

# On the edge:

How inequality affects people with asthma



## Foreword



**Asthma affects one in five households in the UK. At Asthma UK we work tirelessly to stop asthma attacks and cure asthma for all of them. However, we're particularly concerned that asthma health outcomes can vary based on factors like where you live and how much you earn. It's unacceptable that adults and children in deprived communities are more likely to have asthma and more likely to go to hospital with asthma attacks. It's important that we do not accept health inequalities as the status quo.**

Managing a variable lifelong condition with complex treatments like inhalers is hard enough. Managing asthma whilst juggling multiple jobs, family responsibilities and financial pressures is even harder. Deprivation limits choices – the choices that many of us take for granted.

Imagine being trapped in a rented property where the mould triggers your child's asthma because you can't afford to move, being in fear of losing your income if you take time off work with your asthma, needing to switch your job because it triggered your asthma, or having to choose between paying for life-saving medication or basic essentials. Asthma UK hears from people struggling with these terrible choices every day. It's unsurprising there's sometimes little energy left to manage their asthma as directed.

We need action to reduce asthma inequalities. At Asthma UK we'd like to see more focus on eliminating the causes of asthma symptoms – such as smoking, pollution and poor housing. We also need support for health literacy and digital innovation to make it easier for people to engage in self-management. We are seeing a renewed awareness of the implications of neglecting health inequalities. Asthma UK will ensure this momentum is capitalised on so that there's a level playing field for asthma management, and asthma attacks are stopped.

### **Kay Boycott**

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This report was written by **Andrew Cumella** and **Ari Haque**.

## Key findings



Asthma is more prevalent within more deprived communities, and those living in more deprived areas of England are more likely to go to hospital for their asthma.



Those from disadvantaged socio-economic groups are more likely to be exposed to the causes and triggers of asthma, such as smoking and air pollution.



There is significant variation in access to basic care for asthma across geography, age group and ethnicity.



Asthma requires self-management, which is harder to embed in groups with lower health literacy.



To reduce health inequality in asthma and enable people to better adhere to self-managed treatment, there must be preventative action on causes and triggers, improved access to basic care, and digital innovation to improve engagement in healthcare and health literacy.

## 1. Health inequality: the context

**Health inequalities are the preventable differences in health outcomes between groups when separated by factors such as geography, socio-economic status or race.**

Sir Michael Marmot, in the report *Fairer Society, Healthy Lives*, asserts that “inequalities in health arise because of inequalities in society – in the conditions in which people are born, grow, live, work, and age”<sup>1</sup>. Life expectancy is a stark example of health inequality. In England, the least deprived males born between 2014 and 2016 can expect to live almost a decade longer than the most deprived (9.3 years), while for females the gap was 7.4 years<sup>2</sup>.

NHS England and Clinical Commissioning Groups (CCGs) have duties to reduce health inequalities conferred by the National Health Service Act 2006 (as amended by the Health and Social Care Act 2012). But in 2018, NHS England

admitted that “inequalities in life expectancy and healthy life expectancy are nearly all worsening”<sup>3</sup>. The NHS England consultation on the *Long Term Plan for the NHS* therefore makes health inequalities a priority and this briefing is targeted for policymakers in England, but with lessons for all of the UK.

Respiratory diseases in particular have been connected with social deprivation and health inequalities. In 2012, incidence rates of asthma were 36% higher in the most deprived communities than in the least deprived, but more research is needed to understand the link between asthma and social deprivation<sup>4</sup>. This paper collates the evidence on health inequalities and asthma and recommends actions across Government and the NHS to reduce them.

## 2. There is disparity in the incidence of asthma across different groups

**Around 160,000 people a year in the UK receive an asthma diagnosis, and there are marked differences in asthma incidence across different social and ethnic groups in the UK.** This includes a disparity in asthma prevalence across the socio-economic spectrum, with higher rates of asthma prevalence in the most deprived<sup>5</sup>. There is a higher asthma incidence rate in the North West of England<sup>6</sup> than in the rest of the country, and a higher prevalence of difficult and severe asthma symptoms in the North East<sup>7</sup>. There is also a notable difference in asthma incidence by ethnic group. There are significantly higher rates of

incidence in black and minority ethnic (BAME) groups in England and Wales. When subdivided into those born in the UK and those outside, there was a further divide. People from BAME groups born outside the UK had a lower incidence than those born in the UK, suggesting that second and third generation descendants of South Asian and Afro-Caribbean migrants are a group experiencing high rates of asthma incidence<sup>8</sup>. Asthma incidence is a complex area with patchy evidence, but it is clear there are variations between groups that require attention.

