Exploring the Relationship between Medical Insurance and Vaccine Acceptance Rates

Mark Knouse MD
Lehigh Valley Health Network, mark.knouse@lvhn.org

Yennifer Lopez

Hope Kincaid MPH, CPH
Lehigh Valley Health Network, Hope.Kincaid@lvhn.org

Shae Duka BS
Shae.Duka@lvhn.org, shae.duka@lvhn.org

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Mark C. Knouse, MD, Yennifer Lopez, Hope Kincaid, MPH and Shae Duka, BS

Lehigh Valley Health Network, Allentown, Pa.

INTRODUCTION

- Last year the National Travel and Tourism Office estimated that 93,000,000 US travelers went abroad.[1]
- Missed opportunities for vaccination in the higher risk group of travelers may result in increased disease rates in this population.
- A previous study looking at GTEN[2] travel clinics noted that 28% of travelers had refused at least one recommended vaccine.[3]
- As a quality initiative to improve vaccination rates at our travel clinic, we sought to determine if there might be an association between the traveler's medical coverage and acceptance of recommended vaccines.

ABSTRACT

Background: Every year increasing numbers of US travelers, including older/compromised individuals, are traveling abroad. Many are at increased risk for vaccine preventable diseases. Insurance plans typically cover routine immunizations but do not cover many travel vaccines. Little data has been published regarding rates of vaccine acceptance as related to traveler's medical insurance, specifically the likelihood of accepting vaccine recommendations at the time of a pre-travel visit.

Objective: We sought to describe the relationship between a traveler's medical insurance and the likelihood of accepting vaccination recommendations at the time of pre-travel visit.

Methods: As a QI project, we reviewed existing billing records in comparison to vaccines ordered by the providers, between 1/4/16 – 12/29/16. Travel Medicine notes were retrieved, all vaccine recommendations were collated[2] and matching billing information was reviewed.

Results: A total of 696 patients were included in the sample. Slightly more than half (58.3%) were female and the median age was 45 years. There were 1,628 vaccines recommended with an average of 2.3 per traveler. Of the 658 travelers with a recommended vaccine, 31.9% declined at least one recommended vaccine. Reasons for declining were [N (%)]: not being concerned about the risk of illness 122(58.1), concerns about cost 72(34.3), referral to PCP 12(5.7), and contraindication 4(1.9). The insurance type with the highest rate of overall vaccine acceptance was Commercial (Non-HMO) 1,011(85.2) followed by Medicare HMO 19(76), Medicare 130(71.4), Self-Pay 53(67.9), Medicaid HMO 12(54.5) and HMO 69(51.5). Compared with other insurance types, Self-pay and HMO insured travelers had lower rates of vaccine acceptance, except for Typhoid and Yellow Fever. The vaccine with the lowest acceptance rates was Rabies.

