

What is air pollution?

- Air pollution is a mix of particles and gases that have adverse effects on human health
- The main pollutants of concern in Bradford are particulate matter (PM) and nitrogen dioxide (NO₂)
- The air pollution 'hotspots' in Bradford are all transport related, there is also a mixture of wood smoke, industrial and domestic pollution and also background pollution from other places.



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New evidence of the serious public health impacts of everyday air pollution is driving increased political, public and media interest.

Indoor and outdoor air pollution 'claiming at least 40,000 UK lives a year'

Report finds air pollution inside and outside the home is costing £20bn a year as well as causing tens of thousands of deaths



A woman and a child stand on Parliament Hill in Hampstead Heath overlooking London, April 2015. Photograph: Dan Kitwood/Getty Images

Air pollution both inside and outside the home causes at least 40,000 deaths a year in the UK, according to new report, which estimates at £20bn.

High court rules UK government plans to tackle air pollution are illegal

Court rules for second time in 18 months that the government is not doing enough to combat the national air pollution crisis



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Science & Environment

Pollution particles 'get into brain'

David Shukman
Science editor

5 September 2016 | Science & Environment



News

'Air pollution' particles linked to Alzheimer's found in human brain

share



Tiny magnetic particles produced by car engines and brakes can travel into the human brain. CREDIT: ANDREW MATTHEWS



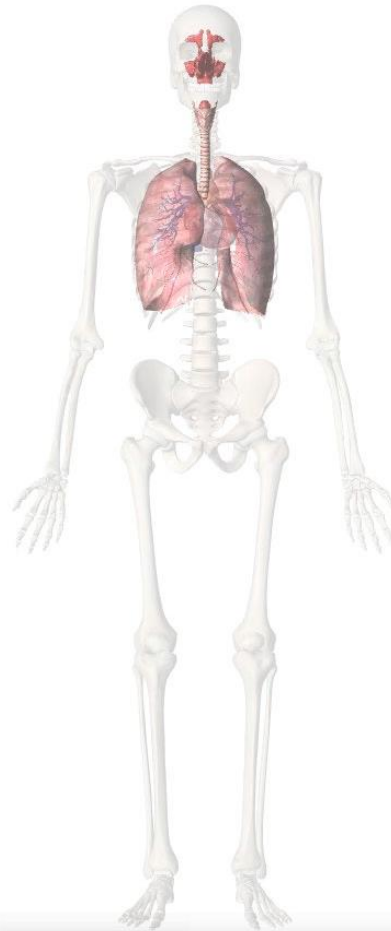
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Air pollutants go inside our body

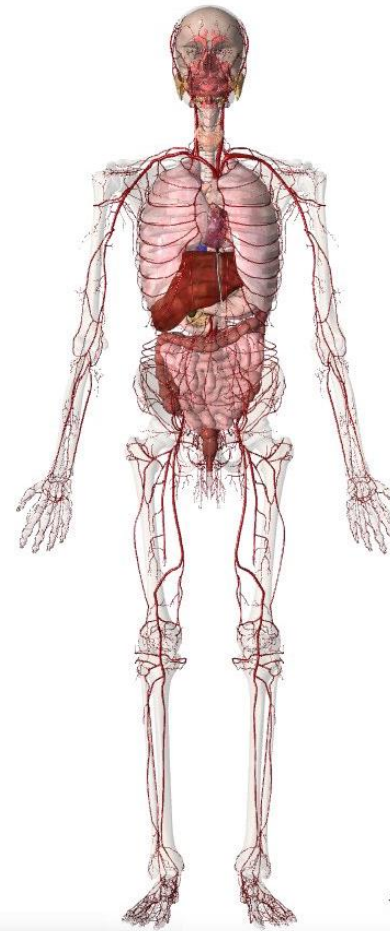
PM_{10}



$PM_{2.5-1}$



$\leq PM_{0.1}$ / Gas



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#SEETHEAIR



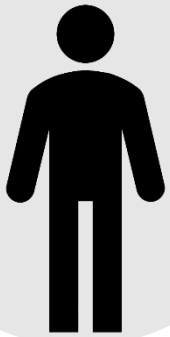
Air pollution throughout life course



Low birth weight
Development
problems



Asthma
Development
problems
Initiating
atherosclerosis



Asthma, COPD, Diabetes, Stroke
Coronary heart disease, Lung cancer



Asthma, Diabetes, Decline in lung
function, Stroke, heart attack
Lung cancer, and Dementia



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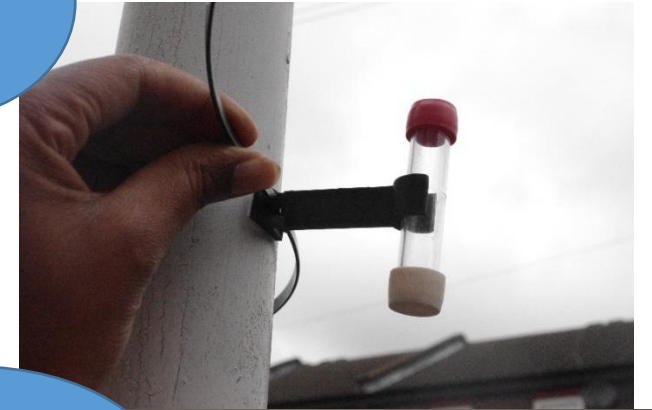


Monitoring Air Quality

3 PM₁₀ &
PM_{2.5}
Monitors



300
new
nox
tubes



7 real time
Nox
stations

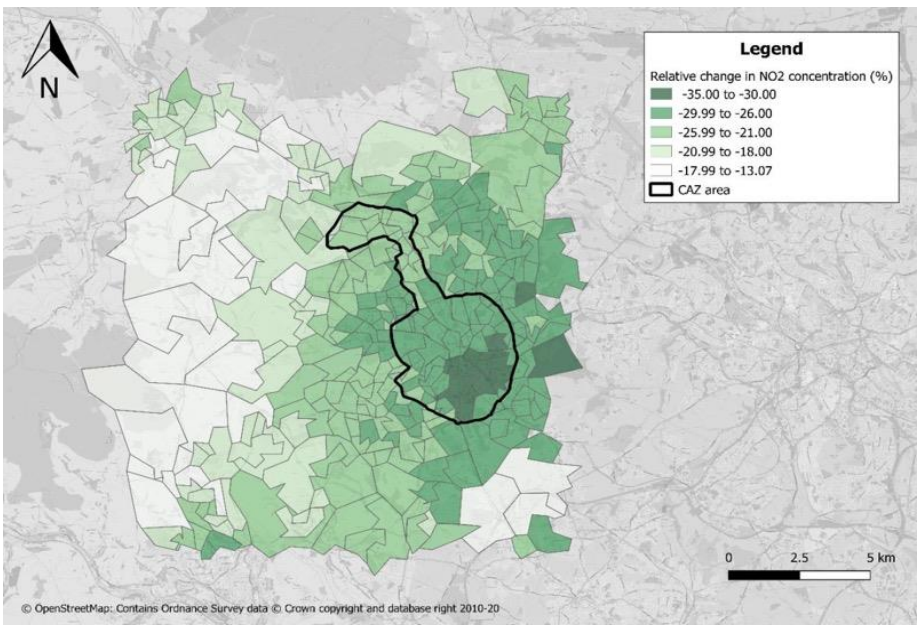


Why does Bradford have a Clean Air Zone ?

