

Reasons for vaccine declination in healthy individuals attending an international vaccine and travel clinic

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Abstract

Little is known about the vaccine-related health behaviors of healthy individuals. We surveyed healthy individuals attending a vaccine center to define the reasons behind vaccine declination when the vaccine is warranted under current guidance. Declination due to perceived risks of the vaccines were by far the most common rationale, suggesting continued need for public health educational campaigns.

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Introduction

Vaccines are a critical component of infection prevention efforts worldwide and represent one of the biggest public health successes in history [1, 2]. Vaccines are rarely mandated, and therefore vaccine acceptance is an engaging area of study, particularly since adult vaccine coverage in the United States is inadequate [3]. Understanding why patients accept or decline recommended vaccines is important in order to develop evidence-based, tailored messages and interventions to increase vaccine uptake [4, 5]. In healthy individuals, such as those requiring vaccines for international travel, little description of vaccine acceptance has been documented [6]. In this setting, specialized computer software is available where vaccines are suggested for travelers to various areas of the world based on likelihood of exposure. Since these vaccines are rarely a prerequisite for travel to any particular location, their final delivery is left to the discretion of the individual. The purpose of this study was to evaluate reasons for vaccine declination in an international vaccine and travel clinic where vaccines are paid for out-of-pocket.

Methods


This was a secondary analysis of a cross-sectional study focused on predictors of the intention to be vaccinated (4). Briefly, the initial study was conducted from November 2013 through July 2014 and included all unique, consecutive, individuals seeking care at the University of Louisville Vaccine and International Travel clinic for pre-travel consultation. Persons requiring only

boosters were excluded from the analysis. After evaluation by a healthcare provider, individuals are offered vaccines based on their personal medical history and/or intended travel epidemiology. Because of this, individuals were evaluated for vaccines that may be suggested for general medical reasons as opposed to solely travel-related reasons. Vaccines offered included: Hepatitis A and B, Influenza (injectable, nasal mist, or intradermal), Japanese encephalitis, measles/mumps/rubella (MMR), meningococcal, polio, pneumococcal, rabies, tetanus/diphtheria/pertussis (Tdap), tetanus/diphtheria (Td), typhoid (injectable or oral), varicella, and zoster. The University of Louisville Human Subjects Protection Program Office approved this study prior to any data collection (IRB # 12.0470). Consent was obtained upon beginning the survey on a tablet computer.

Vaccines suggested based on patient history (e.g. pneumococcal, influenza) or travel future were documented in a REDCap database [7]. With the exception of yellow fever vaccine for some countries, few vaccines are routinely required for travel and in our clinic, individuals were given the option to accept or decline each suggested vaccine. Other notable exceptions where vaccines may be required for travel include meningococcal vaccine for travel to the Hajj, but this requirement was outside of the time frame of the current study. In the event of a declination, the reasons were documented in the same database. Frequencies and percentages for each reason were calculated and tabulated. R v3.3.2 was used for all analysis [8].

