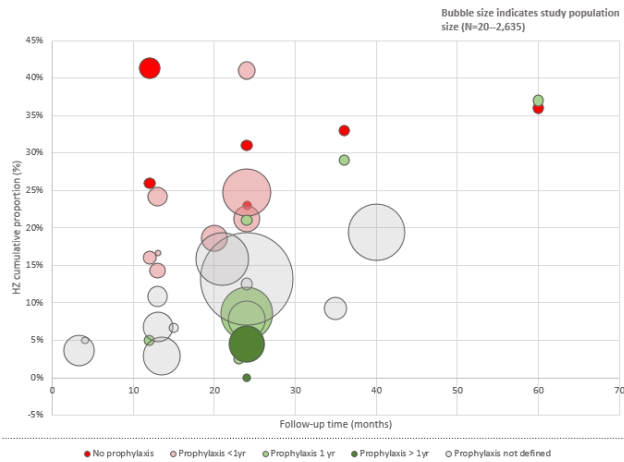


**Figure 3. Cumulative proportion of herpes zoster among HCT patients, by time following transplant**



**Disclosures.** All authors: No reported disclosures.

**1630. Voluntary HIV Testing and Self-Realization of Risk of HIV Infection Among Young Men-Who-Have-Sex-with-Men in the Miami-Dade Area**  
Hampton Ocon, BS; Samir Sabbag, MD; University of Miami Miller School of Medicine, Miami, Florida

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**Background.** According to the Centers for Disease Control and Prevention, Miami-Dade County has the highest rate of new HIV diagnoses in the Nation. So far, a large focus of public health initiatives has been spreading awareness of HIV testing locations, but this form of voluntary testing relies on individuals realizing that they are at risk of HIV infection in the first place. Consequently, a major obstacle to encouraging young men-who-have-sex-with-men (YMSM) to test themselves for HIV is their own self-perceived risk of having an undetected infection.

**Methods.** In an effort to better understand the discordance between high-risk sexual behavior and HIV testing among this high-risk population, YMSM (18–24) were surveyed through smartphone applications that facilitate sexual encounters in the Miami-Dade area (eg Grindr, Scruff). Users were asked about their history of condomless anal intercourse (CAI), their HIV testing habits, and whether or not they believe it possible that they are currently infected with HIV. An analysis of the relationship between CAI and self-perception of possible HIV infection was performed using Cochran-Mantel-Haenszel testing.

**Results.** Of the 843 eligible responses, 667 reported a history of voluntary HIV testing while 176 had never voluntarily tested. 726 respondents reported a history of CAI and 131 of these have never voluntarily tested. Of the 843 total participants, 1.6% were in the highest HIV risk group, which is those who have engaged in CAI with an exchange/casual partner, have never voluntarily tested for HIV, and have no self-perceived risk of being currently infected. According to data analysis, YMSM who have engaged in CAI but have never been tested for HIV were not more likely to have a self-perceived possibility of infection when compared with those who have voluntarily tested ( $P < 0.595$ ).

**Conclusion.** This suggests that many high-risk YMSM are not voluntarily testing themselves for HIV not because they do not have access to testing, but rather because they do not perceive themselves as being possibly infected in the first place. Therefore, in addition to increasing access to HIV testing, new public health initiatives must be designed to facilitate YMSM understanding their own personal HIV risk.

**Disclosures.** All authors: No reported disclosures.

**1631. Association Between Type-Specific Influenza Circulation and Incidence of Severe Laboratory-confirmed Cases; Which Subtype Is the Most Virulent?**

Theodore Lytras, MD, PhD<sup>1</sup>; Anastasia Andreopoulou, Health Visitor<sup>1</sup>; Elisavet Mouratidou, RN,<sup>2</sup>; Kassiani Gkolfinopoulou, MPH, PhD<sup>1</sup>; Sotirios Tsioutras, MD, MSc, PhD<sup>3</sup>; National Public Health Organization, Athens, Attiki, Greece; <sup>2</sup>National Public Health Organization, Athens, Attiki, Greece; <sup>3</sup>Athens Medical School, National and Kapodistrian University of Athens, Athens, Attiki, Greece

