

Insight report:

Understanding air quality can influence health outcomes

October 2020





The largest environmental challenge for European citizens.

In 2010, the European Respiratory Society appealed to physicians to “recognise that air pollution is the largest environmental challenge for European citizens, one that currently limits the fundamental right of all individuals to breathe clean air¹. This challenge is associated with large health effects – effects that will continue to menace public health in the future”.

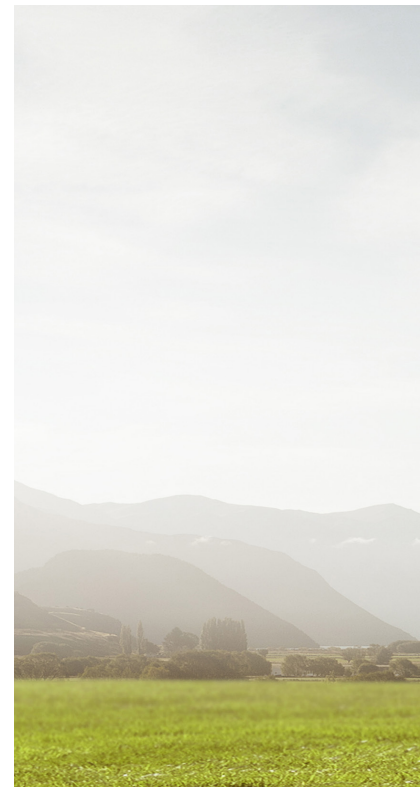
Yet, ten years further on and little has changed. A 2016 report from the United Nations Environment Programme (UNEP) highlighted that between 2008 and 2013, air pollution levels in urban areas increased by eight per cent², and spotlighted the need to support the introduction of vital actions aimed at combating this public health emergency.

And while air quality and air pollution may now be firmly on the global sustainability agenda, the fact is that people’s understanding of how air quality at a local level affects their health on a day-to-day basis remains poor. Moreover, there is a general and misplaced complacency that the impact of poor air quality is something that cannot be mitigated.

On the contrary, Dr. Noel O’Kelly, Spirit Digital, argues that access to air quality data and education should be a priority for local authorities, CCGs, healthcare practitioners and patients – and it’s available today.

Tackling Air Quality

The effect of poor air quality on the health and wellbeing of people is well documented. The “Air Quality and Health” report from the European Respiratory Society (2010) identifies air pollution as an established cause of morbidity and mortality³. Globally, seven million deaths were attributable to the joint effects of household and ambient air pollution⁴. In the UK around 40,000 deaths are attributable to outdoor air pollution⁵.



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1. <https://www.ersnet.org/pdf/publications/air-quality-ENG.pdf>

2. <https://news.un.org/en/story/2016/05/530122-un-report-paints-mixed-picture-global-responses-declining-air-quality#:~:text=%E2%80%9CThe%20current%20global%20response%20to,measures%20to%20improve%20air%20quality.>

3. <https://www.ersnet.org/pdf/publications/air-quality-ENG.pdf>

4. Jiang 3et al. Air pollution and chronic airway diseases: what should people know and do? Thorac Dis. 2016 Jan; 8(1): E31–E40

5. Royal College of Physicians. Every breath we take: the lifelong impact of air pollution. Report of a working party. London: RCP, 2016. <https://www.rcplondon.ac.uk/projects/outputs/every-breath-we-take-lifelong-impact-air-pollution>

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We know that air quality has a significant impact from both a sociological and health perspective. We know that in places where there's high air pollution, it both exacerbates ill health and causes health issues as well. Although we can all be affected by poor air quality, there are many vulnerable groups who are particularly impacted.

This includes people with cardiovascular and respiratory conditions, the young and the old, and those who are particularly exposed on a long-term basis to poor air quality. Of the former group, these can comprise some of most economically and socially deprived groups living in urban areas.

The challenge of tackling poor air quality requires a response on multiple levels. A societal response for federal governments to implement wide-scale policy change; a regional response from local authorities to provide robust local policy and planning decisions to reduce the impact; and a personal responsibility to reduce our contribution to the problem – this includes both looking at our own carbon footprint as well as learning how to avoid situations that that could make our health worse.

Addressing Inequalities

The challenge to vulnerable groups and the impact on their health will continue in the short to medium term. National Guidance (NICE NG70 30/6/2017) advises that people in vulnerable groups should:

- Avoid or reduce strenuous activity in highly polluted locations, such as busy streets
- Have access to and use asthma reliever inhaler therapy as needed
- Close external doors and window in houses where/when outdoor pollution is high⁶.



What should we do when air quality is low?

The US Environmental Protection Agency (EPA) gives very specific guidance on what we all and especially vulnerable groups should do when the air quality is low. (Table 1)

Air Quality Index	Level of risk	Groups	Advice
0-50	Good	All	
51-100	Moderate	Unusually sensitive	Reduce prolonged or heavy exertion
101-150	Unhealthy	All	Limit prolonged or heavy exertion
		Vulnerable Groups: People with heart or lung conditions Children Older adults	Avoid all physical activity outdoors
201-300	Very Unhealthy	All	Avoid activity outdoors
		Vulnerable Groups: People with heart or lung conditions Children Older adults	Remain indoors and keep activity levels low

In essence, when air quality is poor vulnerable groups need to have a process to avoid areas of high pollution and have specific advice as to what actions they can take to minimise the impact to their health.

Part of this process should include developing a patient pathway, whereby vulnerable and at risk patients are identified and monitored, with proactive intervention provided when needed, and in particular for socially and economically deprived groups in urban areas.



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Information and Awareness

The challenge in implementing an individual avoidance strategy to poor air quality has been three-fold:

1. The lack of information that people have readily available on the air quality in their location
2. The lack of awareness of the effect of the air pollution on their health
3. Poor understanding of the actions they can take to mitigate against the harmful effects of air pollution on their health

However, digital remote monitoring solutions now have the capability to provide vulnerable patients and their healthcare practitioners with the ability to assess the air quality in their locality on a day-to-day basis, whilst also including educational packages to inform people of what measures they can take when the air quality is poor. These solutions also allow a patient's health and well-being over time to be tracked so early signs of deterioration can be identified and intervention taken.



There is clear evidence that the more exacerbations a patient gets, the more their lung function will deteriorate, and more chance that they will have more exacerbations of a more severe nature, potentially requiring hospital admission. However, by taking positive action – whether that is better adherence to medication, avoiding going outside or changing behaviour – patients are less likely to deteriorate and health outcomes and quality of life improved.

Conclusion

Tackling air quality from a sustainability perspective may require a global effort, but vulnerable patients and HCPs can make a difference to their own health without requiring large-scale strategies.

We can influence air quality around us and we can influence change, over time, but with the latest innovations in digital health, vulnerable patients and HCPs can have relevant and timely access to air quality data. Moreover, they can gain understanding of the actions they need to take in order to reduce the health risk, take control of the harmful effects of air pollution and improve outcomes today.



To find out more about how we use air quality data in our CliniTouch
Vie remote monitoring solution, please get in touch.

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