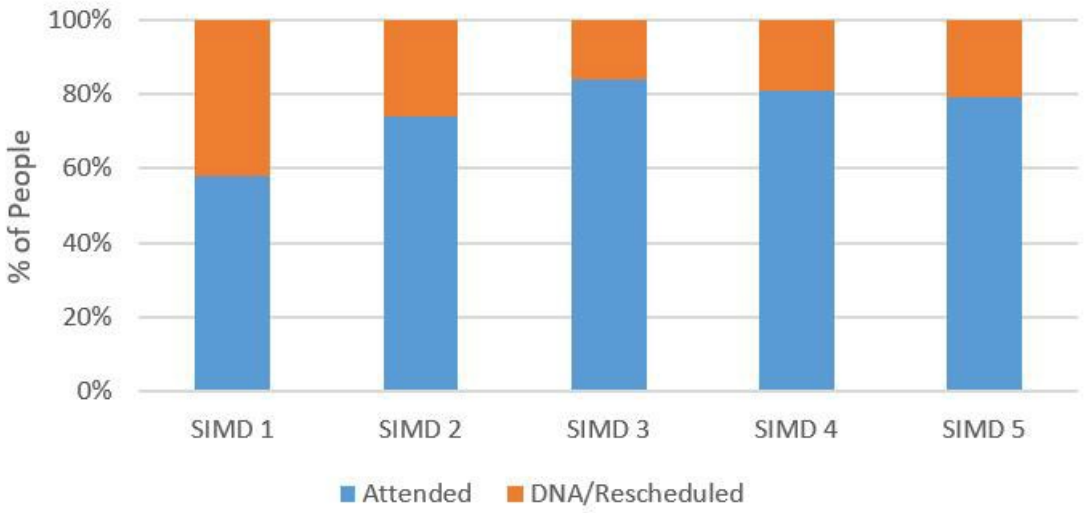


SIMD profiles were also used to examine those appointments that were not attended (DNA) or rescheduled (Figure 5). This highlighted a concern that 73% of all DNA's or reschedules came from people living in the areas with most deprivation (SIMD 1 & 2). To narrow the health inequality gap, it is crucial to understand the reasons why this cohort are more likely to DNA appointments, as they are also the people who are most in need of access to spirometry.

At the beginning of the pilot, all potential clinic sites were mapped to public transport links as a method to try to reduce barriers to access, however this may only be part of the picture in terms of the structural challenges that people may face to attend healthcare appointments. Further work is needed to identify and mitigate the reasons why people are unable to attend the community spirometry service.

10 appointments required to be rescheduled on the day of the appointment, mainly due to contraindications to having the test carried out (for example, the person was on antibiotics). Due to this being a new service, there is no reference for comparison, to know if this rate (or the DNA's) are higher than expected. A comparison with the medical physiology acute spirometry service could be of value alongside learning about any improvement opportunities.

