Serological Susceptibility to Varicella among U.S. Immigration and Customs Enforcement Detainees

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Abstract

U.S. Immigration and Customs Enforcement (ICE) is responsible for detaining unauthorized aliens during immigration proceedings. During 2014–2015, adult ICE detainees at a California facility were invited to complete a survey concerning self-reported varicella history and risk factors. Participants underwent serological testing for varicella-zoster virus (VZV) IgG; susceptible individuals were offered varicella vaccination. Among 400 detainees with available serology results, 48 (12%) were susceptible to varicella. Self-reported varicella history was negatively

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associated with susceptibility (adjusted odds ratio [aOR]=0.16; 95% CI=0.07, 0.35). Among 196 detainees reporting a positive history, 95% had VZV IgG levels suggestive of varicella immunity. Among 44 susceptible detainees offered vaccination, 86% accepted. Given relatively high varicella susceptibility, targeted screening and vaccination among ICE detainees lacking a positive history might reduce varicella transmission risks.

Keywords

varicella; detention; immigration; vaccination; Immigration and Customs Enforcement

INTRODUCTION

Varicella is a highly contagious infection caused by varicella-zoster virus (VZV), with attack rates of 61%–100% in susceptible close contacts (Heininger & Seward, 2006). Compared with infections contracted during childhood, varicella infections in susceptible adults tend to be more severe, with greater risk for complications and hospitalizations (Marin et al., 2008b). In tropical climates, VZV infection generally occurs at older ages relative to temperate climates, resulting in a greater proportion of susceptible adults (Garnett, Cox, Bundy, Didier, & St Catharine, 1993; Lee, 1998; Liyanage et al., 2007). In one study of adult immigrants in Canada, younger age, recent arrival, and originating from a tropical country were associated with varicella susceptibility (Greenaway et al., 2014). In the United States, the varicella vaccination program, initiated in 1995, has considerably reduced the incidence and severity of VZV infections and associated healthcare utilization (Marin, Meissner, & Seward, 2008a; Marin, Zhang, & Seward, 2011; Zhou, Harpaz, Jumaan, Winston, & Shefer, 2005). Globally, routine varicella vaccination is limited to a few high-income countries (Bonanni et al., 2009).

U.S. Immigration and Customs Enforcement (ICE) is responsible for enforcing federal immigration laws, including the detention of unauthorized aliens during immigration proceedings. ICE admitted 440,557 aliens to detention facilities during fiscal year 2013, of whom 56% were Mexican nationals (Simanski, 2014). Detainees are unlikely to have medical or vaccination records available when brought into ICE custody. Routine varicella serological testing and vaccination are not included in current ICE policies for detainee healthcare.

Varicella outbreaks are an ongoing challenge in detention and correctional facilities (Leung et al., 2014; Levy et al., 2003; Public Health England, 2014; Valdarchi et al., 2008), including facilities that house migrants (de Valliere et al., 2011; Gétaz et al., 2010; Haas, Dukhan, Goldstein, Lyandres, & Gdalevich, 2014). Such outbreaks can be disruptive and costly, requiring isolation of cases, identification, assessment of susceptibility and cohorting contacts, staff furloughs, and restriction in movement, gatherings, visitations, and court appearances (Leung et al., 2014). Outbreaks can also spread to other facilities (Levy et al., 2003), increasing resource expenditures to contain transmission.

We aimed to assess serological varicella susceptibility and associated risk factors among ICE detainees. To inform potential implementation of a varicella vaccination program, we

also assessed the validity of self-reported varicella history, vaccination attitudes, and varicella vaccine acceptance among susceptible individuals.

METHODS

Participant recruitment was conducted between August 2014 and February 2015 at a mixed-sex California detention facility housing ICE detainees aged 18 years. After initial intake screening, ICE detainees receive a comprehensive health assessment within 14 days of arrival; this assessment includes a physical examination and mental health screening. In the absence of other clinical indications, influenza vaccine is the only routinely offered vaccination at the facility. Screening for other vaccine-preventable diseases is not routinely performed in healthy detainees.

Participants

We reviewed medical records of recently arrived detainees for participation eligibility. Detainees ineligible to receive varicella vaccine due to contraindications for vaccination (including immunocompromising conditions, any known vaccine allergies, currently taking immunosuppressing medications, pregnant, or acutely ill), or those with a known medical condition requiring chronic medications, were excluded. Detainees deemed unable by the attending provider to reliably consent due to mental illness or intellectual disability, or for whom language-specific interpretation was not readily available at the time of interview, were also excluded.

