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The health of homeless people in high-income countries: descriptive epidemiology, health consequences, and clinical and policy recommendations

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Abstract

In the European Union, more than 400 000 individuals are homeless on any one night and more than 600 000 are homeless in the USA. The causes of homelessness are an interaction between individual and structural factors. Individual factors include poverty, family problems, and mental health and substance misuse problems. The availability of low-cost housing is thought to be the most important structural determinant for homelessness. Homeless people have higher rates of premature mortality than the rest of the population, especially from suicide and unintentional injuries, and an increased prevalence of a range of infectious diseases, mental disorders, and substance misuse. High rates of non-communicable diseases have also been described with evidence of accelerated ageing. Although engagement with health services and adherence to treatments is often compromised, homeless people typically attend the emergency department more often than non-homeless people. We discuss several recommendations to improve the surveillance of morbidity and mortality in homeless people. Programmes focused on high-risk groups, such as individuals leaving prisons, psychiatric hospitals, and the child welfare system, and the introduction of national and state-wide plans that target homeless people are likely to improve outcomes.

Introduction

Rates of morbidity and mortality in homeless people are high compared with the general population, in both relative and absolute terms. In some countries, clinical guidelines have

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Declaration of interests

We declare no competing interests.

See Online for appendix

identified homeless people as a high-risk group who need targeted interventions. We review the epidemiology and risk factors for morbidity and mortality to guide clinical and policy initiatives regarding homelessness. We first present an overview of definitions and rates of homelessness in high-income countries and then survey the scientific literature about the health of homeless people, before making policy and clinical recommendations.

Definitions of homelessness

Definitions of homelessness vary across countries. Uniform definitions of homelessness have been adopted by many high-income countries in an effort to determine eligibility for services and to track progress in reduction of homelessness, although controversies remain. For example, the Homeless Emergency Assistance and Rapid Transition to Housing (HEARTH) Act of 2012 in the USA builds on previous definitions¹ (panel 1), mainly the McKinney-Vento Act.² The HEARTH Act updates the McKinney-Vento Act by including people at imminent risk of becoming homeless and by providing a formal definition of chronic homelessness.

European Union (EU) nations have not agreed on a common definition; although all recognise those who are sleeping rough (unsheltered), some also recognise those who live with family members or who live in transitional accommodation as homeless.³ In 2005, the European Observatory on Homelessness proposed the European Typology of Homelessness and Housing Exclusion (ETHOS) to facilitate improved research and policy decision making on homelessness (table 1). ETHOS defines a person as homeless if they have a deficit in at least two of the physical, legal, and social domains—also described as being roofless or houseless.⁴ In Australia, homelessness is defined as primary (without regular accommodation), secondary (living in shelters or temporarily with family or friends or boarding homes), or tertiary (living in substandard housing—eg, boarding homes).⁵ The UK is the only country with a statutory response to homelessness⁶ where those who have “no accommodation available for his occupation, in the United Kingdom or elsewhere”, should be offered accommodation that is “reasonable for him to continue to occupy”.

Causes of homelessness

The causes of homelessness are complex. Current thinking is that homelessness is an interaction between individual and structural factors, including the presence or absence of a safety net.^{3,7,8} Individual factors include poverty,⁹ early childhood adverse experiences,¹⁰ mental health and substance misuse problems,^{9,11} personal history of violence,¹¹ and criminal justice system association.¹² Evidence suggests that drug and alcohol misuse have strong associations with both the initiation and persistence of homelessness.¹³ Primary individual risk factors for homelessness in young people (unaccompanied individuals aged 12–25 years) are family conflict and victimisation,¹⁴ non-heterosexual sexual identity,^{15,16} and having been in the child welfare system.^{17–19}

Structural factors that promote homelessness include the absence of low-cost housing, employment opportunities for low-skilled workers, and income support.⁷ Findings from ecological studies show that when structural support is not available, individuals with fewer individual vulnerabilities become homeless and rates of homelessness rise.⁷ Income

inequality itself might be a structural factor that promotes homelessness: countries with greater levels of income inequality have higher rates of homelessness.²⁰