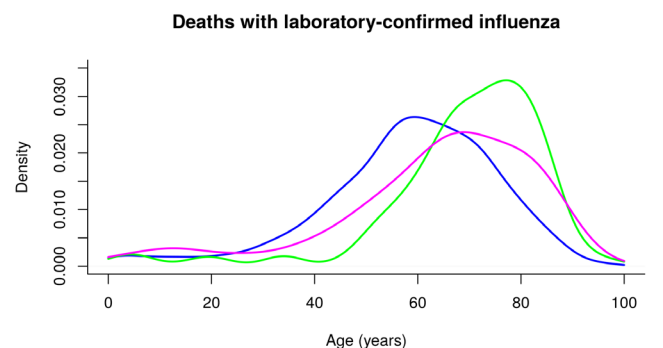
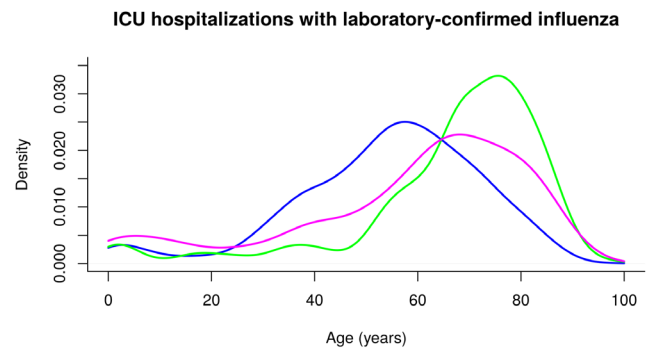
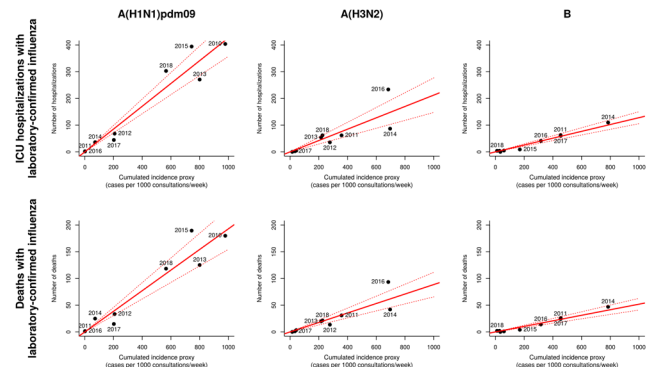
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**Background.** Excess population mortality during winter is most often associated with influenza A(H3N2), particularly “pneumonia and influenza” deaths. We examined differences between influenza types in their association with severe laboratory-confirmed cases, to determine which is the most virulent.

**Methods.** We used nine seasons of comprehensive nationwide surveillance data from Greece (from 2010/11 to 2018/19) to examine the association, separately for influenza A(H1N1)pdm09, A(H3N2) and B, between the number of laboratory-confirmed severe cases (intensive care hospitalizations or deaths) and the overall type-specific circulation during the season (expressed as a cumulated incidence proxy—ILI rate times percent positive, summed over the season), using additive Poisson regression.

**Results.** During the study period, and for the same level of circulation during a season, influenza A(H1N1)pdm09 was associated with 3.7 times (95% CI 2.7–5.0) more laboratory-confirmed deaths compared with influenza B, and 2.2 times (95% CI 1.6–3.1) more compared with A(H3N2) (Figure 1). Similar differences were observed for intensive care hospitalizations. Laboratory-confirmed A(H1N1)pdm09 severe cases were more often younger (median age 56 years) compared with influenza B or A(H3N2) (median age 64 and 72 years respectively, both  $P < 0.001$ ) (Figure 2).

**Conclusion.** Influenza A(H1N1)pdm09 is associated with many more severe laboratory-confirmed cases; this is likely due to a more typical clinical presentation and younger patient age, leading to more laboratory testing. In contrast A(H3N2) affects older people and presents more atypically, which is less likely to lead to laboratory testing and confirmation. Focusing on laboratory-confirmed cases, although useful in itself, may provide severely biased estimates of the burden of influenza mortality and morbidity.



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**1632. Different Healthcare Utilization Pattern in Vaccine Hesitant Children**  
Sangho Sohn; Kwan Hong; Hari Hwang; Byung Chul Chun, MD; Korea University College of Medicine, Seoul, Seoul-t'ukpyolsi, Republic of Korea

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**Background.** National Immunization Program (NIP) in Korea provides 17 types of mandatory vaccines for all children free of charge. However, vaccine-hesitant group refusing the NIP are being a major threat to public health. We analyzed the healthcare utilization pattern observed in NIP eligible children and sought to identify those who remain unvaccinated using national population data.

