

Framework for the Drivers of Health Inequalities









South Yorkshire and Bassetlaw Integrated Care System The Children and Young People's Health Equity Collaborative (CHEC) is a partnership between the UCL Institute of Health Equity (IHE), Barnardo's and three Integrated Care Systems (ICSs), Birmingham and Solihull, Cheshire and Merseyside, and South Yorkshire.

The CHEC sees action on the social determinants of health as essential in improving health outcomes among children and young people and reducing inequalities in health. The CHEC recognises that social determinants of health are generally not sufficiently addressed in policies, services and interventions that aim to support better health among children and young people.

The framework has been developed by the CHEC with direct input from children and young people local to the three ICSs. The CHEC Board were also involved in its development.

The framework's main purpose is to underpin action for achieving greater equity in children and young people's health and wellbeing and will be used to support the development of pilot interventions in the three partner ICS areas. There is an ambition for the framework also to be used more widely, encouraging other ICSs to take action on the social determinants of health among children and young people.

The framework has several intended purposes:

- 1. To set out the key drivers of health and wellbeing for children and young people.
- 2. To guide the analysis of data and the development of indicators to assess and monitor inequalities in children and young people's health and wellbeing and their determinants of health in each ICS.
- 3. To support and guide ICSs in the commissioning and development of interventions and services to improve children and young peoples' health and wellbeing.
- 4. To strengthen partnerships between health care, public health and local authorities and the community and voluntary sector, so they can work effectively together to take action on the social determinants of health.

The Social Determinants of Health for Children and Young People

The social determinants of health describe the social and environmental conditions in which people are born, grow, live, work and age, which shape and drive health outcomes. Factors that determine how the social determinants of health conditions are experienced across societies include the distribution of power, money and resources. Unfair distribution of these resources creates avoidable health inequalities.¹ Good quality, equitable and accessible healthcare is one determinant of health but most of the determinants of health lie outside the healthcare system. These include access to good-quality living conditions, experiences and services during early childhood; good-quality education and opportunities for lifelong learning; households having sufficient income, adequate and affordable housing; and living in connected and inclusive communities in healthy environments.^{2,3} While most social determinants lie outside the healthcare system, there is much that the healthcare system can do by acting on these social determinants of health, providing advocacy and leadership for such action as well as by ensuring equitable access to healthcare services.⁴

This partnership work on the upstream social determinants of health is essential for delivering on ambitions to tackle inequalities, but also to make the best use of systems resources and community assets. The CHEC is centred on strengthening the role of the health and social care system in taking action on the social determinants of health for children and young people.

Integrated Care Systems are partnerships that bring together NHS organisations, local authorities, the Voluntary and Community Sector and others to take collective action on improving health, address health inequalities and contribute to social and economic development. Their establishment presents an important opportunity to address the social determinants of health; through their Integrated Care Boards (ICBs), responsible for planning and funding most NHS services and with Integrated Care Partnerships (ICPs), which aim to focus on collaboration to drive improvement for local populations through a health strategy for an area.

Local authorities and NHS organisations also have an important role as anchor institutions making positive use of their assets and resources to improve social, economic and environmental impacts and in turn the health and wellbeing of their local community.^{5,6,7,8} For example, through fair employment and training and mentoring of young people from locally defined inclusion health groups, the use of NHS and NHS partners' estates as a means to access to safe green space, reducing air pollution and promoting active travel.



Development of the Children and Young People Health and Wellbeing Framework

Over the course of July 2023, the CHEC, in partnership with local Voluntary and Community Sector (VCS) organisations in each of the three partner ICS regions, ran engagement workshops with children and young people. The findings from this engagement have allowed the CHEC to review and revise the initial framework draft, and to ensure children and young people's views and lived experiences inform the framework and are embedded in it.

In total, over the three areas, we engaged with 302 children and young people aged 7-24 with different demographics and protected characteristics. Each of the engagement sessions was run by the local VCS engagement team or VCS partners. These voluntary organisations included (but were not limited to) Birmingham Voluntary Sector Council, Chilipep, and Youth Focus North West. Barnardo's developed resources to support this first engagement of the Collaborative, including training, session plans and questions around key themes – these included questions on how children and young people understood the drivers of their health and wellbeing covering their relationships, communities, schools, education, homes and experiences of services.

