INTRODUCTION

Housing is one of the most fundamental human needs. Unfortunately, homelessness in the United States is a pervasive and persistent problem. The most recently available point estimate from January 2013 counted more than 600,000 Americans experiencing homelessness. Still, this count likely underestimates the impact of homelessness in this country. Although many individuals are chronically homeless, many more have unstable housing and are at risk of homelessness, struggling with poverty and high housing costs as a percentage of total income. The acutely homeless may sleep in cars, double-up with friends or family, or fall in and out of shelters or other temporary living situations. Some of the most vulnerable homeless persons are so-called rough sleepers, who sleep outside and may eschew the assistance offered by shelters or other service providers (Fig. 1).
There are complex interactions between homelessness and health. Persons without adequate housing experience continuous threats to their health, whether from diseases, complications, or environmental dangers. This milieu leads to disturbingly poor health outcomes. Homeless persons have a mortality rates 3 to 4 times higher than the general population. This means a young homeless man in the United States may expect to live only into his late 40s compared with a housed man who expects to live nearly until the age of 80.

Simultaneously these individuals are generally less equipped to cope with various insults due to mental illness, cognitive impairment, substance use, or simply lack of adequate resources. A continual struggle between competing demands may prevent homeless persons from accessing services or following through on medical recommendations. Even if they are able to access health care services, homeless individuals may suffer discrimination or maltreatment as a result of their situations or associated comorbid conditions. This article aims to discuss general strategies when caring for homeless patients, highlight practical tips for addressing common clinical syndromes, and discuss the unique needs of vulnerable homeless subpopulations.

**CLINIC VISIT**

A remark from a receptionist, looks from nurses, or a provider’s reluctance to shake hands—the most important moment in a clinic visit with homeless patients may occur before they ever enter the examination room. Homeless patients often report suffering discrimination in health care settings because of their homelessness and are less likely to follow-up as a result. Warmth, respect, and a welcoming atmosphere are essential to building a therapeutic relationship. In addition to explicitly welcoming a patient to clinic, this is also accomplished at a systems level by accommodating walk-in appointments whenever possible. Key components of the history and physical examination are outlined in Tables 1 and 2, respectively (Figs. 2 and 3). As the visit draws to an end, it is important to carefully review the plan, which should address medical issues, how to connect to social resources, and follow-up. Because it is impossible to predict the myriad potential barriers, the plan should be created collaboratively (eg, “Do you see any obstacles to getting and taking this medication?”). Providing written instructions and an updated medication list (consider use of a
wallet-sized health card) may help improve adherence and mitigate difficulties from fragmentation of care. Neither literacy nor health literacy should be assumed (“Do you ever have trouble with reading health forms?” or “To make sure I explained it properly, can you tell me your understanding of the plan?”). The primary goal is not necessarily to gather all possible information but to provide empathetic, active listening for patients who often struggle with social isolation and to build a relationship so they are willing to return. Follow-up is essential to the plan: if a suitable way to contact a patient is unavailable, plan on having the patient return after a short interval, even if just to re-view laboratory results.

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a Avoid sending personal health information via texts but they can be helpful in reminding about appointments and coordinating care.
Fig. 2. Tinea pedis. (A) Interdigital tinea pedis. (B) White macerated web between fourth and fifth toes. (C) Moccasin distribution of tinea pedis. (D) Bullous tinea. (From White G, Cox N. Diseases of the skin. 2nd edition. St Louis (MO): Mosby; 2006; with permission.)

Fig. 3. Clinical manifestations of venous insufficiency. (A) Spider telangiectasia. (B) Venulectasia in a corona phlebectatica distribution. (C) Tributary varicose vein. (D) Reticular varicose vein. (E) Lipodermatosclerosis. (F) Venous ulceration. (From Fan C. Venous insufficiency. In: Abbara S, Kalva SP, editors. Problem solving in cardiovascular imaging. Philadelphia: Saunders; 2013. p. 800–12; with permission.)
SPECIFIC MANAGEMENT