### 3. Socially deprived groups are disproportionately exposed to the causes of asthma and triggers of asthma attacks

**Asthma is caused by a combination of genetic and environmental factors, and the symptoms of asthma are triggered by a range of behavioural and environmental factors.** While further research is needed to better understand the development of asthma in both children and adults, several factors are known to contribute to asthma incidence. For children, exposure to air pollution is a key driver of the development of asthma, along with poor quality housing (through mould exposure<sup>9</sup>), second hand smoke, diet and obesity<sup>10</sup> and socio-economic status<sup>11</sup>. For adult-onset asthma, key risks in its development include one's occupation (16% of adult-onset asthma<sup>12</sup>), history of smoking<sup>13</sup> and obesity<sup>14</sup>. Those from disadvantaged socio-economic groups are at higher risk of exposure to these causative triggers<sup>15</sup>.

Outdoor air pollution from vehicle emissions is linked with a number of respiratory conditions in adults and children, including asthma. There is an established link between poor health due to air pollution and socio-economic deprivation. Air pollution is more prevalent in urban areas with higher levels of social deprivation: 66% of man-made carcinogens are emitted in the 10% most deprived English city wards<sup>16</sup>. These communities are also likely to have less access to green spaces, which improve air quality, and receive less spending on public transport necessary to reduce overall vehicular traffic<sup>17</sup>. Indeed, children with asthma who live close to a green space present fewer asthma symptoms than those who live further away<sup>18</sup>. A child in Lewisham living near London's congested South

Circular Road recently died due to an asthma attack. Evidence submitted appealing for a new inquest into her death<sup>19</sup> has linked the worsening of her asthma symptoms with spikes in air pollution levels, which were at illegal levels. In 2018, London had exceeded its annual legal air pollution limit by the end of January<sup>20</sup>. Although air pollution is a policy area with an increasing amount of prominence, significant effort is needed to address air pollution levels.

Smoking is linked with the onset and exacerbation of asthma – 53% of people with asthma say that smoke impacts their asthma<sup>21</sup> – and is more common amongst the demographics likely to be impacted most by health inequalities. 23% of those earning under £10,000 are smokers, compared with 11% of those earning £40,000+<sup>22</sup>. Differences in smoking prevalence across the population cause differences in death rates and illness due to the harmful nature of smoking. Smoking is also more prevalent among unskilled and low-income workers than among professional high earners. The more disadvantaged someone is, the more likely they are to smoke. This means that they are more likely to develop asthma and to have an asthma attack. In recent years, the trend has been away from preventative treatment: in England, there has been a 75% decline in stop smoking treatments prescribed by GPs and pharmacists<sup>23</sup>, and this has the potential of worsening the impact of smoking on health inequalities.

In 2018, London had exceeded its annual legal air pollution limit by the end of January

Other causes of asthma and triggers of asthma attacks, such as housing and occupational hazards, also impact disadvantaged groups more. 20% of homeless people have asthma<sup>24</sup>, and mould and dust mites are most common in cheaper, less well-constructed houses. Children growing up in homes with mould are between one and a half and three times more prone to coughing and wheezing – symptoms of asthma and other respiratory conditions<sup>25</sup>. Preventing poor housing conditions which may cause or trigger asthma is a policy challenge that would need to tackle the root cause of housing inequality: poverty. For example, mould can be a

consequence of inadequately heated properties, which in turn may be a consequence of fuel poverty.

Another cause of asthma is exposure to chemicals which are more likely in lower-paid manual professions. According to the Health and Safety Executive<sup>26</sup>, the highest rates of occupational asthma were found in vehicle paint technicians, bakers and confectioners, and process operatives. As with housing, combating the inequality in incidence due to occupational hazards is a complex issue that cannot be met with one solution.

