

Table 2. Rate of positive bacterial infections in 46 *A. agrarius* rodents as indicated by serological assays.

Name of positive sera	Seropositive	
	IFA titer for <i>O. tsutsugamushi</i> ^a (% positive rate)	PHA for <i>Leptospira</i> species ^b (% positive rate)
6-6	1:128	— ^c
6-7	1:64	—
7-4	1:16	—
7-13	1:16	—
7-17	1:16	1:160
7-18	1:32	—
8-7	1:256	—
8-9	1:64	—
No. of positive sera	8 (17.4)	1 (2.2)

^aCutoff titer of immunofluorescence assay, immunoglobulin G \geq 1:16.^bCutoff for passive hemagglutination assay \geq 1:80.^c—: negative.**Table 3.** Number of positive cases of *Orientia tsutsugamushi*, *Anaplasma phagocytophilum*, and *Leptospira interrogans* among the 47 *Apodemus agrarius* rodents obtained by PCR targeting different genes.

Specimen	No. of samples	<i>O. tsutsugamushi</i>		<i>A. phagocytophilum</i>			<i>L. interrogans</i>		
		rrs ^a	TSUTSU Kit ^b	56 kDa ^c	groEL ^d	ankA ^e	rpoB ^f	LipL32 ^g	gyrB ^h
Blood	46	0	0	0	4	4	0	0	NA ⁱ
Spleen	45	0	0	0	0	6	0	0	NA
Kidney	47	0	0	0	0	1	3	2	2
No. of positive rodents		0			9 (19.1) ^j		3 (6.4)		

^a16S ribosomal RNA.^bINNOPLIX TSUTSU detection kit for *O. tsutsugamushi*.^c56 kDa gene.^dHeat shock protein chaperone.^eAnkyrin-related protein gene.^fRNAse polymerase subunit beta.^gOuter membrane lipoprotein.^hDNA gyrase subunit B.ⁱNA: not available.^j% Positive rate.**Disclosures.** All authors: No reported disclosures.**1649. That's Not Cricket! Outbreak of *Legionella pneumophila* (*L. pneumophila*) in a Community Cricket Club in the UK, 2018: Challenges in *Legionella* Control in This Setting**Natalie Wright, MBBS¹; Deborah Fenelon¹; Rachel Fleeson²; Diane Coopey²; Jeremy Hawker¹; Mamoonah Tahir, MBBS¹; ¹Public Health England, Birmingham, UK; ²Nuneaton and Bedworth Borough Council, Nuneaton, UK**Session:** 163. Public Health

Friday, October 4, 2019: 12:15 PM

Background. Cricket clubs in the UK are frequently collocated with community venues which host a range of activities, often for vulnerable members of society, such as children and elderly people. In July 2018, two cases of local laboratory-confirmed Legionnaires' disease were notified to Public Health England (PHE). The cases were found to be players in the same cricket team (via the enhanced Legionnaires' disease surveillance system) and had multiple shared potential exposures during their incubation periods.

Methods. A three-pronged outbreak investigation was conducted, with epidemiological, microbiological, and environmental components. Case-finding and potential shared exposures were identified through completion and analysis of *Legionella* enhanced surveillance questionnaires. Following risk assessment, environmental samples were obtained from aerosolizing outlets at identified sites. Additionally, sputum and urine samples were obtained from cases. All samples were sent to the PHE reference laboratory for confirmation of species and sequence typing.

Results. All cases were confirmed as *L. pneumophila* serogroup 1. Only one case provided a sputum sample suitable for sequence typing, which yielded a partial result. This result was consistent with a strain of *L. pneumophila* found in abundance at numerous water outlets at a local cricket club epidemiologically linked to all cases. On the emergence of these findings, control measures were put in place to prevent further exposure to the pathogen including shot-dosing of the water systems and closure of aerosolizing outlets. However, eradication of the organism proved challenging.

