Health Economics Unit

NHS
Midlands and Lancashire
Commissioning Support Unit

Smarter Spending in Population Health

Using the STAR method to identify value for money in the Birmingham and Solihull COPD pathway

April 2023

Contents

This is the condensed report. For more on methods, references and caveats, please see the full report.

Health Economics Unit

NHS
Midlands and Lancashire
Commissioning Support Unit

Executive summary

- Overview of the process, findings and recommendations

Process

The project aimed to understand how to increase allocative efficiency of the COPD pathway in Birmingham and Solihull. It was facilitated through the following process:

Collect data and evidence on the pathway:

- >**500** COPD patients completed a preferences survey
- >**64** publications were part of the literature review
- >**100** data points were collected looking at costs, activity and health gain.

Collaborative workshops to value the pathway and identify improvements:

- **20** attendees contributed to two workshops
- Attendees included COPD clinicians, public health, finance, informatics, analysts and transformation managers.

Model pathway improvements in terms of costs and population health:

- **13** pathway improvements were modelled using methods validated by LSE
- **Five** pathway improvements are recommended for implementation due to the modelled cost and population health gain.

More details on the project process are on page 12

Key priorities and findings

Prevention and promotion of healthier communities

Reducing the risk of getting COPD alongside reducing exacerbations and promoting healthy lifestyles for those with COPD.

Accurate diagnosis

The earlier an accurate diagnosis, the earlier people receive the correct management plan. Enhanced case finding could help to identify patients earlier.

Support and education for clinicians

Implementing a robust training programme to upskill clinical teams could support delivery of consistently high quality respiratory care.

Living well

Birmingham and Solihull plan to develop a clear set of pathways to support patients at each point of contact with their self-management

Dying well

Development of clinical and social support to improve palliative care processes could have benefits for those in their last years of life.

National priorities

The expansion of the virtual ward aims to treat patients closer to home and to reduce resources needed for their care in a hospital setting.

Recommendations

The following pathway improvements have been modelled and are recommended for implementation as they are likely to lead to the most health generation per pound spent.

Virtual ward as early discharge support	*Expanding spirometry testing*	***Introducing the myCOPD app***	***Increasing uptake of smoking cessation services (Tertiary prevention – Quit with Bella app)***	***Promoting respiratory services within localities through social prescribing – physical activity***
Yearly savings through avoided admission (~£1.8m)	Up to £163k savings a year due to early diagnosis	£0.01 for every additional unit of population health gain	£0.23 for every additional unit of population health gain	£0.26 for every additional unit of population health gain
4,194 fewer bed days required for COPD patients per year	94 fewer hospital admissions a year	~11,000 people receiving self care support a year	1 avoided case of COPD for every 88 people who quit	1 hospital admission avoided for every 70 people treated
National priority addressed: Expand virtual wards	Priority addressed: Accurate and timely diagnosis	Priority addressed: Living well	Priority addressed: Prevention and promotion of healthier communities	Priority addressed: Living well

If implemented, these pathway improvements are expected to be cost saving. They are estimated to save ~£1.8m net per year and lead to a 52.46% percentage point increase to population health.

More details on intervention, recommendations and next steps on pages 20-34

Health Economics Unit

NHS
Midlands and Lancashire
Commissioning Support Unit

Introduction

- Aims for COPD in Birmingham and Solihull

Aims for the COPD population in Birmingham and Solihull

- Birmingham and Solihull Integrated Care System's (ICS) programme development group, in collaboration with the Health Economics Unit (HEU) and partners, piloted the STAR approach to assess the allocative efficiency of their COPD pathway.
- The Socio-Technical Allocation of Resources (STAR) approach synthesises data from multiple sources in easy-to-interpret graphs of where value – in terms of health improvement versus costs – lies within a given pathway. This allows stakeholders, including people with COPD, across Birmingham and Solihull to build a shared understanding of the pathway and reach consensus on how to improve it.
- This summary has been put together to highlight methods, key findings and next steps. Further outputs, caveats and methodology details can be found in the full report.

Health Economics Unit

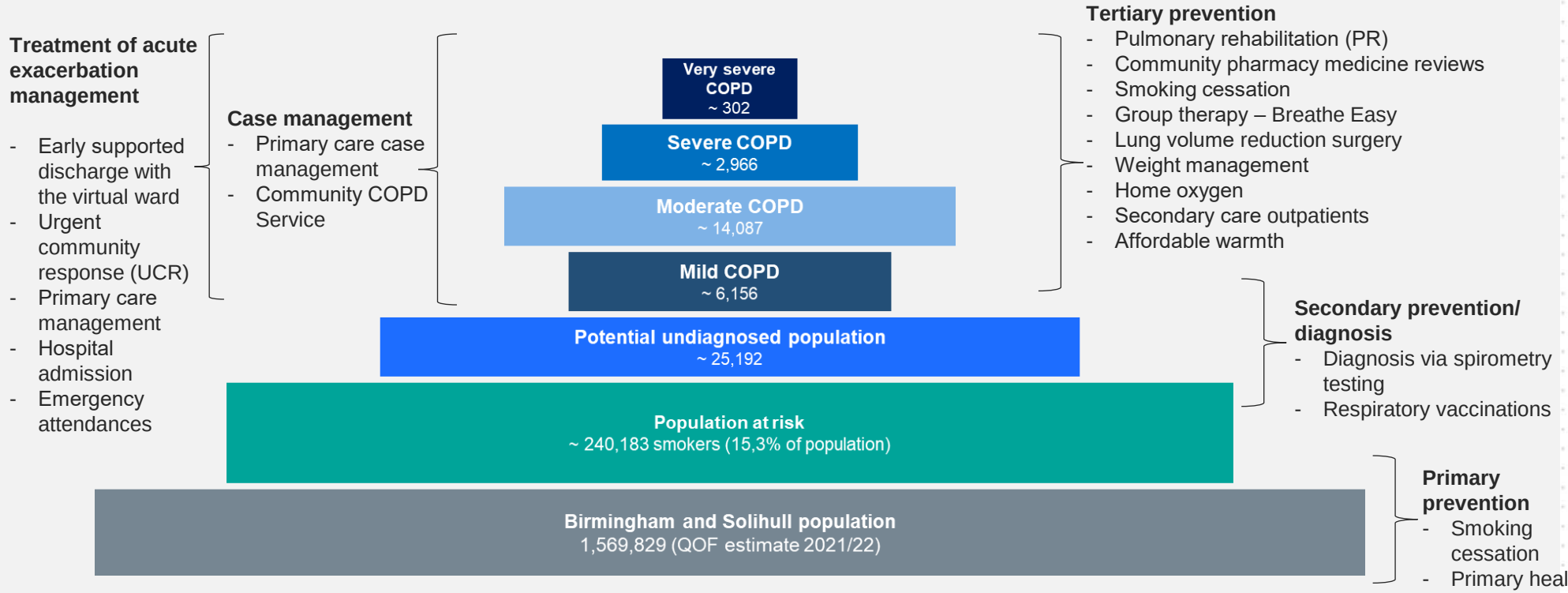
NHS
Midlands and Lancashire
Commissioning Support Unit

Project process

- COPD population
- STAR process
- Birmingham and Solihull priorities
- Identified initiatives

The COPD population in Birmingham and Solihull

The pyramid summarises the estimated population diagnosed, undiagnosed and at risk of developing COPD and the various interventions that make up the COPD pathway



There are up to ~23,473 people diagnosed with COPD. This is approximately 1.5% of the Birmingham and Solihull population.

Approximately 14% of those diagnosed with COPD have severe or very severe COPD and the remaining 86% have mild or moderate COPD.

Some estimates say that the true prevalence of COPD is 3.1%, suggesting that over a third of the COPD population is undiagnosed.

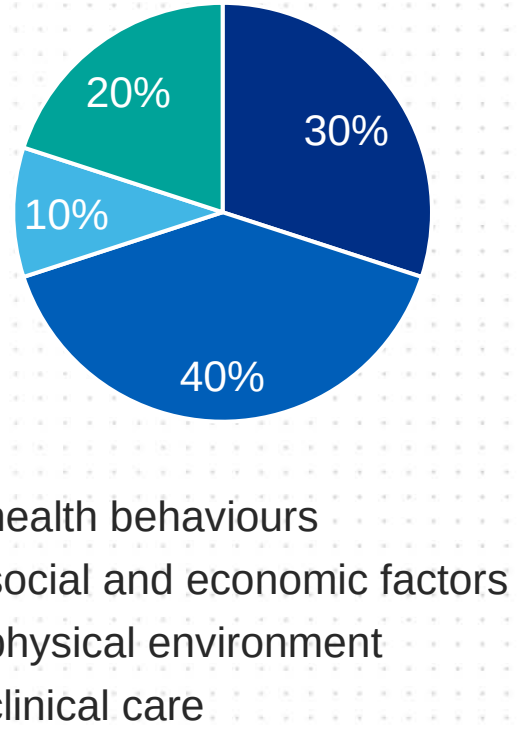
15.3% of the population are smokers, putting them at risk of COPD. Data suggests smokers are more likely to live in deprived areas.

(QOF, 2021/22, Nacul et al., 2007, e-healthscope)

Why STAR?