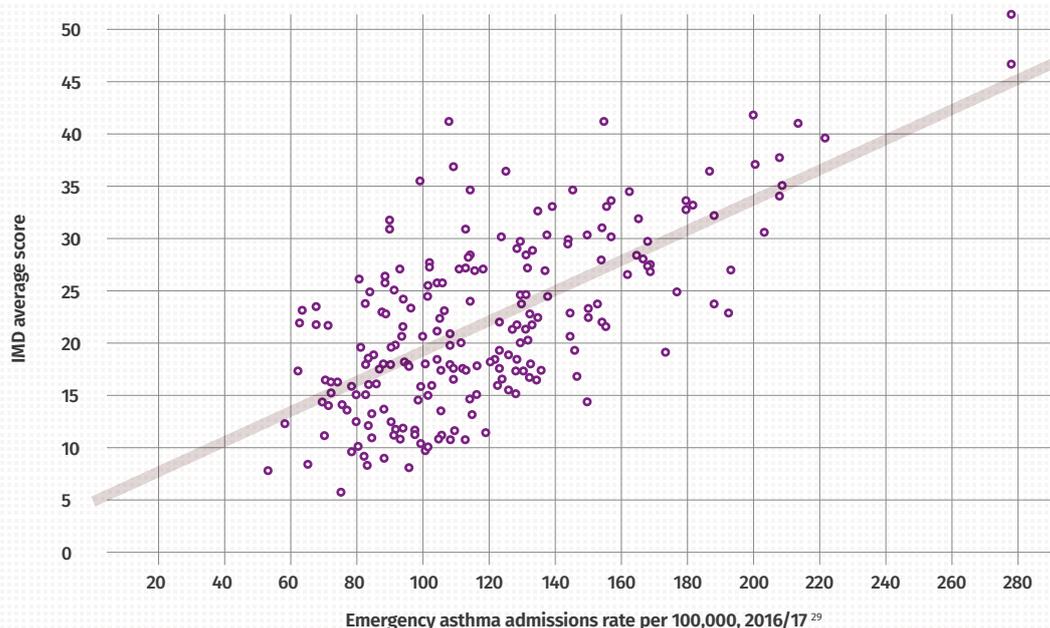
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## 4. Certain groups experience materially worse health outcomes from their asthma

Every year, there are around 65,000 emergency hospital admissions for asthma in England<sup>27</sup>. New analysis by Asthma UK in Figure 1 shows that there is a strong correlation (with a correlation coefficient of 0.67) between the rate of emergency admissions for a clinical

commissioning group (CCG) and the index of multiple deprivation (IMD) score for that area<sup>28</sup>. People with asthma living in more deprived CCGs in England are more likely to go to hospital for their asthma.