Trained recruitment staff supervised by senior project staff approached eligible detainees to explain project objectives and activities, provided a written information sheet in English or Spanish, and invited detainees to participate. Among detainees with limited English and/or Spanish language proficiency, telephonic interpreter services were used and the written information sheet was verbally translated unless language-specific interpretation was not readily available. Detainees were informed that their participation was voluntary and would not impact their detention, legal claims, or any legal proceedings involving ICE. For all detainees approached, age, sex, language, and nationality were recorded.

Data collection

We obtained a convenience sample comprised of the first 400 eligible detainees who consented to participate and for whom varicella serology was performed. Recruitment staff administered a survey to consenting participants in English, Spanish, or via telephonic interpreter services for other languages. The survey included questions about self-reported history of varicella, community of childhood household (defined as the village, town, city, and country where they lived during the majority of their childhood between birth and 12 years of age), and total number of adults and minors (aged <18 years) who lived in their childhood household. Participants were also asked closed-ended questions regarding their general attitudes on vaccination and their trust of medical providers at the facility to recommend vaccines.

Serological testing

Blood was drawn from participants to test for varicella IgG titer (Liaison VZV IgG assay, DiaSorin, Saluggia, Italy) and HIV seropositivity by enzyme-linked immunosorbent assay (ELISA). Varicella IgG titer values were interpreted as positive, equivocal, or negative, according to commercial testing laboratory reference ranges. HIV testing was performed to ascertain eligibility for varicella vaccination. HIV ELISA-positive samples were followed by a confirmatory assay. Participants were informed of their varicella and HIV serological test results. Participants found to be newly HIV-positive were counseled and offered additional testing and treatment in accordance with ICE medical policies.

Vaccination

Detainees with equivocal or negative varicella IgG serology and whom were found to be HIV seronegative were provided the varicella vaccine information sheet (VIS) in English, Spanish, or other languages as available (Centers for Disease Control and Prevention, 2008), informed that vaccination is voluntary, and offered the first of two vaccine doses. Participants who received the first dose and remained in the facility 4–8 weeks after initial vaccine administration were offered the second dose.

Analysis

Interview language was categorized as Spanish, English, or Other. Total childhood household size and number of minors were dichotomized based on the medians. Refusal to answer survey questions or missing responses were excluded. To assess positive and negative predictive value of self-reported varicella history, uncertain and negative histories were combined. Varicella IgG serology results were used to classify participants into susceptible (negative and equivocal results) and immune (positive results). Countries of childhood household were regionally categorized, as described elsewhere (Greenaway et al., 2014), and grouped to ensure adequate participant numbers. To assess climate, latitude, and longitude estimates for the city/village of childhood household were obtained using Google Maps (Google, Palo Alto, CA) and grouped by climate category, according to Köppen-Geiger classification (Greenaway et al., 2014; Kottek, Grieser, Beck, Rudolf, & Rubel, 2006).

Statistical analyses were performed using SAS 9.3 (SAS Institute, Cary, NC) and EpiInfo 7 (Centers for Disease Control and Prevention (CDC), Atlanta, GA). Bivariate comparisons were performed using Mantel-Haenszel Exact Chi-square tests assessed at $\alpha = 0.05$. Binomial proportion confidence intervals (CIs) were calculated using the Wilson score method. Univariate and multivariate logistic regression modeling were utilized to test associations between varicella susceptibility and study variables. A backwards elimination approach was used for multivariate logistic regression modeling, retaining sex and age as potential confounders.

Human subjects

As this investigation was conducted to inform the implementation of a public health intervention in a defined population, it was determined to be non-research by CDC and therefore not subject to CDC Institutional Review Board review.

RESULTS

We invited 671 detainees to participate, of whom 424 (63%) consented. After excluding detainees due to previously unidentified ineligibility or inability to obtain blood samples, 400 participants with available serology results were included in analysis (Figure 1). No significant differences by age, sex, or interview language were detected between detainees included in the analysis and those invited but who did not participate ($p > .05$). Participation rates varied by nationality ($p < .0001$); detainees born in Europe and Central Asia (6, 26%) had significantly lower participation than those born in East and South Asia, the Pacific, North Africa and the Middle East (30, 60%), Latin America and the Caribbean (307, 61%), or Sub-Saharan Africa (57, 86%).

