The Safer Air
PROJECT

Submission to the Productivity Commission consultation on 'Delivering quality care more efficiently'

Introduction

The Safer Air Project is a registered health promotion charity advocating for safer indoor air as a critical accessibility and inclusion issue. Our vision is a world where everyone can breathe safely indoors, regardless of health status.

According to the Australian Bureau of Statistics, one in two (49.9% or 12.6 million) people have at least one chronic health condition, and women are more likely to have at least one chronic condition than men (52.3% compared to 47.4%).[1] For people with chronic conditions, poor indoor air quality (IAQ) creates barriers to education, healthcare, workplaces, and community life. Safe air is not only a matter of public health and productivity, but of equity and accessibility.

Prevention

We welcome the draft report proposal to establish a National Prevention Investment Framework and we recommend that IAQ be included as a core prevention measure.

Every person has a right to safe healthcare, governed by a range of laws and regulations internationally. In Australia, the Australian Commission on Safety and Quality in Healthcare (ACSQHC) sets benchmarks for safety and quality in healthcare services and is responsible for the Charter of Healthcare Rights.[2] The Charter describes seven rights that people and their carers can expect when accessing healthcare. These rights apply to all healthcare providers in Australia. Of the seven rights, a person can expect to have access to care that meets their needs, safe care that meets national standards and makes them feel safe, and treatment with respect and dignity.[2]

Unfortunately, in the absence of the safest possible IAQ standards and appropriate airborne infection prevention and control (IPC) policies, many people with chronic health conditions, and other risk factors like age and disability, do not have these rights fulfilled because of the risk of healthcare-acquired infection (HAI) from airborne pathogens.

Evidence of harm

Data from Victorian hospitals in 2022 show a mortality rate of >10% in patients who acquired COVID-19 while in hospital,[3] while data from NSW show that 14% of all COVID-19 deaths in 2023 were due to infections acquired in healthcare settings.[4]

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Similarly alarming mortality rates from healthcare-acquired COVID-19 infections have been reported overseas.[5]

Because of these increased risks, many people with chronic health conditions are making decisions about whether they really need to access healthcare, or not. Indeed, a recent Australian study showed that, because of the increased risks of infection occurring in healthcare settings, many people with chronic health conditions are avoiding going to the doctor or hospital for their own healthcare needs.[6]

Transmission risks

The process of assessing the risk of SARS-CoV-2 transmission and other airborne pathogens in healthcare facilities needs an urgent paradigm shift. SARS-CoV-2 is airborne and constantly present in the community, and approximately 60% of infections are the result of presymptomatic transmission.[7]

Additionally, it is widely recognised that COVID-19 is frequently asymptomatic,[8] that some infected people have non-respiratory symptoms and that many people are infectious for well beyond the minimum isolation requirements. All hospital patients should be regarded as 'high-risk' given their current medical problems. In many cases, patients are unable to wear respirators due to young or advanced age, confusion, or during surgery, imaging, or other treatments. Thus, they rely entirely on the facility to provide a safe environment.

Solutions

Providing the safest possible IAQ standards to reduce the potential for airborne HAIs, it is also necessary to address source control via other measures such as universal respiratory personal protective equipment (PPE), including the use of N95 respirators, testing, and isolation. The use of N95 masking is widely recognised as both source control and PPE control in the risk reduction of airborne pathogens – with source control being the more effective risk reduction measure (i.e. everyone masking versus one-way masking).[9] Education about proper use of PPE and why it's important to wear respirators can help overcome potential resistance to their use.

The current recommendations that leave PPE decisions to individuals fail to acknowledge that one-way masking is insufficient protection: hospital stays involve many moments where masks must be removed (eating, taking medications, treatments, etc) and masking is impractical for infirm, elderly or confused patients. High-risk patients also need to be able to attend healthcare facilities while caring for their family members, as carers themselves.

Australian and international evidence supports stronger prevention measures. One Australian study found staff N95 mask use and admission screening testing of patients can reduce hospital-acquired COVID-19 infections and COVID-19 deaths.[10] The same study also found that these two interventions can save the health system potentially hundreds of millions of dollars in the long term, and many thousands of lives.[10]

Meanwhile, another study found masking among healthcare workers can reduce HAI respiratory viral infections by ~60%.[11] The authors also note that it would be a mistake to ignore the SARS-CoV-2 threat and that 'healthcare facilities could reimagine masking policies to protect patients from the full array of nosocomial respiratory viral infections, using masking to protect all patients from all viruses when viral activity is elevated and the most vulnerable patients year-round'.[11]

Respiratory protection plays an important role in employee safety in many sectors and should be integrated into healthcare occupational health and safety protocols. Employee training, education, and mask fit-testing should now be routine to protect patients, visitors, and staff, noting particularly that the provision of a safe work environment is also a basic employee right.