**Figure 1:** Emergency asthma admissions and IMD score

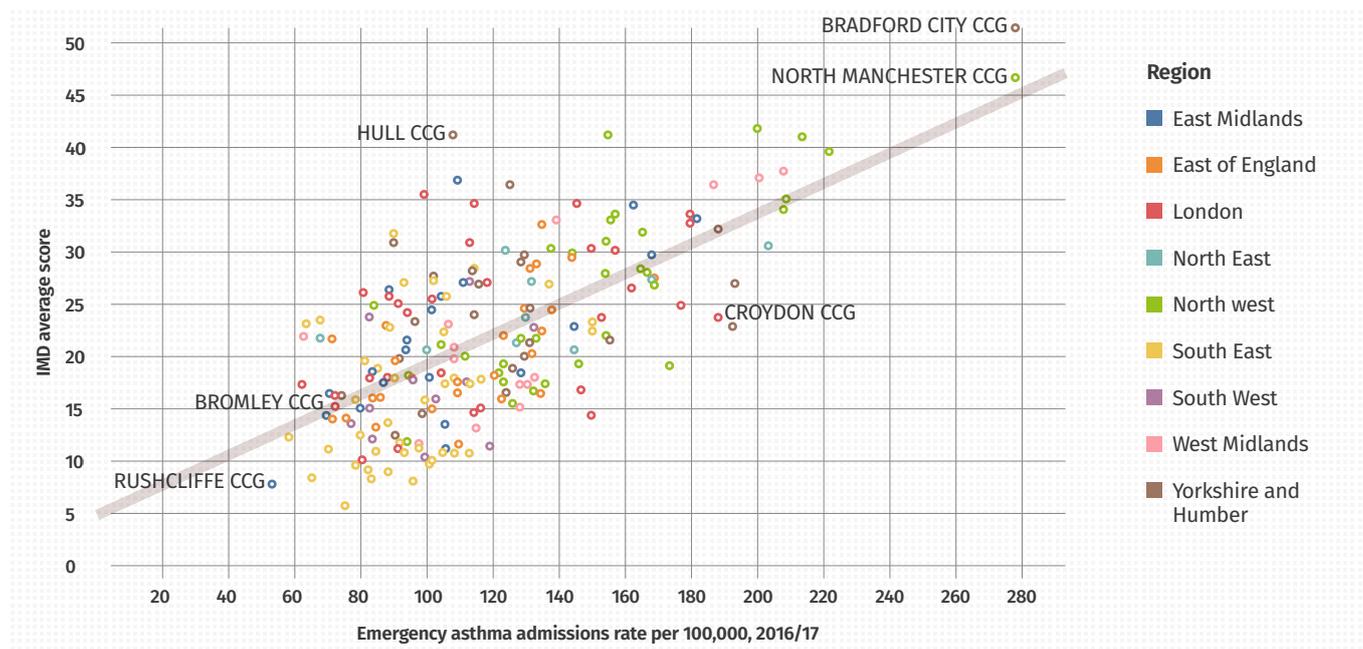


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**Further analysis of this dataset indicates a complex picture.** The two areas with both the highest IMD score and the highest rate of emergency admissions per 100,000 are Bradford City and North Manchester (which is now part of Manchester CCG). The area with the lowest rate of emergency admissions for asthma is Rushcliffe, which is also the second least deprived. Interestingly, Hull indicates that having a high level of deprivation does not always mean high levels of asthma emergency

admissions. It indicates that there are areas that have developed local solutions to address potentially high levels of asthma incidence and need. Inequality also occurs in neighbouring areas. Croydon has the highest rate of emergency asthma admissions in London, while neighbouring Bromley has the lowest rate in London. There can be a great diversity in asthma outcomes within different areas of cities, and local solutions may be needed to address inequality.

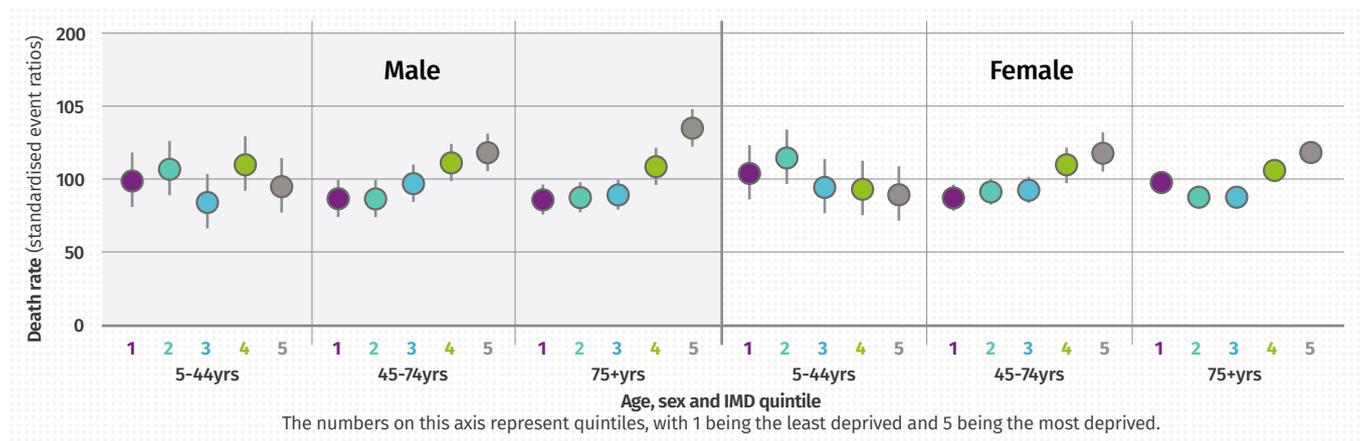
**Figure 2: Emergency asthma admissions , region and IMD score**



