

Estimating the Remaining Prevalence of Chronic HCV in Ireland: A Risk Population Modelled Approach Applied in Practice

EPH159

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INTRODUCTION

The WHO set a timeline of 2030 to achieve elimination of viral hepatitis. Against this backdrop, a recent publication by McCormick et al⁷ estimated the remaining prevalence of HCV to be ~0.09% in a general community population of Ireland and as such, considering Ireland to be close to reaching elimination of HCV.

However, in-country HCV prevalence needs to be considered in its entirety, and not just within a community population with a relatively low risk of exposure to HCV infection. Risk factors for contracting HCV have long been established as⁶:

- Sharing of recreational drug equipment (e.g. needles, syringes, spoons, straws)
- Exposure to contaminated blood as recipient of a blood transfusion
- Medical or dental procedures in a country where infection control procedures may be substandard
- Tattoos, piercings, acupuncture or electrolysis where infection control procedures may be substandard (e.g. unlicensed venues, armed forces, prison)
- Sharing personal hygiene products that may have blood on them, e.g. razors and toothbrushes
- Through unprotected sexual contact where blood was present
- Occupational exposure where contact with infected blood can occur (e.g. needlestick injury)
- Vertical transmission – HCV infected mother can transmit to infant.

Exposure tends not to be wide-spread within the general community but concentrated within specific sub-populations including those born in countries outside Ireland where HCV prevalence is higher (e.g. Eastern Europe, sub-Saharan Africa & parts of Asia), those in prisons, specific groups of drug users and homeless populations. The aim of this analysis was to understand a reported low community HCV prevalence in the context of high-risk populations, providing an inclusive, bottom-up calculation of the likely remaining prevalence of chronic HCV across Ireland.

METHODOLOGY

To calculate the overall prevalence of HCV, the population of Ireland was divided into high vs. low risk with regards to HCV exposure. Populations considered at higher infection risk include:

1. Prison population
2. Population accessing opioid substitution treatment services (OST - acknowledging that there are more people with meet criteria of IV drug use than access treatment)
3. Homeless population
4. Country of birth (outside Ireland, specifically Eastern EU where background rates are higher than Ireland)