Conclusion. This is the first known outbreak of *L. pneumophila* epidemiologically and microbiologically linked to a cricket club in the UK. Control of the outbreak was challenging for two reasons. Firstly, the nature of the setting as a community venue meant that there was a large number of people potentially exposed, many with characteristics putting them at increased risk of Legionnaires' disease. Secondly, the cricket club was run by a committee of volunteers with limited expertise and financial resource. There was a resultant lack of clarity about who was ultimately responsible for *Legionella* risk management and the implementation of control measures.

Disclosures. All authors: No reported disclosures.**1650. Knowledge and Attitudes Toward Influenza Vaccination Among Hispanics: A Survey Conducted in Latin American Consulates in South Florida**Maria L. Soler Hidalgo, MD¹; John M. Abbamonte, MA²;Laura Regalini, MD, MD¹; Mariana Schlesinger, PhD, PhD¹; Maria L. Alcaide, MD³; Gordon M. Dickinson, MD³; ¹Fighting Infectious Diseases in Emerging Countries, Miami, Florida; ²University of Miami, South Miami, Florida; ³University of Miami Miller School of Medicine, Miami, Florida**Session:** 163. Public Health

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Background. Each year Influenza causes between 12,000 and 56,000 deaths, and over half a million of hospitalizations in the United States. Despite the widespread availability of vaccination, immunization coverage is low. Less than half of American adults receive the influenza vaccine, and there is a disparity between Hispanic and non-Hispanics, with only 35.9% of Hispanic compared with 45.9% of white non-Hispanics receiving the vaccine. In Miami, South Florida, over two-thirds of the population is Hispanic, and rates of influenza vaccination are low. This study aims to identify the knowledge and attitudes toward influenza vaccination among members of the adult Hispanic community in Miami, and to identify barriers to vaccination in this population.

Methods. This is a cross-sectional study conducted during the influenza season in 2017 and 2019 (October to December). A survey was administered in the waiting rooms of participating Latin American Consulates (Argentina, Colombia, Ecuador, Guatemala, Honduras, Mexico, Peru, and Uruguay) in Miami. Participants included were older than 18 years, Hispanic, and with residence in the United States for more than 6 months. The participants accepted the inform consent orally. The survey was voluntary and anonymous.

Results. We enrolled 970 adults. The median age was 43 years, 50% were male, 60% had health insurance, and 67% had completed education of high school or higher. Knowledge regarding influenza and vaccination was low (78% believed asymptomatic individuals could transmit influenza, 14% knew that vaccination is recommended during the winter months, 50% felt not everyone should be vaccinated, 25% believed the vaccine causes influenza, and 7% autism). About one quarter (27%) received the influenza vaccine annually, 35% sometimes, and 38% never. Using multinomial logistic regression, we identified age $\chi^2(2) = 19.38, P < 0.001$, consulate $\chi^2(6) = 160.21, P < 0.001$, and insurance status $\chi^2(2) = 23.04, P < 0.001$ as predictors of receiving vaccination. Neither gender, nor education level found to be associated with vaccination behavior.

Conclusion. Immunization rates in the adult Hispanic population are low. Interventions to improve vaccination among Hispanics who are older and lack of health insurance are urgently needed in the diverse Hispanic community.

Disclosures. All authors: No reported disclosures.**1651. The Impact of the 2017–2018 Influenza Season on Acute Care Hospitals in the United States: A Qualitative Evaluation of Immediate Responses and Future Preparedness**Gavin H. Harris, MD¹; Kimberly J. Rak, PhD¹; Jeremy M. Kahn, MD, MSc¹; Derek C. Angus, MD, MPH¹; Erin A. Caplan, MPH²; Olivia Mancing, BA¹; Julia Driessen, PhD³; David J. Wallace, MD, MPH¹; ¹University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania; ²Critical Care Medicine - University of Pittsburgh, Pittsburgh, Pennsylvania; ³University of Pittsburgh Graduate School of Public Health, Pittsburgh, Pennsylvania**Session:** 163. Public Health

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Background. The 2017–2018 influenza season was characterized by high illness severity, wide geographic spread, and prolonged duration compared with recent years in the United States – resulting in an increased number of emergency department evaluations and hospital admissions. The current study explored how US hospitals perceived the impact of influenza during this time period, including effects on patient volumes, ways in which hospitals responded, and how lessons learned were incorporated into future influenza preparedness.