**This socio-economic inequality is also reflected in research on asthma mortality.** England has around 1,100 deaths listed with asthma as the primary cause each year. The National Review of Asthma Deaths (NRAD)<sup>30</sup>, a comprehensive investigation into factors leading to asthma deaths, recognised that there are poor outcomes for those at a socio-economic disadvantage. Further research into asthma mortality<sup>31</sup> found socio-economic

status variations in asthma mortality rates for those aged over 45. In Figure 3, those aged over 45 in the most deprived quintile (5 on the x axis) have a higher rate of mortality than those in the least deprived (1 on the x axis). There are many factors that can lead to an asthma death, but socio-economic status has a link to asthma deaths in middle and old age.

**Figure 3: Asthma mortality by age and IMD quintile**



The numbers on this axis represent quintiles, with 1 being the least deprived and 5 being the most deprived.

Figure adapted from Gupta et al 2017<sup>32</sup>

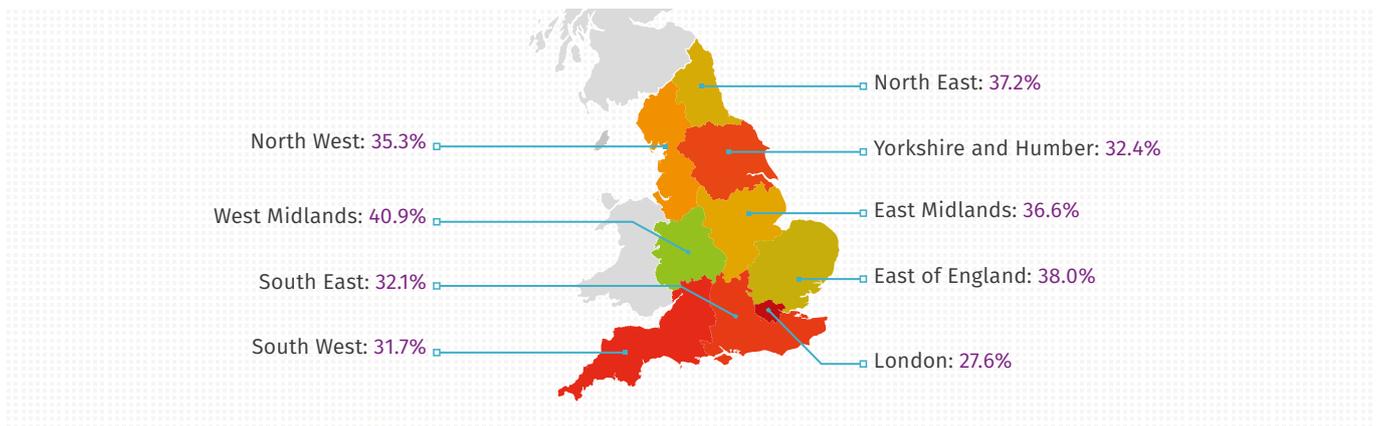
## 5. Provision of care, diagnosis and treatment services is worse for certain groups

**Emergency admissions and death are indicators of poor asthma management, and the National Review of Asthma Deaths (NRAD) estimated that two thirds of asthma deaths were avoidable with better management<sup>33</sup>.**

Asthma UK research has highlighted the variation in the most basic levels of asthma care received across England. The 2017 Annual Asthma Survey<sup>34</sup> found that only 34% of people with asthma were receiving the most basic elements of asthma care, which includes attending an annual asthma review, having an inhaler technique check,

and having an asthma action plan. Figure 4 shows the regional variation, ranging from 41% in the West Midlands to 28% in London. London has a unique health economy and different demographics to other regions, and this low score may be reflective of problems in primary care access for the younger, more transient population in the capital. There will also be notable variation within the regions, but this data shows that a ‘postcode lottery’ for asthma care still exists.