Responses from this work have allowed an understanding of the key views and priorities of children and young people involved. In particular, the work highlighted the importance of key aspects of health which had not been included in the first draft of the framework which was based on data and evidence, for example, the importance of psychological and physical safety. The responses of children and young people have informed the revised framework and will shape the priority setting for the proposed intervention area for each ICS.

Several children and young people involved in these initial consultations will have continued involvement in the programme as Health Equity Champions, individuals who will be directly involved in developing and evaluating the pilot interventions.

Figure 1 is specifically for the CHEC to support the four purposes of the framework. It is adapted from the 2008 Commission on the Social Determinants of Health (CSDH) framework and based on a substantial evidence base about the main drivers of health among children and young people.^{9,10,11,12} The framework was then adapted following the input from children and young people and following advice from the CHEC Board. Stages in the development of the framework are set out in annex 1. The framework relates to the social determinants, particularly the households, communities and spaces where children and young people live, learn and play. These, along with the services children and their families have contact with, are the central drivers of young people's health and wellbeing and are very important arenas for intervention to support better and more equitable health and wellbeing. The areas within the red box below are considered to be within the remit of the CHEC and important areas for intervention by ICSs. There is further explanation under the framework.

Figure 1: Framework for Drivers of Health and Wellbeing among Children and Young People



Box 1: Socioeconomic political context

Socioeconomic political context covers the main structural drivers of inequalities in society and shapes peoples' social position, living conditions and health and wellbeing (boxes 2, 3 and 4). The socioeconomic and political system includes national and local governance systems, political and economic structures which drive inequalities and cultural and societal norms and values which affect the extent of exclusion of some groups based on specific characteristics, such as ethnicity or gender. Most of the levers for changing the socioeconomic and political context are outside the remit of the CHEC but it is important to note that advocacy is an important lever which the CHEC can use to influence socioeconomic and political systems and point out the impacts on the health of children and young people. The CHEC can show, for example, the harm that child poverty does to health and wellbeing through its impacts on material conditions, living conditions and education – this advocacy can lead to change.

Boxes 2-6, outlined in red above, are considered within the scope of the CHEC and interventions to support better outcomes in these areas will lead to better and more equitable health outcomes for children and young people.

Box 2: Social position

This identifies key dimensions of inequalities: education, employment and income and wealth. Inequalities in social position are driven by the socioeconomic and cultural context and also drive inequalities in living conditions. There are many interventions which can support better outcomes in education, employment and income and wealth.^{13,14,15,16} For example, good quality early years programmes, good quality education and adult learning and anti-discriminatory recruitment and promotion and paying a living wage. In relation to effects on children and young people, other than

education, most of the social position factors relate to household characteristics, rather than children and young people themselves, but are nonetheless important determinants of children and young people's health and wellbeing. In relation to education, level of attainment is an important driver of good health and wellbeing during school years and throughout life, and there are wide inequalities in educational attainment related to household income. Additionally, and as highlighted to us by children and young people during the consultation with them, children and young people spend a great deal of their time at school and experiences at school and positive relationships with friends, teachers and other school employees are vitally important to their health and wellbeing.

Not living in poverty or being in a family with high levels of educational attainment, are protective factors for children's health and wellbeing and increase the likelihood of experiencing better health and social determinants of health in the longer term. Children and young people identified a number of factors which indicated poverty as a key driver of their health. This included for example, the importance of having a warm, well-lit home and sufficient and nutritious food.

Box 3: Living conditions

This was the area where children and young people's input was mostly oriented; they clearly understood the impact of these conditions on their own health and wellbeing and highlighted several areas which weren't included in earlier versions of the framework which was based on the established evidence base without the views of children and young people being represented. The input from children and young people resulted in significant changes to the initial framework. In particular, children and young people brought up issues around spending good quality time with their families and also showed great concern over their physical and mental safety. These areas are often not included in health improvement and public health programmes and strategies, and their inclusion is an important addition for those concerned with improving the lives and health of children and young people.

Homes: Affordable, good quality housing is an essential bedrock for good health.^{17,18} Poor quality, unaffordable, insecure housing damages physical and mental health. It is an area where the three ICSs have expressed an interest in intervening to support better outcomes for children and young people. Housing also features in more recent efforts by the NHS to reduce poor health.¹⁹ Children and young people highlighted the importance of clean, well looked after, warm and well-lit homes which felt safe and repeatedly highlighted the importance of having their own space and not living in overcrowded housing. Many of the issues highlighted by children and young people are not captured by routine data and surveys do not always incorporate the views of children and young people directly. The absence of data means that these important areas are often overlooked.