Rates of homelessness

Methodological and definition differences create challenges when tracking the number of people who are homeless and comparing rates between countries. The USA conducts an annual point-in-time count, whereby communities across the country must report the number of individuals sheltered nightly in a 10-day period in January; every other year, each community must also count all unsheltered individuals by counting the number of homeless individuals without shelter at night. Canada collects data about individuals who use shelters. EU member states do not have a systematic way to count homeless individuals; some collect data for the numbers of individuals receiving homeless services in a year, whereas others do point-in-time counts in selected cities or throughout the country. Point-in-time counts overestimate chronic homelessness and underestimate short periods of homelessness. The most difficult group to gather accurate count data for are homeless people who live on the streets. Because homelessness is dynamic, the differences between point-in-time counts and annual counts, which include those with short-term homelessness, are important to recognise. The 2010 US Interagency Council on Homelessness Federal Strategic Plan to Prevent and End Homelessness reported an increase during the preceding 30 years in the number of people who were homeless, with a substantial increase in the number of children and families who were homeless.²¹ The increase in homelessness during the past 30 years has been attributed to several factors. In the early 1980s, the increase in homelessness was attributed to the closing of state psychiatric facilities, without a concomitant increase in community mental health services, a decrease in affordable housing, stagnating wages, changes in welfare policies, and the crack cocaine epidemic. Since 2000, unemployment and stagnating wages, compounded by increases in housing costs and unavailability of subsidised housing, have all contributed to homelessness.²² However, the USA had a 6% overall reduction in homelessness between 2010 and 2013, despite an ongoing recession. This was achieved by large reductions in family homelessness (8%) and chronic homelessness (15%) due to specific initiatives targeted at these groups. Yet, homelessness in families remains problematic. Although there were very few homeless children in families in the 1980s in the USA, during one night-time count of homeless people in 2013, 23% of homeless individuals were children living in families (238 110 people in families were homeless). Unaccompanied young people (aged 12–25 years) made up 8% (or 22 700 individuals annually) of the sample.²³ In the USA, black Americans and Native Americans are overrepresented in the homeless population. Although black Americans make up only 12% of the US population, they make up 39% of shelter populations.

In 2012, in one night-time count, there were 2309 rough sleepers in England, 24% of whom lived in London (panel 2). This number was a notable increase compared with 2010, when there were 1768 rough sleepers. More than 50% of rough sleepers were not UK nationals, and most of them were from other EU countries.²⁴ In 2012–13, 53 540 UK households were eligible for homelessness assistance. Of these households, 65% were white, 15% black, 8% Asian, and 3% mixed race (indicating an over-representation of black and Asian people); 64% had dependent children.²⁵

In the whole of the EU, an estimated 4.1 million people have a homeless episode in a year (panel 2).²⁶ Few data exist about the characteristics of homeless people.⁴ Homelessness seems to have increased in the past 5 years; only Finland and the Netherlands have reported reductions.²⁶ The homeless population in EU states is changing from single, middle-aged men to migrants from other EU and non-EU countries, younger people, women, and families. A rise in housing costs, migration within the EU and from outside countries, ageing of the population, and changes in family structure might explain increased rates of homelessness. Roma gypsies and other minorities are over-represented.²⁶ Few epidemiological data exist for family homelessness, although it has risen four-fold from 1999 to 2009 in Paris to nearly 9000 families, according to data from one telephone helpline.²⁷ Whether this pattern is common to other cities or countries needs further surveillance.

Patterns of homelessness

Researchers have defined three categories of homelessness: chronic homelessness, intermittent homelessness, and crisis or transitional homelessness.^{7,28} Chronic homelessness is defined as an episode of homelessness lasting more than a year, or four episodes of homelessness in the previous 2 years in an individual who has a disabling condition. Individuals who cycle in and out of homelessness repeatedly, with episodes of homelessness alternating with housing and institutional care (jails, hospitals, treatment programmes) are thought to have intermittent homelessness. Individuals who are only homeless once or twice and for a relatively short period of time (less than a year) after an unexpected crisis (job loss, divorce, eviction) are thought to have had crisis homelessness.

Studies suggest that 20% of individuals in the USA who have one episode of homelessness will go on to become chronically homeless.²⁹ Risk factors for a person becoming chronically homeless include having mental health problems, substance misuse, or physical health problems, a history of criminal justice system association, and older age (44 years and older).^{21,29} Although homelessness negatively affects health outcomes irrespective of duration, chronically homeless individuals have worse clinical outcomes than individuals who experience either intermittent or crisis homelessness. Intermittent homelessness is a common pattern for families who experience homelessness. Family homelessness (defined as adults with minor children) is often episodic, and is more prevalent in the USA than in EU countries.²⁰ Individuals in homeless families tend to have fewer behavioural health or physical health problems than do chronically homeless individuals.³⁰ Crisis or transitional homelessness is often caused by a discrete event: either an act of nature or political crisis that displaces individuals, an economic disruption (severe recession, foreclosure crisis), or a personal crisis (job loss, illness).²⁸ Although crisis homelessness has severe negative effects on health, in general, those who experience crisis homelessness have better clinical outcomes than individuals who experience chronic or intermittent homelessness.