- NO₂ Exceedances A650, Mayo Avenue, Tong Street, Manningham Lane, Queens Road and Bingley Road, Saltaire
- Traffic flows are now higher than before lockdown
- Air quality monitoring data showed that many areas were still above the legal limit
- The CAZ will ensure legal limits for NO₂ are met



NO₂ levels in 2018



Improvements in NO₂ across the District with the CAZ

330 ANPR
cameras

Euro 5/6 petrol
hybrid PHV

9.3 miles

CLASS C



Buses



Coaches



Taxis



HGVs



Large Vans



Minibuses



Small Vans

CAZ C
Commercial
vehicles only



0 1 2 km

Legend

 CAZ boundary

How does it work?

- Provision in Transport Act 2000
- 330 automatic number plate recognition cameras along the boundary and inside the zone
- Data sent to Central Service (DVLA)

Non-compliant, older ~2015/16 commercial vehicles
Identified (~3.5% of traffic)

- National & Local white list
- Charges collected centrally by DVLA
- Unpaid journeys processed by Local Authority
- The most effective Clean Air Zone does not take any charges
- Charges are legally ringfenced for sustainable transport





Sign up for the Bradford Clean Air Zone news and updates, submit your email address here

Next

[Breathe Better Bradford](#) | [What help is available](#)



What help is available?

Clean Air Support Programme - £Grants

- £1.63m** to support buses (grant circa £16,000)
- £1.66m** to support coaches (grant circa £16,000)
- £11.74m** to support taxis (grants from £3,200 to £5,000)
- £6.42m** to support HGVs (grants up to £16,000)
- £10.18m** to support LGVs (grants up to £4,500)
- £175,500** to support minibuses (grants up to £4,500)

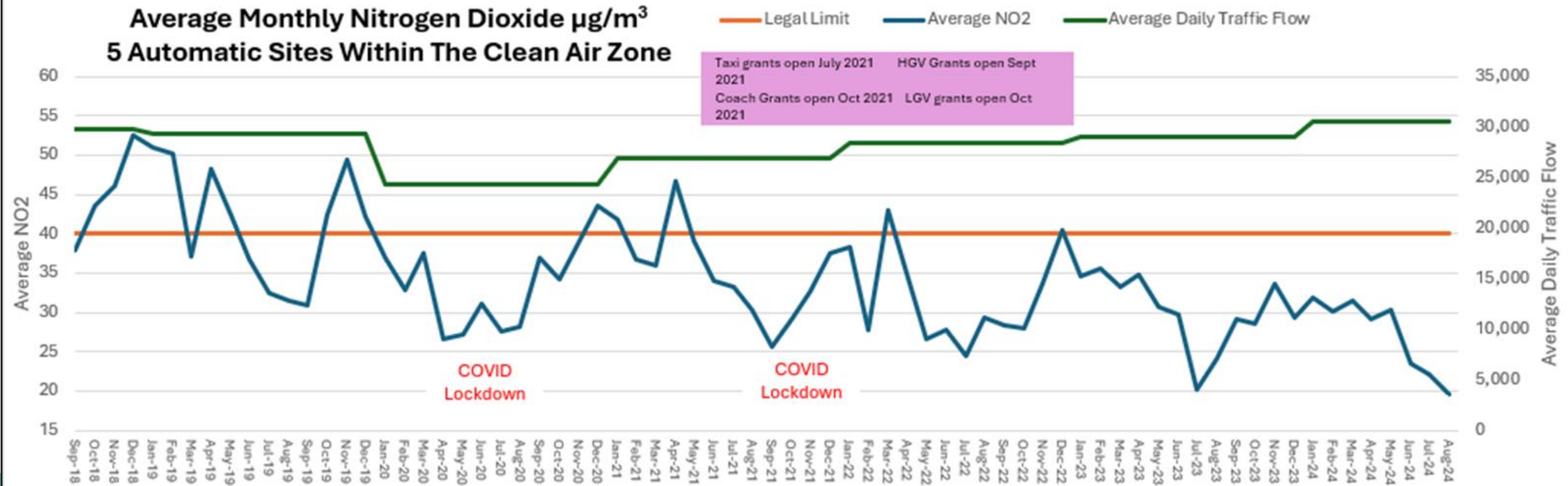
Exemptions

- All residents of Bradford District 1 Exemption
- SME Businesses can have 3 exemptions (+ grants)
- This includes self-employed
- Does not include cars/motorbikes
- Exemptions for community transport, charities

85% of the older commercial vehicles causing the problem come from outside Bradford

Air Quality is improving

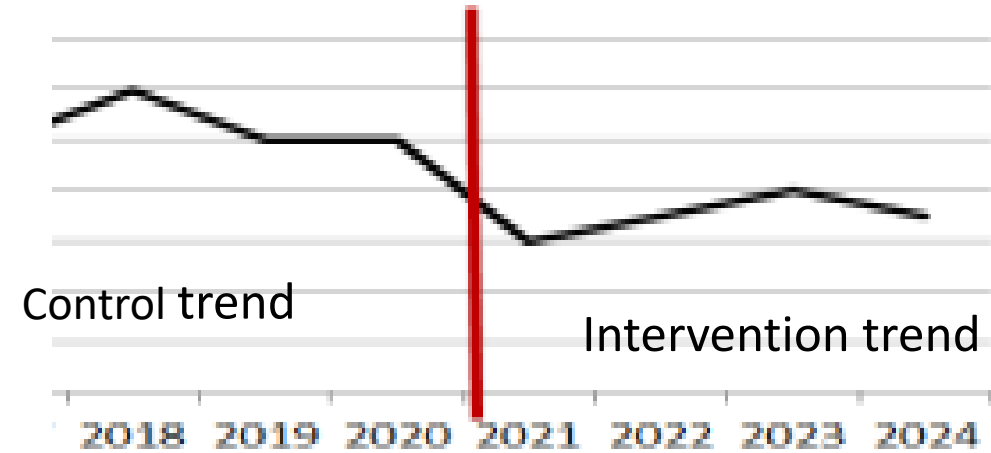
Data has been collected at air quality monitoring sites inside the CAZ.