Diabetes Mellitus

Homeless diabetics typically suffer from poor glycemic control and several barriers to adequate disease management. The treatment of diabetes in this population should focus on simplifying regimens, patient education, and avoiding extremes of blood glucose. If using insulin, it is preferable to use insulin pens whenever possible, because they lead to greater adherence and improved control and may be less likely to be stolen than standard needles and syringes. Although insulin lasts longer if refrigerated, it should generally last a full month if kept at reasonable temperatures; patients can minimize heat degradation by not keeping the insulin right next to their skin. Food insecurity is clearly a major barrier to good diabetes control, and efforts should be made to ensure patients have access to all available food resources in their community. They should also be advised about better and worse food choices, even when selection is limited. If using prandial insulin or a sulfonylurea, patients should be reminded that it should not be used if food is unavailable, a situation that tends to arise more frequently toward the end of each month. Patients should also receive extensive education on the symptoms of hypo- and hyperglycemia. Being on one’s feet all day, along with a lack of sufficient clean, dry socks or access to well-fitting shoes all increase the risk of diabetic foot complications. Careful attention should be paid to the feet and, whenever possible, patients should be provided with new socks during clinic visits.

Hypertension

The rate of poorly controlled hypertension is greater in the homeless community than among domiciled patients. Chronic stress, smoking, drug and alcohol use, and lack of healthy food all contribute to elevated pressures. Interviews with homeless hypertensive patients demonstrate the importance of clear education around the topic. Because health literacy varies dramatically, it is important to clearly state that “hypertension” means “high blood pressure,” and to ensure that patients understand it as a long-term, typically silent problem. For those who do experience symptomatic hypertension, they may be under the impression that when the headache or dyspnea has gone away, so has the problem. This has implications for whether patients use their medications on a regular basis or only as needed, when symptoms arise.

With only half of homeless smokers reporting having been advised to quit, there is room for greater counseling on therapeutic lifestyle changes, albeit with sensitivity to the numerous barriers homeless patients may face. These may include a lack of control over available food, a lack of understanding of specific recommendations, the influence of family or friends, lack of access to exercise equipment, or even habit and enjoyment of the unhealthy activity. Counseling in these situations likely requires creative problem solving with patients, such as finding safe places to walk or minimizing sodium in shelter food by foregoing items like gravy. If available at a subsidized cost, nicotine replacement therapy can be proffered as both a safer and potentially more cost-effective solution than cigarettes. A special emphasis should be placed on avoidance of the highest risk activities, such as cocaine use. Even if a patient does not quit, a reduction in frequency or amount used may diminish the risk of stroke, and this connection can be made explicit to the patient.

In choosing an antihypertensive regimen, the likelihood of follow-up should be taken into account. If there is concern that a patient will not be able to come in for follow-up laboratory tests, a patient should be steered toward a calcium channel blocker rather than angiotensin-converting enzyme inhibitor, angiotensin-receptor blocker, or...
Diuretics have an added downside of increased urination in a population with limited access to bathrooms, although in some settings they may be the most cost-effective option.

**Cardiovascular Disease**

A common cause of death in this marginalized population is cardiovascular disease, with cardiovascular disease 3 times more common in homeless aged 25 to 44 compared with their age-matched peers. The homeless are more likely to have undiagnosed and undertreated predisposing conditions, such as hypertension and diabetes. This is in addition to a higher rate of smoking, higher rate of substance abuse, and chronic stress. All of these lead inexorably to earlier death and greater morbidity due to myocardial infarction and stroke.

When focused on secondary prevention, medication counseling is paramount. A patient with a prior history of myocardial infarction and heart failure may be prescribed a dizzying number of medications, all of which have a potential benefit. Even though several pharmacies have low-cost plans, patients may not be able to afford the copays, or the cost of replacing stolen medications. Ideally, patients can be connected to assistance programs or charity care. At times, it may be necessary to prioritize medications for patients (eg, emphasizing the need for aspirin and clopidogrel in a patient with a recent stent). Additionally, discussion of how to use medications may be beneficial, such as reminding patients to use diuretics whenever is most convenient for them in terms of bathroom access, rather than at fixed times.