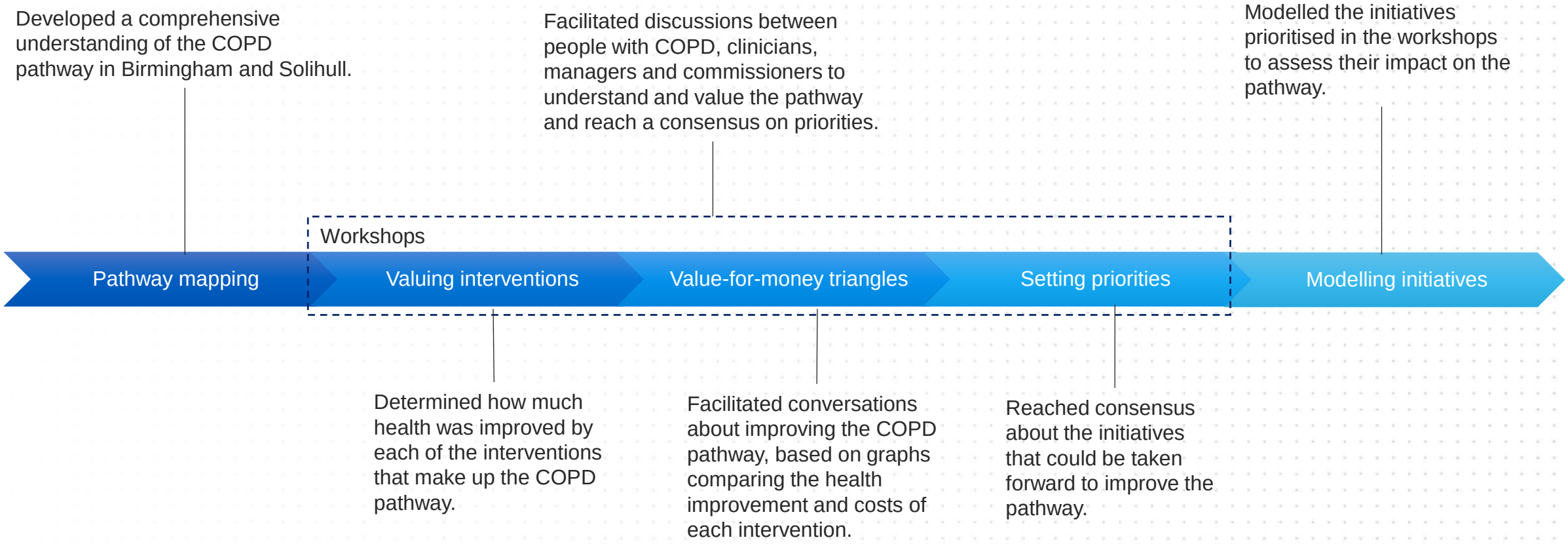
- STAR is a method that can help to determine the priorities through a technical value-for-money analysis with extensive stakeholder engagement.
- STAR provides a structured way to bring stakeholders together to think about allocating resources across the entirety of a pathway through workshops and the building of graphs.
- Clinical care accounts for ~20% of modifiable contributors to population health. STAR allows consideration of the full pathway including all modifiable health determinants.

Modifiable health determinants



(Hood et.al, 2016)

The STAR process



See the full report for more detail.

(Airoldi et al., 2014; The Health Foundation, n.d.)

The pathway improvements identified in each priority area

As part of the process, interventions and initiatives within the six key areas were identified to be taken forward for modelling:

Prevention and promotion of healthier communities

- Increasing uptake of smoking cessation services
- Increasing uptake of pulmonary rehabilitation (PR) services
- Driving pneumonia vaccination uptake

Accurate diagnosis

- Increasing uptake and quality of spirometry testing
- Case finding

Support and education for clinicians

- Improving the quality of primary care management through clinical education
- Promoting respiratory services in localities through social prescribing
- Medicines optimisation reviews

Living well

- Psychological support
- Promoting self-care through the myCOPD app
- Virtual ward - admissions avoidance

Dying well

- Hospice-at-home virtual ward

National priorities

- Expanding the virtual ward as an early discharge support intervention

Health Economics Unit

NHS
Midlands and Lancashire
Commissioning Support Unit

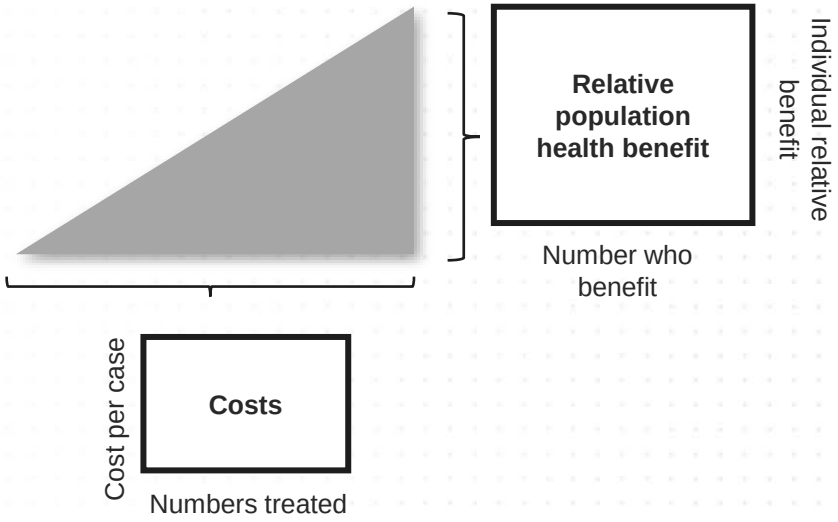
Current pathway

- Interpreting the value-for-money triangles
- The Birmingham and Solihull COPD value-for-money triangles

Interpreting the value-for-money triangles: An intervention

What does a value-for-money triangle represent?

- Each triangle represents an intervention or package of care.
- The steeper the slope, the higher the value for money.
- A triangle has cost across the x-axis and population health gain across the y-axis.



What does the slope of the triangle mean?

The gradient of the slope is due to the costs (numbers who are treated x the individual cost) and the benefit (numbers who benefit x the individual benefit):

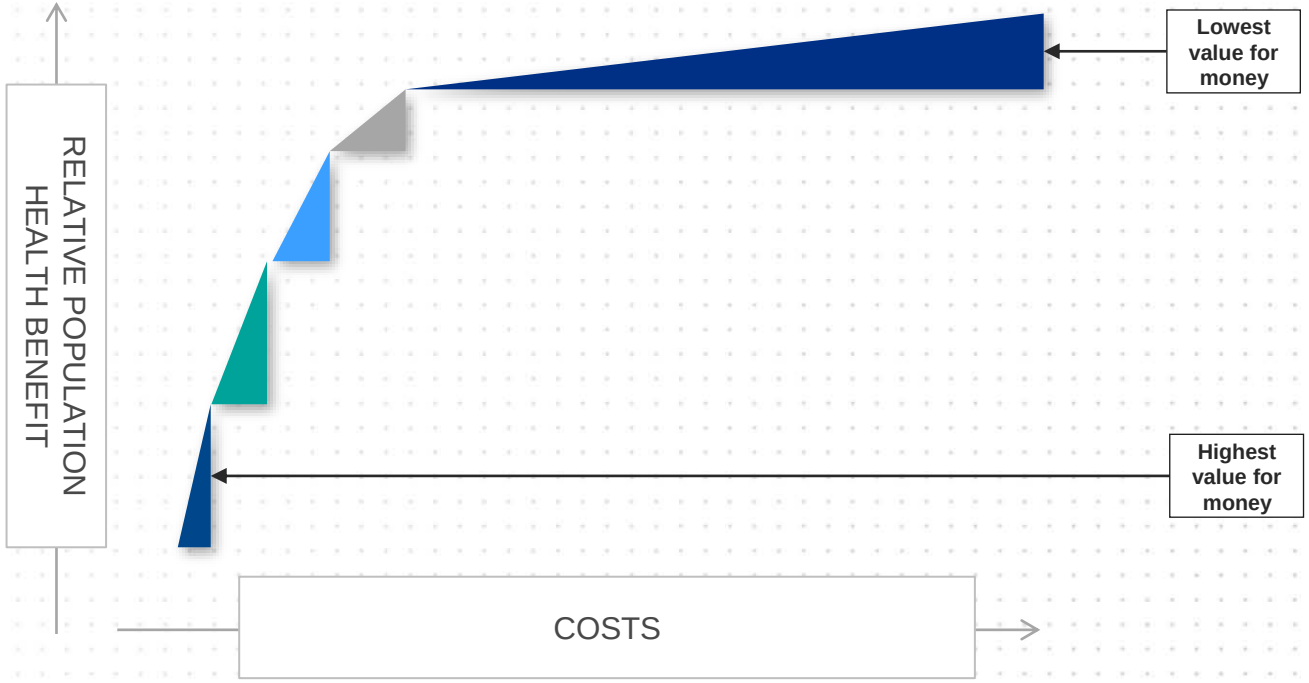
Lower value-for-money triangle
This means that this intervention is *relatively* lower value for money compared to other interventions.

Higher value-for money triangle
This means that this intervention is *relatively* higher value for money compared to other interventions.

Note: Higher value-for-money triangles are not necessarily “good” and lower value-for-money triangles are not necessarily “bad”.

Interpreting the value-for-money triangles: The pathway

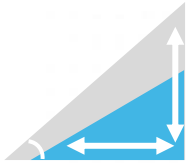
- This is an easy-to-interpret graph of where the value lies in a pathway.
- The triangles (interventions) are ordered by their value for money (highest to lowest) to create a view of the entire pathway.
- Costs, benefits, numbers who benefit and numbers treated were sourced from data, literature and workshops.
- Workshop discussions were used to help the group work together to gain consensus, with the support of facilitators, evidence and data.