Ultimately, patients shouldn't need to self-advocate for basic airborne infection control procedures; providing a safe healthcare facility is the responsibility of the facility and cannot be transferred to patients. As part of good governance and optimising patient outcomes, healthcare facilities should explicitly prioritise protecting patients from contracting SARS-CoV-2 or any other communicable disease when in their care. Health service organisations accredited to the National Safety and Quality Health Service Standards[12] must comply with the Preventing and Controlling Infections Standard, which requires environmental control measures, such as effective ventilation systems, to be in place to reduce the risk of infection transmission.[13]

Guidance for IPC, including optimising ventilation, should be updated to include mitigations for airborne diseases that:

- appropriately recognise asymptomatic and presymptomatic transmission
- acknowledge that high-risk patients are not confined to clinically high-risk areas, and may be attending as carers
- recognise that airborne transmission occurs through breathing and talking and isn't confined to 'aerosol-generating procedures'
- recognise that even where IAQ is optimised, respiratory protection is required to prevent the risks of near-field transmission occurring.

In addition to updating IPC guidance and improving IAQ in all healthcare facilities, the HAI committee of ACSQHC, which has been responsible for the National Hand Hygiene Initiative for many years, should implement a 'National Airborne Infection Prevention Initiative'. Promoting the prevention of airborne transmission in the same way that the ACSQHC promotes the prevention of other HAIs will help educate and raise awareness among healthcare workers and patients of the risks of airborne transmission and how to prevent it from occurring. It will also ensure that patients are protected from all modes of transmission that cause healthcare-acquired infections.

Additionally, given that infections are transmitted outside of healthcare settings, the newly formed Australian Centre for Disease Control (CDC) must include IPC in its remit. Leaving IPC solely under the remit of ACSQHC ignores the fact that IAQ is a shared, whole of community issue and not just a healthcare setting issue.

Prevention through safer indoor air will reduce preventable hospitalisations, lower health costs, and protect long-term workforce participation. Economic analysis reinforces this case. A preliminary analysis for The Safer Air Project estimated that IAQ improvements delivering a 60% reduction in infections could yield between $24–50 billion in benefits between 2022–24, with a benefit–cost ratio of 1.5 to 3.1 (see appendix one). Additionally, preventing post-acute infection syndromes would also have significant economic and productivity benefits. Long COVID alone cost Australia an estimated $9.6 billion in GDP losses in 2022, equivalent to 0.5% of GDP (see appendix two).

Quality and safety regulation

The Commission proposes aligning practice and quality standards across aged care, the NDIS and veterans' care. IAQ must be embedded in these standards. Current regulations mandate ramps, hygiene and fire safety but fail to mandate safe indoor air. IAQ performance standards, including ventilation, filtration and CO_2 thresholds, should be incorporated into the proposed national reporting framework.

Priority settings for implementation include schools and early childhood education, healthcare facilities, aged care and disability residential services, and workplaces. Embedding IAQ across these environments would align environmental safety with other quality-of-care obligations and deliver measurable outcomes

Collaborative commissioning

The recommendation to expand collaborative commissioning is an opportunity to integrate IAQ into local care planning. Primary Health Networks, Local Hospital Networks and Aboriginal Community Controlled Health Organisations should be resourced to commission IAQ interventions such as ventilation upgrades, filtration and monitoring in priority settings.

Regional and rural areas, where respiratory illness burdens are high, would particularly benefit. Community-led commissioning also ensures that IAQ measures reflect lived experience and local needs. This will directly support the Commission's focus on reducing potentially preventable hospitalisations.

Productivity impacts

Improving IAQ for accessibility and reducing the risk of airborne infection in shared indoor environments, with a focus on people living with high-risk conditions, makes indoor air safer and healthier for everyone. Businesses that invest in improving their IAQ can achieve a social return on their investment through increased accessibility and inclusion. They can also gain a financial return as they realise other benefits such as improved cognitive functioning, increased productivity, and reduced costs.[14,15]

IAQ monitoring, for example, can have many benefits including improving employee satisfaction, creativity, safety and presence, increasing productivity, and optimising health and climate goals.[16,17] Many studies have shown that workers or students in well-ventilated buildings are healthier and more productive than those in poorly ventilated buildings.[18–20] For instance, testing of office workers in the US at different ventilation rates has shown that better ventilation improves cognitive performance.[21] It also found significant declines in cognitive scores when CO_2 concentrations were increased to levels common in indoor spaces (about 950ppm). Meanwhile, another US study found that school students were more attentive and calmer in well-ventilated classrooms.[22]