Participants were predominantly male (73%) with a median age of 30 years (range: 18–60 years) (Table 1). All global regions were represented in childhood households, although most grew up in Latin America and the Caribbean (71%) or Sub-Saharan Africa (14%). More than half (56%) of participants grew up in a tropical climate. Twenty-four (6%) participants reported a different country of childhood household than their nationality; of these, 17 (71%) were born in Mexico, but reported their childhood household as being in the United States.

Among the 400 participants, 48 (12%; 95% CI = 9%, 16%) were susceptible to varicella, of whom two (4%) had equivocal serology results (Table 2). One participant was HIV-positive, but he was immune to varicella. Prior varicella history was reported by 196 participants, of whom 187 were immune (positive predictive value = 95%). Among 204 participants denying or unsure of varicella history, 39 were susceptible (negative predictive value = 19%).

Of the 48 susceptible detainees, 44 (91%) were still housed in the facility when serology results became available; of these 44, 38 (86%) consented to varicella vaccination (Figure 1). Among the 38 receiving vaccination, eight (21%) received one dose and 30 (79%) received two doses before being transferred or released from the facility.

In a multivariate logistic regression model (Table 2), controlling for age and sex, childhood household in a tropical climate was positively associated with varicella susceptibility (aOR = 3.04; 95% CI = 1.26, 7.33). Self-reported history of varicella was inversely associated with susceptibility (aOR = 0.16; 95% CI = 0.07, 0.35). No significant differences in susceptibility by any other variables assessed were detected in univariate or multivariate analyses (Table 2).

More than 80% of participants agreed that vaccines can prevent diseases and are safe, and >90% indicated trust in facility medical staff to recommend vaccines (Table 3). Participants aged 45 years were more likely to agree that vaccines are safe, compared with those aged 25–34 years ($p = .02$). No associations between vaccination attitudes and sex or global region of childhood household were detected ($p > .05$).

DISCUSSION

We documented 12% serological susceptibility to varicella among ICE detainees at a large facility in California, approximately six times that of U.S. adults aged 20–49 years (Reynolds, Kruszon-Moran, Jumaan, Schmid, & McQuillan, 2010). Participants from tropical climates were more likely to be susceptible, while no significant differences by age, sex, interview language, household size, or global region were detected. Our report is the first assessing infectious disease susceptibility among ICE detainees and is useful to inform measures to prevent varicella infections in this population.

As a confined population, ICE detainees have increased risk of varicella exposure given congregate housing and frequent movement of persons (Bick, 2007; Breuer, 2004). Furthermore, being foreign-born adults, ICE detainees have greater likelihood of varicella susceptibility than the U.S.-born (Meyer, Seward, Jumaan, & Wharton, 2000), and are unlikely to have received childhood varicella vaccination (Bonanni et al., 2009). The detected level of susceptibility exceeded prior reports of 3%–6% susceptibility among adult migrants in Canada and U.S.-bound refugees (Greenaway et al., 2014; Leung et al., 2015), but was comparable to 13% susceptibility among migrant inmates at a Swiss prison where a varicella outbreak occurred (Gétaz et al., 2010). Given herd immunity threshold estimates of 86%–91% to prevent varicella transmission (Plans-Rubio, 2012), and documented varicella outbreaks in correctional facilities where VZV seroprevalence exceeded 85% (Centers for Disease Control and Prevention, 1989; Gétaz et al., 2010; Valdarchi et al., 2008), our findings suggest that VZV transmission and outbreaks would likely occur at this facility if an infectious person was introduced.

More than half of participating ICE detainees originated in a tropical climate, and were more likely to be susceptible than detainees from temperate climates. Contributing factors to susceptibility in tropical climates include reduced transmission efficiency in hot, humid environments (Garnett et al., 1993; Lolekha et al., 2001) and being more likely to live in a rural setting, a proxy for low population density and frequency and closeness of interactions (Mandal, Mukherjee, Murphy, Mukherjee, & Naik, 1998). Since climate can be deduced from household location, obtaining childhood household information during intake procedures (in addition to self-reported varicella history) and systematizing climate determination might help identify potentially susceptible detainees for further testing and vaccination.

