Addressing social contexts and determinants of health in Marshallese communities

We read with great interest the Article by Virgie Fields and colleagues,[1] which describes a mumps outbreak in an Arkansas (USA) Marshallese community. They analysed relevant Arkansas Department of Health data from Aug 5, 2016, to Aug 6, 2017. The authors recognised that other social factors, such as health illiteracy, poor access to health care, and overcrowding, might explain the high prevalence of infectious disease in Marshallese people.

The authors conclude that the 2016–17 mumps outbreak underscored the need for an "interdisciplinary, culturally sensitive, outbreak response team".[1] A social determinant of health that should be accounted for in this description is health-care access, perhaps through health-care facilitators. Although recognising the exclusion of Marshallese people from some federal health benefits, the authors neglect health-care access disparities in Arkansas itself. Arkansas' children's health insurance programme, ARKids First, is not available to Compact of Free Association migrants living in Arkansas, consequently leaving many Marshallese children without health insurance.[2] This unavailability could further explain why most mumps infections in this outbreak occurred in children.

Fields and colleagues note that investigators at the Arkansas Department of Health did interviews to obtain standardised demographic and exposure information, among other factors. Despite acknowledging the role of poverty in heightening the opportunity for disease spread in the Marshallese community, income was not stratified for. Poverty, a function of low income and other social factors, leads to escalated health risks. For example, the working environments of poorer people often hold more environmental risks for illness and disability, and other environmental factors, such as lack of clean water access, disproportionately affect poor families.[3] This poor environment and contaminated water should be viewed in light of the effect of radioactivity exposure in Marshallese people. Cesium-137, a radioactive isotope with a half-life of about 30 years, was detected in the groundwater at all contaminated atolls in the northern Marshall Islands.[4] Cesium-137 is transported from soil to the edible portions of plants, further contributing to the radioactive dose experienced in the Marshall Islands.[4]

Fields and colleagues' analysis could be improved by accounting for social determinants of health, such as poor access to health care and socioeconomical poverty, which might affect Marshallese people with disadvantaged status. Improving statistical measurements and analyses of mumps prevalence through addressing health inequities and social contexts governing health will allow infectious disease professionals to improve prevention and more adequately address future outbreak burdens.

We declare no competing interests.

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1 Fields VS, Safi H, Waters C, et al. Mumps in a highly vaccinated Marshallese community in Arkansas, USA: an outbreak report. *Lancet Infect Dis* 2019; **19:** 185–92.
2 McElfish PA. Marshallese COFA migrants in Arkansas. *J Ark Med Soc* 2016; **112:** 259.
3 Murray S. Poverty and health. *Can Med Assoc J* 2006; **174:** 923.
4 Robison WL, Bogen KT, Conrado CL. An updated dose assessment for resettlement options at Bikini Atoll—a US nuclear test site. *Health Phys* 1997; **73:** 100–14.

Authors' reply

We thank Asghar Shah and colleagues for their comments on our Article[1] reporting a mumps outbreak among the Marshallese community in Arkansas, USA. We agree that social determinants of health, such as access to health care and socioeconomical poverty, within this community are important factors that should be further described. However, during the outbreak, when over 100 individuals per week were interviewed and numerous urgent vaccination clinics were held in a variety of settings, only demographical and epidemiological information essential to controlling transmission were collected. Unfortunately, information about social determinants of health was not collected in this context.

Nonetheless, readers might benefit from additional information about the social determinants of health for the Marshallese community in Arkansas. A 2017 pilot study provided a foundation for understanding the socioeconomic challenges that affect this population.[2] The study found that only half (199/401) of Marshallese participants had a high school education, and among individuals who did, only 15% (60/401) had college education.[2] The vast majority (89%; 191/214) report income that is at or below the federal poverty level (unpublished). Although information about income is sparse, it is known that many Marshallese people in Arkansas work low-wage jobs, without health or retirement benefits, in the poultry industry.[3] In the outbreak we studied, we observed intense disease transmission in crowded homes and other congregate settings.[1] The unifying underlying factor in each of these settings is poverty.

These social determinants of health, along with federal policies