Interpreting the value-for-money triangles: Improvements

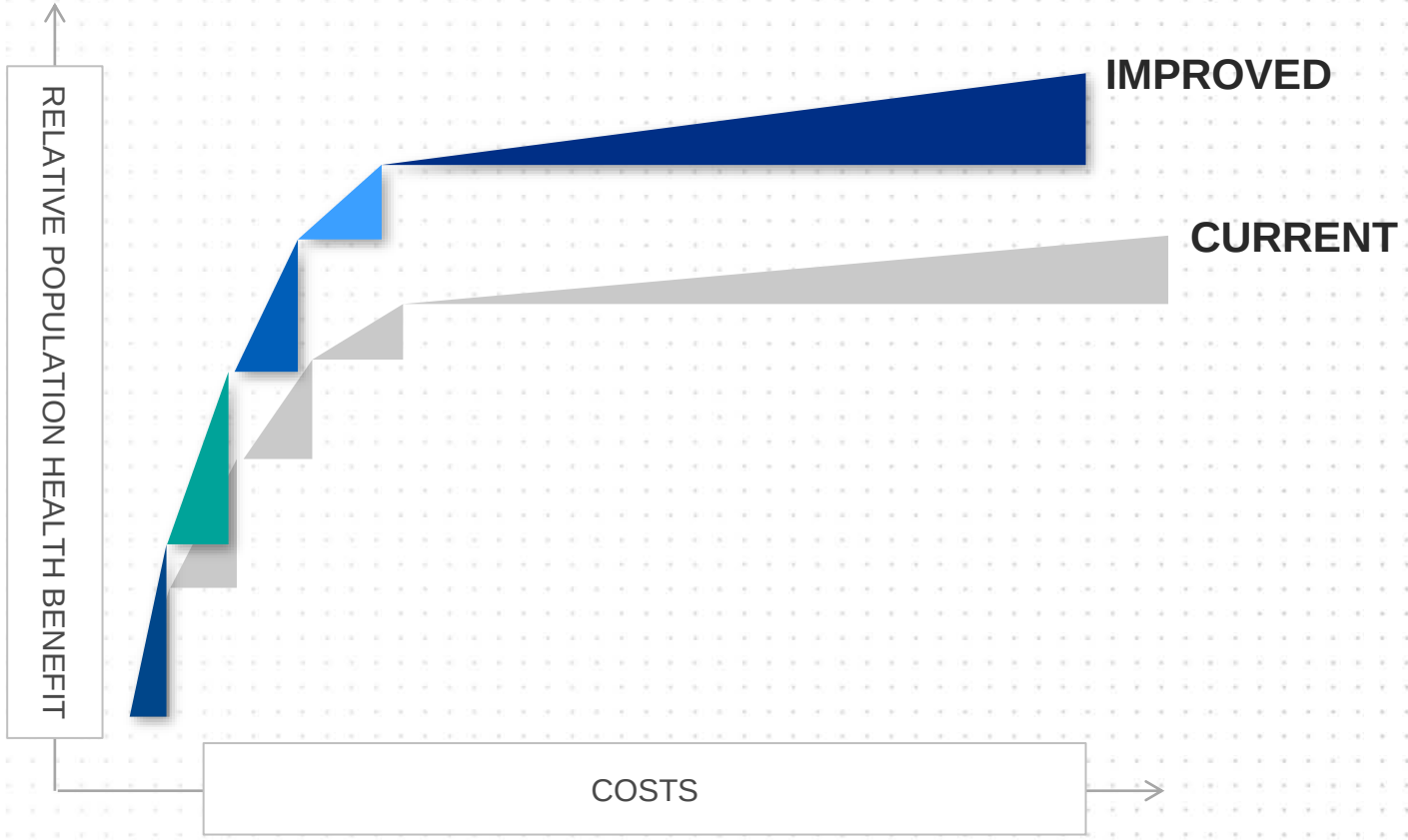
The value for money triangles can be improved by increasing the population health gain and freeing-up resource/reducing costs. This can be done by:

Changing the size - *Doing more or less*

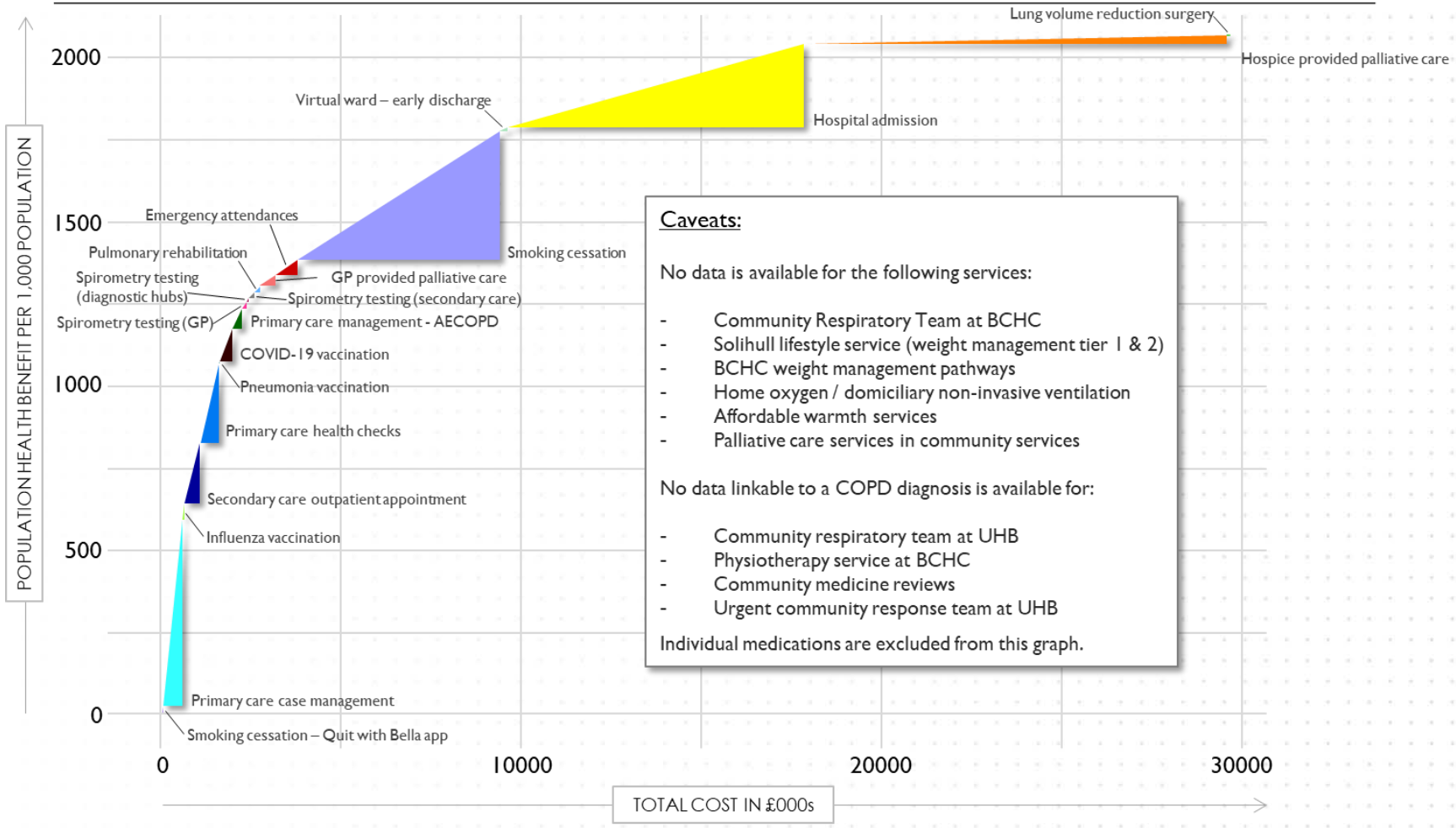


Changing the shape - *Doing things differently*

New - *New interventions*



VALUE OF COPD CARE PATHWAY IN BIRMINGHAM & SOLIHULL



Caveats:

No data is available for the following services:

- Community Respiratory Team at BCHC
- Solihull lifestyle service (weight management tier 1 & 2)
- BCHC weight management pathways
- Home oxygen / domiciliary non-invasive ventilation
- Affordable warmth services
- Palliative care services in community services

No data linkable to a COPD diagnosis is available for:

- Community respiratory team at UHB
- Physiotherapy service at BCHC
- Community medicine reviews
- Urgent community response team at UHB

Individual medications are excluded from this graph.

	PRIMARY PREVENTION	SECONDARY PREVENTION/DIAGNOSIS	CASE MANAGEMENT	TERTIARY PREVENTION	MANAGEMENT OF EXACERBATIONS	PALLIATIVE CARE
% of total spend	20.9%	2.5%	3.32%	0.8%	31.5%	41%
% of pop health gain	30.5%	11.2%	36.5%	0.9%	17.9%	3..02%

This shows the value-for-money triangles of the current COPD pathway.

The aim of identifying initiatives is to alter individual interventions to ultimately shift the pathway:

↑ **Upward** Increasing population health benefit

← **Left** Reducing costs (where appropriate)

Key messages on the efficiency frontier

Prevention and promotion of healthier communities

Reducing the risk of developing COPD alongside reducing exacerbations and promoting healthy lifestyles for those who have COPD is the best way to maximise quality of life for the population.

Accurate diagnosis

Accurate and early diagnosis is essential to the care and management of patients. The earlier the diagnosis, the earlier people can receive the correct management plan. Enhanced case finding strategies could help to identify patients - there is an ambition for a system-wide community-based model to identify and fast-track patients.

Support and education for clinicians

There is a variation in the knowledge of the Birmingham and Solihull COPD pathway and latest guidance. Implementing a robust training programme to upskill clinical teams could support delivery of higher quality and consistent respiratory care.

Living well

As a chronic condition, people living with COPD need to be supported to self-manage their condition. Birmingham and Solihull plan to develop a clear set of pathways to support patients at each point of contact with their self management activities.

Dying well

Development of clinical and social support systems to improve palliative care processes for patients and carers could have big benefits for people with COPD who are in their last years of life.

National priorities

The expansion of the virtual ward as early discharge support for respiratory exacerbations is a national priority. It aims to treat patients closer to home and to reduce the amount of resources needed for their care in hospital setting. The virtual ward is currently being trialled in University Hospitals Birmingham.

Health Economics Unit

NHS
Midlands and Lancashire
Commissioning Support Unit

Pathway modelling

- Initiatives and their modelled impacts
- Next steps and recommendations

Identified pathway improvements

The interventions and initiatives identified in the workshops were:

- Increasing uptake of smoking cessation services
- Increasing uptake of PR services
- Driving pneumonia vaccination uptake

Prevention and promotion of healthier communities

- Increasing uptake and quality of spirometry testing
- Case finding

Accurate diagnosis

- Improving the quality of primary care management through clinical education
- Promoting respiratory services within localities through social prescribing - physical activity
- Medicines optimisation reviews

Support and education for clinicians

- Psychological support
- Promoting self-care through the myCOPD app
- Virtual ward - admissions avoidance

Living well

- Hospice-at-home virtual ward

Dying well

- Expanding the virtual ward as an early discharge support intervention

National priorities

The potential impact on the rest of the pathway was assessed and modelled following the workshops. The following section outlines the findings.

Assessing the impact of improvements on the COPD pathway

Aim

- To demonstrate the potential impact of the interventions on the COPD pathway to support conversations on priority-setting.

Methods

- Discussion in the workshops was used to build out what the scenarios could look like. This was confirmed and refined through conversations following the workshops. This was combined with assumptions from the literature (identified through an umbrella literature review) looking at how an intervention may change healthcare resource use.

Limitations

- Only costs of provision have been included. Programme and capital spend that would be required to set up the interventions have not been included.
- Further work would need to be done to adapt these scenarios into business cases.

More information is available in the full report.