Ageing of the homeless population

The homeless population is ageing. In the USA, the median age of the homeless population now approaches 50 years. This suggests a cohort effect: individuals born between 1954 and

1965 have experienced homelessness at a higher rate throughout their lives.³¹ The changing age structure has implications for the health and health-care needs of the homeless population. With younger populations, the focus for health-care providers is to manage and reduce the risk of communicable diseases, unintentional injuries, and drug and alcohol-related problems. In older individuals, the management of chronic diseases, geriatric conditions, frailty, and end-of-life issues is more prominent. Those with late-life first-time homelessness have fewer mental health and substance misuse problems than older homeless adults who have been homeless throughout their adult lives.³² Reasons for late-life homelessness include housing problems secondary to changes in the housing market,³³ loss through death or divorce of an important relationship, or health crises.^{33,34}

Mortality

Findings from several studies have shown that mortality is substantially increased in homeless people,³⁵⁻⁴⁵ with the excess risk most evident in younger people^{39,46} and, in some studies, women.^{35,41,42} Causes of excessive mortality include infections (HIV, tuberculosis), ischaemic heart disease, substance misuse, and external factors including unintentional injuries,⁴⁰ suicides, homicides,⁴⁶ and poisoning (from medication and illicit substances). Much of the excess mortality is probably explained by high exposure to risk factors, including alcohol, smoking, illicit drug use, and mental disorders,⁴² which often coexist. The standardised mortality ratios reported vary between studies and countries but are typically 2–5 times the age-standardised general population. There is evidence that, despite expansion of services, the excess mortality has remained similar during the past two decades, although shifts in the cause of death have occurred with fewer deaths from HIV infection and more from drug overdose and substance misuse disorders.⁴⁷ In homeless families in New York, the overall mortality was not higher than that in residents of low-income neighbourhoods, although the excess was still present in homeless children.⁴⁸ Suicide rates have increased, with a Danish study reporting a standardised mortality ratio of 7 from 1999–2009,⁴² which may be even higher in younger homeless people.⁴⁶

There are no consistent differences in mortality risks between homeless men and women, although most studies report that the proportionate excess of mortality in women is similar to men.^{40,45,47} Denmark is the only country that reports higher relative risk of mortality for women, although the absolute death rate is higher in men than women.⁴² The relative risk compared with age-matched comparisons is higher for younger homeless people than it is for older people in two North American reports.^{39,47} This relative excess is not noted in Denmark.⁴² The pattern of deaths by age also differs between North American studies and European studies. In the USA, a bimodal pattern of mortality is described: younger people die disproportionately from external causes of death (suicide, accidental overdoses, and homicide) and infectious diseases, and there is also a spike in older homeless people. Older homeless people die from similar causes to older people in the general population, such as cardiovascular causes, but 10–15 years earlier.⁴⁷ This bimodal pattern has not been reported in European studies.

Physical and psychiatric health conditions

Homeless individuals have worse physical and emotional health status than the general population, including those from deprived neighbourhoods.^{32,49-51} The reasons for this are multifactorial and include risk factors that increase individuals' risk for homelessness and are associated with poor health outcomes, such as early life poverty⁵² and mental health and substance misuse disorders.^{49,53} Mental health and substance misuse disorders both increase the risk of and are exacerbated by homelessness. Other risk factors are secondary to the conditions of homelessness itself, such as poor nutrition,^{54,55} exposure to communicable diseases,⁵⁶ harsh living environments,^{57,58} high rates of victimisation⁵⁹ and unintentional injuries,^{57,60} and increased rates of tobacco use.^{61,62} Poor health status is exacerbated by poor access to health care⁶³⁻⁶⁵ and challenges in adherence to medication.^{66,67}

Infectious diseases

Most of the studies of infectious diseases in homeless people have focused on tuberculosis, hepatitis C, and HIV.⁵⁶ Of these three, the highest absolute rate is for hepatitis C (table 2). Despite the wide variations in individual study estimates, one review identified that none of the reported characteristics in the individual studies, such as age, sample size, or underlying population prevalence, could explain the noted high heterogeneity between studies. HIV rates also varied widely with no consistent explanations for differences in prevalence estimates between studies. The absolute rates of tuberculosis (which ranged from 0.7–7.7%) were typically lower than for HIV (0.3–21.1%) or hepatitis C (3.9–36.2%), but compared with the general population, rates of tuberculosis infection were at least 20 times higher, and for USA studies, they were more than 40 times higher—a proportionate excess compared with the general population and more than other infectious diseases studied. Heterogeneity between individual tuberculosis studies is partly explained by different diagnostic methods (higher rates when chest radiography was used vs sputum analysis) and differences in the underlying rate in the general population.⁵⁶ Since a 2012 systematic review,⁵⁶ two new studies^{69,70} of tuberculosis that reported a prevalence of between 4% and 8%, and one study⁷¹ of HIV (from New York City) reporting rates of HIV of 1.8% have been published (appendix). Chronic infections with scabies, body lice, and the associated *Bartonella quintana* (which causes trench fever) have been reported.^{68,72} Few studies of hepatitis B have been published, but they report high rates that are typically around 20–30%,^{68,72} and 3% have recent or ongoing hepatitis E.⁷³