**Figure 4:** Basic asthma care levels in England

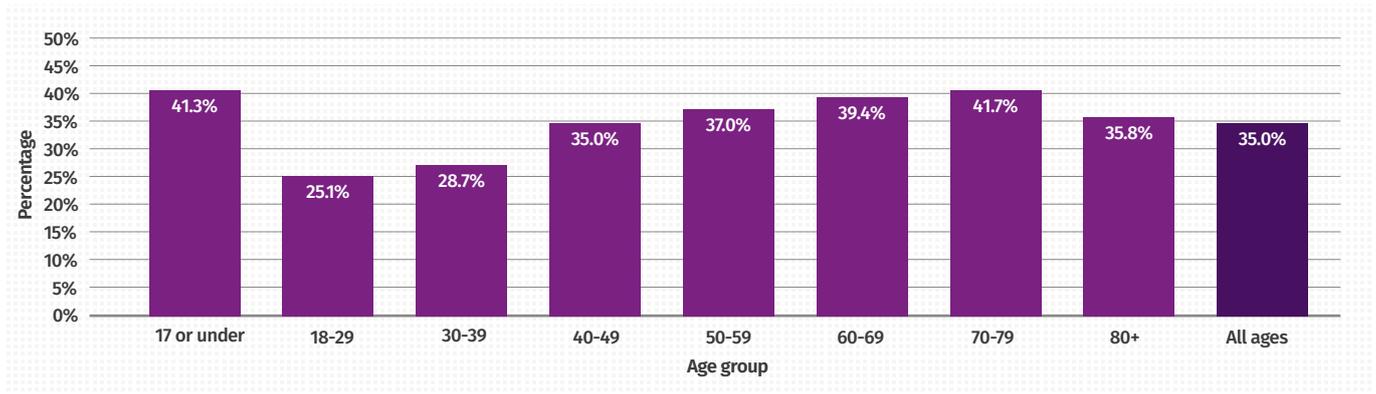


**Age is another area where there is unacceptable variation in care levels.** Those aged 18-29 are not being reached by primary care services, with only 25% receiving basic asthma care.

This exploration of key data indicators on asthma care variation shows that there are many aspects to it,

and potentially many diverse groups that suffer poor outcomes. Those in more deprived areas, and those who are younger, may need new solutions – including digital innovations – to improve access to asthma care and ultimately reduce asthma attacks.

**Figure 5:** Basic care received by age group, England



## 6. Asthma requires self-management, which is harder to embed in groups with lower health literacy

**Asthma is a potentially fatal condition with variable severity. It can be well managed using preventative medication, but is often seen as a low-risk condition by both those with asthma and by healthcare professionals.** Complacency and low motivation to manage the condition are the enemies of improvement of outcomes and asthma health inequalities.

Treatments for asthma are centred on self-management to prevent the exacerbation of symptoms. Recent research indicates that better self-management of long-term conditions reduces the number of emergency hospital admissions, and thus lowers resource usage across both primary and secondary care<sup>35</sup>. After diagnosis, regular appointments, self-monitoring and awareness of asthma triggers as well as a medicines routine are necessary for good asthma management. This requires a certain level of personal engagement in health, and people with asthma can be predisposed to low levels of engagement in managing their condition. This complacency is identified in the NRAD<sup>36</sup> as a problem among both clinicians and people with asthma. Potential reasons for low levels of health engagement and consequent lower outcomes also include low levels of health literacy<sup>37</sup> and language barriers.

People with low health literacy - which has been associated with social determinants such as education, poverty, and employment - are less likely to successfully manage long-term conditions<sup>38</sup>. In part, this is because the success of asthma medication at managing symptoms relies on correct adherence to medication, and those with lower health literacy skills are likely to have more difficulty managing medications<sup>39</sup>. Apart from medication, the other modes of managing asthma, the asthma action plan and the annual review, also currently require a high level of engagement. People with low health literacy use fewer preventative services and have less effective communication with healthcare professionals<sup>40</sup> so the annual asthma review is not best placed to serve this population. Furthermore, this population have less recall and adherence to medical instructions and healthcare regimes<sup>41</sup> such as the asthma action plan.

Asthma UK's segmentation<sup>42</sup> of people with asthma identified the profile of the 18-29 year old demographic that is not being well served by primary care today. This group has a lower income, above average asthma prevalence and below average asthma control. They are more likely to have uncontrolled asthma and have an above average propensity for having had an asthma attack in the last 12 months. They are also more likely to attend or be admitted to hospital due to their asthma. These poorer outcomes are likely to be attributed to the lower level of health literacy and engagement with healthcare in this group.