This summer has seen the lowest recorded levels of NO₂.



Time series analysis



What is the impact of the Bradford Clean Air Plan on respiratory health cardiovascular health and birth outcomes?

How does the Bradford Clean Air Plan impact on health inequalities?

What is value for money of the Bradford Clean Air Plan 3 years post implementation and longer term?

Respiratory health:

- 500 deaths per year in Bradford
- 13154 people with COPD
- 41,858 with asthma
- Rate of emergency hospital admissions for children – 268 per 100,000

Cardiovascular health:

- 410 deaths per year (under 75)

Birth outcomes

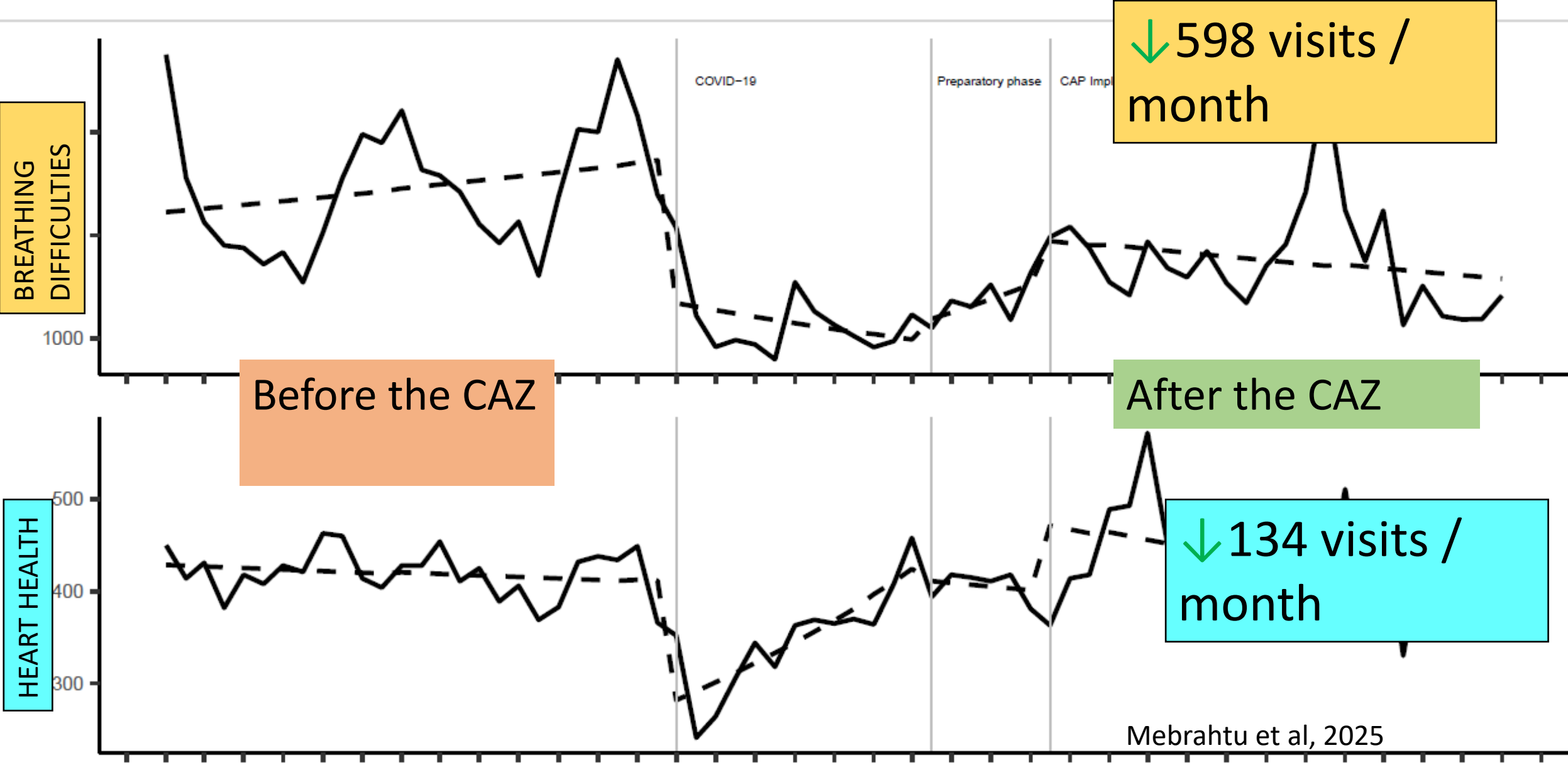
- 3.9% of babies born have a low birth weight



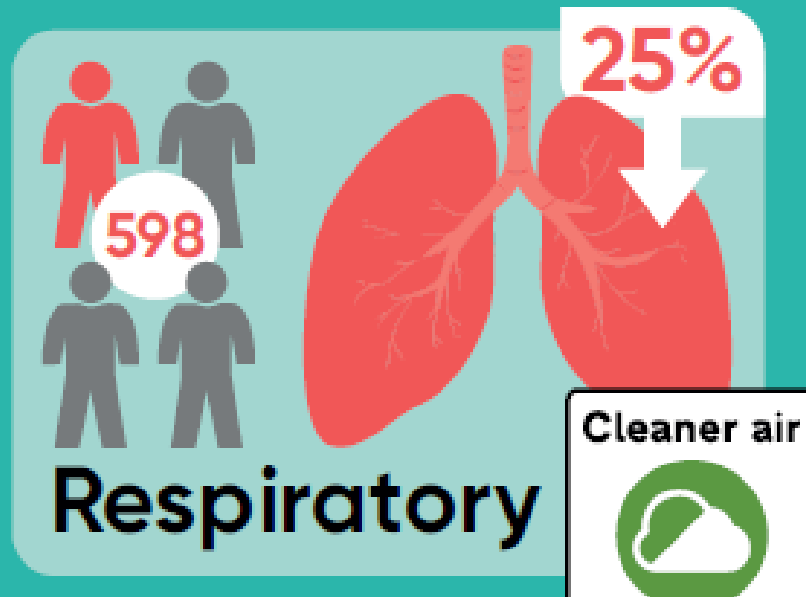
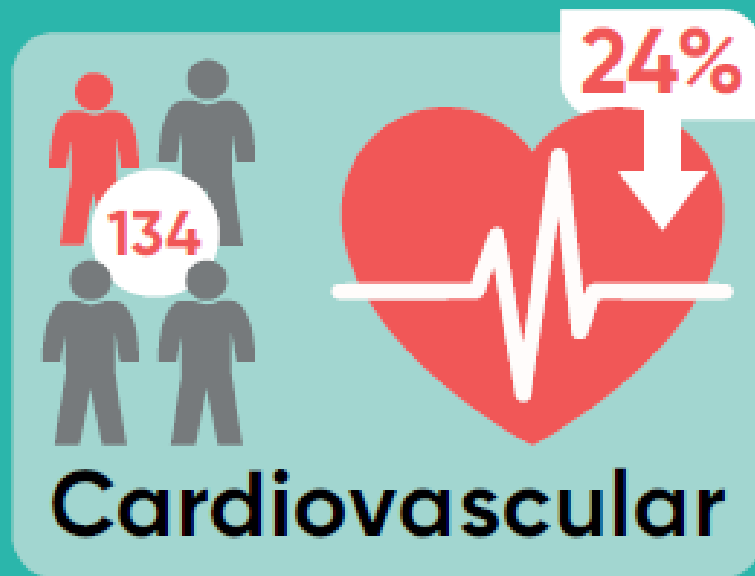
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VISITS TO THE DOCTOR