Risk factors for infectious diseases are typically similar to those in non-homeless people and include intravenous drug use and other factors that decrease immunity (appendix). Findings are contradictory regarding whether young age and ethnicity are risk factors for HIV in homeless people, and further clarification is needed. Research investigations based on adequately sized longitudinal cohorts are urgently needed to address this and other uncertainties in the field.

Chronic diseases and homelessness

Age-related conditions in homeless people

With the ageing of the homeless population, the incidence of chronic diseases and age-related conditions, such as cognitive impairment and functional decline, has increased.^{32,74} Researchers have argued that homeless people should be considered eligible for services directed at older adults at age 50, instead of the general population cut off of 65.^{32,75} This definition is consistent with research in the USA that has identified that homeless veterans are admitted to hospital for medical–surgical conditions 10–15 years earlier than their housed counterparts.⁷⁶ Additionally, homeless individuals aged 50 years and older have higher rates of age-related conditions (functional impairments, cognitive impairments, falls, and urinary incontinence) than a general population comparison that is 20 years older.³² In a cohort of older individuals recruited from homeless shelters in Boston, USA, with a mean age of 56 years, 30% reported at least one functional limitation in activities of daily living, 53% had had a fall in the previous year, and 24% had cognitive impairment.³² Thus, homeless people acquire age-related functional impairments substantially earlier than do members of the general population. Several possible reasons might explain the early acquisition of functional impairments, such as poor control of chronic health conditions and increased rates of tobacco, alcohol, and illicit substance misuse. Health care and services directed at homeless populations should take into account the effect of functional limitations and anticipate their effects at younger ages than typically found. Future research should use longitudinal designs to examine the trajectory of functional decline and its association with key outcomes.

Cardiovascular and metabolic diseases

Studies of the homeless population have shown high rates of morbidity and mortality from cardiovascular diseases. In Europe and Canada, compared with the general population, homeless people have higher rates of smoking, lower rates of obesity and hyperlipidaemia, and similar rates of diabetes and hypertension^{77–81} (table 3). Data from the USA are similar, with the exception that rates of hypertension in homeless people are higher than in the general population, but similar to the non-homeless, low-income population.⁸² Rates of hypertension in the USA in both the homeless population and the low-income population are higher than those in Europe, probably because of the overrepresentation of black people in the US homeless population, who have higher underlying rates of hypertension.⁸³ In all studies, however, hypertension and diabetes in homeless people are more likely to be poorly controlled than in the general population.^{80,82} Few data exist for rates of myocardial infarction or stroke; one study⁸⁴ reports these prevalences using self-report data, which is subject to under-reporting secondary to homeless individuals' poor access to care. The increased risk of morbidity and mortality from cardiovascular disease is probably a result of high rates of behavioural risk factors (illicit drug use, tobacco use); poor control of hypertension, diabetes, and hyperlipidaemia; and poor access to care for early cardiac disease.^{80,85} Homeless people have difficulty accessing medical care and adhering to medications because of an absence of medical insurance, transportation barriers, and the need to attend to competing priorities.^{63,86–88} Further research on the accuracy of self-report data and the incidence and prevalence of cardiac events is needed.

Psychiatric disorders, and drug and alcohol misuse

More than 30 studies have investigated mental disorders, and they typically show a high prevalence of all psychiatric diagnoses in homeless people compared with general population estimates.⁸⁹ A systematic review concluded that the most common mental disorders in homeless people were drug and alcohol dependence (table 4). This review also identified that the prevalence of psychosis was typically as high as that of depression, which contrasts with results from surveys in community and other high-risk populations such as prisoners in which depression is at least twice as common.⁹¹ However, there was substantial heterogeneity between individual studies of psychiatric morbidity, which suggests that local surveys will need to be conducted to inform service development in particular settings. One consistent finding in these psychiatric surveys was that prevalences were associated with participation rates, and that future research needs to be interpreted taking this into account. In reporting of rates of psychosis, lower participation in a particular study was associated with lower prevalences, presumably because those who had psychiatric disorders did not participate because they were unable to consent or refused to take part.⁸⁹ In depression and personality disorder, however, participation rates were associated with higher prevalences, emphasising the need for careful interpretation of individual studies.⁸⁹ Furthermore, in depression, interviewers with clinical training were more likely than non-clinical interviewers to report lower prevalences of depression. In relation to substance misuse and dependence, this review focused on dependence, which for alcohol varied between 8% and 58%, and for drug dependence ranged from 5% to 54%, with very little information about women. For alcohol, studies done in more recent decades reported higher rates.⁸⁹