"A good home has enough space to keep everyone's privacy, that we can keep warm in the winter (...) it makes you feel comfy and cosy."

Workshop participant from Birmingham and Solihull

Family: Family relationships and time spent with family is not typically included in analyses of key drivers of health and wellbeing, or in interventions to reduce health inequalities, but children and young people highlighted this was a critical area for them. In particular, they highlighted that having loving, supportive parents and caregivers who they see every day is important, along with parents who understand mental health and wellbeing and don't pressurise them. Children and young people also highlighted the importance of communal family activities, such as eating together. Evidence shows that it is much more difficult to spend meaningful time as a household when dealing with the challenges of poverty. Having multiple jobs or shift

work is also a barrier. Nevertheless, there is much that employers, services and schools can do through work with families to enable supportive parenting and family time, which children suggested is important to them.

Children and young people also highlighted that their family's mental health is important to them and to their own health and wellbeing. Evidence in the UK shows that parental separation and living in households with family members with mental health problems undermines health and wellbeing for all household members and is considered an adverse childhood experience.^{20,21} Other adverse childhood experiences (ACEs), which can be experienced at home and from family members include physical abuse, emotional abuse, sexual abuse, domestic violence, parental substance abuse and mental illness, parental separation and imprisoned family members. It is important to denote that the 'ACEs' framework as traditionally concieved is somewhat limited as the concept has been constructed from a Eurocentric framing which focus largely on adversities in the home, rather than the impact of structural and social inequaities, such as exposure to racism, discrimination or stigma, for example, which can significantly increase the likelihood of poor lifelong health and wellbeing.

"Having supportive parents is important, parents aren't always that way. I'd like to be allowed a little bit of freedom and more support <u>around my mental health.</u>"

Workshop participant from South Yorkshire

Community: There is a robust evidence base about the importance of strong and active communities helping to reduce social isolation and support wellbeing, and thriving community and voluntary sector organisations are able to draw in assets for the community. Children and young people also highlighted the importance of strong, friendly and inclusive communities and the importance of knowing their neighbours, suggesting that supporting more vulnerable people in the community and having local friendships as important to their health and wellbeing. Children and young people also commented that diversity within communities is important to them and a source of pride, and that they would like opportunities to celebrate different cultures within their communities.

Children and young people drew attention to the importance of digital communities to their health and wellbeing – allowing them to easily connect to people with whom they have interests in common. Children and young people highlighted that it is important to them that they feel they matter and are important to their communities as well as to families, teachers, friends and with service professionals.

"A healthy community is (...) one where people are friendly, it has a good aura, atmosphere, we have community get togethers, and we are in an environment with various cultures and religions."

Student from Birmingham and Solihull

Places: Places make a vital contribution to health for people of all ages.²² Features of healthy places include good access to employment, services, retail and healthy high streets, clean air, good quality and accessible meeting places and public spaces. Children and young people specifically identified access to safe and good quality green spaces and places to play. Public transport and safe routes for active travel with low levels of congestion and air pollution are also important. Safety: Safety is a feature particularly highlighted by children and young people as important for their health and wellbeing. There is evidence about how crime and fear of crime affect health, both directly and through impacts on other social determinants of health. Some children and young people emphasised a widespread fear of violence and knife crime, which prevented them from going into public spaces and using public transport. Children and young people also stated that they were very concerned about their safety at home and in schools, as well as in communities and reported feeling unsafe and exposed to verbal attack and bullying, racism and sexual abuse. They felt that being worried about or experiencing such hostility was a key feature in their mental, emotional and physical health and wellbeing.

"Home might not be a safe place for you. If your home isn't a safe place then home won't help your health."

Workshop participant from Cheshire and Merseyside

"How do you expect people to learn when all they can think of, in a supposedly safe place, is 'How do I leave here safely?"

Student at Aston University Engineering Academy and Sixth Form

Poverty: Children and young people highlighted a number of factors which indicate poverty is a key driver of their health and wellbeing. This included the importance of having a warm, well-lit home, having sufficient and nutritious food, and having physically safe buildings and communities in which to live.