Fewer GP visits per month



CAZ - Positive Outcomes for Bradford

- Health improvement, reductions in health inequalities
- 99.5% of 3700 licensed taxis now CAZ Standard –electric hybrid or electric – higher standard than London ULEZ – cleanest taxi fleet in UK with 40% plus fuel savings
- 90% of buses upgraded, 20% of HGVs & 10% of LGVs upgrading,
- 1-1.6% BEV car fleet following CAZ launch
- £10m ZEBRA bus funding award for 40 electric buses from 2023
- ZEBRA bus bid (Summer) and CAZ revenue to create Hydrogen Test bed – convert First Bus Depot, 40 buses and full RCV route, supported by the Advanced Fuel Centre
- CAZ revenue for Park & Ride and electric express busway
- 150,000 tonne reduction in GHG emissions (CAP baseline)



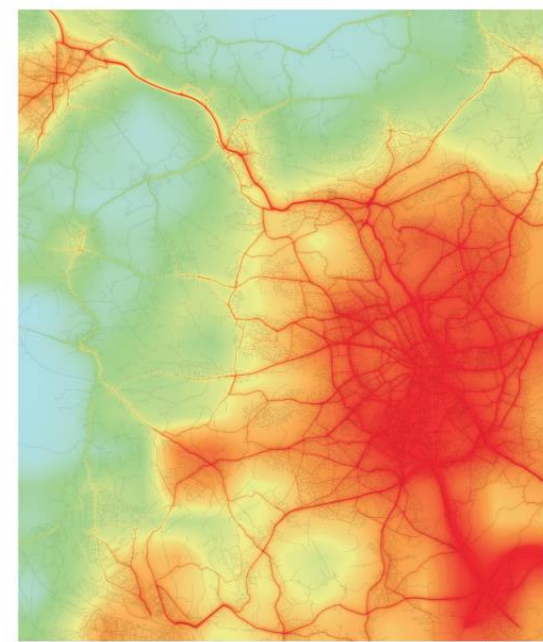
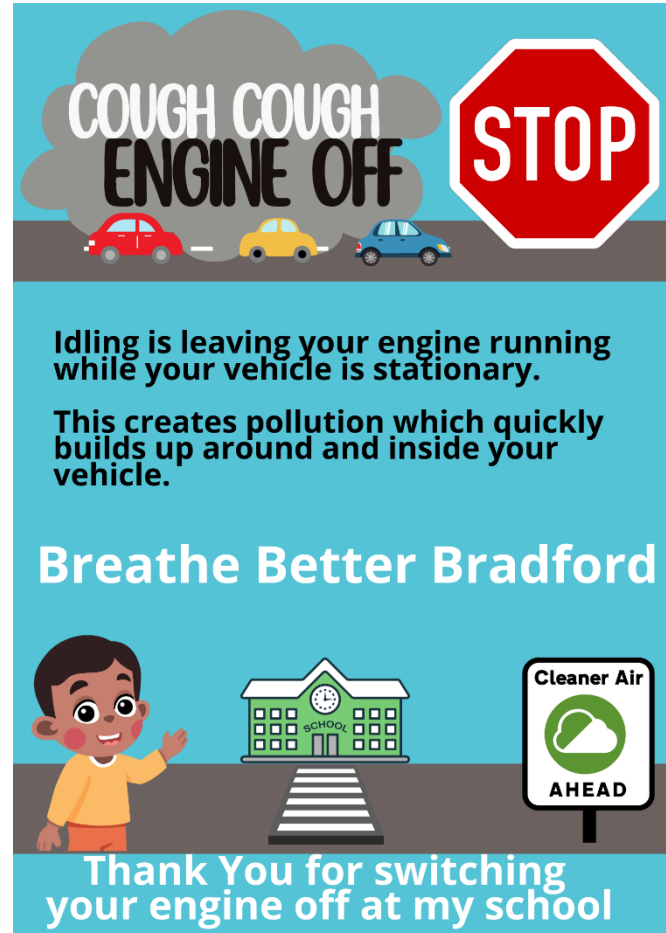
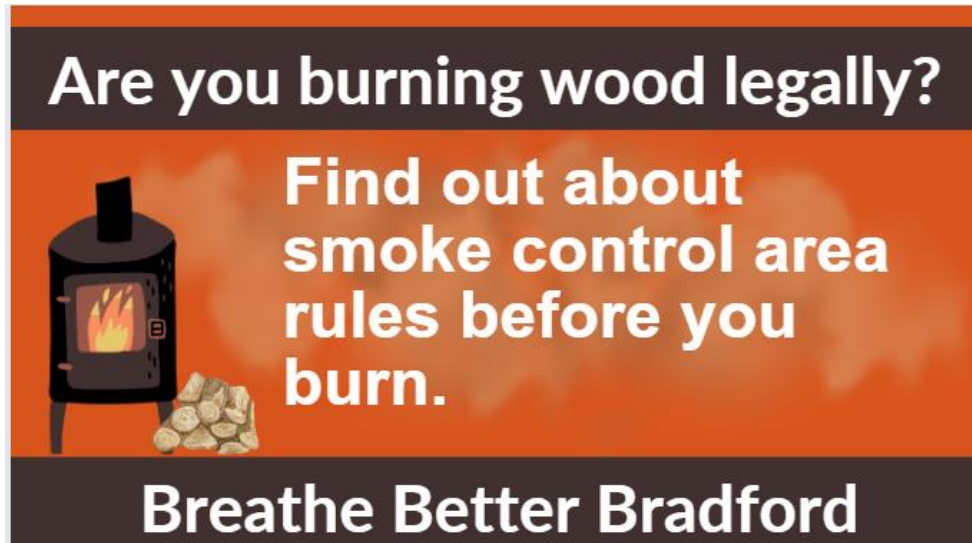
Clean Air Schools programme