In our sample, more than one-third of detainees were aged 35 years. Compared with a prior study of migrants in Canada, where nearly all persons in this demographic were immune (Greenaway et al., 2014), 12% of detainees in this group were susceptible. Primary VZV infection in older age groups is associated with higher consequences in severe morbidity and mortality (Marin et al., 2008b). Hence, transmission of varicella within this facility could result in more severe cases requiring hospitalization, presenting additional challenges in terms of patient transport and population movement in a confined setting (Leung et al., 2014).

Vaccination programs reduce the risk of disease transmission within correctional facilities and in the wider community following release (Sequera, Garcia-Basteiro, & Bayas, 2013). Strategies to prevent varicella transmission in adults include: (i) post-exposure vaccination; (ii) routine vaccination; and (iii) routine or targeted serological testing with subsequent vaccination of susceptible individuals. Post-exposure vaccination can considerably reduce varicella infections and hospitalizations (Souty et al., 2015), but timely implementation of response measures and identification of exposed detainees and staff can be challenging (Leung et al., 2014). Routine varicella vaccination increases coverage at elevated cost, given unnecessary vaccine administration among immune individuals. In one migrant detention facility in Switzerland, general vaccination was more effective than targeted testing in preventing varicella outbreaks, but incurred more than double the costs (de Valliere et al., 2011). Serological testing and subsequent vaccination can provide a more cost-effective approach for varicella prevention, including for recent migrants (Merrett, Schwartzman, Rivest, & Greenaway, 2007; Smith & Roberts, 2000). However, the transient nature of ICE detainees presents challenges in obtaining test results and administering vaccine prior to release.

Self-reported varicella history offers a rapid approach to identify potentially susceptible individuals. Among ICE detainees, a positive self-reported history of varicella was generally reliable; our calculated positive predictive value (95%) exceeded prior estimates based on migrant prisoners in Switzerland (Gétaz et al., 2010) and refugees in the United States (Christiansen & Barnett, 2004). However, a negative history was not accurate; fewer than 20% of participants who denied history or were unsure were susceptible. Hence, detainees denying or unsure of their history might be targeted for serological testing. Among immunocompromised, pregnant, or other high-risk detainees, serological testing might be performed regardless of varicella history. For the general population in the United States, the Advisory Committee on Immunization Practices recommends a healthcare provider's documentation or verification of a history of varicella or herpes zoster as evidence of immunity, since this is a more specific definition than self-reported history and minimizes the possibility of false-positive results (Marin, Guris, Chaves, Schmid, & Seward, 2007). However, given lack of access to historical medical records and potential challenges among ICE detainees of accurately describing the disease presentation, the feasibility of implementing this definition in this population is low.

Barriers to varicella vaccination implementation in facilities housing ICE detainees include the requirement to administer two doses; a single dose of varicella vaccine does not provide sufficient population immunity to prevent transmission, especially in high-contact settings (Marin et al., 2008a), and the minimum interval between the doses is 4–8 weeks (Marin et al., 2007). Frequent movement among ICE detainees can interfere with medical follow-up (Schneider & Lobato, 2007). In the present study, more than one-fifth of susceptible detainees who received one dose of varicella vaccine were transferred or released before the second dose could be administered. Susceptible detainees were advised to seek medical consultation to receive a second dose if released before series completion. However, vaccine access may be limited if the detainee is removed from the United States, or if they are uninsured or without financial means after release. Distrust of facility and medical staff is another potential challenge to vaccination implementation. Although ICE detainees

generally reported positive attitudes toward vaccination and trust for medical providers, 14% of susceptible detainees declined to receive varicella vaccination, comparable to refusal rates in an immigrant detention facility in Israel (15.6%) (Haas et al., 2014). As detainees who agreed to participate might have greater trust concerning vaccination and medical providers, the refusal rate among all ICE detainees might exceed that observed.