Increasing uptake of smoking cessation services

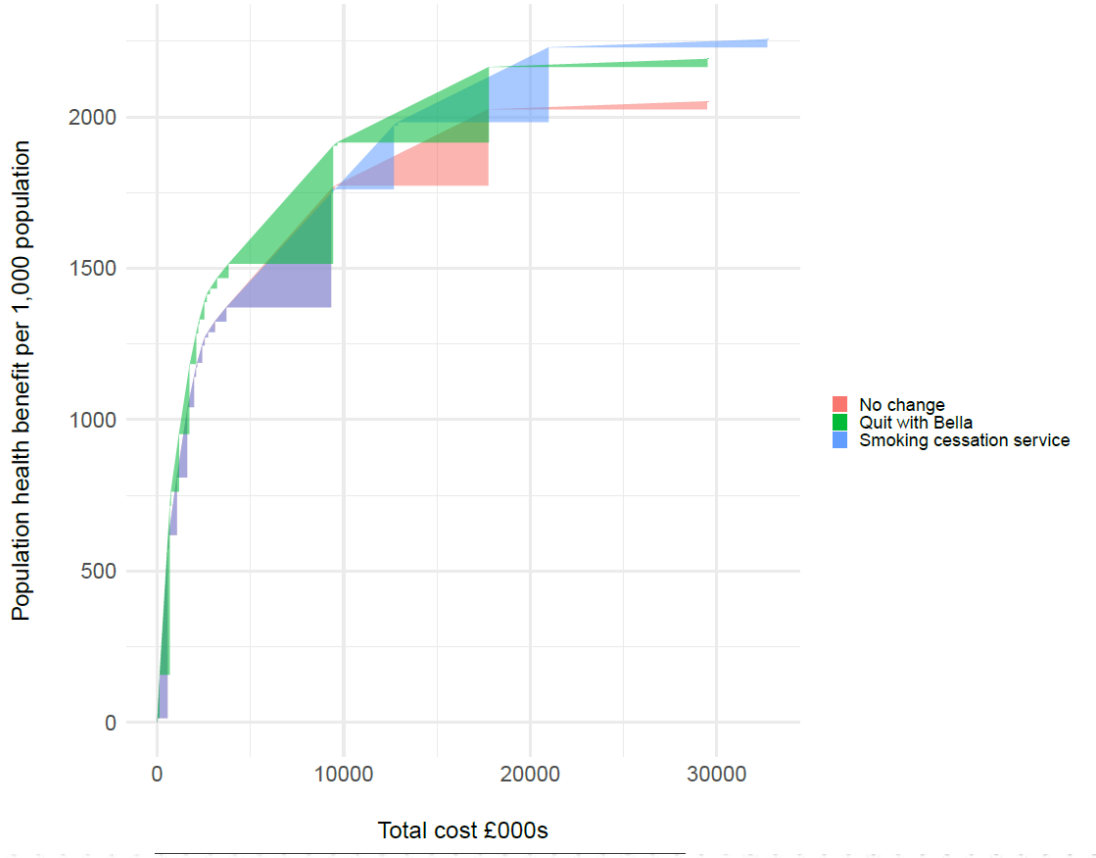
Intervention

Improving the number of people who take up smoking cessation services and complete them would help to reduce the number of people who develop COPD. Also, stopping people with COPD from smoking can impact the rate of exacerbations and hospital admissions.

Expected change

Increasing access of both the smoking cessation app and the Quit with Bella app are likely to increase population health due to more people quitting smoking. However the smoking cessation programme has a much larger cost associated with it.

Metric	Total	Interpretation
Total additional pathway costs • Primary prevention • Tertiary prevention	Smoking cessation service = £5,561,830 Quit with Bella = £7,507.84 Smoking cessation service = £3,250,791.65 Quit with Bella = £33,474.41	None of the scenarios proposed are expected to avoid enough cases of COPD or acute exacerbations to be cost saving. This is partly because approximately three people in both services need to set a quit date to get one additional quitter.
Additional cost/additional population health ratio • Primary prevention • Tertiary prevention	Smoking cessation service = 14.26 Quit with Bella = 0.54 Smoking cessation service = 15.43 Quit with Bella = 0.23	The Quit with Bella app is expected to cost a lot less to generate each additional unit of population health than the smoking cessation service.
Cost ratio • Primary prevention • Tertiary prevention	Smoking cessation service = 0.01 Quit with Bella = 0.25 Smoking cessation service = 0.04 Quit with Bella = 0.71	Neither service is expected to be cost saving.



Increasing uptake of pulmonary rehabilitation services

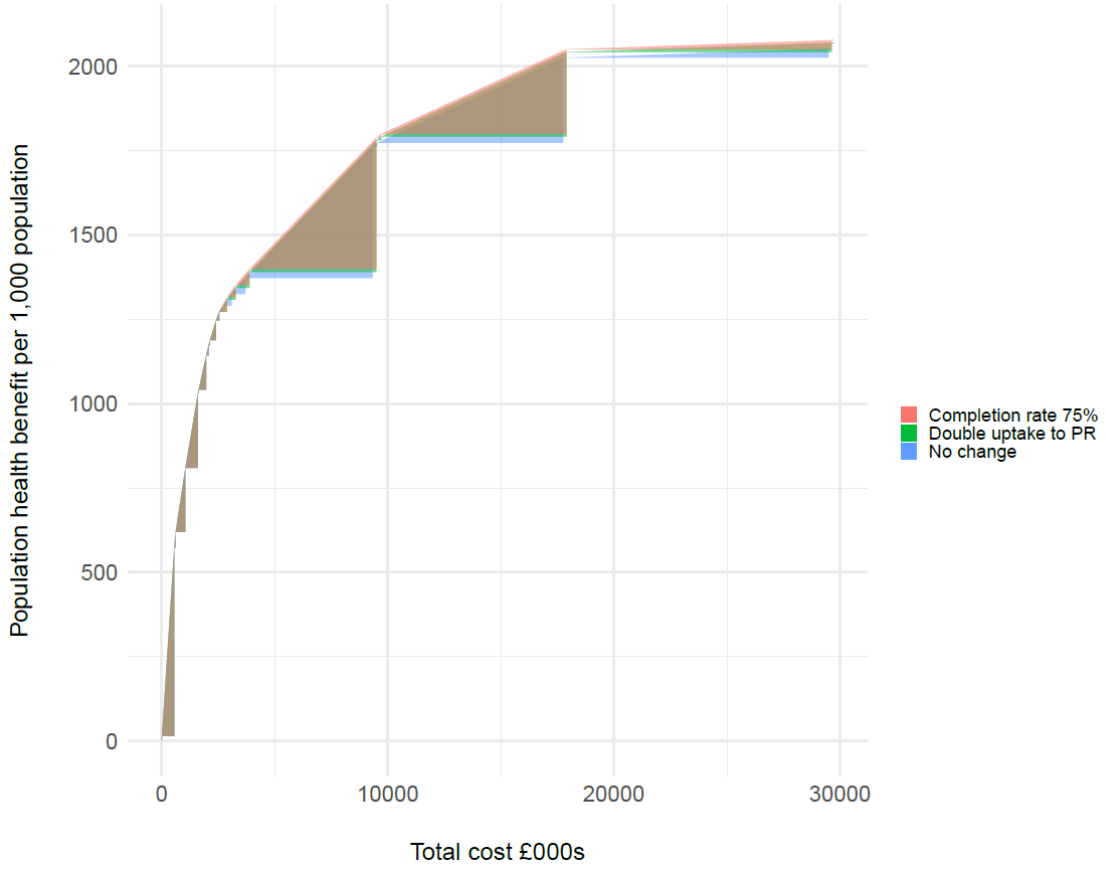
Intervention

Pulmonary rehabilitation (PR) is widely regarded as one of the best things that someone with COPD can do to improve their quality of life. Currently an estimated 51% of people complete PR. This means around two people need to be treated for one person to benefit. Improving completion rates would make PR a more cost-effective intervention.

Expected change

We modelled the effect on the rest of the pathway that increasing the number of patients starting the course and improving the completion rate to 75% has. The expected change is of relatively low impact due to a small number of patients accessing this intervention.

Metric	Total	Interpretation
Total additional pathway costs • Double people starting course • Improving completion rate to 75%	 £155,217.84 £145,254.32	Neither scenario is expected to offset enough hospital admissions to be cost saving.
Additional cost/additional population health ratio • Double people starting course. • Improving completion rate to 75%	 6.87 4.36	With the current completion rate, PR is expected to cost £6.87 for every additional unit of population health gain. With a 75% completion rate, it would be £4.36.
Cost ratio • Double people starting course. • Improving completion rate to 75%	 0.11 0.16	With the current completion rate, PR is expected to save £0.11 elsewhere in the pathway for every £1 spent. With a 75% completion rate that would be £0.16.