Conclusion: Our QI project showed that vaccine acceptance rates varied based on the specific vaccine recommended and insurance coverage. It is not known whether some of these travelers ultimately received recommended vaccines elsewhere — future studies to explore this would be helpful to optimize the overall health of our travelers.
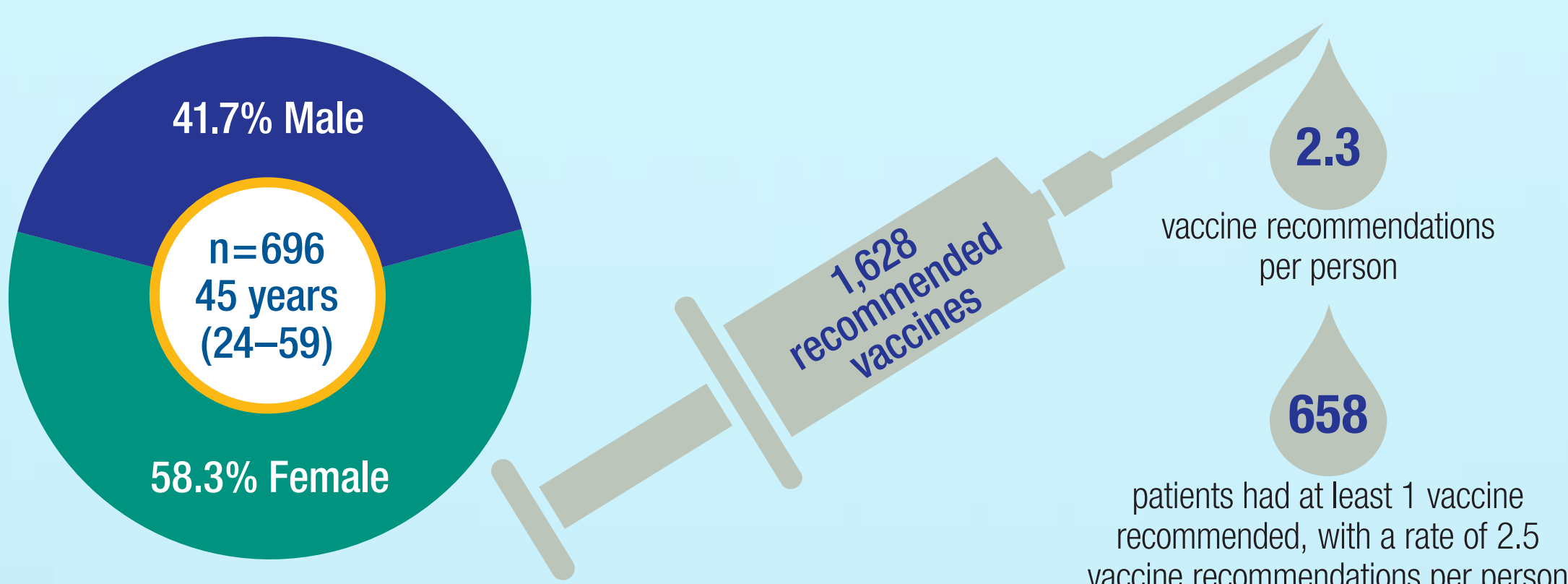
RESULTS

TABLE 1. DEMOGRAPHICS (Unit of analysis is patient)

	Self-Pay (N=29)	Commercial (Non-HMO) (N=513)	HMO (N=45)	Medicare (N=86)	Medicare HMO (N=9)	Medicaid HMO (N=14)
Age (yrs.)	29 (21-46)	41 (23-56)	29 (21-52)	69 (66-72)	71 (66.5-76)	20.5 (17.75-28.75)
Male	13 (44.8)	217 (42.3)	15 (33.3)	39 (45.3)	6 (66.7)	0 (0)
Female	16 (55.2)	296 (57.7)	30 (66.7)	47 (54.7)	3 (33.3)	14 (100)

N= # of patients in each group   Age is presented with the median and IQR

TABLE 2. OVERALL REFUSAL VS. ACCEPTANCE RATE BY INSURANCE TYPE (Unit of analysis is vaccine)

	Entire Sample (N=1,628)	Self-Pay (N=78)	Commercial (Non-HMO) (N=1,187)	HMO (N=134)	Medicare (N=182)	Medicare HMO (N=25)	Medicaid HMO (N=22)
Vaccine Acceptance Rate	1,294 (79.5)	53 (67.9)	1,011 (85.2)	69 (51.5)	130 (71.4)	19 (76)	12 (54.5)
Vaccine Decline Rate	334 (20.5)	25 (32.1)	176 (14.83)	65 (48.5)	52 (28.6)	6 (24)	10 (45.5)
Not concerned about risk of illness	193 (57.8)	12 (48)	130 (74)	16 (24.6)	31 (59.6)	4 (66.7)	0
Concerned about cost	110 (32.9)	9 (36)	38 (21.6)	38 (58.5)	19 (36.5)	2 (33.3)	4(40)
Contraindicated	4 (1.2)	0	2 (1.1)	0	2 (3.8)	0	0
Referred to PCP	27 (8.1)	4 (16)	6 (3.4)	11 (16.9)	0	0	6 (60)

41.7% Male
n=696
45 years
(24–59)
58.3% Female

1,628 recommended vaccines

2.3 vaccine recommendations per person

658 patients had at least 1 vaccine recommended, with a rate of 2.5 vaccine recommendations per person

REASONS FOR DECLINING RECOMMENDED VACCINES (N=210)*

Accepted	68.1%
Declined	31.9%
Not concerned about risk of illness	58.1%
Concerns about cost	34.3%
Contraindication	1.9%
Referral to PCP	5.7%

NOTE: Unit of analysis is patient, those who declined one or more recommended vaccines included.