Figure 5: Appointments that were attended or DNA/rescheduled by SIMD profile



4.3 Outcome of test:

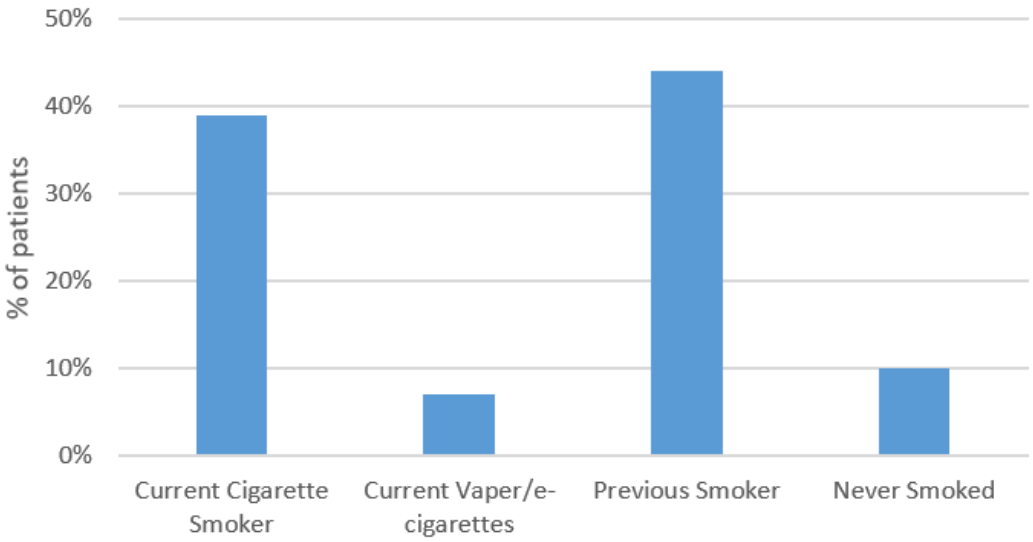
70 (44%) of the 160 completed spirometry tests indicated a degree of airflow obstruction. Of these, 27% demonstrated mild airflow obstruction, 59% moderate, and 14% severe. Note that these figures do not include reversibility testing, therefore the specific outcomes with respect to airflow obstruction and potential diagnosis will not be further commented on in this report.

One third (56) of those tested had been previously diagnosed with COPD without a spirometry test and two thirds (103) were newly symptomatic people with suspected COPD.

4.4 Smoking status of those who have been referred

Smoking is the leading cause of COPD and is thought to be responsible for up to 9 in every 10 cases (Chronic obstructive pulmonary disease (COPD) - Causes - NHS). Figure 6 details the number of people who had spirometry results indicative of airflow obstruction in each of the smoking/vaping categories identified. Of people with airflow obstruction indicated on their spirometry test result, 90% were either previous or current smokers, or e-cigarette users.

Figure 6: Smoking status of people where airflow obstruction was indicated



As a test of change, in late June, a Quit Your Way Tobacco Cessation Prevention Officer started also attending two out of the four spirometry clinics, working from an office nearby and thus enabling the staff carrying out the spirometry test to introduce anyone who wanted to explore smoking cessation immediately to this officer.

Prior to the establishment of this pathway, uptake to the Quit Your Way service was very low from the community spirometry service, with only a small number of people taking away a self-referral form. Since implementation of this test of change there has been 11 active referrals to the Quit Your Way service (average of 0.7 referrals per week), with one successful quit. In addition, 20 people who did not sign up on the day have been provided with brief advice and information.

Quit rate data for all referrals made through the spirometry pathway will be reported within the end of pilot evaluation to specifically examine this aspect of the model.

4.5 Referring Partner Feedback

All 18 GP practices within South Ayrshire are now able to refer into the service, along with GP practices in North and East Ayrshire for patients residing in South Ayrshire postcodes. There was a staggered approach to on boarding, as each GP cluster was only offered entry into the pilot once the community spirometry clinic in their geographical location was established.

Ten practices are actively referring into the pilot. In order to better understand the uptake and engagement with the pilot, and identify any potential barriers, facilitators, or risks of the pilot, Rogers' theory of adoption of innovation has been drawn upon and some of this language will be used within this section. It should be noted that the GP practices differed in one major factor: some already offered in-house spirometry testing, and others did not.

Early Adopters

Within the first month of being offered entry into the pilot, five practices referred patients in. Four of these practices did not have access to an in-house spirometry service and as such they became the majority source of referrals in the initial few months and were thus noted to be Early Adopters of the pilot. This would be expected, given that they did not have access to this service in the community, and thus they had a need for it.

In the feedback survey sent to these practices, they reported being very satisfied with the service, noting that the pathway is working well and enables people to access tests quickly. They have appreciated seeing an "essential service back up and running again in Ayrshire". Some noted that they would have liked to have had the reports interpreted as part of the service. This had been explored during the design phase within the Expert Reference Group and was felt to be out of scope of the pilot.