Driving uptake of pneumonia vaccination

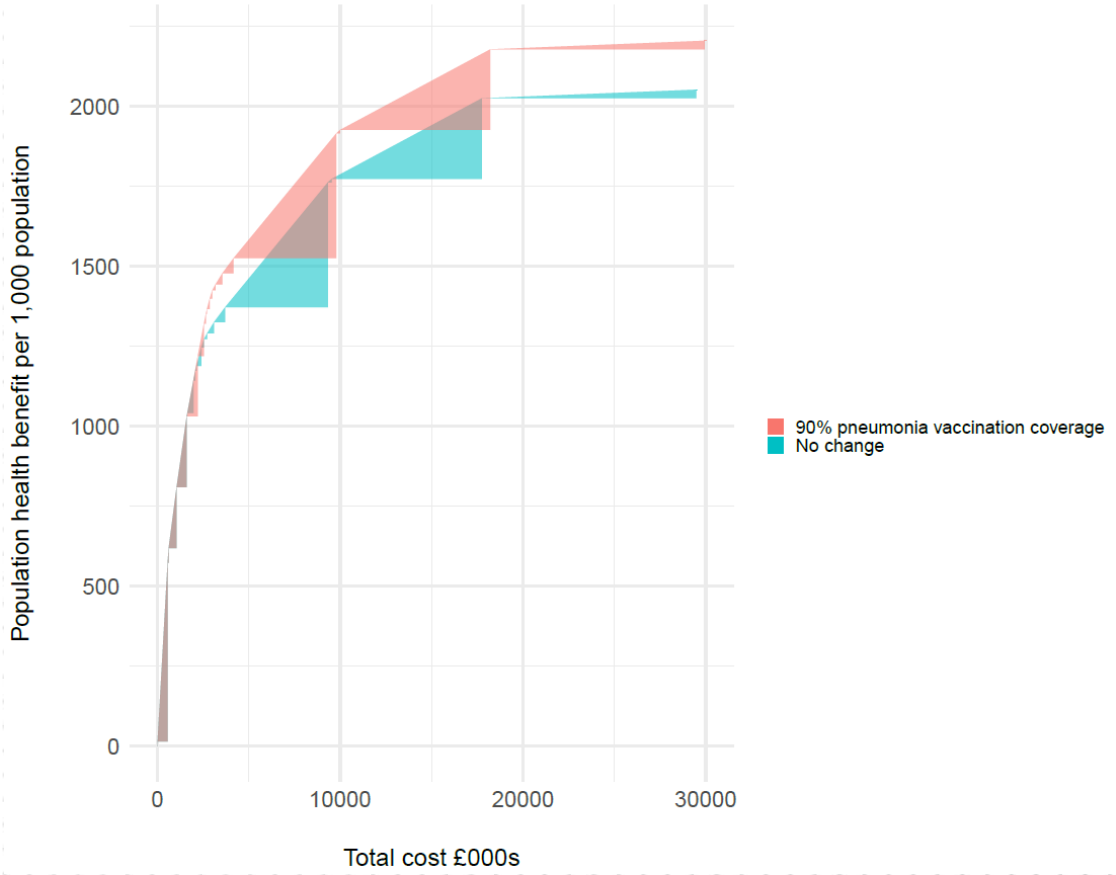
Intervention

Approximately 4.4% of patients with COPD had a pneumonia vaccination in 2021/22. According to a Cochrane Review, the number of patients needed to be treated to prevent a patient from experiencing an exacerbation is eight. Therefore more can be done to improve the uptake of pneumonia vaccinations for those with COPD.

Expected change

we modelled what it would look like if pneumonia vaccination coverage was expanded to 90% of patients with COPD. In the current COPD pathway, pneumonia vaccinations are the 6th best value for money intervention in the pathway but only reached a small proportion of the target population. Although this improvement is not expected to be cost saving, it would lead to a large increase in population health gain.

Metric	Total	Interpretation
Total additional pathway costs	£489,077.91	The number of avoided acute exacerbations is not expected to offset the costs of this pathway improvement.
Additional cost/additional population health ratio	2.60	Increasing the number of pneumonia vaccinations is estimated to cost £2.60 for every additional unit of population health gain.
Cost ratio	0.19	This pathway improvement is expected to cost £0.19 for every additional £1 spent.



Increasing uptake and quality of spirometry testing

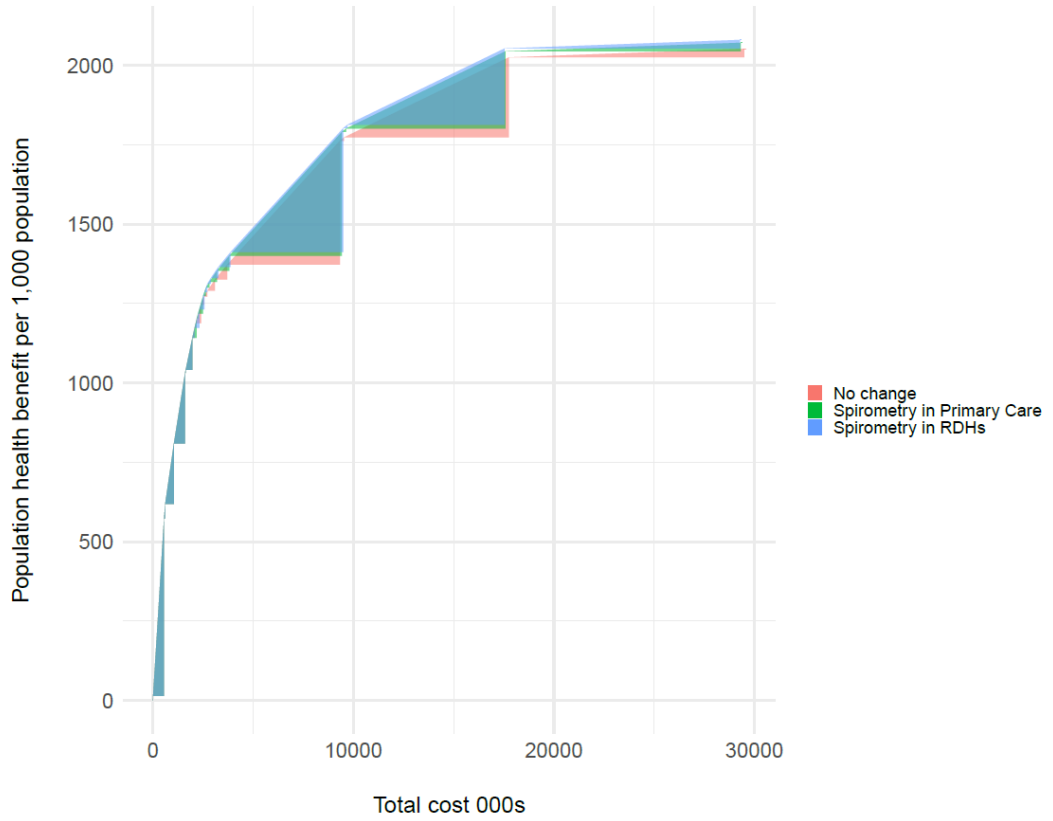
Intervention

Diagnostics is a critical step in COPD management. Spirometry tests can be administered by clinical practices, diagnostic hubs and in secondary care. Numbers suggests that administering those tests in hubs and practices is cheaper compared to secondary care and increasing testing will therefore improve the value-for-money.

Expected change

We modelled two scenarios that are both expected to be cost saving due to the reduction in hospital admissions associated with earlier diagnoses. Doubling the number of tests in primary care is expected to be slightly better value for money as it has a higher estimated diagnosis rate.

Metric	Total	Interpretation
Total additional pathway costs • Doubling tests in primary care • Expanding respiratory diagnostic hubs (RDHs)	 -£134,400.68 -£163,742.59	Both scenarios are expected to be cost saving.
Additional cost/additional population health ratio • Doubling tests in primary care • Expanding RDHs	 -4.38 -3.76	Expanding spirometry tests through the RDHs is expected to save £3.76 for every unit of population health gain it generates, compared to £4.38 for the doubling of tests in primary care.
Cost ratio • Doubling tests in primary care • Expanding RDHs	 2.23 1.89	Expanding spirometry tests through the RDHs would save £1.89 for every £1 spent compared to £2.23 in primary care.



Improving the quality of primary care management through clinical education

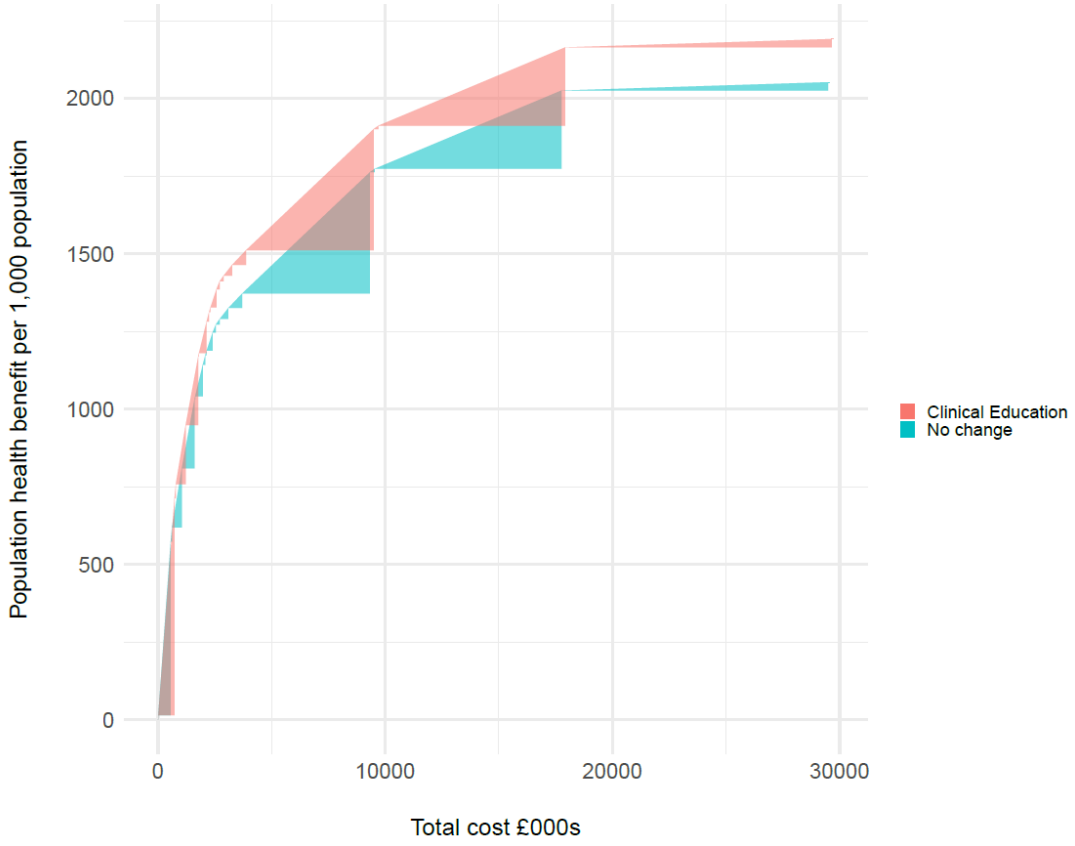
Intervention

Current provision of primary care for people with COPD is variable. Helping general practice staff to develop specialist skills in COPD management could help to reduce this variability. Education for primary care staff will be offered through the Birmingham and Solihull training hub.

Expected change

It is assumed that the benefits of educating primary care staff in COPD is that it would improve the relative benefit score of primary care management 40 to a score of 55 (in line with that of the community provided case management services).