This study has several limitations. We obtained a convenience sample of detainees from one facility. The top four countries represented (Mexico, El Salvador, Guatemala, and Honduras) were consistent with broader ICE population demographics (Simanski, 2014). However, overrepresentation of participants from Latin America and the Caribbean might have obscured susceptibility comparisons by global region. Low participation rates among European and Central Asian detainees were observed, although these represented a minority of individuals approached. Attitude and provider trust assessments among participants might overestimate those of the wider detainee population. Given the migration history of ICE detainees, childhood household was used in lieu of nationality when assessing varicella susceptibility. Only 6% of detainees had a different country of birth than their childhood household. However, as the age of probable VZV exposure can vary between climates, childhood household might not be the primary exposure site for all detainees. We did not ask participants about their vaccination history, given their nationalities and limited global implementation of varicella vaccination (Bonanni et al., 2009), although a few spent their childhood in high-income countries where varicella vaccine is routinely administered. We did not assess population density in community of childhood household; reliable population size and geographic area estimates for communities represented in the sample were unavailable. Variability in the specificity of participants' village/town/city of childhood household may have reduced overall geocoding accuracy for climate assessments. We also did not ask about participant occupation or contact with children, which may be relevant to VZV exposure. Finally, given their detention status, participants may have provided inaccurate interview responses due to perceived benefit. However, no participation incentives were provided, and project staff emphasized that participation would have no impact on their detention or legal proceedings.

CONCLUSION

Our study represents the first assessment of a preventive health initiative in an ICE detention facility. We detected 12% varicella susceptibility among adult ICE detainees and 95% positive predictive value of a reported history of varicella. Given the high level of population susceptibility, targeted screening and vaccination among detainees who deny or are unsure of their varicella history, had a childhood household in a tropical climate, or are at elevated risk for complications from varicella might be considered. While this approach does not eliminate the possibility of VZV transmission, it could provide an effective strategy for minimizing disruptions caused by VZV exposures in ICE facilities.

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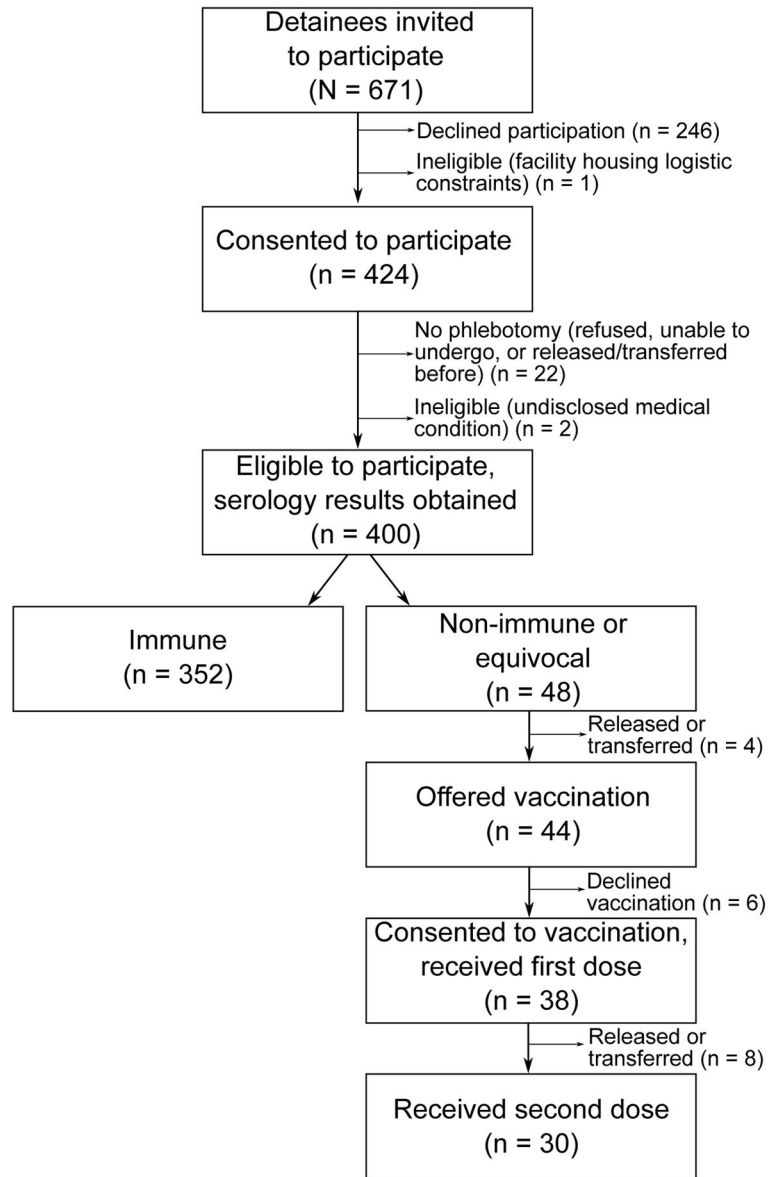
Figure 1.
Participant recruitment, serological testing, and vaccination among U.S. Immigration and Customs Enforcement detainees at a California detention facility.