- Launch with high profile comms, plenty of images of children and the schools involved.
- 5 Wardens will be key facilitators and have great links into the community to help amplify our messages and encourage engagement with the scheme.
- Handheld kit, workshop and curriculum based sessions for children



Other Air Quality Work

- Particle Reduction Strategy
- New Zephyr network
- Anti idling enforcement
- Burning enforcement
- Burning education campaign

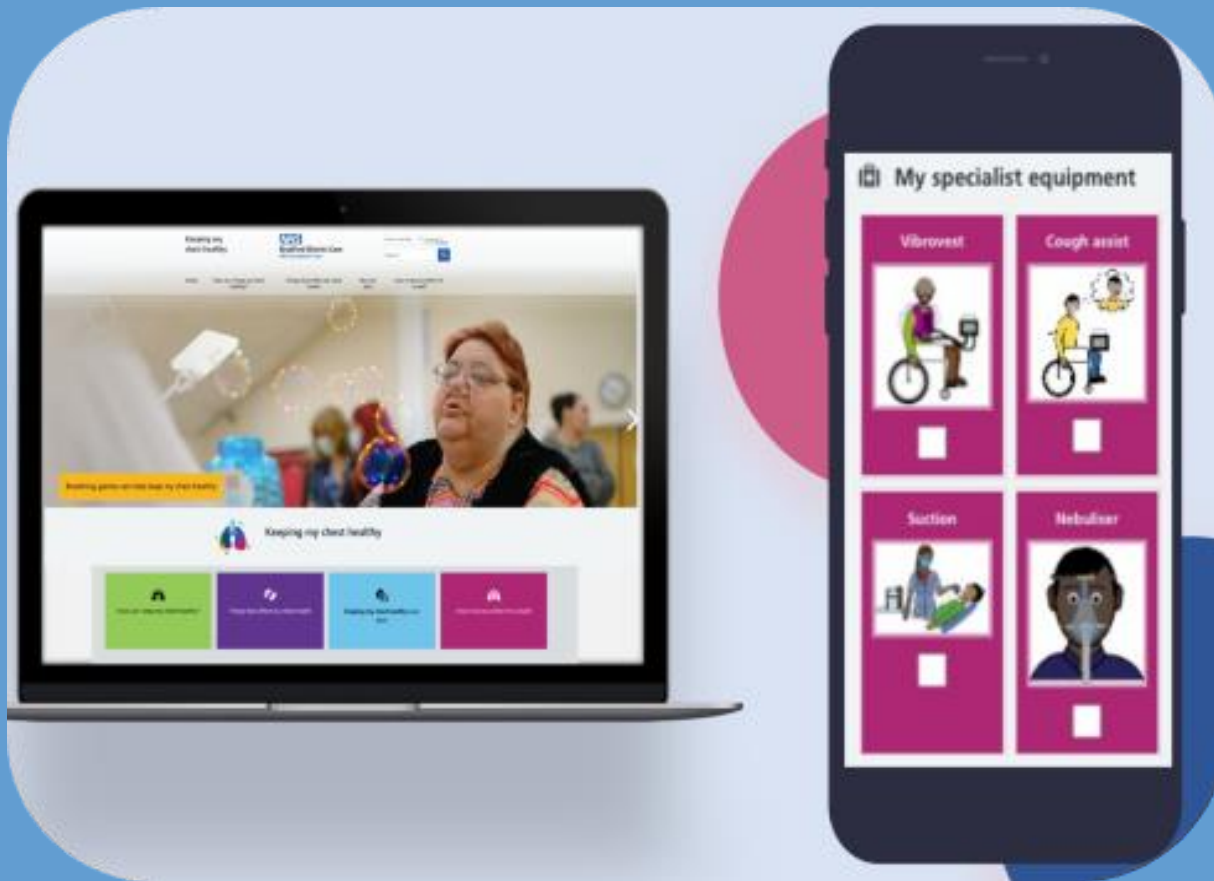


Source: Dr Kimon Krenz, University College London. Contains data from the City of Bradford Metropolitan District Council, Department of Health and Wellbeing, Environmental Health and Ordnance Survey data © Crown copyright and database right 2022

Figure 3: Concentrations of particulate matter (PM₁₀) for the City of Bradford, at 1x1 metre resolution

Keeping My Chest Healthy project

Tracey Barningham & Donna Smalley



NHS

Bradford District Care
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Learning from Lives and Deaths- (LeDeR 2022)

What did the LeDeR report highlight?



People with a learning disability die **24 years** sooner than the general population.



42% of deaths were avoidable compared to 22% for the general population.



Respiratory disease remains a leading cause of death. 24% of avoidable deaths were linked to respiratory disease.



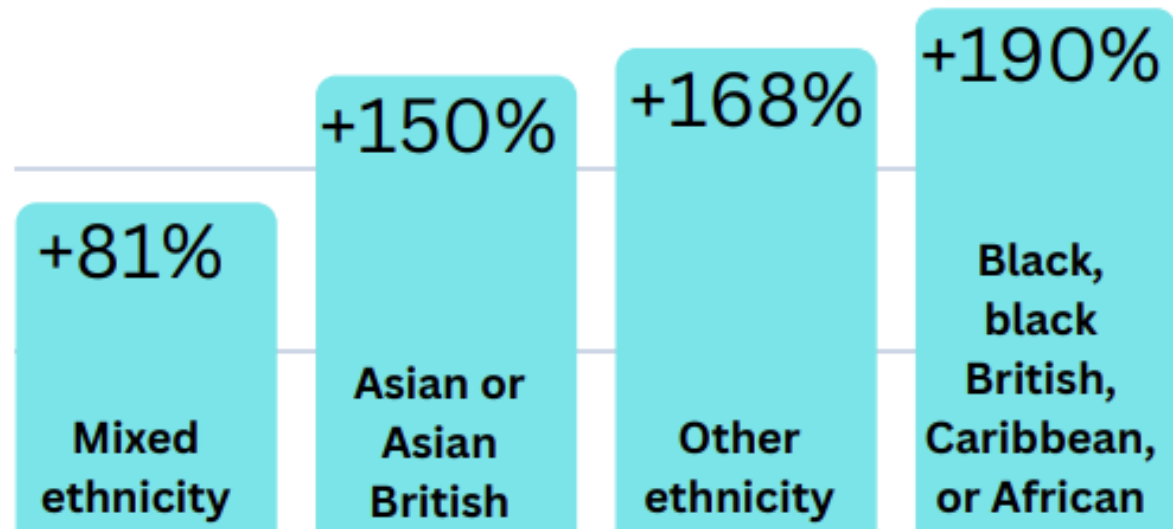
People from minority ethnic communities died at a much younger age in comparison to people of white ethnicity

KEY FINDINGS OF FACTORS ASSOCIATED WITH AGE AT DEATH

AGE AND ETHNICITY

People from all ethnic minority groups died at a **younger age** in comparison to people of white ethnicity, when adjusting for sex, region of England, deprivation, place of death, and type of accommodation.