The health benefits associated with enhanced ventilation rates far exceed the per-person energy costs relative to salary costs.[23] The improved work performance associated with better ventilation has been estimated to produce a $6,500 (USD) increase in worker productivity, with only an increase in energy cost of $40 (USD) per person, per year, and as low as $1 if energy-efficient systems are used.[23] Other research has estimated that improving air quality at work in the US in 1997 would have saved $6–19 billion from fewer respiratory diseases, $1–4 billion from fewer allergies and asthma, $10–20 billion from fewer sick building syndromes, and $12–125 billion from better productivity.[24] Other research found similar savings.[25]

Accessibility and equity

Safe air is an accessibility and inclusion obligation within the scope of the Disability Discrimination Act. Failure to provide safe air creates barriers to education, employment and healthcare, and risks non-compliance with reasonable-adjustment duties in public spaces and workplaces.

Children, older Australians, immunocompromised people, and those with chronic conditions face disproportionate harm from airborne pathogens and pollutants. Embedding IAQ into equity, diversity and inclusion policies would prevent exclusion and enable full participation in community life.

Recommendations

We call on the Productivity Commission to:

1. **Recognise IAQ as a national prevention priority** within the proposed National Prevention Investment Framework, highlighting its role in reducing preventable hospitalisations, lowering health costs, and improving long-term workforce participation.
2. **Recommend that IAQ standards be considered in future national quality and safety regulation**, including the development of aligned reporting frameworks across aged care, disability, veterans' care and health services.
3. **Highlight IAQ as a priority area for collaborative commissioning**, encouraging governments to resource Primary Health Networks, Local Hospital Networks and Aboriginal Community Controlled Health Organisations to support IAQ interventions in community settings.
4. **Undertake or commission a full benefit–cost analysis of IAQ investments**, quantifying the national returns in terms of productivity, reduced healthcare expenditure and broader economic benefits.

5. **Acknowledge the accessibility and inclusion implications of IAQ**, recognising that poor air quality creates barriers for people with chronic illness, disability, and compromised immunity, and advising government to ensure IAQ is addressed under existing equity and accessibility frameworks such as the Disability Discrimination Act.

Conclusion

Improving indoor air quality is a triple dividend reform:

- It prevents illness and reduces health system pressures.
- It strengthens workforce productivity and economic growth.
- It ensures equitable access to education, healthcare, and workplaces for millions of Australians.

The Productivity Commission has the opportunity to make safer shared air a foundation of quality care reform.

Appendix One: *Cost-benefit analysis – the economic imperative for investing in safer IAQ, an extract from 'Safer shared air: a critical accessibility and inclusion issue'*

By Professor Quentin Grafton, Associate Professor Long Chu and Professor Tom Kompas

Poor IAQ is a hidden cost to people and business through the transmission of illnesses and reduced productivity. As such, in addition to increasing accessibility and inclusion, there are two main types of benefits from improving IAQ – reduced sickness and improved focus.[26]

The following analysis of the benefits of improved IAQ are based solely on reduced sickness, through the avoided costs of COVID-19 and long COVID cases that would not occur due to enhanced air quality in public spaces. Our estimates, derived from 2022 data and findings in the Medical Journal of Australia, focus exclusively on reductions in labour supply, meaning they underestimate avoided costs, as they do not account for the impact on non-working individuals.[27] Further, 'reduction in labour supply' does not include the costs of reduced quality of life, losses due to caring responsibilities, or increased healthcare utilisation.

In 2022, long COVID cost the Australian economy almost $10 billion due to declining labour supply and reduction in other production factors.[27] New estimates for 2022, which include both COVID and long COVID, indicate a 1.9% reduction in labour supply, equating to a $20 billion loss in labour value-added alone, or roughly a $39 billion reduction in gross domestic product (GDP), assuming a proportional decrease in other factors (Pers. comm Grafton, Chu and Kompas October 2024). This figure includes the effects of both typical COVID-19 cases (with recovery within a week) and long COVID cases.

Benefits

While there is considerable uncertainty regarding the scale in the reduction in COVID cases from improving IAQ, we assume a range from 30% (a lower estimate accounting for infections in private spaces) to 90% (the best-case scenario with highly effective filtration). Our most likely estimate is a 60% reduction in cases.

Consequently, the benefits of improved IAQ in public spaces, even at the lowest reduction in labour supply, amount to $12 billion. At the highest estimate, benefits could reach $25 billion, assuming a 60% reduction in cases. These are annual estimates for 2022 alone; future-year benefits would likely increase due to avoided costs of repeated infections, which may increase the prevalence of long COVID.[28] Conversely, future-year costs would likely decrease due to operating and maintenance costs being lower than initial investment.