Complacency and low motivation to manage the condition are the enemy of improvement of outcomes and asthma health inequalities

In particular, the people in this group have lower health literacy, such as the 18-29 year old demographic. This group in particular have a high level of digital engagement and are likely to use technology in many aspects of their lives. They are regular smartphone users and access the internet and social media from their devices on a daily basis. It may be the case that this group will engage better in their asthma management if it is delivered through digital channels, rather than through the traditional face-to-face and paper mechanisms.

## 7. Proposed solutions to improve equality of outcomes within asthma healthcare

**We have explored how the health inequalities in asthma are apparent both in incidence, outcomes and care.**

Solutions to improve the equality of outcomes must thus be focused both at reducing its incidence in certain groups, as well as in making sure that treatments serve all groups equitably.

To prevent incidence of asthma in certain groups, there must be a public health drive to reduce the causes and triggers of asthma that disproportionately affect socially disadvantaged groups. High quality stop smoking services should be made accessible to all those who want to quit smoking, and all healthcare professionals should be trained in offering advice on smoking cessation. There must also be a co-ordinated effort across the government, local authorities and the NHS to reduce air pollution, including clean air zones, restrictions on particulate matter emissions from all sources, and the introduction of a system of air pollution alerts with health advice. Recognising housing as a public health issue could lead to targeted action across governmental and NHS bodies to reduce the incidence of poor quality housing and its impact on health. Increased integration between health and housing policy could improve housing quality. Occupational asthma is key to adult-onset asthma, and to tackle this, a combination of policies aimed at equalising opportunities to work in other fields for those who want to, and ensuring employers are keeping workers safe from exposure, will be necessary.

Targeted action to tackle the causes of asthma inequality would also reduce health inequalities in other conditions, including respiratory and cardiovascular disease and cancer.

All groups must be equally able to access primary care. Access to primary care services should be improved through the availability of resources; and decreasing delays in referrals to secondary care would make accessing care less dependent on patient persistence. Pro-active engagement from GPs could help make it easier to manage care – for example, if a patient presents at A&E with an asthma attack, a GP could be notified, leading to a primary care intervention. In this way, data sharing between services could help with risk stratification and

make targeted case-finding of difficult to control asthma easier for GPs. The asthma population is well placed to test innovations based on data sharing: 88% of people with asthma would be willing for their health data to be used for service improvement, and 93% of people with asthma would welcome the use of data collected through apps to tell healthcare professionals when their asthma needs to be reviewed<sup>43</sup>.

Initiatives to improve health literacy would improve the likelihood of good adherence to asthma treatment plans. The importance of health literacy to asthma management is hard to overstate. There is an established link between poor health literacy and poor outcomes<sup>44</sup>. NHS England has set up a Collaborative<sup>45</sup> to address health literacy, which is welcomed. This work should be given a greater prominence, and the importance of self-management and health literacy to people with asthma should be declared. In tandem, self-management of the condition must be made less onerous. Asthma care could be better delivered through different modes of communication that are less reliant upon individual proactivity and health literacy. Moving to digital modes of communication and self-management could beneficially impact socially disadvantaged groups today. 85% of the UK population have smartphones, so they have the potential of being an equalising force that can be used to mitigate the other communication inequalities and behaviour drivers in asthma care. A digital asthma action plan could improve adherence, and appropriate use of mHealth applications and smart inhalers would make taking medication easier. Similarly, digital alerts could be used to prompt the patient to attend their annual asthma review.

**Asthma is a broad-ranging condition that makes it a compelling case study for understanding health inequalities. Asthma UK proposes that asthma could be an exemplar for targeted action to reduce and mitigate these inequalities by tackling causes and triggers, improving access to basic care and improving engagement in healthcare through digital innovation.**

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**On the edge:**

How inequality affects people with asthma

Every ten seconds someone in the UK has a potentially life-threatening asthma attack and three people die every day. Tragically two thirds of these deaths could be prevented, whilst others still suffer with asthma so severe current treatments don't work.

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- We campaign to improve the quality of care received by people with asthma.
- We help hundreds of thousands of people a year with our expert advice and support.

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