Box 4: Health and wellbeing outcomes

Children and young people's health and wellbeing outcomes are largely influenced by the social determinants of health, as outline in the framework (figure 1). For simplicity we don't list all the health and wellbeing outcomes, but these cover a range of physical health and mental health. The NHS is set up to treat ill health but is largely not geared to taking action to tackle the social determinants, which is where the CHEC framework is oriented.

Box 5: Personal characteristics and intersectionality

Many individuals and communities are subjected to discrimination and exclusion which damage their health and deepen social, economic and health inequalities.^{23,24,25} Characteristics which can lead to experiences of discrimination and exclusion include legally protected characteristics relevant to children and young people (disability, gender reassignment, pregnancy and maternity, race, religion or belief, sex, and sexual orientation). Following consultation with CHEC partners, these characteristics were expanded to also include children and young people with special educational needs and disabilities (SEND), including learning disability and/or neurodiversity, displaced migrants, young carers, children in care and care experienced young people, and those with experience of abuse/neglect. The negative impacts of discrimination and exclusion are compounded when individuals and communities face multiple forms of discrimination and exclusions.

Box 6: Interactions with systems and services

This can exacerbate or mitigate inequalities, which arise from socioeconomic situation and living conditions. The CHEC is oriented towards developing services and interventions which positively impact and reduce inequalities in key social determinants of health. The way services interact with children is also important – services which show children and young people that they matter and are cared for have positive impacts.^{26,27,28} There are existing frameworks for service providers around reducing inequalities for children and young people, which will be considered in the development of interventions.

Data

IHE and collaboration partners reviewed data sources aligned to the domains of the framework, which could be used as indicators to show inequalities in the social determinants and in health and wellbeing in the three ICS areas. An initial data stocktake set out sources of publicly available and routine data, which link to the different domains of the framework – social position, living conditions, interaction with services and health and wellbeing outcomes. The stocktake aimed to identify whether the available data can be disaggregated in terms of area deprivation, gender, ethnicity and additional inclusion health groups. It also included relevant available datasets on healthcare activity and outcomes. A process was developed to ascertain data quality and geographical and demographic granularity available to produce a short list of high-quality core indicators for monitoring child health equity.

Analysis of this data, alongside children and young people's engagement and other local insights will help each ICS partner to identify inequalities in children and young people's health and the determinants of health in their area and help prioritise areas for developing interventions to reduce these. The data will also support the evaluation of the impacts of the pilot interventions and the development of key insights for implementing and scaling the programme to other ICSs in the future. In some areas, particularly in many of the areas highlighted by children and young people as being important to their health and wellbeing, there is a lack of routine or publicly available data which may partially explain why these areas are often overlooked by services and system's considerations of need and outcomes. The CHEC is working with partners to assess how to address these gaps both locally and nationally. The extent to which issues which are identified as significant by children and young people can be represented in the analysis and in the prioritisation and design of interventions will be established in due course. Where further gaps emerge, recommendations will be made for future research and survey information.

Links to NHS Approaches to Health Inequalities

There are important links between the CHEC framework and existing frameworks on health and wellbeing inequalities for children and young people in the NHS. The view of the CHEC is that the framework outlined above is an important foundation for work on health inequalities within the NHS and provides a way of acting on the drivers of poor health to support better health and wellbeing among children and young people.

In addition to the moral imperative to take action on social determinants of health, there is strong evidence which makes the financial case for upstream action to improve NHS outcomes and efficiency.^{29,30} These improved efficiencies are vital in reducing pressure on an increasingly stretched system. Prior to COVID-19, health inequalities were estimated to cost the NHS an extra $\pounds 4.8$ billion a year.³¹

The recently published NHS framework on inclusion health³², indicated the financial cost of not taking action to reduce inequalities and improve health for inclusion groups of all ages, stating that the needs of people in severe and multiple disadvantaged groups costs society an estimated £10.1 billion per year.³³ Furthermore, the frequency of unplanned emergency care has a significant impact on the health system, putting greater strain on the service and costing the NHS £2.5 billion a year.^{34,35,36}

The CHEC approach can add an important dimension to inclusion health approaches, including identifying children and young people at particular risk of poor outcomes and health service experience and identifying the drivers of exclusion and risk including areas covered in **boxes 2** and **3** of the framework.