Estimating costs involves assessing air filtration, installation, and operating expenses, along with the number of public buildings in Australia. Drawing from the recently published report, Time to clear the air: the economic benefits of improving New Zealand's indoor air quality, which estimates a cost of NZ$125 million for upgrades with an additional NZ$10 million per year in operating costs, we scale this to Australia's economy (about seven times larger than New Zealand's).[26] This suggests a capital cost of approximately $875 million and annual operating costs of $70 million. The New Zealand analysis is based on upgrading classrooms and office buildings, as this is where the current standards and levels of compliance are relatively low and where the potential benefits are greatest.[26]

Alternatively, if we assume an average filtration unit cost of $5,000 per public building, and considering Australia has around 1.4 million apartment dwellings and potentially 1 million public buildings, we arrive at a capital cost of roughly $12 billion, with annual operating costs of $1.2 billion (assuming 10% of the capital cost).

Benefit-cost ratio

The benefit-cost ratio (BCR) depends on assumptions about the benefits (avoided costs) and costs of filtration. Based on ongoing excess deaths (lower in 2024 than in 2022),[29] we can reasonably assume avoided costs for at least three years, not just 2022. Even if costs are halved in 2024, which may not be the case due to the cumulative risk of long COVID increasing with repeated reinfections, total benefits at a 60% case reduction could range between $24 billion and $50 billion over the 2022–2024 period.

For costs, assuming filtration units were installed in 2022 and operating costs incurred through 2024, the total would be approximately $16 billion.

Thus, the BCR for Australia, based on these preliminary estimates, would range from 1.5 to 3.1 (assuming the higher cost estimates). By comparison, the New Zealand report's BCR was between 3.4 and 4.6.[26]

In conclusion, while there is uncertainty around the benefits and costs of improving IAQ in public spaces, there is a high level of confidence that the BCR in Australia exceeds 1.0 – meaning the benefits are likely to outweigh the costs. A more detailed study by the Productivity Commission, or a similar agency, is recommended to determine the precise BCR for Australia. The preliminary analysis, along with New Zealand's findings, strongly supports the need for such a study. However, we note that given access to safer indoor air is a critical accessibility and inclusion issue for people living with chronic health conditions, implementing this report's other recommendations should not be delayed pending the Productivity Commission's findings.

Appendix Two: *Investing in preventing post-acute infection syndromes, an extract from 'Safer shared air: a critical accessibility and inclusion issue'*

COVID-19 is not the first airborne virus to cause a post-acute infection syndrome. ME, which has been described in medical literature for hundreds of years, is also predominantly caused by viruses such as influenza, Epstein–Barr virus (glandular fever) or Ross River fever.[30]

There is a significant and growing burden of disease caused by long COVID and ME. While estimates vary, many studies have shown that at least 10% of COVID infections may lead to the development of long COVID.[31–33] Long COVID shares many symptoms and biological abnormalities with ME, with up to 45% of those with long COVID meeting the diagnostic criteria for ME after six months.[34] This adds significantly to the existing number of people in Australia already living with ME, which research estimates to be 0.4–1% of the population: up to 250,000 Australians.[35]

Long COVID represents the constellation of post-acute and long-term health effects caused by SARS-CoV-2 infection; it is a complex, multisystem disorder that can affect nearly every organ system and can be severely disabling.[36] The disease burden spans from mild symptoms to profound disability, the scale making this a huge, new healthcare challenge.[31]

> ***"The oncoming burden of long COVID faced by patients, health-care providers, governments and economies is so large as to be unfathomable."***
>
> *Professor Danny Altmann, et al., Nature Reviews Immunology*[31]

The cumulative global incidence of long COVID is estimated to be around 400 million individuals,[31] and to have an annual economic impact of approximately $1 trillion—equivalent to about 1% of the global economy.[36] One study, published in August 2024, demonstrated that long COVID cost the Australian economy almost A$10 billion in 2022 alone.[27,37] The authors noted that 'widespread SARS-CoV-2 infections in Australia mean that even a small proportion of infected people developing long COVID-related illness and disability could have important population health and economic effects'.[27] This is in addition to the estimated $10–14.5 billion ME costs the Australian economy annually.[38,39]

In addition to the costs of post-acute infection syndromes, such as long COVID and ME, there are significant direct and indirect socioeconomic costs associated with airborne disease transmission.[40] Even in the absence of post-acute infection there are other impacts on the workforce, including reduced productivity (related to increased sick leave and presenteeism), declines in employee engagement, sick leave costs and others.[40] It follows, therefore, that reducing transmission through improved IAQ can prevent these costs occurring and deliver significant benefits to organisations and societies that prioritise safer indoor air environments.

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