Increased comorbidity between mental illness and substance misuse has been reported, and two-thirds of homeless people with schizophrenia were misusing illegal drugs in one clinical survey of 185 homeless people in Copenhagen.³⁵ In a study⁹⁰ based in three Canadian cities, 58% of homeless people had dual diagnosis, with some patterns of comorbidity being prominent (including depression co-occurring with alcohol, and post-traumatic stress disorder with crack cocaine). One uncertainty is whether the absolute prevalence of mental disorders differs between men and women, with contrasting findings in two large studies,^{92,93} although the relative excess compared with the general population in women is higher than for men. A range of neuropsychiatric problems has also been reported in homeless people, including traumatic brain injury, and markers of cognitive impairment, including low IQ, alcohol-related brain damage,⁹⁴ and global cognitive deficits.

Several vulnerability factors have also been documented in homeless people, particularly histories of several forms of abuse. Findings from a study of 500 homeless people in three cities in British Columbia, Canada, showed that three-quarters of homeless people reported one form of abuse, with more than half reporting a history of sexual abuse.⁹⁵ Histories of abuse were associated with a range of psychiatric outcomes and self-harm. The association between childhood and adolescent problems, such as abuse, and homelessness needs clarification in longitudinal cohorts, which can also address factors that predict the persistence and desistence of homelessness.

Unintentional injuries

Unintentional injuries are a major cause of morbidity and emergency department use in homeless people⁵⁷ and represent around 9% of all admissions to hospital for this population; rates are higher than the general or housed poor population, although the discrepancy is greatest in elderly people.⁵⁸ Substance misuse is more frequently a contributor to injury in the homeless population than in the non-homeless population.^{57,96} Results from a study in Boston, USA, showed that 53% of older homeless adults reported having fallen in the previous year, compared with 14% of older adults in the USA.³² Most studies of injuries in homeless populations do not provide rates of injuries but rather compare reasons for health service use (emergency department visits or admissions to hospital) between homeless and non-homeless individuals. Results from these studies showed that homeless individuals (compared with low-income non-homeless individuals) are more likely to seek medical care for falls, cold-related injury (hypothermia, frostbite), burns, poisonings (from medication and illicit substances), assaults, traumatic brain injuries, and self-harm and are less likely to seek care for transport-related injuries.^{32,57,58,60,96} Increased rates of burn injuries in homeless people are thought to be due to individuals' attempts to warm themselves and cook food in cold environments, are caused by assaults, or are contributed to by comorbid substance misuse.^{57,96}

Victimisation, including physical and sexual assaults, are common in homeless individuals. Findings from studies show that between 27% and 52% of homeless individuals were physically or sexually assaulted in the previous year.⁹⁷⁻⁹⁹ Although men and women have similar overall rates of violent victimisation, homeless women and transgendered individuals have higher rates of sexual assault, with about 10% of homeless women every year reporting a sexual assault in the previous year.⁵⁹ Between a third and a half of homeless young people have been sexually or physically victimised while homeless.¹⁰⁰ In homeless adults, older age, a history of child abuse, current substance misuse, and mental health problems increase the risk of victimisation while homeless.^{98,99}

Traumatic brain injury is an important category of unintentional injury in homeless populations.¹⁰¹ Rates of traumatic brain injury are increased in homeless people, compared with non-homeless poverty populations, with rates typically ranging from 38% to 53%.⁶⁰ Studies of homelessness suggest that traumatic brain injury predates homelessness^{102,103} and that homeless individuals are more likely to report repetitive episodes of traumatic brain injury than housed individuals.¹⁰³ Homeless men are more likely to have traumatic brain injury than homeless women.⁶⁰ Traumatic brain injury is thought to be a risk factor for both becoming homeless and remaining homeless because traumatic brain injury increases the risk of cognitive impairment, which impedes social functioning.^{60,103} More research on the temporality of traumatic brain injury in homelessness is needed.