Core20PLUS5

For ICSs, the links between the CHEC framework and the NHS Core20PLUS5 approach to support the reduction of health inequalities among children and young people are important to articulate and understand.³⁷ The focus on social determinants in the CHEC underpin the objectives of Core20PLUS5 and other NHS health inequality approaches. As the CHEC focuses on the drivers of poor health rather than the health conditions themselves, in this way it supports work which has a primary focus on specific health outcomes or population groups.

Core20PLUS5 sets out the NHS England approach to reduce health inequalities at the national and system levels. It identifies target population cohorts and 5 key clinical areas/outcomes for action and gives "a practical focus for action."

It focuses on the most deprived 20% of the national population as identified by the national index of multiple deprivation (IMD) and "PLUS" population groups, to be identified at an ICS level and likely to include people who are excluded or experience poor health such as some ethnic minority communities; inclusion health groups; individuals with neurological or development conditions; looked after children/care experienced young people; those in contact with the justice system; and protected characteristic groups amongst others.

The "5" of the Core20PLUS5 gives five clinical areas of focus, which are part of wider actions for the ICSs for system change. The 5 areas of focus for children and young people are: asthma; diabetes; epilepsy; oral health and mental health and the areas for action are mostly related to access to services and treatments.

The CHEC framework can support ICSs to make links between the social determinants of health and the priority areas within NHS Core20PLUS5 and support action on those areas. **Figure 2** is an illustrative example for asthma which is a clinical priority area within the Core20PLUS5 approach for children and young people and is related to social and economic inequalities. The framework shows how actions in the social determinants of health can be mapped out to identify interventions which ICS and partners can develop to reduce incidence and inequalities in asthma. The framework can be used for other conditions in a similar way. **Figure 2** is not exhaustive but is used to demonstrate how the framework can be used to identify and prioritise actions. Around 1 in 3 people in the UK have symptoms suggestive of asthma.³⁸ Asthma has been estimated to cost the UK public sector in excess of £1.1bn per annum. It is a major cause of poor health and missed school days, with poor educational attainment in turn being linked to poorer health and wellbeing outcomes throughout the life course.³⁹ Poorer areas tend to have fewer GPs per head of population and families in more affluent areas have higher planned care usage compared to families in poorer areas. Low income families are more likely to attend A&E with asthma exacerbations and there is significant variation across the UK to access to basic preventative asthma care.^{40,41}

This process can be applied to other conditions within the Core20PLUS5 framework and more widely. Annex 2 highlights a number of practical case studies of how asthma and its wider environmental triggers have been addressed.

Figure 2: Using the CHEC Framework to Tackle Inequalities in Asthma

Intersectionality

To be identified at ICS level and to include people and communities who are excluded or experience poor health. This is also the focus of NHS **Core20PLUS5** action.

Socioeconomic Political Systems

National/Local governance **Example areas** for action: Legal limits on air pollution Air Quality Standards Regulations Good quality housing standards

Political and economic structures **Example areas** for action: Focus on equity Reducing poverty Improving housing

quality, affordability and supply

Cultural and societal norms and values

Example areas for action: Advocacy for sustainable and healthy environments Focus on equity

Social position

Low income and poverty are linked to increased asthma exacerbations and emergency hospitalisations. Many factors contribute to this including poor quality housing, exposure to air pollution and access to quality healthcare

In turn asthma impacts on education (missed school days) and current and future family income.

Example areas

for action: Asthma friendly schools Advocacy for, and paying living wage, healthy housing, transport and reduced pollution. Place level clean air strategy and plans.

Living conditions

Homes

Insecure and poor-quality housing are associated with more severe asthma, through exposures to factors such as cold homes, damp and mould and dust mites.

Places

Short term exposure to high levels of air pollution can exacerbate asthma and increase respiratory admissions. In the UK, exposure to air pollution is higher in poorer urban communities.

Example areas for action: Partnership working between ICSs, local authorities, housing providers, business to improve quality of homes, air and active travel. Advocacy for healthy housing, transport and reduced pollution.

Health and wellbeing

Adverse social determinants of health are associated with worse asthma outcomes and increased use of emergency care.

Actions across areas of the framework align with the Core20PLUS5 goals for children and young people and asthma to: "Address over reliance on reliever medications"; and "Decrease the number of asthma attacks"

Example areas for action: Actions should also improve the quality of life for children and young people living with asthma and reduce acute hospital admissions.