% increased risk of dying earlier by ethnic minority group, in comparison with people from white ethnicity backgrounds, when adjusting for other demographic factors



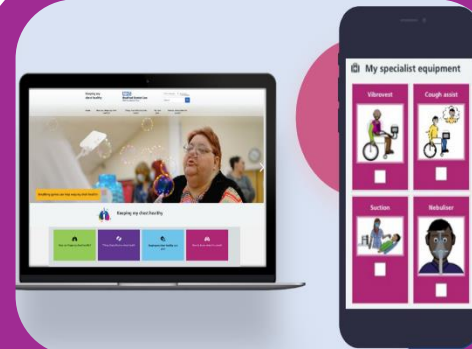
Ambition: What did the Keeping My Chest Healthy project do?



Develop an evidence-based MDT pathway including a scoring tool for the early identification of risk factors



Provide simple to follow, bespoke care plans that were accessible & user friendly



Increase the awareness about respiratory health through the co-production of an online digital hub.



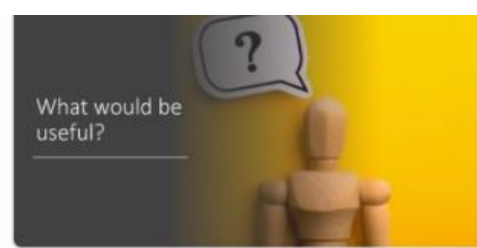
Develop a clinical professional's area of the site containing CPD accredited training and access to clinical tools.



Co production



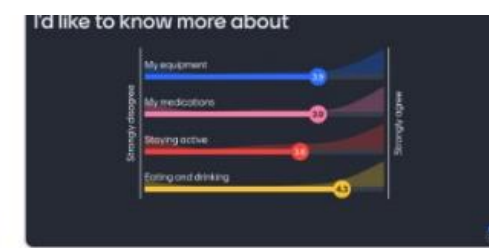
Planning Involvement



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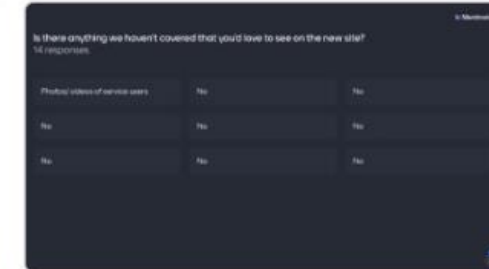
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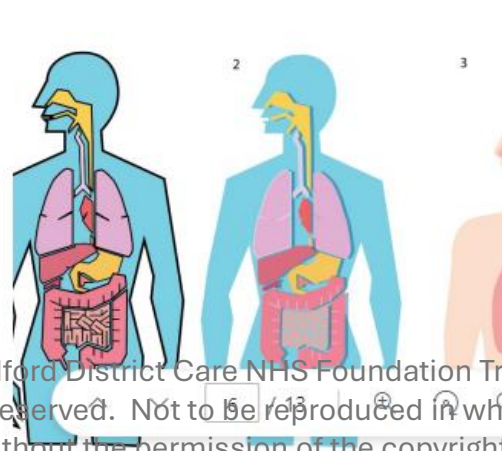
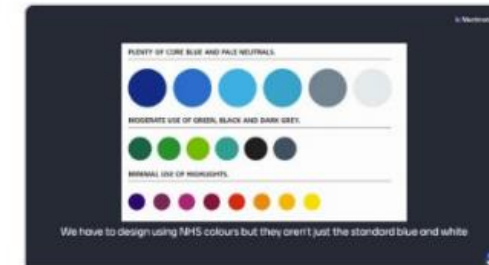
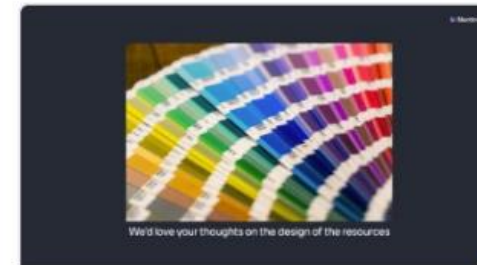
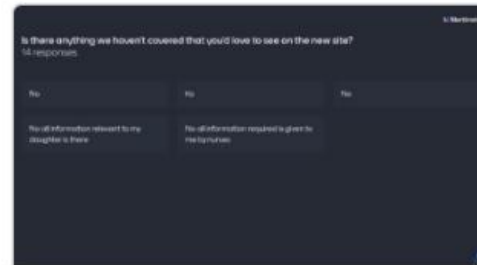
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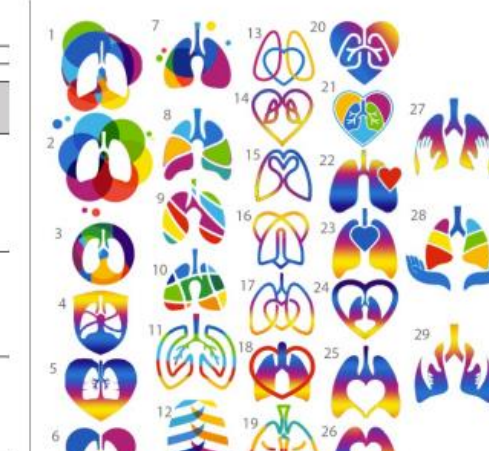