Tobacco use

Homeless individuals have high rates of smoking-related diseases, including early onset cardiac disease,⁸⁰ chronic obstructive pulmonary disease,¹⁰⁴ and smoking-related cancers.⁴⁷ Tobacco use is common in homeless populations; in the USA, 68–80% of homeless people

are current smokers,⁶¹ which is four times the rate of the overall US population and 2.5 times that of the low-income population.¹⁰⁵ Smoking rates in homeless populations in Canada, France, and the UK are similarly increased.¹⁰⁶⁻¹⁰⁸ Several reasons might explain these high rates, including high rates of comorbid mental health and substance misuse disorders, poverty, and victimisation, which are all associated with smoking. However, homelessness is independently associated with smoking.⁶¹ Specific marketing efforts by tobacco companies are thought to contribute to these high rates.¹⁰⁹ In the USA, despite substantial decreases in smoking during the past 20 years, smoking rates in homeless individuals have not decreased.¹¹⁰ In homeless populations, the quit ratio or proportion of former smokers among those that have ever smoked is substantially lower than in the general population,¹¹⁰ suggesting that homeless people are less successful at quitting than the general population. Several factors impede smoking cessation, including high rates of environmental exposure in shelters and other congregant living facilities, reduced access to health care,¹¹¹ and competing health needs, which decrease health-care providers' opportunities to discuss cessation.

Studies of smoking in the homeless population have shown high rates of physical dependence on smoking.¹¹² Despite this, evidence suggests that homeless individuals are motivated to quit for the same reasons as the general population, including negative health effects, effects of smoking on appearance, and high financial cost.^{107,113} Findings from small studies^{111,114,115} of smoking cessation in homeless populations have shown that homeless individuals are receptive to both behavioural and pharmaceutical assistance with smoking cessation. Results from one study¹¹⁶ showed that homeless individuals were receptive to having smoke-free policies in shelters. Elimination of smoking in shelters would both help in cessation efforts and decrease exposure to second-hand smoke.⁶²

Health service use

Homeless individuals have high rates of acute health-care use, including emergency department visits and inpatient admissions to hospital; this pattern is seen across many countries and health-care systems, including in countries with and without universal health-care insurance.^{49,117-122} Homelessness is an important predictor of being a high user of the emergency department, defined as those with more than three to five emergency department visits per year.¹²³⁻¹²⁵ Although homeless people are more likely than non-homeless people to have had any emergency department visits or hospital admissions, a small group of homeless individuals who use the acute care service frequently account for most of the acute care use in homeless people. Although the proportion varies depending on the definition of high user, less than 10% of homeless individuals account for more than half of emergency department visits made by all homeless individuals.¹¹⁷⁻¹¹⁹ Substance misuse and mental health disorders are risk factors for becoming a high user.^{117,118,123,124} Homeless individuals not only have higher rates of hospital admission but also have longer stays once admitted—at least 2 days longer for acute admissions to hospital in one study.¹²⁶

In systems historically without universal access to health care, such as the USA, homeless people are less likely than their housed counterparts to have received care in community health sites. In systems with universal health care, this trend might be reversed with more

community health treatment, but emergency department use and hospital admissions remain increased.^{87,117,120,127}

Many reasons explain the increased rates of acute health-care use, including high prevalences of predisposing conditions, communicable and non-communicable diseases, unintentional injuries, and comorbid mental health and substance misuse problems.^{49,117,118,125,128,129} However, homelessness is an independent risk factor for hospital admission and emergency department attendance after accounting for these predisposing factors because of lower hospital admission thresholds caused by the complexities of management of acute medical crises in homeless people, barriers to timely care that might allow health problems to deteriorate beyond what can be managed safely as an outpatient, and competing demands and insufficient knowledge, leading homeless individuals to seek care in the emergency department for medical conditions that could have been handled in community health-care settings.^{49,117,130}

Recommendations for health services, research, and policy

Innovations to health services, new research, and public policy initiatives are necessary to improve the health of homeless people. Health services need to focus on the identification and management of infectious diseases, mental illness, and diseases of old age. Health-care providers need to be aware of the environmental conditions of homeless people and adapt chronic disease management accordingly. Such services will need integration across medical specialties, particularly with treatment providers for addictions, and also to address unmet social and housing needs (panel 3). Research is needed into the best models of care;¹³² whether screening for common diseases is feasible and effective also needs to be established. Policies to improve the environment of homeless people and focus on transitional periods associated with high risk of becoming homeless should be considered (panel 4). A key policy initiative will be to introduce targets relating to the health of homeless people in national or state-wide health plans, which should include financial targets to support programmes addressing homelessness (panel 4).