Metric	Total	Interpretation
Total additional pathway costs	£167,064	This pathway improvement is expected to be cost incurring.
Additional cost/additional population health ratio	1.20	This pathway improvement is expected to cost £1.20 for every additional unit increase in population health gain.
Cost ratio	N/A	No expected cost savings.



Promoting respiratory services within localities through social prescribing

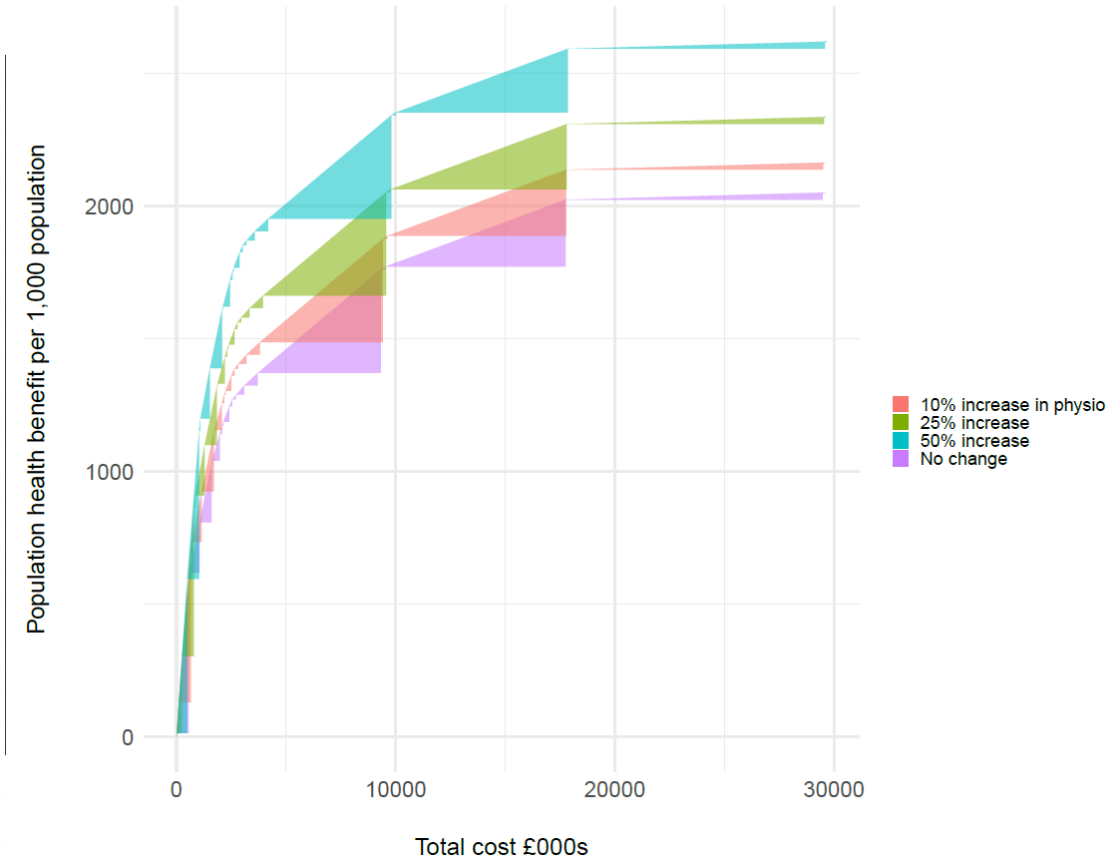
Intervention

There are many services that could be beneficial for people with COPD. These could be flagged to patients through text messages from their GPs and through the myCOPD app. As smoking cessation services and PR services are modelled elsewhere, here we focus on the creation of a physical exercise programme that allows people with long term conditions to increase their activity levels.

Expected change

Increased physical activity programmes through social prescribing could have a large increase in the population health generated. Although it is not expected to be cost saving, it would generate more population health for the spend than a PR course.

Metric	Total	Interpretation
Total additional pathway costs	10%: £30,016.26 25%: £77,551.44 50%: £155,143.26	This pathway improvement is expected to be cost incurring.
Additional cost/additional population health ratio	0.26	This scenario costs £0.26 for every additional unit of population health gain it generates.
Cost ratio	0.68	£0.68 is saved elsewhere in the COPD pathway for every £1 spent.



Medicines optimisation reviews

Intervention
The appropriate or inappropriate use of rescue therapies, inhalers and other medications can make a big difference in the quality of life for someone with COPD and in the cost of medications to the health system. More can be done to ensure triple therapy is appropriately prescribed.

Expected change
One cost-consequence analysis by Wright et al. used the Clinical Practice Research Datalink (CPRD) database to ascertain the current prescribing practices and compared that to NICE guidelines. They identified two large areas where there was a >10% difference between the number of people prescribed a medication and those recommended to receive it as part of the NICE guidelines:

- 24.58% of people with low exacerbation history and high current symptoms and 19.81% of people with low exacerbation history and low current symptoms were not prescribed long-acting beta-agonists (LABA)/long-acting muscarinic antagonists (LAMA) and should have been.

- 16.84% of people with low exacerbation history and high current symptoms and 12.76% of people with low exacerbation history and low current symptoms were prescribed LABA/LAMA/inhaled corticosteroids (ICS) and should not have been. These patients should be stepped down from being patients on LABA/LAMA/ICS triple therapy and being redistributed to LABA/LAMA dual therapy.

Scenarios
Whilst there are potential cost savings to be made by optimising medications, it is not possible to model moving from the correct treatments for three reasons:

1. It is not possible to identify the number of people who are incorrectly prescribed medications in existing datasets. Therefore we are unable to estimate the potential size of the prize.

2. Not all clinicians would agree on what is appropriate or inappropriate prescribing and this is a matter for clinical judgement.

3. Wright et al. report a 1% increase in both moderate exacerbations and severe exacerbations due to patients on LABA/LAMA/ICS triple therapy being redistributed to LABA/LAMA dual therapy. Therefore there is a risk of increasing exacerbations and mortality by inappropriate step downs.

Psychological support for patients

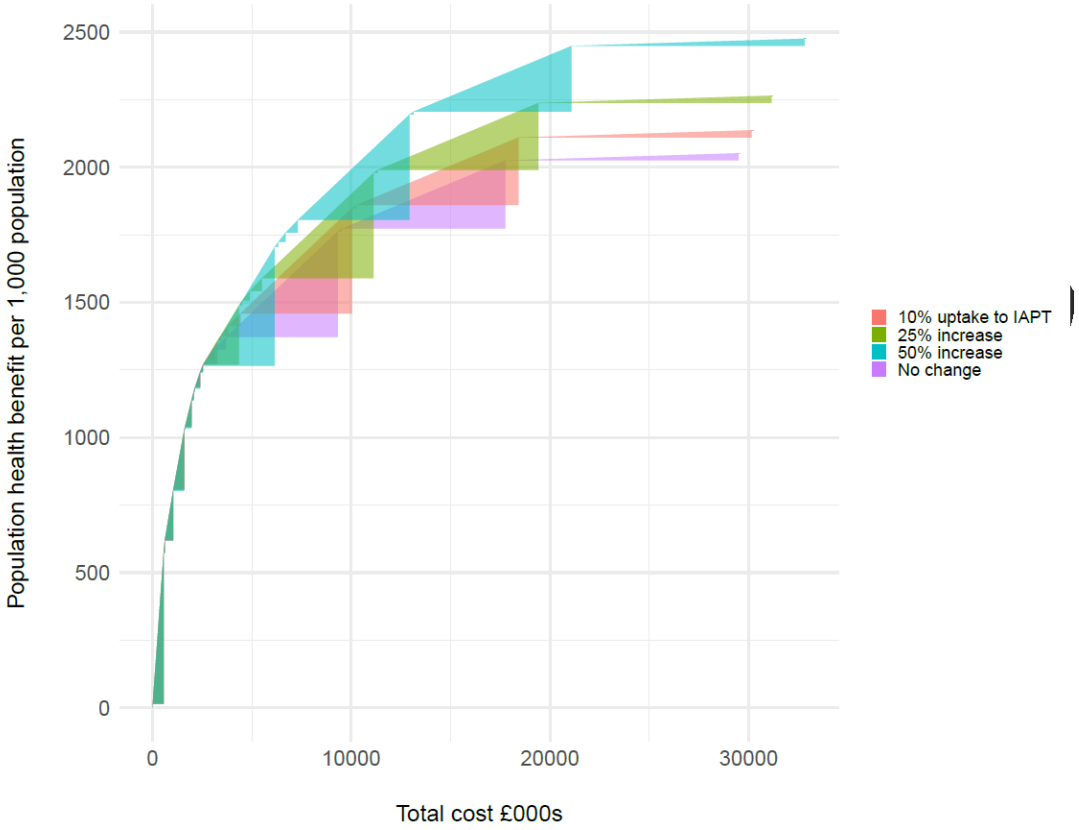
Intervention

Anxiety and depression are among the main co-morbidities for people with COPD. The Improving Access to Psychological Therapies (IAPT) services provide evidence-based treatments for people with depression and anxiety disorders, and comorbid long-term physical health conditions.

Expected change

Here we estimate what effect it would have on the pathway if 10%, 25% or 50% of people with COPD and living with anxiety or depression were referred to IAPT. The reduction in hospital admissions avoided is not expected to offset the cost of providing those services. Although it is expected to generate benefit, there are substantial costs associated.

Metric	Total	Interpretation
Total additional pathway costs	10%: £663,971.49 25%: £1,663,249.22 50%: £3,323,873.45	This pathway improvement is associated with substantial costs.
Additional cost/additional population health ratio	7.54	One additional unit of population health gain is expected to be generated for every £7.54 spent.
Cost ratio	0.08	£0.08 would be saved elsewhere in the pathway for every £1 spent.