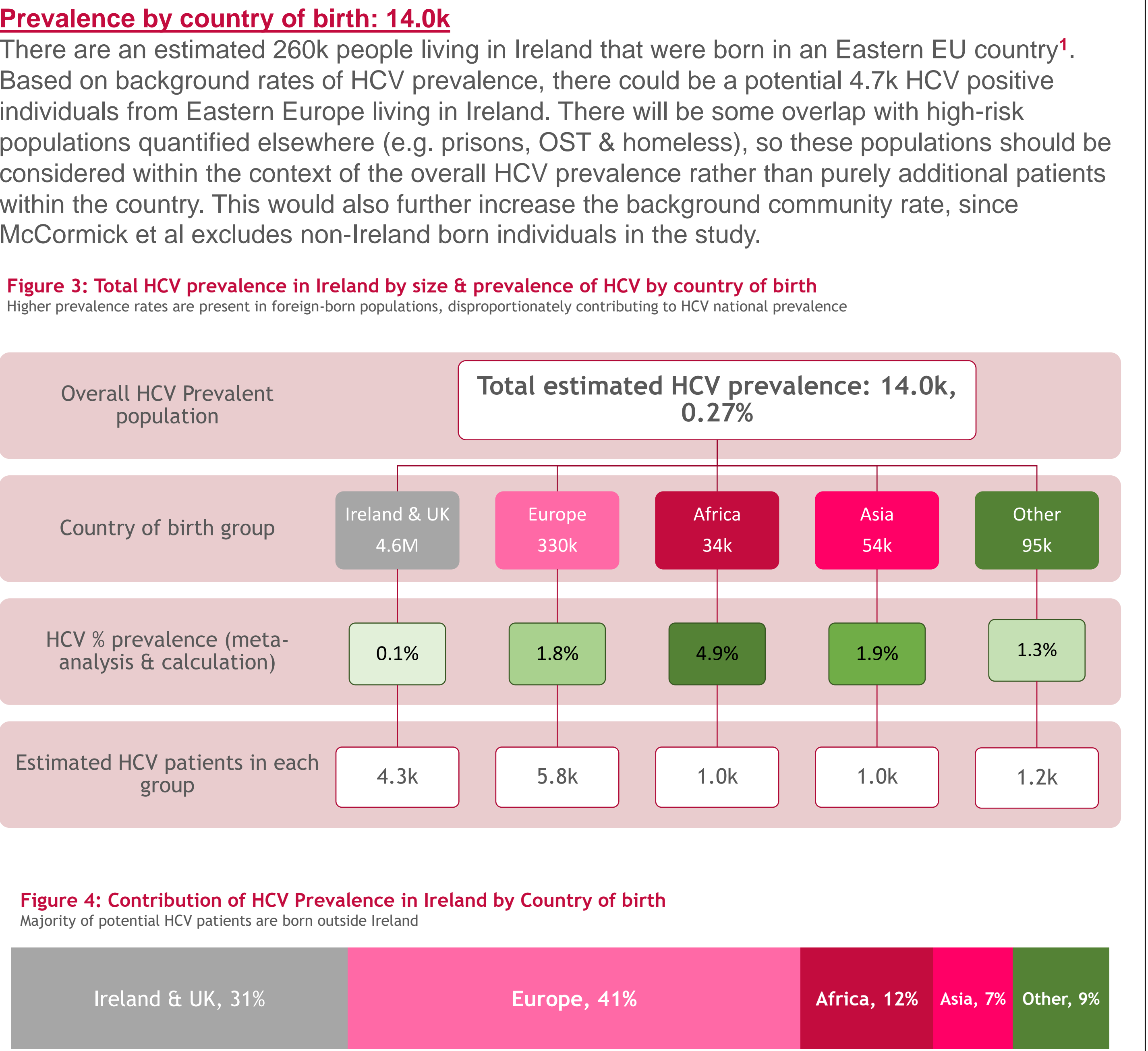
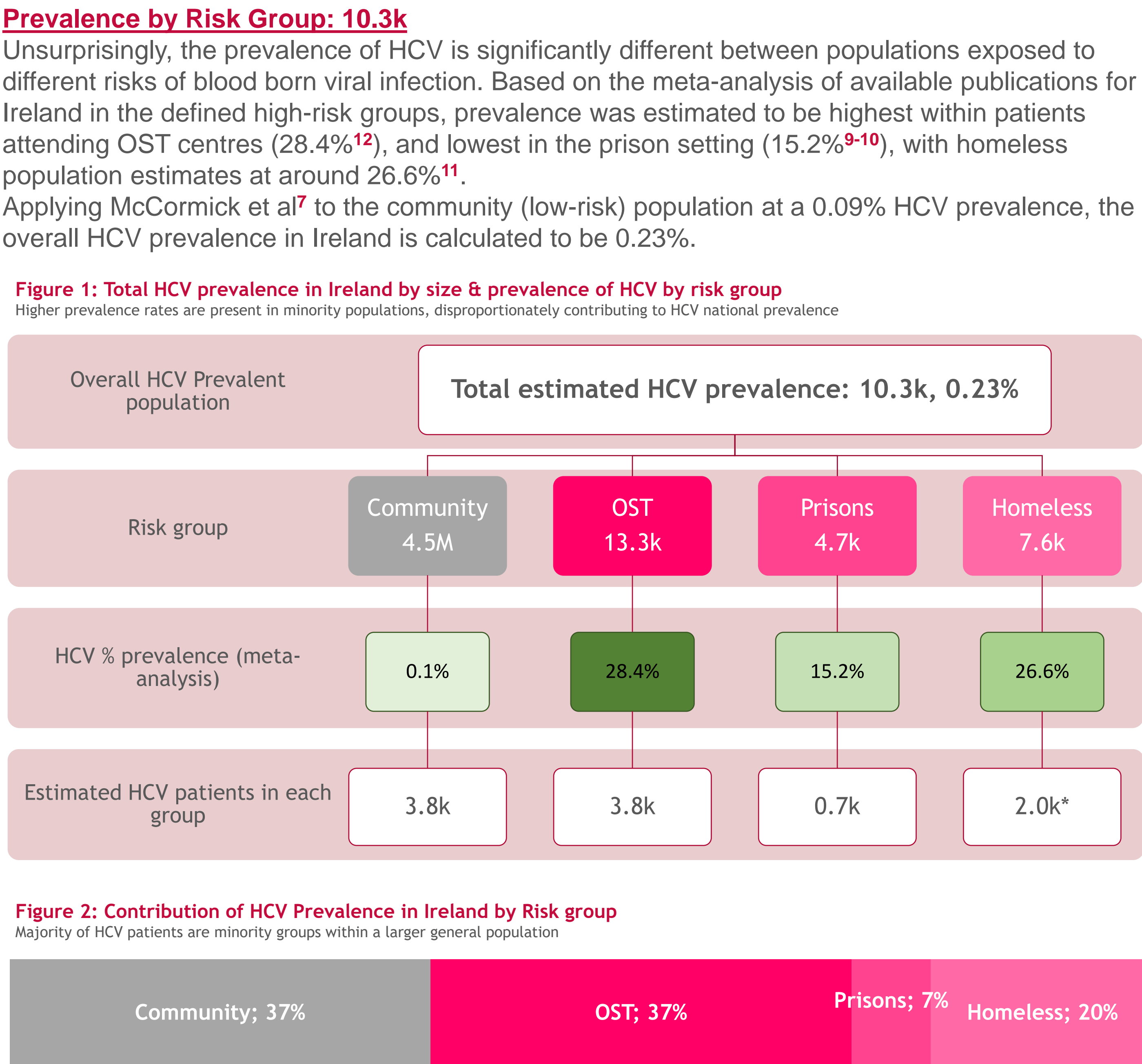
Risk populations were sized and subtracted from the overall Ireland population¹⁻⁵. The remaining population (community, Irish-born) was considered low risk of HCV exposure.