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Search strategy and selection criteria

We searched PubMed from Jan 1, 2003, to Dec 31, 2013 to identify papers published in all languages that addressed the epidemiology, risk factors for, and outcomes of chronic non-communicable diseases, infectious diseases, mental disorders, substance misuse, unintentional injuries, geriatric conditions, end-of-life care, and health service use in homeless individuals. We focused our search for articles that discussed high-income countries, including Europe, Oceania, and North America. We used the search terms “homeless*”, “roofless”, and “homeless persons” and the following terms: “health status”, “geriatric”, “older”, “elderly”, “end of life”, “palliative”, “emergency department”, “hospital*”, “health services utilization”, and a series of terms for medical and psychiatric conditions. Additionally, we manually searched the reference lists of selected articles for additional articles. For information on definitions of and rates of homelessness, we looked for governmental documents and reports using the following search terms in internet search engines: “homeless” and “definition” and “homeless” and “rates” along with: “United States”, “Europe”, “United Kingdom”, “Australia”, and “New Zealand”, and read reference lists for further information. For information on patterns of homelessness and risk factors for homelessness, we searched Web of Science for “homeless” and “patterns”, “chronic”, and “risk factors”, and their bibliographies.

Panel 1**Homeless Emergency Assistance and Rapid Transition to Housing Act of 2012 inclusion criteria (USA)**

- Individuals and families who do not have a fixed, regular, and adequate night-time residence, which includes individuals who live in emergency (but not transitional) shelters for the homeless and those who live in places not meant for human habitation
- Individuals and families who will imminently lose their main night-time residence
- Unaccompanied young people and families with children and young people who meet other definitions of homelessness
- Individuals and families who are fleeing or attempting to flee domestic violence, dating violence, sexual assault, stalking, or other dangerous or life-threatening conditions that relate to violence against an individual or family member

Panel 2**Estimates of homelessness by country****Canada**

- 14 400 people sheltered nightly*
- * 150 000 sheltered annually; an estimated 150 000–300 000 homeless people per year†

USA

- 610 042 (one night; both sheltered and unsheltered)*
- 2.5–3.5 million annually†

Australia

- An estimated 105 000 people nightly*

EU member states

- 410 000 per night*; 4.1 million annually†

Austria: data available from Vienna only

- 7526 individuals used homeless services in 2009†

France: data available from Paris

- 3376 requests for housing one night in 2010*

Germany

- Annual estimates of 248 000 in 2010†

Greece

- An estimated 20 000 individuals in 2011†

Hungary: data available from Budapest

- 6302 in shelters one night in 2011*; 2870 rough sleepers that same night*

Ireland

- 3808 sheltered individuals on census night 2012*

Italy

- 47 648 homeless individuals in 2012†

Lithuania

- 2142 sheltered individuals in 2010†

Poland

- 42 768 received financial support due to homelessness in 2010†; about 9600 sleeping rough nightly in 2011*

Spain: data from Barcelona only

- 2791 on census night in 2011*

UK

- In England, there were 2309* rough sleepers in one night count
- 185 000 homeless people a year in 2013†

References for estimates can be found in the appendix. *Point-in-time estimate. †Annual estimate.

Panel 3**Health services and research recommendations**

The identification and management of infectious diseases should be central, with screening combined with annual snapshot interventions and first-aid centres in major metropolitan areas. 15 of the identified 17 surveys of tuberculosis in homeless people had higher than 0.25% prevalence, the threshold set by the UK National Institute for Health and Care Excellence for the cost-effectiveness of tuberculosis screening programmes.¹³¹ Treatment of other infections, particularly scabies, body lice, and louse-borne infections, needs consideration.

Rates of mental illness vary substantially, and so local surveys need to inform mental health service needs. Treatment is often complicated by comorbid substance misuse and a range of unmet welfare and housing needs are often present. Specialist mental health teams for homeless people might be best placed to deal with the range and complexity of issues involved.

Because drug misuse is associated with infectious diseases and mental disorders, regular review and research is needed to assess integration of different services.¹³²

Medical providers should integrate smoking cessation into substance misuse treatment and include such efforts in overall health care. Smoking-cessation products should be made available to homeless individuals who smoke.⁶²

Homeless individuals with hypertension and diabetes might benefit from simplified medical regimens with daily dosing that do not need to be taken with food. Homeless accommodation providers should consider offering refrigeration for drugs, especially if insulin is prescribed. Because free meal programmes have been shown to be low in fibre and micronutrients and high in salt, medical providers should be aware of homeless individuals' inability to adhere to dietary recommendations.¹³³

Health-care staff should screen for cognitive impairment, mobility impairments, urinary incontinence, and falls in homeless adults aged 50 years and older³² and address deficits accordingly. Encouragement for completion of advanced directives should be considered.¹³⁴

Screening for traumatic brain injury and cognitive impairment should be considered because rates are high. Whenever possible, health information should be conveyed in simple steps with frequent reminders.