Early Majority

The practices with access to in-house spirometry began to adopt the pilot a few months after roll out to each of the clusters and as the pilot has progressed, one third of the practices currently referring in are from this group. These would be in the Early Majority group, who would be described by Rogers as being careful to adopt but open to change. They have noticed benefits to referring into the pilot such as creating additional capacity for their staff to take on other clinical tasks. Their feedback has also noted that the pathway has been effective, it is working well, and that those attending for appointments are satisfied with the service. One practice noted that the nurse who previously carried out the in-house spirometry tests would now receive the results from the community spirometry service and interpret them and then provide the result to the referring clinician.

Late Majority

To date, eight practices have not referred into the pilot. All of these practices already carry out spirometry. In the adoption curve these would fall into the Late Majority, which would suggest that they require further evidence of success prior to engaging with the pilot. In feedback they have noted that they are happy with their current in-house service and have expressed concerns that their staff will become de-skilled if spirometry is outsourced. This insight has been incredibly valuable since it raises a valid concern: if the pilot does not have recurrent funding, there is a risk that staff who have become deskilled from no longer carrying out spirometry, will then require re-training should the Community Spirometry Service not be funded long-term. The project team will need to consider the implications of this risk for those GP practices that fall into the Early Majority above and ensure mitigations are in place when the pilot is completed.

All GP practices, including those not currently referring, will continue to be updated on the progress of the pilot and the ability to refer will remain open for the duration of the pilot.

It should be noted that the project group leading on the pilot has received feedback through various forums (GP Clusters, Respiratory MCN, and directly from practitioners), that there would be significant value in widening the scope of this service to other respiratory conditions and diagnostic testing, including Fractional Exhaled Nitric Oxide (FeNO) testing for the diagnosis and management of asthma.

Although the incorporation of FeNO testing is out with the scope of this pilot and its funding allocation, the feasibility of this could be considered as part of the end of pilot evaluation in order to inform any future business case that may be developed for the continuation and roll out of community spirometry services pan-Ayrshire.

4.6 Service user Feedback

Thirty-seven feedback surveys were collected across all active clinic sites.

There was 32% response rate and of those who responded;

- 89% reported that the service was easy to access
- Approx. 45% of people reported that they waited 2 weeks or less for an appointment
- 20% of people reported that they waited longer than 4 weeks
- 91% of people reported that their appointment was beneficial and 93% stated that they received enough information about their appointment
- 81% of people reported no issues getting to their appointment
- Two of the referred people praised the clinicians for their knowledge and professional manner

As part of the survey, respondents were asked what, if any, additional information they needed. Results from the survey analysis showed that people were most commonly seeking additional information around:

- Smoking cessation (the QYW commenced in July 2025)
- When they will see their GP and what support they will receive

One person noted they received an appointment very quickly but had not received the information leaflet detailing contraindications and their appointment had to be rescheduled on the day due to them being on antibiotics. This particular issue had been highlighted during one of the PDSA cycles and has been mitigated for to ensure that all relevant information is sent out two weeks ahead of the appointment date.

5 Conclusions and Recommendations:

5.1 Conclusion

This paper describes the background, methodology, and evaluation of the South HSCP Community Spirometry Pilot at 8 months, outlining the processes and pathways that have been put in place and the staffing model used.

Community spirometry testing is now available to all residents of South HSCP and those people registered with North and East Ayrshire HSCP GP Practices who have a South Ayrshire postcode.

There have been 220 referrals into the service from a mixture of GP practices who do not currently carry out spirometry, and from those who do. Feedback from GP practices has highlighted positive feedback and also key learning opportunities for the pilot project team.

Continuous improvement ideas have been identified and implemented through the use of PDSA cycles and these will continue to be monitored.

Reversibility will be recorded and included in quarterly highlight reports which will provide a more accurate representation of the types of pathology being seen through the spirometry clinics.