Methods. We conducted semi-structured phone interviews with capacity management personnel in short-term acute care hospitals across the United States. A random hospital sample was created using Centers for Medicare and Medicaid Services annual reports. Hospitals self-identified key informants who were involved with throughput and capacity. The interview guide was developed and pilot tested by a team of clinicians and qualitative researchers, with interviews conducted between April 2018 and January 2019. We performed thematic content analysis to identify how hospitals experienced the 2017–2018 influenza season.

Results. We achieved thematic saturation after 53 interviews. Responses conformed to three thematic domains: impacts on staff and patient care, immediate staffing and capacity responses, and future preparedness (Table 1). Hospitals almost universally reported increased emergency department and inpatient volumes that frequently resulted in strain across the hospital. Strain was created by both increased patient volume and staff shortages due to influenza illness. As strategies to address strain, respondents reported the use of new protocols, new vaccination policies, additional staffing, suspected-influenza treatment areas, and more frequent hospital administration meetings. Many hospitals reported increased diversion time. Despite experiencing high levels of strain, some hospitals reported no changes to their future influenza preparation plans.

Conclusion. Acute care hospitals experienced significant strain as a result of the 2017–2018 influenza season. Hospitals implemented a range of immediate responses to seasonal influenza, but generally did not report future planning specific to influenza.

Table 1. Respondents Perspectives on Influenza Capacity Strain	
Domain	Representative Quotations
Perception of Strain	<p>"This is the highest influx of flu that was admitted that I've seen in probably 10, 12 years. We were really hit hard, and that again put more strains on the resources because they had to be isolated. So that means they had to have a private room"</p> <p>"Flu created strain on the entire hospital just because of the sheer volume of patients [...] And so it really came to light that we needed an improved flow process. Not that we hadn't started it already but it really did bring to light our capacity issues."</p>
Impact of Influenza	
Staff	<p>"The increased patient volumes ended up becoming a physician capacity issue. Our hospitalist group became overwhelmed with the influx of patients and them being at capacity and not being able to see additional patients kind of eliminated a lot of the referrals [...] that we would have gotten as transfers from other facilities."</p> <p>"You have multiple meetings and calls throughout the day to see how you are going to diminish the capacity. So at an administrative level, it's very taxing pressure, constantly thinking of solutions for the team."</p>
Patient Care	<p>"Patient comes in with flu symptoms or they suspect flu during triage, the patients are moved out of the general lobby area and put into like a treatment area that's a waiting area in the back part of the emergency department to keep those patients from being mixed in with the patient that came in with the broken arm."</p> <p>"We were as high as having like 48 people isolated at a time. And we don't have 48 private rooms. So that means we had to take semi-privates and make them private which further impacted our ability to do flow."</p>
Immediate Response	
Staffing	<p>"We ended up needing [...] mandatory overtime. We had staff sign up. We asked everyone to work one extra shift per pay period. So that kind of took its toll on staff as well. It wasn't really a big satisfier but we needed to do that in order to make sure all the patients were cared for safely."</p> <p>"We do have a 10-bed overflow unit, and that was open all fall, all winter long to help with increased patient load. We did utilize some temporary staff agency; contractual staff to help meet the need of our increased patient census."</p>
Capacity	<p>"We have a surge plan that we use that changes [...] during the day. We implemented that a number of times during that period to try to get discharges out sooner, to get tests done more quickly, to triage a little bit differently; I can't reduce the amount of time people are waiting to come into the hospital. I can't say that it was 100% successful [...]"</p> <p>"We had our hospital system's ambulance service [...] actually taking patients out of the ED [...] off the floors as well that were ready for discharge."</p>
Future Preparedness	
Staff	<p>"We're already hiring travelers and getting everything setup. Like I said, we're setting up the units. We want to be prepared to deliver that same level of service we expect on the floors. And really you need people to be able to do that so we're hiring enough temporary help to manage us getting sick and the amount of people that come through our doors that are sick."</p>
Capacity	<p>"This last one challenged us where we've changed our policies and that's where that new capacity management plan came from."</p> <p>We have just put together a high census committee and we are working on several action plans [...] One of those being what we consider overwhelming at the hospital. Just diversion is pretty much like a four-letter word, and nobody wants to use it. We're thinking of better ways to go about communicating with EMS and other facilities [...] So we are actually putting together an action plan now."</p> <p>"Yes. That has definitely increased over the last couple of years, and once again, I think a large part of it has really picked up since the last flu season. The flu season last year was very, very wild. Honestly, just crazy, and so we were doing things off the cusp. We're not quite prepared as much as we should have been, but everybody is running around, a little bit crazy. So right after that kind of ended, they got to work implementing that emergency metric and kind of took a lot of the onus to work with each hospital, to grow our best practices, our things in preparation for this upcoming flu season. So, we need to have a discussion every other week to discuss how things are going for capacity and what plans they have in place, all that good stuff. So, it's a lot more focused than it was prior to a couple years ago."</p>