ACCEPTANCE OF VACCINE BY INSURANCE TYPE

HepA — *Self-Pay (n=20), Commercial (n=297), HMO (n=7), Medicaid HMO (n=3)

Flu — *Self-Pay (n=6), Commercial (n=107), HMO (n=2), Medicare (n=6), Medicare HMO (n=10), Medicaid HMO (n=0)

Meningitis — *Self-Pay (n=2), Commercial (n=13), HMO (n=8), Medicaid HMO (n=1)

Japanese Encephalitis — *Self-Pay (n=0), Commercial (n=29), HMO (n=6), Medicare (n=10), Medicare HMO (n=2), Medicaid HMO (n=0)

Tdap — *Self-Pay (n=10), Commercial (n=121), HMO (n=10, Medicare (n=19), Medicare HMO (n=2), Medicaid HMO (n=0)

Pneumonia — *Self-Pay (n=1), Commercial (n=4), HMO (n=0), Medicare (n=4), Medicare HMO (n=0), Medicaid HMO (n=0)

Typhoid — *Self-Pay (n=11), Commercial (n=47), HMO (n=1), Medicare (n=69), Medicare HMO (n=10), Medicaid HMO (n=0)

Yellow Fever — *Self-Pay (n=11), Commercial (n=100), HMO (n=18), Medicare (n=13), Medicare HMO (n=11, Medicaid HMO (n=7)

Legend: Self-Pay, Commercial, HMO, Medicare, Medicare HMO, Medicaid HMO

NOTE: N/A means that specific vaccine was not recommended for any patient with that insurance type.
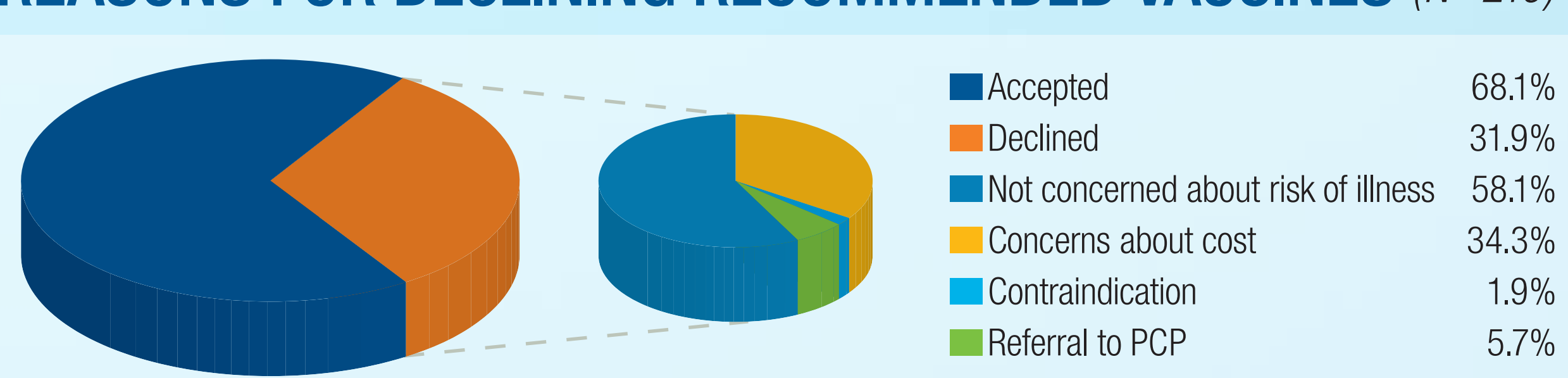
CONCLUSIONS AND NEXT STEPS