HCV prevalence rates:

A systematic literature review was conducted to find relevant published data regarding HCV prevalence in the identified high-risk groups. Data was extracted from relevant publications, and a meta-analysis performed to generate a weighted prevalence rate of HCV for each of the high-risk groups⁸⁻¹⁴. McCormick et al was used for low-risk populations.

Overall estimated number of people infected with HCV was calculated by applying HCV prevalence rates for each risk group to its relevant population. An overall estimate for Ireland was produced based on the sum product of the individual high vs. low-risk groups to yield an overall restated HCV prevalence rate. Ranges in outcome were explored by applying different rates from the meta-analysis. Overlaps in populations were estimated for OST and homeless populations.

RESULTS



CONCLUSION

HCV disproportionately affects minority populations within most countries, including Ireland. According to the latest report from HPSC¹⁵, OST / PWID populations account for ~50% of the HCV diagnosed cases in the last 5 years. While testing for HCV is higher in OST services than the wider community, this would support the hypothesis that prevalence of HCV remains significantly higher in these groups of individuals than is represented by the prevalence rate within the low-risk community population. Even accounting for the relative size and prevalence of the high-risk populations, the overall HCV prevalence in Ireland remains at 0.23%-0.27%, rather than <0.1% as suggested by McCormick et al. HSE data suggest that from 2004-2022, 16,929¹⁵ patients have been diagnosed with HCV in Ireland. To date, approximately 8k of these patients have been treated, and while some may have moved away, died or spontaneously cleared the virus, it would suggest that a substantial number of previously diagnosed HCV patients remain (~4.5k) that can act as a reservoir of onward transmission. Just based on known diagnosed HCV patients remaining untreated, this would result in a prevalence of at least 0.1% in Ireland. Furthermore, it is highly unlikely that all HCV infected patients have been identified, as prevalence rates reported by OST centres remain high.

Quantification of HCV prevalence is complex since it can be approached in multiple ways. While country of birth is a risk factor in countries where HCV is not considered endemic, additional risk factors based on behaviour co-exist with country of birth. In addition, high-risk populations within the justice system are interlinked with drug taking behaviour, mental health and homelessness. With a perfect data set, overlaps between country of birth and behavioural/situational risk factors could be fully quantified to understand the complete risk status of the entire population resident within Ireland. However, no up-to-date country of birth data is available for identified high-risk populations, so it was not possible to produce a combined view of community vs risk plus country of birth for HCV identification. While every effort has been made to remove or quantify overlaps between populations – especially OST, prisons & homeless populations, there could still be double counting of patients in the calculations leading to an inflation of the resulting HCV prevalence estimate.

Estimates of HCV prevalence have been based on available literature; however, it should be noted that many of these publications are from 2010-2020, and thus relatively ‘old’ / specific to one location and may not be reflective of the current prevalence of HCV or appropriate to be applied across the wider geography of Ireland. A high-intensity testing programme within high-risk groups would provide a current validated benchmark for prevalence in these populations to make a more informed view of HCV prevalence remaining in Ireland.

Taking a holistic approach to understand prevalence in different risk groups, community prevalence is only part of the picture. While achievement of WHO elimination is sought, patients with HCV in minority populations are being left behind in pursuit of a legislative metric.

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