Table 1

Demographic characteristics among participating detainees (N = 400).

Characteristic	Value
Age (years), median (range)	30 (18–60)
Sex, n (%)	
Female	102 (25.5)
Male	298 (74.5)
Interview language, n (%)	
English	105 (26.3)
Spanish	254 (63.5)
Other	41 (10.3)
Total number of persons in childhood household, median (range)[a,b]	7 (2–48)
Number of minors aged <18 years in childhood household, median (range)[a,c]	4 (1–25)
Nationality, n (%)[d]	
Mexico	215 (53.8)
El Salvador	33 (8.3)
Guatemala	28 (7.0)
Honduras	20 (5.0)
Ghana	15 (3.8)
Other	89 (22.3)
Global region of childhood household, n (%)[e]	
Latin America and the Caribbean	285 (71.3)
Sub-Saharan Africa	57 (14.3)
U.S. and Western Europe	24 (6.0)
South Asia	19 (4.8)
North Africa and the Middle East	6 (1.5)
East Asia and the Pacific	5 (1.3)
Eastern Europe and Central Asia	4 (1.0)

Footnotes: Rounded figures might not add to 100%.

[a]Refers to self-reported number of persons (adults and/or minors) living in household during majority of childhood between birth and 12 years old.

[b]Responses were missing for two participants.

[c]Responses were missing for four participants.

[d]Refers to country of citizenship based on U.S. Immigration and Customs Enforcement records.

[e]Based on country where detainee spent majority of childhood between birth and 12 years old.

Table 2

Serological varicella susceptibility and logistic regression modeling in relation to demographic and geographic factors among participating detainees.

Variable	Totaln (%)	Susceptible to varicella% (95% CI)	UnivariateOR (95% CI)	MultivariateaOR (95% CI)
Overall	400 (100)	12.0 (9.2, 15.6)		
Sex				
Female	102 (25.5)	13.7 (8.4, 21.7)	1.24 (0.63, 2.41)	1.52 (0.73, 3.14)
Male	298 (74.5)	11.4 (8.3, 15.5)	Ref	Ref
Age (years)				
<25	107 (26.8)	10.3 (5.8, 17.5)	0.80 (0.26, 2.47)	0.60 (0.18, 1.99)
25–34	156 (39.0)	12.8 (8.5, 19.0)	1.03 (0.36, 2.94)	0.74 (0.24, 2.28)
35–44	97 (24.3)	12.4 (7.2, 20.4)	0.99 (0.32, 3.01)	0.71 (0.22, 2.29)
45	40 (10.0)	12.5 (5.5, 26.1)	Ref	Ref
Interview language				
English	105 (26.3)	7.6 (3.9, 14.3)	Ref	-
Spanish	254 (63.5)	13.4 (9.7, 18.1)	1.87 (0.84, 4.20)	
Other	41 (10.3)	14.6 (6.9, 28.4)	2.08 (0.67, 6.41)	
Self-reported history of varicella				
Yes	196 (49.0)	4.6 (2.4, 8.5)	**0.19 (0.09, 0.40)**	**0.16 (0.07, 0.35)**
No	160 (40.0)	20.6 (15.1, 27.6)	Ref	Ref
Not sure	44 (11.0)	13.6 (6.4, 26.7)	0.61 (0.24, 1.56)	0.64 (0.24, 1.68)
Total number of persons living in childhood household[a]				
7	238 (59.8)	13.0 (9.3, 17.9)	1.35 (0.71, 2.56)	-
>7	160 (40.2)	10.0 (6.3, 15.6)	Ref	
Number of minors aged <18 years in childhood household[a]				
4	229 (57.8)	14.0 (10.1, 19.1)	1.78 (0.92, 3.44)	
>4	167 (42.2)	8.4 (5.1, 13.6)	Ref	-
Climate in community of childhood household[b]				
Arid/cold/polar	66 (16.6)	12.1 (6.3, 22.1)	2.05 (0.71, 5.94)	2.22 (0.74, 6.63)
Temperate	111 (27.9)	6.3 (3.1, 12.5)	Ref	Ref
Tropical	221 (55.5)	14.9 (10.8, 20.2)	**2.61 (1.11, 6.10)**	**3.04 (1.26, 7.33)**
Global region of childhood household[c]				
Latin America and the Caribbean	285 (71.3)	13.0 (9.6, 17.4)	Ref	-
Sub-Saharan Africa	57 (14.3)	8.8 (3.8, 19.0)	0.64 (0.24, 1.72)	
U.S./W. Europe/E. Europe & Central Asia	28 (7.0)	3.6 (0.6, 17.7)	0.25 (0.03, 1.87)	
S. & E. Asia/Pacific/N. Africa & Middle East	30 (7.5)	16.7 (7.3, 33.6)	1.34 (0.48, 3.72)	