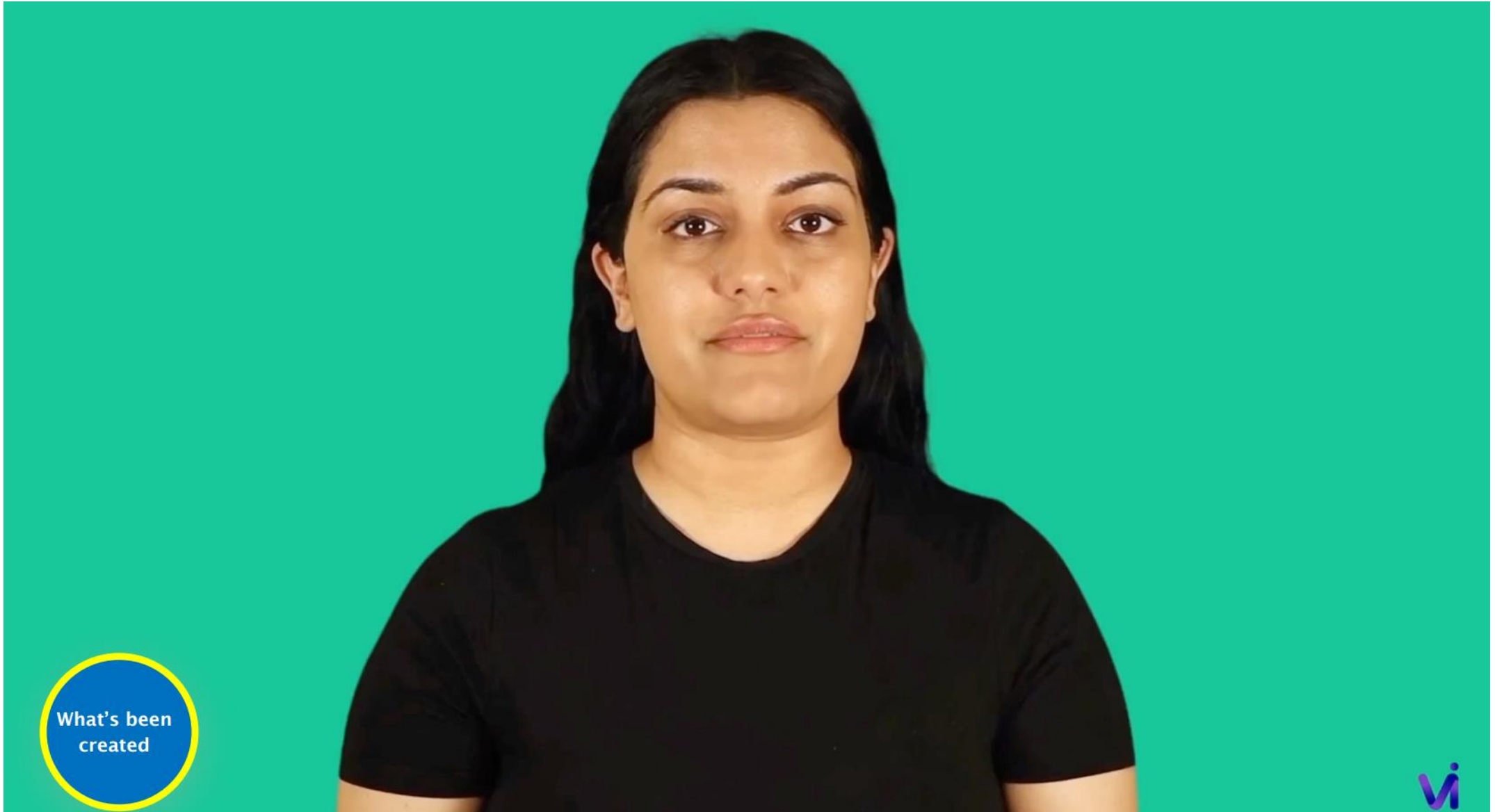
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Chest Healthy Care Plan

Urdu (Avatar)	Cutaway/Footage/Images	Graphics
Chest Healthy with BDCFT logo and project identifier graphic		
	Avatar on screen	Topic Intro Card
		my name
	Photo of a KMCH care plan	care plan
	Show what we mean by chest lungs, airway, swallow	healthy lungs





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**We are the winners of the HSJ
Patient Safety Awards 2024!**

[Find out more about the award](#)



**How can I keep my chest
healthy?** Health promotion
resources.



**Things that affect my chest
health.** Information on the risk
factors for respiratory disease.



**Keeping my chest healthy
resources & guidance.** Includes
videos and equipment
demonstrations.



How to know when I'm unwell.
Information to help you spot
the signs of illness.



Video in
English

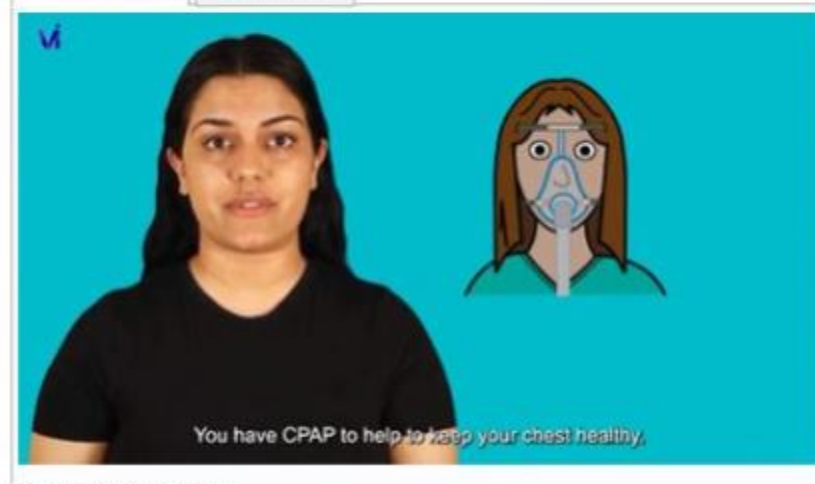
Video in Urdu



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Video in English

Video in Urdu



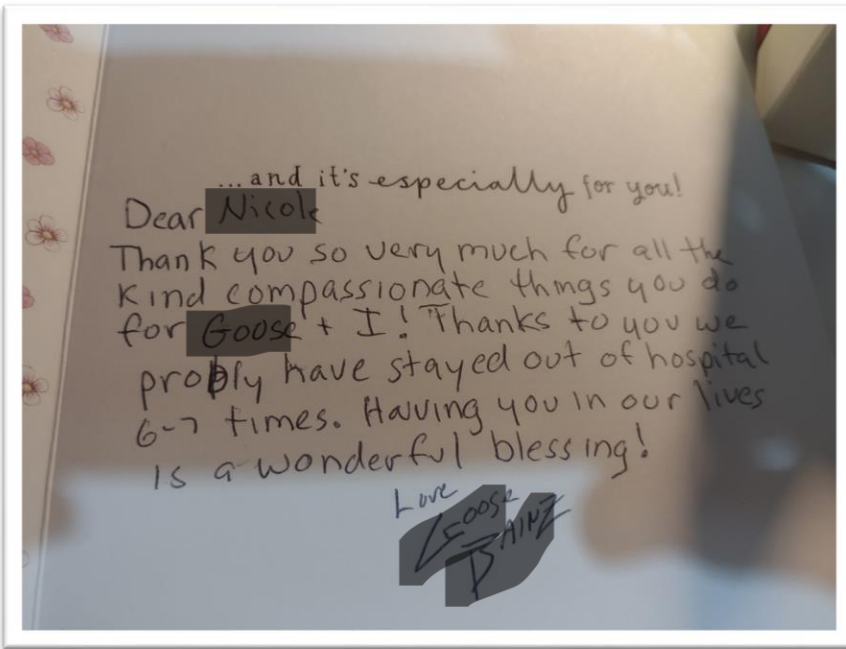
KMCH Project Impact:

Fewer GP visits, fewer A&E attendances, fewer admissions - improvements were seen across every area measured in the 12 months after the pathway.