**Lung Disease**

With the rate of smoking reaching 4 times that of the general population, it is no surprise that chronic obstructive pulmonary disease (COPD) is also more common. In addition, the greater exposure to sick contacts and close quarters increases the risk of COPD exacerbations, and patients should be strongly encouraged to get vaccinated against influenza and *Streptococcus pneumoniae*. In addition to simplifying medication regimens as much as possible (eg, daily dosing with long-acting agents), attention should be paid to inhaler technique to optimize effectiveness.

The provision of medical equipment for COPD and obstructive sleep apnea offers unique logistical challenges. In patients with a need for supplemental oxygen, some shelters may be willing to accept delivery of tanks, but this should not be assumed and should be arranged prior to discharge if patients are in the hospital. Those in need of continuous positive airway pressure/bilevel positive airway pressure machines may not have regular access to electricity, especially at night, so battery-operated machines may be beneficial if available. Alternatively, a dental appliance may be a reasonable alternative.

**Hepatitis and Chronic Liver Disease**

Nowhere is the complex interaction between housing, mental health, and physical health better exemplified than in the care of a homeless patient with liver disease. Compared with the general population, the rates of hepatitis B, hepatitis C, and alcohol dependence are all significantly higher. Complications of liver disease are a common cause of death among the homeless.

The prevention of liver disease begins with counseling on risk reduction, which may involve discussion of alcohol or intravenous substance use, referral to a needle exchange program, or provision of condoms to promote safer sex. Screening at least once for hepatitis C is recommended, but more frequent screening should be considered for those at increased risk. The recent development of rapid hepatitis C
antibody screening allows for the testing of individuals who otherwise may not return for laboratory results. With regard to the physical examination, attention should be paid to traditional stigmata of liver disease but also more disease-specific findings, such as porphyria cutanea tarda (Fig. 4) or leukocytoclastic vasculitis (Fig. 5).

Once chronic liver disease is discovered, through laboratory tests, imaging, or physical examination, strategies for treatment should be carefully considered. Despite the recent development of shorter, more effective treatment regimens for hepatitis C, it may be reasonable to delay treatment of most homeless patients until housing is achieved to achieve optimal efficacy. Although almost all treatments now spare interferon, the regimens remain expensive and require frequent follow-up.

Regarding treating the complications of end-stage liver disease, adjustment in the approach to medications may improve compliance. In treating hepatic encephalopathy, the use of rifaximin rather than lactulose has the advantage of not requiring easy access to a toilet, although it can be prohibitively expensive. When lactulose or diuretics are needed to treat complications of end-stage liver disease, patients can be counseled to use them whenever they believe they will have bathroom access rather than insisting on fixed times.

**Human Immunodeficiency Virus**

HIV testing is recommended for all patients at least once and more often when at increased risk. As discussed previously, counseling on safe needle and sex practices may aid in prevention. The use of rapid HIV testing is more practical and less invasive than the traditional venipunctur and has been used in several outreach settings.15

Current guidelines suggest all HIV infected patients begin treatment as soon as possible. Although lack of housing is associated with decreased medication adherence, homelessness should not by itself be considered a contraindication to begin treatment with antiretrovirals.16 Rather, the goal should be to choose an appropriate regimen and provide support around taking it regularly. Generally, in choosing a regimen, the major considerations are resistance patterns, prior treatment regimens, side effects, and convenience. When adherence is a concern, some providers choose regimens with a higher barrier to resistance, such as protease inhibitors, even at the expense of convenience. Yet, one study among seropositive homeless patients found

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Fig. 4. Porphyria cutanea tarda. (From Ferri FF. Ferri’s color atlas and text of clinical medicine. Philadelphia: Saunders; 2009. p. 44–5; with permission.)
that the use of once daily combination efavirenz/tenofovir/emtricitabine (Atripla) was associated with greater adherence and virologic control than a multiple pill protease inhibitor–based regimen.\textsuperscript{17} The potential psychiatric effects of efavirenz, however, should be carefully considered before prescribing it for anyone struggling with mental illness. Other currently approved once-daily combinations include emtricitabine/rilpivirine/tenofovir (Complera), abacavir/dolutegravir/lamivudine (Triumeq), and elvitegravir, cobicistat, emtricitabine, tenofovir (Stribild), each of which has its own particular considerations but does not have significant neuropsychiatric effects.

