

Lung cancer in Aotearoa New Zealand: paradoxes of progress, precision and prevention

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Lung cancer remains the leading cause of cancer death in Aotearoa New Zealand and one of the clearest reflections of structural inequity within our health system. More New Zealanders die of lung cancer each year than from breast, prostate and melanoma combined, with more than 1,700 deaths annually.¹ The three accompanying papers—projecting future burden,² exploring Māori perspectives on screening biomarkers³ and examining the carcinogenic risk of vaping⁴—collectively provide a compelling and timely narrative. Together they illustrate that lung cancer control in New Zealand is shaped by three linked paradoxes: we are making progress, yet the burden is growing; we have increasingly precise tools, yet trust remains decisive; and we promote harm reduction, yet new harms may be emerging.

The first paradox is progress without relief.

While age-standardised lung cancer incidence is declining, the absolute burden of disease continues to rise and inequities remain entrenched. Walsh et al.² project that annual diagnoses will exceed 3,500 cases per year by 2045. This reflects demographic forces—population growth and ageing—combined with the long latency of smoking-related disease. Prevention is working, but its benefits will take decades to translate into reduced case numbers. Over the next two decades, health services will face more, not fewer, patients.

This rising burden will not be shared equally. Māori and Pacific peoples will continue to carry a disproportionate share. Historical data show lung cancer incidence rates more than threefold higher in Māori compared with non-Māori, non-Pacific populations, reinforcing that these inequities are long-standing and persistent.⁵

Importantly, the burden we observe clinically likely underestimates the true disease burden. New Zealand data suggest that a substantial proportion of potentially curable lung cancers are never identified early enough for treatment, with many cases detected only incidentally in those who

access imaging for other reasons. This “invisible cohort” highlights a fundamental system failure: lung cancer is often not seen until it is too late.⁵

These disparities cannot be explained by smoking alone. While smoking prevalence remains higher among Māori, inequities in stage at diagnosis, access to diagnostics and treatment, and the cultural safety of care all contribute. Delays in referral and failure to meet even basic diagnostic timeliness standards are well documented, particularly for rural, Pacific and Māori populations.

Lung cancer is therefore both a biological disease and a manifestation of structural inequity.⁶ This aligns with a broader understanding of lung disease as a product of “structural violence”, where social, economic and institutional factors shape exposure, access and outcomes across the lifecourse. In this framing, lung cancer is not simply something individuals develop but something that, in part, is done to populations through inequitable systems.

The second paradox is precision without trust.

Early detection—particularly through lung cancer screening—represents one of the most promising opportunities for change. International evidence demonstrates that low-dose computed tomography screening reduces lung cancer mortality when appropriately targeted.⁷ However, New Zealand experience suggests that improving outcomes is not simply a technical challenge. Without addressing access, trust and system performance, even well-designed interventions may fail to deliver equitable benefit.

The paper exploring Māori perspectives on biomarker use within screening provides critical insight.³ Acceptance of blood-based screening was high, but conditional on transparency, consent and clear benefit to whānau. Concerns around governance and data use highlight that technological solutions alone are insufficient.

This is consistent with wider evidence that healthcare systems often fail not because of lack of knowledge but because of failures in delivery. Even where standards exist, they are frequently

not met in practice. Precision medicine succeeds only when embedded within systems that are accessible, trusted and culturally safe.

Advances in screening, including blood-based biomarkers, may improve risk stratification and address limitations of current approaches. However, their implementation must align with Māori data sovereignty and tikanga Māori. Without this, innovation risks reinforcing inequity rather than reducing it.

The third paradox is harm reduction without harmlessness. Vaping has become embedded within smoking cessation policy and practice, yet its long-term health implications remain uncertain. Evidence from a recent randomised trial demonstrates that nicotine-containing e-cigarettes can be as effective as varenicline in achieving smoking cessation at 6 months, with abstinence rates of approximately 40–44%.⁸ This supports a role for vaping as a cessation tool in established smokers.

However, this benefit must be interpreted cautiously. Long-term harms remain unknown, and continued nicotine dependence is common among those who quit smoking via vaping. Furthermore, the increasing uptake of vaping among young people—many of whom have never smoked—introduces a new and uncertain population-level risk.

Toxicological evidence indicates that vaping aerosols contain carcinogenic compounds, including aldehydes such as formaldehyde and acrolein.⁴ While exposure levels may be lower than with conventional cigarettes, they are not negligible. The carcinogenic risk of vaping remains unquantified, but mechanistic evidence suggests plausible pathways for harm.

This places vaping in a complex position: it is both a harm-reduction tool and a potential source of future disease. The distinction between these roles depends critically on context. For a long-term smoker unable to quit, vaping may reduce harm. For a young person initiating nicotine use, it introduces risk.

The convergence of these three strands—rising burden, persistent inequity and emerging risk—creates a complex and urgent policy landscape.

Lung cancer in Aotearoa New Zealand is not simply a legacy of past smoking; it is a contemporary and evolving challenge shaped by demography, inequity, system performance and emerging exposures.

Addressing this challenge will require a co-ordinated and sustained response. Investment in tobacco control and cessation must continue, particularly for populations with the highest burden. Lung cancer screening should proceed with urgency but must be designed to reduce inequities and supported across the full pathway from detection to treatment. The health system must also address fundamental failures in diagnostic access and timeliness—without this, screening alone will not achieve its potential.

The system must also prepare for increasing demand. The projected rise in cases will place pressure on diagnostic imaging, specialist services and treatment capacity. Integrated models of care, including comprehensive cancer centres, may provide a framework for responding to this demand.

Emerging risks such as vaping require careful regulation and ongoing evaluation. Public health messaging must remain nuanced: vaping may assist cessation, but it is not harmless and should not be normalised, particularly among non-smokers.

Perhaps the most important message from these papers is that lung cancer is not a disease of the past. It is dynamic, evolving and deeply intertwined with the performance of our health system and the conditions in which people live. Progress has been made, but it is uneven and fragile.

Lung cancer in Aotearoa New Zealand therefore represents both a warning and an opportunity. The warning is clear: without deliberate and sustained action, the burden will grow and inequities will persist. The opportunity lies in the convergence of evidence, innovation and policy attention. We now have the tools to change the trajectory of this disease. The question is whether we have the will to do so—and to do so in a way that delivers equitable outcomes for all New Zealanders.

COMPETING INTERESTS

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