	Metric	Total Number Pre	Total Number Post	% Decrease
	GP contacts	137	80	↓ 41.6%
	OOH contacts	31	14	↓ 54.8%
	Paramedic visit (not conveyed to hospital)	9	5	↓ 44.4%
	A&E attendance	38	16	↓ 57.9%
	Hospital admissions	29	7	↓ 75.9%
	Virtual ward number of days	13	0	↓ 100%
	Days in hospital	295	23	↓ 92.2%
	HDU/ICU days	120	33	↓ 72.5%
	No of courses of antibiotics prescribed in primary care	117	70	↓ 40.2%

Testimonials:

- In the 12 months prior to KMCH – 4 chest infections and 5 hospital admissions for aspiration pneumonia, spending a total of 59 days in hospital.
- The estimated financial cost of this treatment amounts to £57,000
- In the 12 months post KMCH there were no chest infections or hospital admissions



The hospital only showed the 'educated' family members (how to use the suction machine) Because we don't speak English, I have had to rely on them to show me what to do, even though it is me that is with x most of the time. It is good to be able to show the rest of the family the Urdu videos too.

Cost savings for KMCH (and projected savings based on a population of 300)

- **Note:** Savings are conservatively estimated and based on a preliminary economic analysis modelling tool.
- Figures are currently based on the lowest number of interventions, complication and comorbidities score.
- Costs reflect only the primary diagnosis for admission; additional complications (e.g., sepsis, respiratory failure, HDU etc) are not included.

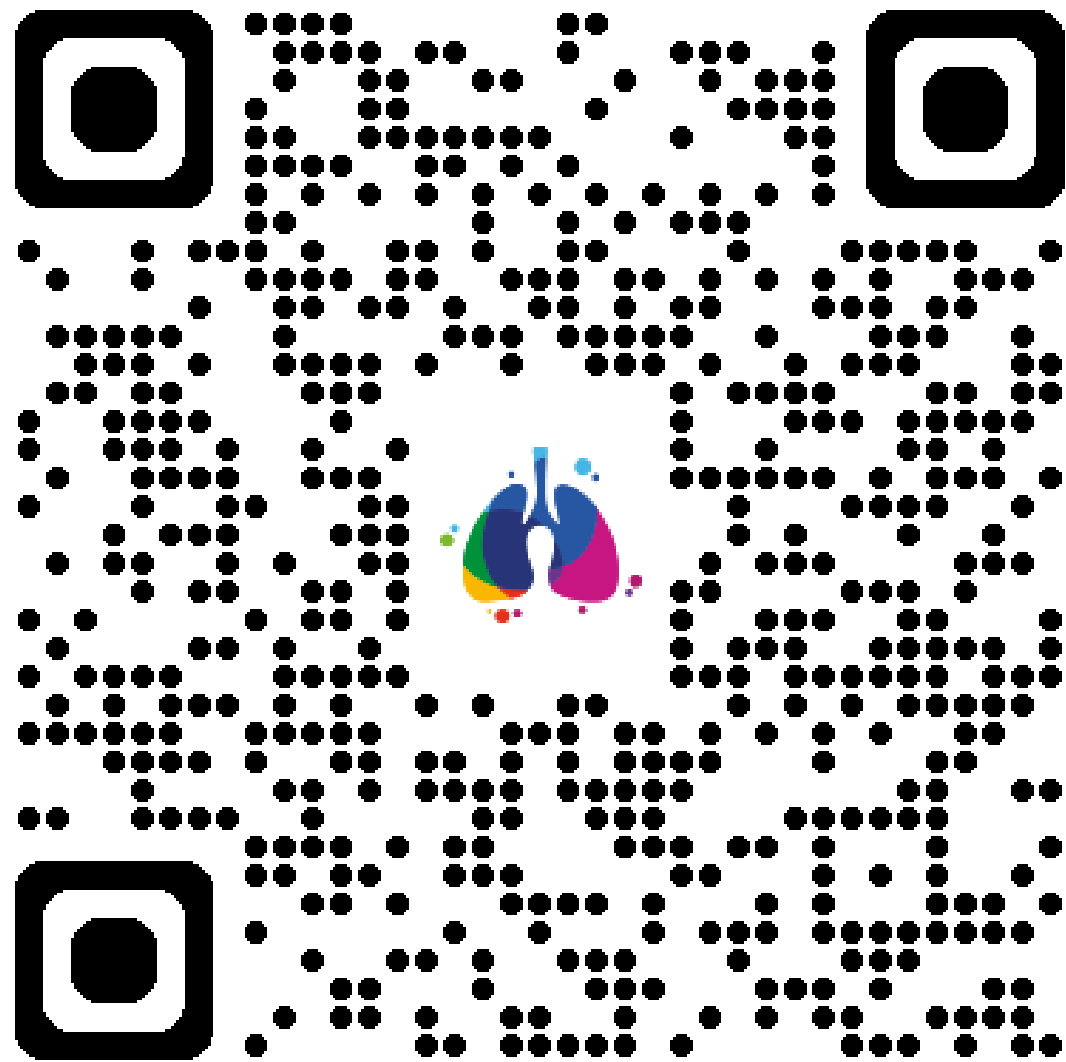
	12 MONTHS PRE PATHWAY	12 MONTHS POST PATHWAY	COST SAVINGS PER PATIENT	TOTAL SAVINGS (BASED ON 46 PATIENTS)	PROPOSED SAVINGS BASED ON POPULATION OF 300 PATIENTS
Primary Care	£62,86.68	£36,72.80	£56.82	£26,13.88	£17,047.04
Emergency Care	£23,058	£9357	£297.85	£13,701	£89,354.35
Non-elective admissions based on primary diagnosis ICD10	£169,537	£46,433	£2676.17	£123,104	£802,852.17
			Total: £3030.85	Total: £139,418.88	Total: £909,253.56



If you would like to find more about the KMCH project or are interested in future phases of the project.

Get in touch!

Keepingmychesthealthy.bdct.nhs.uk



Any Questions?

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Pulmonary Rehabilitation

Kath Helliwell

11th June 2025

Background

Pulmonary rehab (PR) is one of the most effective programmes for people with COPD



Cost effective



Runs across Bradford District and Craven



8-week programme of tailored exercise, advice and guidance

Challenges....

Classes not always local to people – due to costs associated with the programme we have 3 classes across our place

Uptake low

...a bonus...People who do attend, stay!

Benefits to health - reduces exacerbations, improves breathing, improves mental health/reduces anxiety

Benefits to people – meet other people with COPD and share their experiences, can seek assurances from clinical teams

Our ask...

What would people like to see as the benefits?

How can we promote these benefits to people?

What barriers do people have and how can we reduce/improve them?

Contact :

- Kath.helliwell@bradford.nhs.uk