Promoting self-care through the myCOPD app

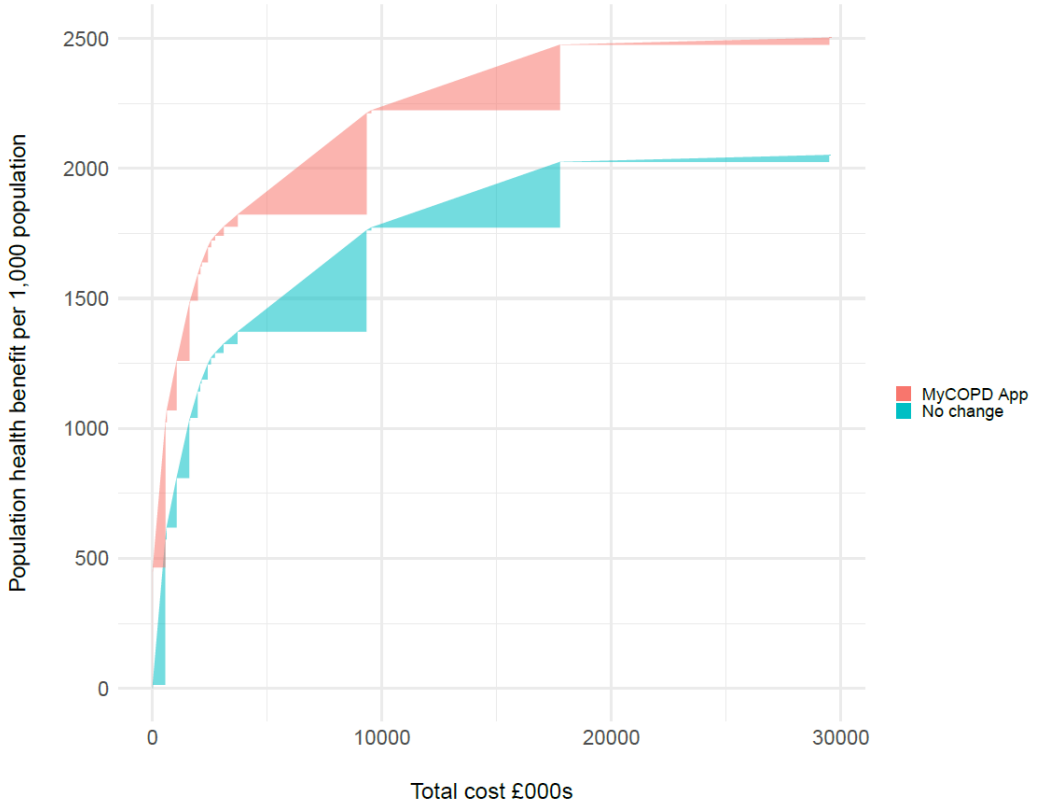
Intervention

The myCOPD app is a smartphone application to support the self-management of people at any stage of COPD. It provides education on inhaler use, help with self-management, prescription assessments and symptom tracking, and provides access to a six-week PR course. Healthcare professionals can also use the app to communicate with patients.

Expected change

Offering the myCOPD app will support patients to self-manage as well as receive information from their care providers. The app is a relatively cheap intervention at an estimated cost of £0.25 per person. However, given that NICE recommends more research, if the myCOPD app were to be taken forward by Birmingham and Solihull ICS, an evaluation of the app should be commissioned alongside its rollout (the cost of the evaluation is not costed into this scenario).

Metric	Total	Interpretation
Total additional pathway costs	£5,868	The myCOPD app is a relatively cheap intervention compared to others.
Additional cost/additional population health ratio	0.01	This improvement would cost £0.01 for every additional unit of population health gain it generates.
Cost ratio	N/A	There are no expected cost savings from this pathway improvement.



Virtual ward - admissions avoidance

Intervention

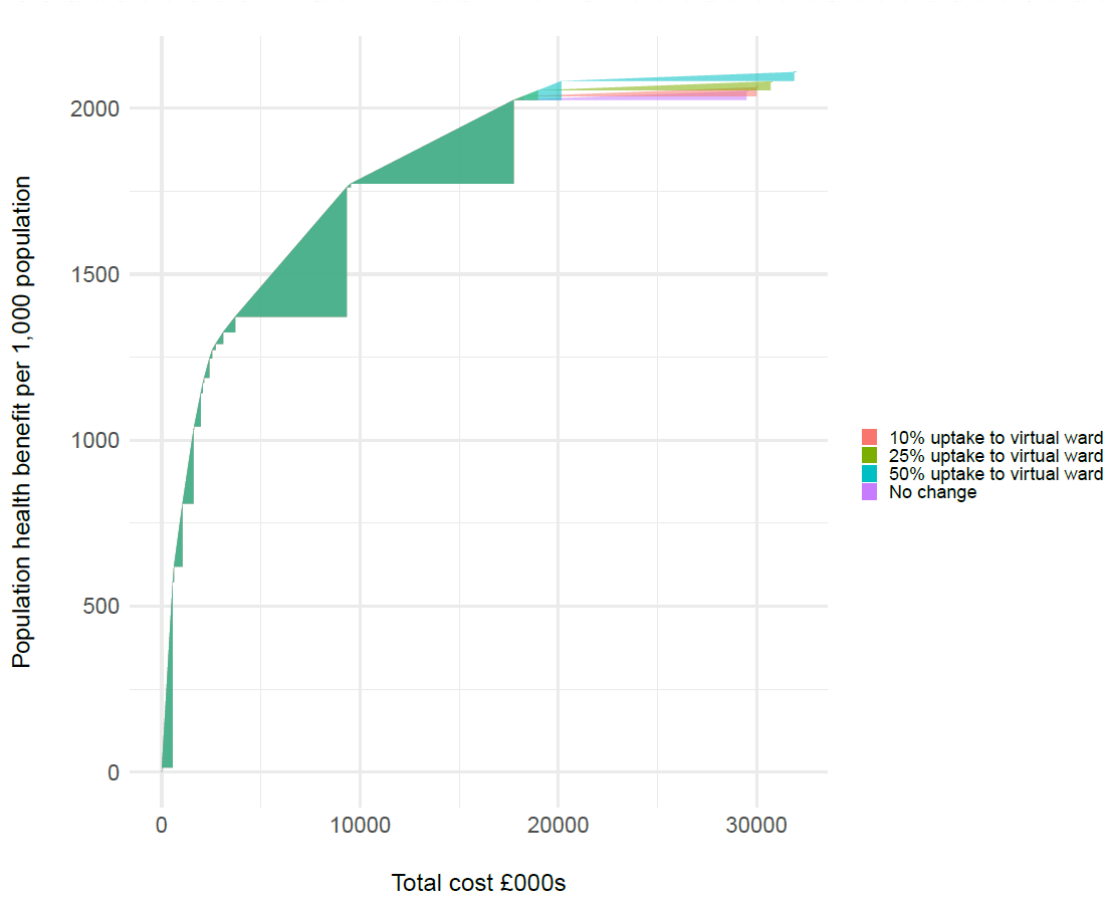
Currently the virtual ward is only offered to people as part of early discharge support following a hospital admission for an acute exacerbation. In the decision conference, it was suggested that the virtual ward could be offered to people who are at high risk of a hospital admission or 'frequent flyers'.

Expected change

The number of people at risk of a hospital admission is not known, therefore we look at offering the virtual ward as an admissions avoidance intervention to 10%, 25% and 50% of people with severe or very severe COPD. The virtual ward, if used for admissions avoidance, would need to avoid one hospital admission for every 1.91 people included on it to be cost saving.

If the virtual ward is implemented, an evaluation of the intervention should be commissioned to assess its impact.

Metric	Total	Interpretation
Total additional pathway costs	10%: £504,054.15 25%: £1,217,035.88 50%: £24,405,819.90	This pathway improvement is expected to be associated with significant costs.
Additional cost/ additional population health ratio	10%: 44.04 25%: 42.56 50%: 42.07	If 50% of people with severe or very severe COPD use the virtual ward, it is expected to cost £42.07 for every additional unit of population health gain.
Cost ratio	N/A	There are no expected cost savings from this pathway improvement as we cannot evidence a reduction in admissions due to the virtual ward.



Hospice-at-home virtual ward

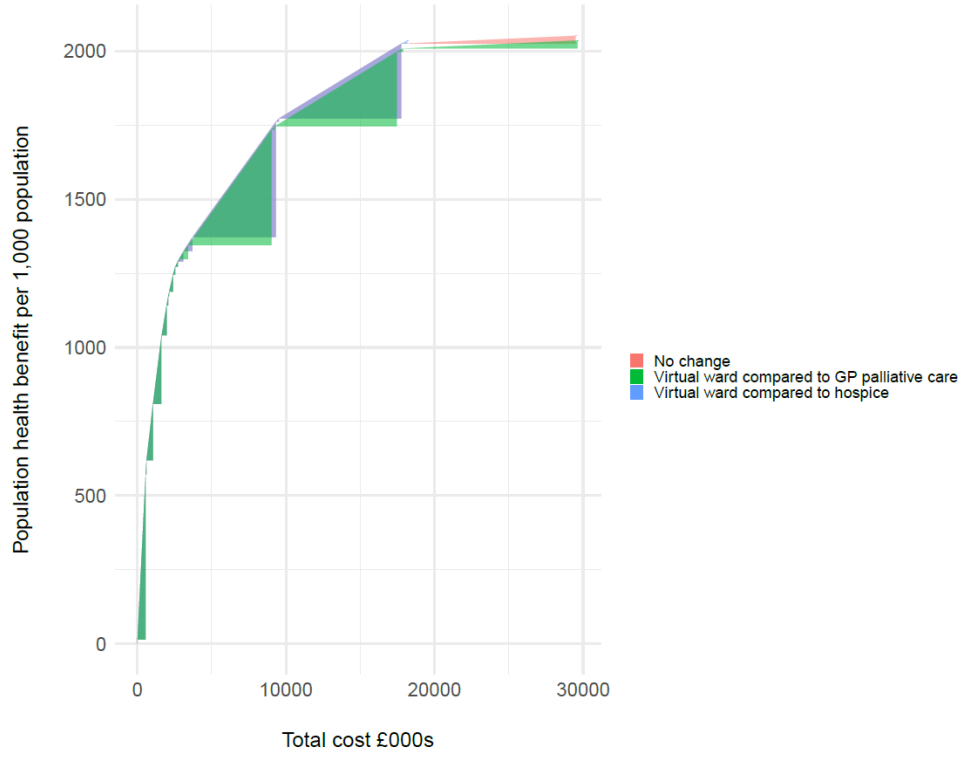
Intervention

Palliative care services are less well-developed for patients with chronic disorders compared to those with malignant disease. Most patients want more information about their illness to facilitate participation in decision making. Development of clinical and social support systems to improve palliative care processes for patients and carers could have big benefits for people with COPD who are in their last years of life.