Finally, due to both federal funding and several charitable organizations, HIV-infected patients may be eligible for unique housing and other local social support resources. They should be connected to local HIV/AIDS organizations to help facilitate such referrals.

**Outbreaks and Infestations**

Contagious infectious diseases have long been a concern among homeless patients, particularly those using shelters given the close contact that typically occurs in this setting. Contact tracing can be particularly challenging and the numbers of exposures are typically high among homeless populations, complicating management during outbreaks.\textsuperscript{18} General hygiene measures are highly recommended for homeless patients in shelters, including hand hygiene, covering coughs or sneezes, and avoiding contact with bodily fluids.

The most widely studied infectious agents among homeless populations are tuberculosis and influenza. There are regularly outbreaks of tuberculosis among homeless persons living in shelters, and homelessness remains a risk factor for tuberculosis, particularly among patients with comorbid HIV infection.\textsuperscript{19} That said, the majority of tuberculosis cases diagnosed in the United States occurs in foreign-born patients. Options for tuberculosis control include screening staff and clients, improved ventilation, and utilization of UV lights for decontamination.\textsuperscript{20} Influenza is similarly likely to spread in the close quarters found in most homeless shelters.\textsuperscript{21} In addition to the routine hygiene measures discussed previously, vaccination can be particularly effective for controlling the spread of flu.\textsuperscript{22}

The homeless population is at increased risk of exposure to cutaneous parasites, and the index of suspicion should be high for homeless patients presenting with pruritic papules or vesicles.\textsuperscript{23} The distribution of lesions and physical examination should help differentiate between scabies (Figs. 6 and 7), bedbugs (Fig. 8), body lice (Figs. 9 and 10), and lice egg (nits) (Fig. 11).
and 10), and fleas (Table 3). Complications can arise from secondary bacterial infections. The treatment of bedbugs and fleas is focused on symptom relief of the hypersensitivity reaction and attempting to control exposure to the parasites. In the treatment of scabies, permethrin cream is ideal, but oral ivermectin may also be used if a patient is unable to apply the cream. Permethrin may also be used in the treatment of body and head lice, but the more effective treatment is effective removal
of the parasite through laundering clothes and bedding at high temperature as well as shaving if needed.

**Mental Health**

An estimated 25% to 50% of people with serious mental illness suffer from homelessness at some point in their life. In turn, homelessness often exacerbates underlying mental illness as well as precipitating depression and anxiety. The most successful interventions for homeless patients with serious mental illness have revolved around case management and permanent supportive housing, and patients should be referred to such programs whenever possible. Such programs have been shown to

![Fig. 7. Scabies rash. Dorsal view of an older patient’s hand demonstrating a crusted scabies infestation by the scabies mite, *Sarcoptes scabiei*. Note the localized crusting in the interdigital web spaces. (Courtesy of Reed and Carnrich Pharmaceuticals/CDC, 1975.)](image)

![Fig. 8. Adult bedbug, *Cimex lectularius*. (Courtesy of CDC/CDC-DPDx; Blaine Mathison, BS, Atlanta, GA; with permission.)](image)
lead to better quality of life, reduction in substance use, and decreased need for intensive support services.\textsuperscript{25,26}

With regard to pharmacologic treatment, patients with significant difficulty holding onto and taking medications may benefit from depot preparations of antipsychotics. Otherwise, it is important to discuss with patients how they want medications dispensed. Because of theft, some patients may wish to have more frequent fills of smaller amounts.

\textbf{Trauma and Injuries}

Trauma, defined as actual or threatened danger to the physical integrity of self or another person, can be an almost daily experience for many homeless persons. Even after adjusting for comorbidities, homeless patients are more likely to suffer unintentional and intentional injuries, including assaults and self-inflicted wounds.\textsuperscript{27} Particularly common injuries include pedestrian versus motor vehicle collisions,