Footnotes: Rounded figures might not add to 100%. Boldface values indicate statistical significance ($p < .05$). Abbreviations: CI = confidence interval; OR = odds ratio; aOR = adjusted odds ratio.

[a] Refers to self-reported number of persons (adults and/or minors) living in household during majority of childhood between birth and 12 years old.

*b*Based on the village/town/city where detainee spent majority of childhood between birth and 12 years old.

*c*Based on the country where detainee spent majority of childhood between birth and 12 years old.

Table 3

Attitudes towards vaccines and vaccination among participating detainees by age, sex, and region of childhood household.

| | Attitude statement[a,b] | | | | | | | |
| Characteristic | Vaccines can prevent diseases | | Vaccines are safe | | Vaccines may contain dangerous chemicals | | Trust medical staff at detention facility to recommend vaccines | |
	% agree (95% CI)	p	% agree (95% CI)	p	% agree (95% CI)	p	% agree (95% CI)	p
Overall	86.0 (82.3, 89.1)	-	82.5 (78.5, 85.9)	-	32.8 (28.3, 37.5)	-	90.3 (87.0, 92.8)	-
Sex								
Female	88.2 (80.6, 93.1)	0.51	85.3 (77.2, 90.9)	0.45	27.5 (19.7, 36.8)	0.22	92.2 (85.3, 96.0)	0.56
Male[c]	85.2 (80.8, 88.8)		81.5 (76.8, 85.5)		34.6 (29.4, 40.1)		89.6 (85.6, 92.6)	
Age (years)								
<25	84.1 (76.0, 89.8)	0.11	82.2 (73.9, 88.3)	**0.02**	28.0 (20.4, 37.2)	0.11	86.9 (79.2, 92.0)	0.06
25–34	84.0 (77.4, 88.9)		75.6 (68.3, 81.7)		31.4 (24.7, 39.1)		89.7 (84.0, 93.6)	
35–44	87.6 (79.6, 92.8)		88.7 (80.8, 93.6)		38.1 (29.1, 48.1)		91.8 (84.6, 95.8)	
45	95.0 (83.5, 98.6)		95.0 (83.5, 98.6)		37.5 (24.2, 53.0)		97.5 (87.1, 99.6)	
Global region of childhood household[c]								
Latin America and the Caribbean	87.0 (82.6, 90.4)	0.15	84.6 (79.9, 88.3)	0.41	35.4 (30.1, 41.2)	0.05	89.8 (85.8, 92.8)	0.14
Sub-Saharan Africa	87.7 (76.8, 93.9)		80.7 (68.7, 88.9)		22.8 (13.8, 35.2)		96.5 (88.1, 99.0)	
U.S./W. Europe/E. Europe & Central Asia	67.9 (49.3, 82.1)		60.7 (42.4, 76.4)		35.7 (20.7, 54.2)		85.7 (68.5, 94.3)	
S. & E. Asia/Pacific/N. Africa & Middle East	90.0 (74.4, 96.5)		86.7 (70.3, 94.7)		23.3 (11.8, 40.9)		86.7 (70.3, 94.7)	

[a] Comparing agree responses versus disagree and not sure responses. Refused to answer responses were excluded.

[b] P-value corresponds to chi-square test; boldface values indicate statistical significance ($p < .05$).

[c] Based on the country where detainee spent majority of childhood between birth and 12 years old.