WHO's recommendations on vaccination must be followed.

The need for a three-dose regimen presents organisational and economic difficulties, particularly in low-income countries. Only countries with well established immunisation programmes can rely on routine services to deliver the second and third doses. Together with additional expenses, which are difficult to sustain in low-income countries, the uptake of routine vaccination after receipt of an early dose can be suboptimal. Although data on vaccination uptake in developing countries are insufficient, a Canadian study showed that approximately 20% of early-vaccinated children, mainly in low-income families, did not receive further doses at the appropriate time.[8]

The most important obstacle to measles elimination by 2020 in five of the six WHO-targeted regions is the poor vaccination coverage in countries where measles had been nearly eradicated. Coverage with two doses at recommended ages was less than 95% in 96·5% of European countries, and the prevalence of measles protection according to antibody titres was significantly lower than the herd immunity threshold in these countries (76% *vs* 95%).[9] Similar suboptimal vaccination coverage was seen in several other countries outside Europe, including the USA.[10] Circulation of measles virus among adolescents and adults predominantly affects unvaccinated young infants. Only total compliance to recommendations can solve the problem of poor vaccination coverage.

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HCV, injection drug use, and the importance of harm reduction in Kenya

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Matthew Akiyama and colleagues' study[1] in *The Lancet Infectious Diseases* fills an important gap in our understanding of hepatitis C virus (HCV) prevalence and risk factors among a geographically diverse sample of people who inject drugs (PWID) in Kenya and, by extension, other parts of sub-Saharan Africa and similar settings. The authors also reiterate the importance of supporting a robust array of harm-reduction services for PWID to prevent excess morbidity and mortality associated with infectious diseases. These services are especially relevant during nascent epidemics, as appears to be the case with HCV transmission among PWID in Kenya, where there is opportunity for primary prevention of infectious disease transmission. Government investment in harm reduction and provision of safe injecting supplies is rare worldwide, although typically successful when comprehensively established.[2] Therefore, Kenya's programmes could be a model to inform harm-reduction programming in other nations in sub-Saharan Africa and beyond. Furthermore, as Akiyama and colleagues suggest,[1] targeted implementation based on geographical or

otherwise-identified hotspots might be especially important for controlling more localised HCV infection.

The Kenyan Government has developed considerable capacity to respond to increasing injection drug use and its potential health sequelae. As Akiyama and colleagues describe,[1] the Kenya National AIDS and STI Control Programme (NASCOP) provides a spectrum of services for PWID, including needle exchange programmes, infectious disease testing, and linkage to care for people who test positive for HIV, HCV, or tuberculosis, as well as methadone maintenance therapy and preventive health services (eg, vaccinations and risk reduction education). NASCOP has also committed to testing and treating HCV among all PWID nationally.[1] Akiyama and colleagues[1] highlight the crucial role that government-supported harm-reduction programming can have in not only ameliorating risks associated with infectious disease transmission—such as educating PWID against use of syringes with detachable needles—but also in implementing culturally acceptable and gender-responsive services (women in their study were more likely to be HCV antibody positive).

Akiyama and colleagues' study[1] underscores an opportunity to address and intervene in the spread of HCV and to take action on common risk factors for HCV and HIV, informed by specific and local patterns of risk in a given region and with attention to the key role of harm reduction. Provision of adequate public resources to implement evidence-based strategies, with local input and with local leadership, can make a key difference in the interaction between HCV, HIV, and other sexually transmitted infections. Furthermore, the study shows that it is important that PWID trust and engage with the services offered. This study might thus serve as a model for a high-resource intervention, demonstrating what is realistically needed in a setting where little previous research has been done.

Several public health considerations are raised by this study. The authors note that all participants confirmed to be viraemic were offered treatment with direct-acting antivirals. A large body of consensus literature, and more than a dozen medical organisations and international public health bodies,[3] endorse treating HCV in active drug users. Akiyama and colleagues' data[1] further illustrate the feasibility of treating substance-using populations. Notably, the risk of HCV reinfection is more strongly associated with inadequate access to safe injecting supplies than with any other factor.[3,4] Thus, needle exchange programmes, as part of a larger suite of harm-reduction services, can facilitate successful HCV treatment among PWID,[1] as well as supporting key linkages of at-risk PWID to screening, testing, and treatment services for additional infectious disease (eg, HIV). In addition, while Akiyama and colleagues[1] note that Kenya introduced methadone maintenance therapy in 2014, we urge the Kenyan NASCOP to expand medication-assisted treatment options for any PWID or other drug users who desire it, alongside efforts to implement the so-called seek, test, and treat strategy.[5] Finally, we urge the authors and other researchers conducting similar work in different parts of the world to look beyond patterns of risk based on demographics and geography only. Rather, we need to better understand risk within the context of interacting and consequential structural and biopolitical factors[6,7] to better develop interventions to preserve and transform not only individual lives but entire societies and nations.

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