As the pilot moves into the second half of its term, the team will be building evidence for writing a business case to inform recommendations for a sustainable, pan-Ayrshire community spirometry service.

5.2 Key Recommendations

1. The project team should continue to cycle through the PDSA model to maintain a focus on the quality improvement approach of this pilot.

2. Reversibility data should be captured as a measure to build a wider profile/picture of the types of respiratory pathology seen through the spirometry clinics.

3. The project team, along with key stakeholders, should identify learning opportunities from the acute clinical physiology team with respect to DNAs and rescheduled appointments and also explore whether there has been any impact of the South Ayrshire Community Spirometry Pilot on the acute clinical physiology waiting list times.

4. Plans to extend Smoking Cessation support to include a pre-appointment phone call should be progressed to be able to offer current smokers referred to the service postal Nicotine Replacement Therapy (NRT), to support with the 24-hour period of abstinence required before the test. This will be offered in addition to the onsite support available at the clinic.

5. Quit rates of current smokers who are referred to the Quit Your Way Smoking Cessation service should be recorded to identify the value of coupling this service to spirometry tests.

6. The project team should consider links to other wrap around services where onward referral would be beneficial to the health and wellbeing outcomes of this group,

drawing upon the service mapping exercise that was carried out during the exploratory phase of the pilot.

7. Links with key stakeholders should be made with East and North Ayrshire in preparation for the development of a business case for the pan-Ayrshire roll out of this model, and an understanding of the SIMD profiles and current spirometry provision within these areas should be obtained to help inform this.

8. The end of pilot evaluation should explore whether any impact has been seen on emergency attendances to hospital with complications of COPD or previously undiagnosed COPD, recognising that this may be difficult to see within the small timescale of this pilot.

Acknowledgements

The project team would like to thank everyone who has supported this pilot by providing their insights, knowledge, experience and time. This includes the Expert Reference Group, the administrative team at Girvan Community Hospital, the staff of the clinic locations, the healthcare staff carrying out the spirometry test, the QYW smoking cessation team, the GP practices, the Respiratory Managed Clinical Network, and the people that have used the service.

References

Dearing, J.W. and Cox, J.G. (2018). Diffusion of innovations theory, principles, and practice. *Health Affairs*, [online] 37(2), pp.183–190. doi:https://doi.org/10.1377/hlthaff.2017.1104.

Faculty of Public Health (2017) Principles underlying the development of clinical guidelines, clinical effectiveness and quality standards, and their application in health and social care. Available at:
Principles underlying the development of clinical guidelines, clinical effectiveness and quality standards, and their application in health and social care | Health Knowledge

National Institute for Health and Care Excellence (NICE) (2018) Chronic obstructive pulmonary disease in over 16s: diagnosis and management (NG115). Available at:
Chronic obstructive pulmonary disease in over 16s: diagnosis and management

NHS (2023) Causes, Chronic Obstructive Pulmonary Disease (COPD). Available at:
https://www.nhs.uk/conditions/chronic-obstructive-pulmonary-disease-copd/causes/

NHS Confederation (2025) COPD Health Inequalities Improvement Programme. Available at:
COPD Health Inequalities Improvement Programme | NHS Confederation

Wyper, G., Grant, I., Fletcher, E., McCartney, G. and Stockton, D. (2019). Scottish Burden of Disease (SBOD) study: developments and findings of local estimates. *International Journal of Population Data Science*, 4(3). doi:**https://doi.org/10.23889/ijpds.v4i3.1257.**

APPENDICES (see separate)

Appendix 1 - Membership of Project and Expert Reference Groups

Appendix 2 - Community Spirometry Referral From

Appendix 3 – Guidance for Referring Partners

Appendix 4 – Administrative SOP

Appendix 5 – SOP Girvan Community Hospital

Appendix 6 – SOP Arrol Park

Appendix 7 – SOP Fullarton

Appendix 8 – SOP Temple Hill

Appendix 9 – PDSA Cycles

Appendix 10 – Measurement Plan