Interaction with system and services

Example areas for action: Strengthening NHS anchors with partnership action on housing, transport, pollution inequalities and sustainability Becoming a Clean Air Hospital Asthma family support workers Reducing inequalities in access to services

Next Steps

The partner ICSs are analysing the data related to the areas of the framework outlined in **boxes 2-7** and identifying important gaps. Analyses of local data, along the dimensions of inequality outlined in the framework, will enable ICSs to identify inequalities and areas of particular concern. This will feed into the development of a service/intervention to help reduce inequalities in outcomes for children and young people. The interventions will be developed in early 2024 with support of the CHEC, children and young people Health Equity Champions, advisory boards and within each ICS.

Following further consultation and discussion of the framework and narrative, a working document will be published and circulated among key stakeholders for input and discussion, particularly among other ICSs.



Annex 1: Development of the Framework

The original framework developed for consultation among collaboration partners was based on the framework in the global Commission on the Social Determinants of Health, 2008. This framework, based on global evidence and expertise, has been used in many global contexts and for differing health equity concerns and, with some adaptation, was found to be useful and relevant, and to allow identification of key drivers of health and wellbeing and to identify areas for intervention and policy changes.

Figure 2: Commission on the Social Determinants of Health Conceptual Framework



Following discussions an amended framework, **Figure 4**, was used for engagement and discussion. It incorporated elements of **Figure 3** but amended for the different context and for children and young people. There is greater focus on intersectionality which includes characteristics which can lead to discrimination and exclusion; these include ethnicity, gender, sexuality, immigration status and special educational needs, caring responsibilities and children and young people who are looked after. There is also greater focus on a range of different services which children and young people and their families interact with and which directly shape social position, living conditions and health and wellbeing. There is also more focus on living conditions, including quality and accessibility of housing and built and natural environments, social isolation and parental and own mental health behaviours.





SOCIAL DETERMINANTS OF HEALTH AND HEALTH INEQUITIES

Annex 2: Asthma Case Studies

Creating healthy homes

An initiative that improved heating and ventilation in Welsh homes led to a 17% movement for children with severe asthma to moderate asthma compared to 3% in the control group. Ventilation systems were installed in the roof spaces of houses. Improvements were made to bring central heating systems to a defined standard; new systems were installed if none existed. There was no cost to the families for these improvements.⁴² At a cost of £12,300 per child moved from the severe to the moderate asthma group, study authors concluded that there was a 75% chance that improving heating and ventilation for children with asthma was cost-effective.⁴³

Asthma friendly schools

The school environment is an important space for delivering interventions to improve children's health. Asthma Friendly Schools work in partnership with health, education and local authorities to manage children and young people with asthma at primary and secondary school. Asthma Friendly Schools increase awareness, knowledge and confidence for all school staff, pupils and parents, on the management of asthma in schools. Implementing current and best practice strategies for the management of asthma improves school attendance, supports educational attainment, reduces stigma and the risk of asthma occurrences in school.

Barnardo's Asthma-focused Family Support Workers (FSWs)

Trained FSWs are embedded in Emergency Departments to support families that attend for asthma related issues. This support is tiered into 3 levels based on what the needs of the family and young person are. Interventions include asthma home assessments, how to use inhalers, working with schools, landlord assessments/checklists, 1:1 family support, reducing air pollution, diet, nutrition advice/support and signposting.

Asthma in the community

Multi-component community asthma care models are associated with significant reductions in asthma-related Emergency Department visits, hospitalisations and increased use of asthma actions plans. Successful models incorporate home visits and environmental trigger assessments, care coordination linking children and young people and their families with health and social care services and culturally appropriate education and self-management support.

Clean Air

Long-term exposure to air pollution reduces life expectancy, due to respiratory diseases, cardiovascular disease and lung cancer. Short-term exposure (over hours or days) to high levels of air pollution can exacerbate asthma and increase respiratory admissions. In the UK, exposure to air pollution is higher in poorer urban communities, highlighting a direct link between inequalities in living conditions and health and wellbeing outcomes. Recent analysis from London indicates that between 2016 and 2019 improved air quality in London has reduced the number of children admitted to hospital for asthma by 30%.^{44,45} There is ongoing work in London to assess the overall impact of ULEZ and lung function in children.⁴⁶

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