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Vaccine	Total Offered	Total Declined	Reasons for Declining or Not Obtaining Offered Vaccine													
			Cost	Intends to receive elsewhere due to cost/insurance	Already received (with documentation)	Already received (without documentation)	Vaccine not available due to supply	Declined due to side effects	Declined due to perceived risk	Elected to receive combination vaccine (Hepatitis A or B only)	Elected to receive vaccines separately (Hepatitis A/B dual only)	Vaccine not available, out of season (influenza only)	Elected to receive oral vaccine due to longer immunity (injectable typhoid only)	Elected to receive oral vaccine due to not needing an injection (injectable typhoid only)	Elected to receive injectable vaccine due to preferring the oral pill (oral typhoid only)	Other, Not-Specified
Hepatitis A	159	95 (59.7)	8 (8.4)	9 (9.5)	14 (14.7)	6 (6.3)	1 (1.1)	1 (1.1)	12 (12.6)	43 (45.3)						1 (1.1)
Hepatitis B	117	101 (86.3)	4 (4)	5 (5)	13 (12.9)	10 (9.9)	0 (0)	1 (1)	22 (21.8)	45 (44.6)						1 (1)
Hepatitis A/B Dual	99	55 (55.6)	4 (7.3)	3 (5.5)	2 (3.6)	6 (10.9)	0 (0)	0 (0)	1 (1.8)	22 (40)	15 (27.3)					2 (3.6)
Influenza	112	89 (79.5)	2 (2.2)	4 (4.5)	3 (3.4)	34 (38.2)	0 (0)	5 (5.6)	41 (46.1)		0 (0)					0 (0)
Japanese Encephalitis	57	41 (71.9)	13 (31.7)	2 (4.9)	0 (0)	0 (0)	0 (0)	0 (0)	1 (2.4)	25 (61)						0 (0)
Measles, Mumps, Rubella (MMR)	24	19 (79.2)	0 (0)	1 (5.3)	5 (26.3)	10 (52.6)	0 (0)	0 (0)	2 (10.5)							1 (5.3)
Meningitis (Menactra)	37	24 (64.9)	9 (37.5)	5 (20.8)	0 (0)	2 (8.3)	0 (0)	0 (0)	8 (33.3)							0 (0)
Meningitis (Menomune)	17	11 (64.7)	2 (18.2)	2 (18.2)	0 (0)	0 (0)	0 (0)	0 (0)	7 (63.6)							0 (0)
Polio	30	14 (46.7)	1 (7.1)	2 (14.3)	4 (28.6)	4 (28.6)	0 (0)	0 (0)	3 (21.4)							0 (0)
Pneumococcal Conjugate (PCV-13)	7	7 (100)	0 (0)	1 (14.3)	1 (14.3)	1 (14.3)	0 (0)	0 (0)	4 (57.1)							0 (0)
Rabies	123	113 (91.9)	19 (16.8)	1 (0.9)	0 (0)	0 (0)	0 (0)	1 (0.9)	90 (79.6)							1 (0.9)
Tetanus, Diphtheria, Acellular Pertussis	111	35 (31.5)	4 (11.4)	7 (20)	9 (25.7)	4 (11.4)	1 (2.9)	2 (5.7)	8 (22.9)							0 (0)
Injectable Typhoid	218	116 (53.2)	6 (5.2)	2 (1.7)	0 (0)	0 (0)	17 (14.7)	1 (0.9)	16 (13.8)		21 (18.1)	52 (44.8)				1 (0.9)
Oral Typhoid	210	122 (58.1)	5 (4.1)	2 (1.6)	0 (0)	0 (0)	0 (0)	21 (17.2)	21 (17.2)						72 (59)	1 (0.8)
Varicella	22	19 (86.4)	0 (0)	0 (0)	0 (0)	9 (47.4)	0 (0)	1 (5.3)	6 (31.6)							3 (15.8)
Yellow Fever	78	6 (7.7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (66.6)	2 (33.3)							0 (0.0)
Shingles	4	2 (50)	0 (0)	2 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)							0 (0)

Figure 1 Reasons for vaccine declination (frequency and percentage) in healthy individuals attending an international travel and vaccine center, by vaccine offered.

Results

A total of 249 unique individuals were included in the analysis. The most common vaccine offered was injectable typhoid in 210 (84%) of patients. The least frequent vaccine offered was shingles in 4 (1.6%) individuals. The top three most frequently declined vaccines were: Pneumococcal Conjugate Vaccine (PCV-13) with 7/7 (100%) of patients declining, Rabies with 113/123 (91.9%) of individuals declining, and Varicella with 19/22 (86.4%) of individuals declining vaccination. A table of each vaccine, the total offered, declined, and the frequency and percentage of reasons for individuals declining offered vaccines can be found in **Figure 1**. Declination due to perceived risks of the vaccine was the most often reported reason for not receiving any particular offered vaccine, with an average of over one third of individuals indicating this as the major reason for declination. Yellow fever vaccine was the most accepted vaccine, with 6/78 (7.7%) of individuals declining the vaccine. Four individuals who would have been offered the yellow fever vaccine were deemed ineligible due to contraindications and were removed from the denominator.