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1652. Equivalent HIV Outcomes for Persons with HIV after Re-engagement in HIV Care with Prior or New Provider

Chi-Chi N. Udeagu, MPH; Sharmila Shah, MD, MPH; Sarah Braunstein, PhD, MPH; New York City Department of Health and Mental Hygiene, New York, New York

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Background. New York City (NYC) health department staff assist people with HIV (PWH) deemed out of care (OOC) per NYC HIV Surveillance Registry to re-engage in HIV care with their last known treating provider/parent clinic or, if preferable/necessary (e.g., moved to a new neighborhood), a new NYC provider. We examined retention in care and viral suppression (VS) of PWH re-engaged in care in a group who agreed to return to care and were cared for by either their previous or a new provider.

Methods. We analyzed data from 2009 to 2015 on PWH who had ≥ 2 CD4 count or viral load (VL) test reports in the NYC HIV Registry who fell out of care and then re-engaged in care. We compared characteristics, timeliness and retention in care (≥ 2 CD4 or VL, ≥ 90 days apart) and VS (last VL ≤ 200 copies/mL) of PWH overall and also according to whether they returned to their last known vs. a new provider in year 2 post re-engagement in care.

Results. From 2009–2015, 882 persons were re-engaged in care by the health department. Most were diagnosed 5–10 (27%) or >10 (67%) years prior, and were OOC for 1–3 years (70%) or >3 years (20%). Most re-engaged PWH were male (63%), black (56%) or Hispanic (34%), US-born (79%), aged 30–49 (48%) or ≥ 50 (40%) years. Risk factors for HIV included heterosexual transmission (39%), male-sex-with-male (26%) or injection drug use (18%). Twenty-two percent had history of homelessness and 5%

incarceration. Fifty-one percent and 49% re-engaged in care with their prior or a new provider, respectively. PWH re-engaged with prior providers vs. new providers had lower rates of prior or current homelessness (17% vs. 28%, $P = 0.0001$), PWH re-engaged to prior vs. new providers had their first lab reports and achieved VS earlier (1 vs. 2 months, and 4 vs. 5 months, respectively (both $P < 0.05$). Proportions of PWH re-engaged to prior or new providers and retained in care (92% vs. 91%, respectively) or with VS (73% vs. 75%, respectively) in year 2 did not differ.

Conclusion. Our results show that health department efforts to re-engage previously OOC-PWH in HIV care resulted in more than 70% achieving VS. Assignment to a new provider resulted in earlier VS but did not affect 2-year VS or care retention. PWH who re-engage in care can safely be given the choice between known or new providers.