Expected change

There is not a single standard palliative care model for COPD patients. The common models are hospice-provided palliative care, GP-provided palliative care and community-provided palliative care. Since no data was available on community provided palliative care, we have modelled two scenarios. In the first scenario, the expansion of virtual wards palliative care offer is compared to expanding hospice-provided palliative care and in the second, it is compared to expanding GP-provided palliative care. If the virtual ward was used to expand palliative care instead of hospice level care, it is estimated to be vastly cost saving (£11 million).

Metric	Total	Interpretation
Total additional pathway costs		The cost-effectiveness of the palliative care virtual ward depends on the relevant comparator.
- Compared to hospice care	£11,312,029.10	
- Compared to GP palliative care	£133,943.80	
Additional cost/additional population health ratio		If the virtual ward palliative care replaced hospice care, it could save £1,059.67 for every additional unit of population health gain generated. If it replaced GP palliative care, it would cost 12.55 for every additional unit of population health gain.
- Replacing hospice care	1059.67	
- Replacing GP palliative care	12.55	
Cost ratio		If replacing hospice care, the virtual ward could save £27.86 for £1 spent. If replacing GP palliative care, it would save £0.68 for every £1 spent.
- Replacing hospice care	- 27.86	
- Replacing GP palliative care	- 0.68	



Expanding the virtual ward as an early discharge support intervention

Intervention

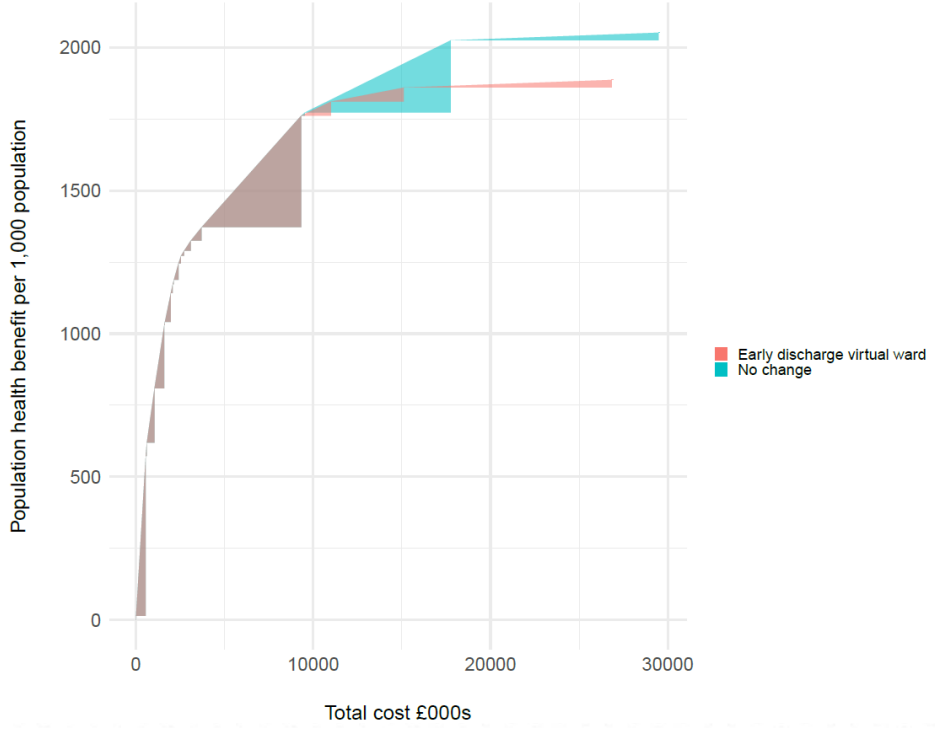
The expansion of the virtual ward as early discharge support for respiratory exacerbations is a national priority. It aims to treat patients closer to home and to reduce the amount of resources needed to treat in hospital. The virtual ward is currently being trialled in University Hospitals Birmingham.

Expected change

A 2017 Cochrane Review showed virtual wards to be comparable with current practice in terms of readmission to hospital (Gonçalves-Bradley et al., 2017). That paper suggested a reduction in length of stay of around seven days for patients, and this is supported by a more recent paper which suggests a length of stay two days less than expected, with a median length of stay of one day (Echevarria et al., 2018).

Treating a patient on the virtual ward is expected to cost 48.15% of the cost of treating an acute exacerbation through a hospital admission alone so will save money.

Metric	Total	Interpretation
Total additional pathway costs	-£1,802,830	This pathway improvement is expected to be cost saving as it is estimated that treating someone on the virtual ward costs on average 48.15% of treating someone through a normal hospital admission.
Additional cost/additional population health ratio	-36.85	This pathway improvement is expected to save £36.85 for every £1 spent.
Cost ratio	2.08	This pathway improvement is expected to save £2.08 through reduced hospital admission costs for every £1 spent.



Health Economics Unit

NHS
Midlands and Lancashire
Commissioning Support Unit

Next steps

- Prioritising identified initiatives
- Next steps and recommendations for Birmingham and Solihull

Three ways in which the initiatives can be prioritised

Below are three approaches to priority-setting. The HEU recommends that priority-setting of the pathway improvements is done based on the cost/population health ratio (1). Using this method will ensure the most efficient allocation of resources based on cost per unit of population health gain, therefore improving the value for money of the pathway:

1. **Ranking the interventions by a net cost/health ratio.** Prioritising in this way will help to ensure that the interventions taken forward will produce the most health within the given available budget. The lower the ratio, the better, with a negative ratio representing interventions which are both cost saving and health generating.

2. **Ranking the interventions by the ratio of the cost of the intervention to the cost savings elsewhere in the system**. Prioritising in this way can determine the intervention will offset costs elsewhere in the system. A number between 0 and 1 represents cost savings elsewhere in the system.

3. **Looking at the net cost of the intervention**. Similar to looking at the cost ratio, this method can determine whether the intervention is likely to save money overall or incur additional costs.

Ranking scores

In the table below, the initiatives have been ranked in order of their cost/health ratio. Using this method will ensure the most efficient allocation of resources based on cost per unit of population health gain:

Ranking	Pathway improvement (scenario)	Cost/population health ratio
1	*Expanding palliative care through hospice-at-home virtual ward (compared to hospice care)*	*-1059.67 (explained further in the next slide)*
2	**Virtual ward as early discharge support**	**-36.85**
3	**Increasing uptake and quality of spirometry testing (doubling tests in primary care)**	**-4.38**
4	**Increasing uptake and quality of spirometry testing (expanding RDHs)**	**-3.76**
5	**Promoting self care through the myCOPD app**	**0.01**
6	**Increasing uptake of smoking cessation services (tertiary prevention – Quit with Bella app)**	**0.23**
7	**Promoting respiratory services within localities through social prescribing – physical activity**	**0.26**
8	Increasing uptake of smoking cessation services (primary prevention – Quit with Bella app)	0.54
9	Improving the quality of primary care management through clinical education	1.20
10	Driving pneumonia vaccination uptake	2.60
11	Increasing uptake of PR services (increasing completion rate to 75%)	4.36
12	Increasing uptake of PR services (double people starting the course)	6.87
13	Psychological support	7.54
14	*Expanding palliative care through hospice-at-home virtual ward (compared to GP palliative care)*	*12.55 (explained further in the next slide)*
15	Increasing uptake of smoking cessation services (primary prevention – smoking cessation service)	14.26
16	Increasing uptake of smoking cessation services (tertiary prevention – smoking cessation service)	15.43
17	Virtual ward admissions avoidance	42.07 – 44.04

Recommendations

It is recommended that Birmingham and Solihull invest in the pathway improvements that have the best cost/population health ratio, as this will ensure the investment leads to the most health generated per pound spent. It is recommended to focus on the following interventions:

- **Virtual ward as early discharge support:** This pathway improvement supports the national priority of expanding the virtual ward. As the virtual ward costs an estimated 48.15% compared to a hospital admission, maximising capacity in the virtual ward could save up to £1,802,830 a year.
- **Expanding spirometry testing:** This improvement addresses the priority of accurate and timely diagnosis. Whether spirometry testing is expanded in primary care or through RDHs, it is estimated to be cost saving. Minimising the number of tests needed for an additional diagnosis of COPD is the key to making it as cost-effective as possible.
- **Introducing the myCOPD app:** This meets the priority of living well. As a digital offering, the myCOPD app could be offered to the entire population of people living with COPD relatively easily.
- **Increasing uptake of smoking cessation services (tertiary prevention – Quit with Bella app**). This improvement meets the prevention and promotion of healthier communities' priority. It is the most cost-effective way of increasing access to smoking cessation service.
- **Promoting respiratory services within localities through social prescribing – physical activity:** This meets the priority of living well. Physical activity will improve quality of life in people with COPD. A physical activity programme could be a cheaper alternative to PR.

If implemented, these pathway improvements are expected to be cost saving. They are estimated to save ~£1.8m net per year and lead to a 52.46% percentage point increase to population health. The hospice-at-home virtual ward could also be a cost efficient way of increasing capacity in palliative care services. It has not been recommended explicitly here due to the uncertainty surrounding it.

Next steps

Improving the allocative efficiency of the COPD pathway will improve the health of the COPD population in Birmingham and Solihull. We recommend that:

1. The group should review these findings, agree next steps and choose the interventions to take forward.

2. The group should then further develop and evidence those interventions and initiatives, using local intelligence and expertise, to make the case for change. There are a number of ways to approach this, including through the development of business cases.

3. The group should approach stakeholders for funding and support with governance. Moving resources can be challenging but does lead to improvements in population health. Having the support of relevant stakeholders will ensure successful interventions and initiatives. Buy-in may be achieved by drawing attention to this report, presenting findings and continuing conversations throughout the system. HEU can support the group with this.

4. The system can then navigate relevant funding and governance for the chosen interventions. This may be achieved in a variety of ways (e.g., seeking funding, transferring responsibility for budgets to the most relevant organisations, and reviewing and streamlining existing assumptions and processes).

5. Finally, selected and appropriately resourced initiatives should be closely monitored, measured and controlled to assess impact. This could be done by managing a similar STAR process in 12 months' time.

Health Economics Unit

NHS
Midlands and Lancashire
Commissioning Support Unit

Get in touch:

HEU.support@nhs.net

healtheconomicsunit.nhs.uk