Discussion

This study reports the reasons for declining suggested vaccines in otherwise healthy, low-risk individuals seeking care at a large Vaccine and International Travel Center. Although this clinic is a cash-only clinic which requires individuals to pay out-of-pocket, declination due to cost or intention to receive the vaccine elsewhere due to insurance were not major factors in individual declination decisions. Declination due to perceived risks of the vaccines were by far the most common rationale suggesting continued need for public health educational campaigns regarding the importance of vaccination. This differs from a report from the Global TravEpiNet study, which identified lack of perceived risk of the disease as the main factor for declination [6]. Yellow fever was the most accepted vaccine as expected, since this vaccine is the only one required for travel to certain areas.

This study has several limitations. First the sample size was relatively small and was obtained from a single center. These factors limit the generalizability of our findings. Further,

we did not collect data on the reason for travel and if friends or family were the rationale for travel. These factors were previously documented to modify the rate and rationale for vaccine acceptance [6]. Another limitation is with respect to required vaccines. Occasionally some countries have required evidence of various vaccines (e.g. MMR during an outbreak). Since these requirements change rapidly, some individuals may have biased some results. With respect to all vaccines, we didn't collect data on if individuals followed through with travel. This is particularly important for Yellow Fever vaccine, since it is required for travel to their destination. We were not able to document if the individual did not travel because of the lack of obtaining the vaccine, or if they received it elsewhere, bypassing their rationale for declination in our clinic.

In conclusion, we documented a low rate of vaccine acceptance in our international travelers, which varied based on the vaccine. Since immunizations are a critical component of public health infection prevention activities, there is a substantial need for active education and policy to assist in the prevention of preventable infection.

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References

- Centers for Disease Control and Prevention (CDC). Ten great public health achievements-worldwide, 2001-2010. MMWR Morb Mortal Wkly Rep. 2011 Jun;60(24):814-8. PMID:21697806
- Centers for Disease Control and Prevention (CDC). Ten great public health achievements--United States, 2001-2010. MMWR Morb Mortal Wkly Rep. 2011 May;60(19):619-23. PMID:21597455
- Centers for Disease Control and Prevention (CDC). Adult vaccination coverage-United States, 2010. MMWR Morb Mortal Wkly Rep. 2012 Feb;61(4):66-72. PMID:22298302
- Wiemken TL, Carrico RM, Kelley RR, Binford LE, Peyrani P, Ford KD, et al. Understanding why low-risk patients accept vaccines: a socio-behavioral approach. BMC Res Notes. 2015 Dec;8:813. <https://doi.org/10.1186/s13104-015-1816-2> PMID:26698110
- Yaqub O, Castle-Clarke S, Sevdalis N, Chataway J. Attitudes to vaccination: a critical review. Soc Sci

- Med. 2014 Jul 1;112:1-11. <https://doi.org/10.1016/j.socscimed.2014.04.018> PMID:24788111
6. Lammert SM, Rao SR, Jentes ES, Fairley JK, Erskine S, Walker AT, et al. Refusal of recommended travel-related vaccines among US international travellers in Global TravEpiNet. *J Travel Med.* 2016 Jul 1;24(1). <https://doi.org/10.1093/jtm/taw075> PMID:27799502
 7. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform.* 2009 Apr;42(2):377–81. <https://doi.org/10.1016/j.jbi.2008.08.010> PMID:18929686
 8. R Core Team. R: A language and environment for statistical computing. Vienna, Austria: R Foundation for Statistical Computing; 2016. Available from: <http://www.R-project.org>.