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1653. Strong Partnership and Effective Communication Between a Tertiary Hospital and a County Health Department Were Critical in Controlling a 2019 Measles Outbreak in Southeast Michigan (SEM)

Trini Mathew, MD, MPH, FACP, FIDSA; Paul Johnson, MD; Diane Kamerer; Amber Jones, MPH, CIC; Jeffrey Dittkoff, MD; James Ziadeh, MD; Christopher Carpenter, MD, MHA; Beaumont Hospital - Royal Oak, Michigan

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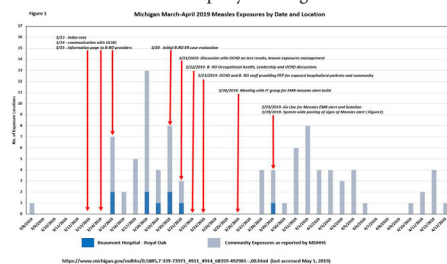
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Background. Measles, declared eliminated in the US 2000, is a reemerging vaccine-preventable airborne disease. The 2019 case count (704 as of April 30, 2019) has surpassed the number of 2014 cases (667), the highest since 1994. Many healthcare personnel (HCP) have not seen a case of measles, and this lack of clinical experience may contribute to missed or delayed diagnoses leading to its spread. We describe the processes and measures implemented at Beaumont Hospital, Royal Oak (B-RO) Michigan in collaboration with the Oakland County Health Department (OCHD) to prevent secondary spread during an outbreak.

Methods. Soon after the initial report of the index case in Oakland County in March, the B-RO epidemiology team connected with OCHD. As both exposed and suspected cases were expected to seek care at B-RO, a one-page informational document was sent to B-RO providers. This document detailed isolation precautions and testing methods, post-exposure prophylaxis (PEP), and contact information. During subsequent days, as measles cases increased, frequent calls between B-RO and OCHD addressed numerous issues, including: media notifications, contact of exposed persons, vaccine and immunoglobulin supply for PEP, safe referral of cases to the EC, and the process of measles specimen submission for testing. As needed, these communications occurred after business hours and during week-ends. Serologic testing to confirm measles immunity was ramped up.

Results. As of April 30, 41 cases have been confirmed in MI associated with the index case. OCHD facilitated the exposure control for 40 patients, of which 6 came to B-RO during their infectious period (Figure 1). To date, there have been no secondary cases developing in B-RO patients, HCPs or visitors, which may be related to successful engineering controls, appropriate protective equipment, mandatory measles immunity confirmation as condition of Beaumont employment since the late 1980s, institution of furlough procedures, PEP for hospitalized patients, and widespread communications with patients, visitors and HCPs (Figure 2).

Conclusion. During an outbreak, close healthcare facility and local health department collaboration is essential in rapidly limiting an airborne disease outbreak.



Beaumont

HEALTH ALERT

The safety of our patients, families and staff is our top priority.

Due to the current outbreak of measles and widespread flu in Michigan, Beaumont STRONGLY URGES friends and family of patients TO AVOID VISITING A HOSPITAL IF THEY HAVE:

- Cold or flu symptoms (fever, cough, runny nose, etc.)
- A rash
- A weak or compromised immune system

In addition, children under 13 and anyone who has not been immunized for measles should avoid visiting. We will make exceptions for extraordinary circumstances, such as severe illness of a loved one, or end-of-life situations.

Measles symptoms include:

- High fever (may spike to over 104°F)
- Cough
- Runny nose
- Red, watery eyes (conjunctivitis)
- The white spots on the inner cheeks, gums, and roof of the mouth 2-3 days after symptoms begin
- A rash that is red, raised, blotchy, usually starts on face, spreads to torso, arms, and legs 3-5 days after symptoms begin

Flu symptoms include:

- High fever
- Cough
- Runny nose
- Sore throat
- Body aches

If you develop measles or flu symptoms, call your doctor or emergency room before you go to the clinic, so they can take precautions to prevent exposure to other individuals.

FOR MORE INFORMATION, VISIT beaumont.org/measles or beaumont.org/flu

We appreciate your cooperation and understanding.

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