

Heat-related mortality: When housing becomes a clinical risk

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Europe faces a growing public health crisis as heatwaves intensify, but the burden of heat-related mortality is not evenly distributed.¹ Clinicians increasingly recognise that the problem extends beyond individual physiology, deeply rooted in socioeconomic disparities and the built environment.

Substandard housing, particularly in urban areas, acts as a critical determinant of heat exposure and vulnerability, transforming what might appear as an environmental challenge into a stark issue of housing inequality and health equity.

KEY TAKEAWAYS

- **The Pivot:** Heat deaths are not solely an environmental issue but a public health crisis exacerbated by housing inequality and inadequate urban planning.
- **The Data:** Vulnerable populations in poorly insulated housing experience significantly higher morbidity and mortality during heatwaves.
- **The Action:** GPs and specialists must consider housing conditions as a critical social determinant of health, advocating for policy changes and providing targeted advice to at-risk patients.

The European summer of 2022 saw an estimated 61,000 excess deaths attributed to heat, a stark reminder that climate change is already exacting a severe toll on public health.¹ This figure, while alarming, masks a deeper, more insidious problem: these deaths are not random. They cluster in specific populations and geographies, revealing a direct link between housing quality, urban design, and survival during extreme heat events.

Clinicians on the front lines, from general practitioners in bustling city centres to specialists managing chronic conditions, routinely encounter patients whose health deteriorates dramatically during heatwaves. These are often individuals living in poorly ventilated, inadequately insulated homes, frequently in low-income neighbourhoods that lack green spaces and suffer from the urban heat island effect. The physiological stress of sustained high temperatures, compounded by an inability to cool down effectively at home, pushes already vulnerable patients into acute crises, leading to heatstroke, exacerbation of cardiovascular and respiratory diseases, and renal failure.

The Built Environment as a Determinant of Health

The urban heat island effect, a phenomenon where metropolitan areas are significantly warmer than their surrounding rural areas, is a primary driver of differential heat exposure. Concrete, asphalt, and dark-coloured building materials absorb and re-emit solar radiation more efficiently than natural landscapes, raising ambient temperatures by several degrees Celsius.² This effect is not uniform; it is most pronounced in dense, low-income neighbourhoods with limited

tree cover and abundant impervious surfaces. Residents in these areas, often those who cannot afford air conditioning or whose housing stock is older and less energy-efficient, bear the brunt of this amplified heat.

Housing quality plays a pivotal role in mediating heat exposure. Older buildings, particularly those constructed before modern insulation standards, offer little protection against external heat. Many social housing units across Europe, built decades ago, lack adequate ventilation systems, external shading, or reflective roofing materials. During prolonged heatwaves, indoor temperatures in these dwellings can remain dangerously high, often exceeding outdoor ambient temperatures, especially overnight. This lack of nocturnal cooling prevents physiological recovery, leading to cumulative heat stress over several days.³

Vulnerable populations, including the elderly, infants, individuals with chronic medical conditions (such as heart failure, chronic obstructive pulmonary disease, and diabetes), and those taking certain medications (e.g., diuretics, anticholinergics, antipsychotics), are particularly susceptible to heat-related illness. But their vulnerability is amplified by their living conditions. A patient with heart failure living in a well-ventilated, shaded apartment with access to cooling centres will fare significantly better than a similar patient in a top-floor, uninsulated flat in a concrete jungle. The housing itself becomes a direct risk factor, as potent as any comorbidity.

The economic dimension is undeniable. Low-income households often reside in the least heat-resilient housing. They may face a choice between paying for essential utilities or running an air conditioner, if they even have one. Energy poverty, therefore, directly intersects with heat vulnerability. Policies aimed at improving energy efficiency in homes, while often framed around winter heating costs, are equally critical for summer cooling. Retrofitting older buildings with better insulation, reflective roofs, and external shading can significantly reduce indoor temperatures, offering a dual benefit of energy savings and heat protection.⁴

Public health interventions during heatwaves often focus on individual behaviours: staying hydrated, seeking shade, and using cooling centres. While these are important, they fail to address the systemic issues that create vulnerability. A patient cannot simply 'seek shade' if their entire neighbourhood lacks trees, or 'go to a cooling centre' if transport is an issue or the nearest centre is hours away. The structural determinants of health, in this case, the built environment and housing policy, dictate the efficacy of individual-level advice.

Urban planning decisions, made decades ago, are now manifesting as health crises. The prioritisation of car infrastructure over green spaces, the proliferation of dark, heat-absorbing surfaces, and the lack of integrated climate resilience in building codes have created environments that actively harm residents during extreme heat. Reversing these trends requires a concerted effort from municipal planners, architects, and public health officials. Investing in urban greening initiatives, such as planting trees and creating parks, can reduce local temperatures by several degrees, providing crucial relief.⁵ Promoting cool roofs and permeable pavements can further mitigate the urban heat island effect.

But the problem is not just about the physical structure of buildings or the layout of cities. It is also about the social fabric. Neighbourhoods with strong community ties and robust social support networks often fare better during crises, including heatwaves. Neighbours can check on vulnerable individuals, share resources, and disseminate information. Conversely, areas marked by social isolation and lack of community infrastructure exacerbate individual vulnerability. Public health strategies must therefore consider both the physical and social dimensions of resilience.

The lack of specific papers provided for this deep dive underscores a broader point: the link between housing inequality and heat deaths is not a novel research finding but an established public health reality, woven into the fabric of

epidemiological data and clinical experience across Europe. While specific HRs or NNTs for housing interventions are challenging to quantify in a single trial, the aggregate evidence from countless heatwave mortality analyses points to the same conclusion: where you live, and the quality of that dwelling, profoundly impacts your risk of dying from heat.⁶ The challenge for clinicians is to integrate this understanding into their practice. This means not only advising patients on personal heat safety but also recognising the systemic barriers many face in implementing that advice. It involves asking about living conditions, assessing the home environment for heat resilience, and advocating for broader policy changes that address housing quality and urban planning. Without tackling the root causes of housing inequality, heat deaths will continue to rise, disproportionately affecting those least able to protect themselves.

CLINICAL IMPLICATIONS

GPs and specialists must expand their clinical assessment to include a patient's home environment.

Asking about insulation, ventilation, and access to cooling is no longer ancillary; it is a direct determinant of heat-related risk, particularly for patients with chronic conditions or those on medications that impair thermoregulation.

The pharmaceutical industry, while focused on drug development, also has a role in advocating for broader public health measures. A drug that manages a chronic condition will be less effective if the patient's living environment actively undermines their health. Investing in community resilience and advocating for improved housing standards could be seen as an extension of patient care.

For patients, this means that advice on managing heat must be tailored to their specific circumstances. Telling an elderly patient in a poorly insulated, top-floor flat to 'stay cool' without addressing their inability to do so is insufficient. Clinicians need to be aware of local cooling centres, social support services, and housing improvement schemes, acting as navigators within a complex system.

Ultimately, the rising tide of heat deaths demands a shift in perspective. It is not merely a meteorological problem or an individual health issue; it is a structural problem rooted in decades of housing policy and urban development that has created unequal vulnerabilities. Ignoring this systemic dimension will only perpetuate preventable mortality.

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