Panel 4**Policy recommendations****Improvement of health and care of homeless populations**

National or state-wide health plans should include targets relating to the health of homeless people, including surveillance of infectious diseases, mental illnesses, traumatic brain injury, and early cognitive impairment; outreach efforts to provide chronic disease management; and the establishment of homeless teams in all metropolitan centres. The costs of such services should also be clarified, possibly with the inclusion of the third sector (voluntary—eg, charities, non-profit organisations).

In the European Union, there are wide variations in how homeless people are counted and member states respond. Consistency is needed in the definition of homelessness (eg, using the European Typology of Homelessness and Housing Exclusion criteria), which should also include policies directed at prevention and emergency provision for homeless individuals and families. Minimum funding allocated as a proportion of gross domestic product towards the support of programmes that address homelessness should be considered.

Accommodation providers should consider enforcement of smoke-free zones indoors, with designated smoking areas outside the facility and away from windows or doorways.

Homeless accommodation providers should mitigate functional impairments by preventing falls with measures such as adequate lighting and handrails, and ensuring older individuals do not have to sleep on the top bunk in bunk beds.

Targeted prevention efforts in cold weather to provide shelter and cooking facilities to prevent the use of open fires could be considered.

Preventing homelessness during high-risk periods

Transitional programmes that provide access to housing with community support, targeted at individuals in these high-risk periods (eg, those transitioning out of the criminal justice system or psychiatric facilities, individuals ageing out of the child welfare system,¹⁷ or those fleeing interpersonal violence) might be an effective way to reduce homelessness.¹³²

In older adults at risk of homelessness, medical providers should screen for risk factors, such as spousal death or divorce, cognitive impairment, or health crises, and referrals should be made for assistance to try to prevent housing loss.

Table 1
The theoretical domains of homelessness in European Typology on Homelessness and Housing Exclusion⁴

	Physical domain	Legal domain	Social domain
Homelessness			
Rooflessness	No dwelling	No legal title to a place for exclusive possession	No private and safe space for social relations
Houselessness	Has a place to live, fit for habitation	No legal title to a place for exclusive possession	No private and safe space for social relations
Housing exclusion			
Insecure and inadequate housing	Has a place to live (not secure and unfit for habitation)	No security of title	Has space for social relations
Inadequate housing and social isolation within a legally occupied dwelling	Inadequate dwelling (unfit for habitation)	Has legal title or security of tenure, or both	No private and safe personal space for social relations
Inadequate housing (secure tenure)	Inadequate dwelling (unfit for habitation)	Has legal title or security of tenure, or both	Has space for social relations
Insecure housing (adequate housing)	Has a place to live	No security of title	Has space for social relations
Social isolation within a secure and adequate context	Has a place to live	Has legal title or security of tenure, or both	No private and safe personal space for social relations

Table 2
Prevalence of infectious diseases in homeless people

	Prevalence range in homeless people	General population prevalence
Tuberculosis ⁵⁶	0–8%	0.005–0.032%
Hepatitis C ⁵⁶	4–36%	0.5–2.0%
HIV ⁵⁶	0–21%	0.1–0.6%
Hepatitis B ⁶⁸	17–30%	<1%
Scabies ⁶⁸	4–56%	<1%
Body louse ⁶⁸	7–22%	<1%
<i>Bartonella quintana</i> ⁶⁸	2–30%	<1%

Table 3
Prevalence estimate for non-communicable diseases in homeless people

	Canada ⁸⁰	USA ⁸²	Portugal ⁷⁸	France ⁸¹	Ireland ⁷⁷
Hypertension	35% (stage I and II)	50% (stage I and higher)	33.6% (increased blood pressure)	5.2% ¹³⁵	..
Obesity	46% (obese or overweight)	..	40.5%	..	..
Diabetes	4%	12% (RBS>200 mg/dL)	7.9%	6.2%	8%
Hyperlipidaemia	8% (high or very high)	18.8% (total cholesterol>200 mg/dL; 34.5% (HDL<40 mg/dL)	7.9%	..	..
Myocardial infarction	..	34.5% (self-report)	..	..	..
Stroke	..	9% (self-report)	..	..	..

RBS=random blood sugar.

Table 4
Prevalence of neuropsychiatric disorders in homeless people

	Prevalence range in the homeless	Prevalence in the general population
Traumatic brain injury ⁶⁰	8–53%	1%
Psychosis ⁸⁹	3–42%	1%
Depression ⁸⁹	0–49%	2–7%
Personality disorder ⁸⁹	2–71%	5–10%
Alcohol dependence ⁸⁹	8–58%	4–16%
Drug dependence ⁸⁹	5–54%	2–6%
Dual diagnosis ⁹⁰	58–65%	<1%
Post-traumatic stress disorder ⁹⁰	38–53%	2–3%