- This review shows that 31.9% of patients declined at least one recommended vaccine at the time of their pre-travel visit. Many commonly recommended vaccines were refused at the time of visit (e.g. Hepatitis A, Tdap).
- The declination of vaccines may be predicted to some extent based on the traveler's medical insurance and the vaccines offered.
- The reasons given (see QRS link) for individual vaccines seem to vary greatly, but the end result is a missed opportunity for vaccination for this at-risk population.
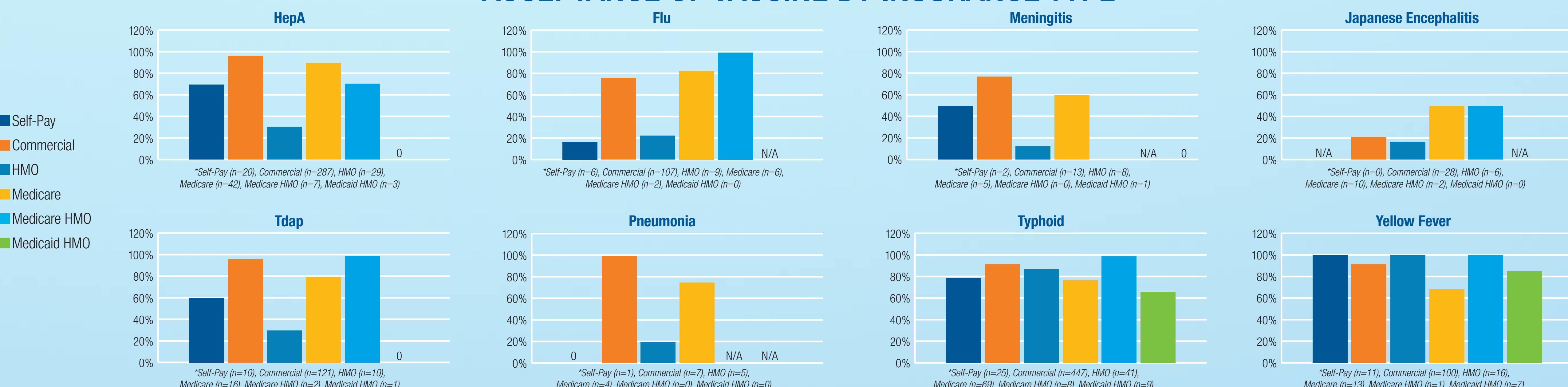
Supplementary Tables

- Typhoid fever vaccine and yellow fever vaccine are more often accepted regardless of the insurance.
- Rabies vaccine was declined often and across all insurance types.
- We will plan to use this information in our pre-visit planning to find better ways of increasing vaccine acceptance based on the type of insurance.
- Ultimately payers might use such data to create better systems for preventative health care in vulnerable travelers.

LIMITATIONS

- Limitations of this review were that it was performed in a single center enrolled in the Global TravEpiNet[2] – results may not be generalizable to other centers.
- We did not collect any follow-up data and were unable to assess whether the travelers who declined ultimately got their vaccines elsewhere. This is worthy of future investigation.
- There are likely other reasons besides insurance coverage that impact a patients decision to decline a recommended vaccine but that data was not assessed as part of this initiative.

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REFERENCES/FOOTNOTES

1. https://travel.trade.gov/tinews/archive/tinews2019/20190402.asp (accessed May 15, 2019).
2. Components of these data were collected via participation in Global TravEpiNet (GTEN), a CDC-supported consortium of clinics that collects data on health interventions pre-travel. The analysis and views expressed in this report do not necessarily reflect endorsement by GTEN or CDC.
3. Lammert SM, Rao SR, Jentes ES, et. Al. Refusal of recommended travel-related vaccines among U.S International travelers in Global TravEpi Net. J Travel Med 2016; 24:1-7.

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