**Methods.** History of receiving protein conjugate pneumococcal vaccine (PCV) was reviewed to determine the vaccination status of children born between 2013 and 2015. Children who had 3-doses or more out of 3 + 1 schedule were defined vaccinated, while those with no record of vaccination were defined unvaccinated. Their healthcare utilization records, including a number of visits, total duration, type of institution (hospitals, complementary and alternative medicine [CAM]), and purpose of visits (outpatient care, hospitalization), were retrieved from the National Health Insurance (NHI) Review and Assessment Service. Annual healthcare utilization rate and incidence of pneumococcal infections were estimated with Poisson regression and compared between study arm. The proportion of CAM out of total healthcare utilization was also compared.

**Results.** Among 1,272,685 children, 51% were boys and median age was 29.4-months. Two-percent of the cohort remained unvaccinated until study end. Annual hospital visiting rates were 26.9 times (95% confidence interval [CI] 26.9–27.0) for vaccinated and 3.4 (95% CI 3.4–3.5) for unvaccinated. Average NHI benefit period per year was 28.8 days (95% CI 28.8–29.0) for vaccinated and 3.9 (95% CI 3.8–3.9) for unvaccinated. The discrepancy resulted in under-detection of pneumococcal incidence in unvaccinated with 10.1 cases (95% CI 9.9–10.4) per 1,000 child-months whereas that of vaccinated was 42.5 (95% CI 42.4–42.6). Vaccine hesitant children preferred CAM at least 3-times more than vaccinated children (CAM proportion 3.5% in hesitant group vs. 1.07% in vaccinated group,  $P < 0.001$ ).

**Conclusion.** Vaccine hesitant group not only refuses vaccination but also tends to opt-out from the entire medical attention and prefer CAM. Active detection considering this different pattern should be implemented in order to ensure the public benefits from the vaccination program.

**Disclosures.** All authors: No reported disclosures.

### 1633. Human Co-infection with *Borrelia burgdorferi* and *Babesia microti* Among High-Risk Hispanic/Latino Workers on Eastern Long Island, New York: A Preliminary Cross-Sectional Analysis in 2016

Stalin Vilcarromero, MD DTM&H; Ana M. Nunez, MS; Katherine Vivas, Bachelor's of Science; Saadia Mahmood, MPH (c); Julianna Russo, Bachelor of Science in Health Science; Anna-Marie Wellins, DNP; Yun Xu, PhD; Xiaohua Yang, MS; Chrisa Arcan, PhD, MHS, MBA, RD; Benjamin J. Luft, MD; Stony Brook University, Brentwood, New York

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**Background.** Lyme disease has serious public health implications and has a high prevalence in Suffolk County, NY. Furthermore, there is a high risk for coinfection with Babesiosis, a potentially life-threatening tick-borne infection in the same area. This population-based cohort study was implemented in 2016 to assess the risk factors for Borreliosis among the Hispanic/Latino work population, which gave us the opportunity to measure clinical and epidemiological features of co-infection.

**Methods.** Invitation to participate in the study occurred during a Spanish educational lecture about tick-borne diseases. Following signed informed consent, a questionnaire and blood sample were obtained for each participant Borreliosis was defined based on 2-tiered serologic testing. Antibodies to *B. microti* were detected by indirect immunofluorescence assay (IFA). Between June and December 2016, 126/199 (66%) with a completed visit 1 (survey and blood draw) were included in the first analysis.

**Results.** Sample characteristics include 60% 18–39 years old, 75% male, 79% had elementary school education or less, 86% reported having tick exposure, 79% lived in Eastern North Fork, 65% lived 10 or more years in the United States, and 48% were gardeners and landscapers. The seroprevalence for Borreliosis burgdorferi, Babesiosis microti, and co-infection were  $n = 13$  (10.3%),  $n = 36$  (28.6%), and  $n = 7$  (5.6%), respectively. In the univariate analysis having a fatigue severity score of  $<4$  or having fatigue most of the time or stiff neck or joint pain or facial paralysis, or a previous diagnosis of other tick-borne diseases were associated with co-infection (Pearson chi-square,  $P < 0.05$ ).

**Conclusion.** However, none of these factors were statistically significant in the multivariate analysis after adjusting for the above variables. In this initial study, a high prevalence of Babesiosis was found. A larger sample size may be needed to better assess the risk of coinfection in this Lyme endemic area.

**Disclosures.** All authors: No reported disclosures.

### 1634. A Mobile Application for Management and Surveillance of Vector-borne Diseases in Cali, Colombia: An Evaluation of Usability and Acceptability in a Hospital Setting

Sarita Rodriguez, MD<sup>1</sup>; Ana M. Sanz, MD<sup>1</sup>; Gonzalo Llano, PhD<sup>2</sup>; Andres Navarro, PhD<sup>2</sup>; Claudia M. Parra, MD<sup>2</sup>; Amy Krystosik, BSc, MPH, PhD<sup>3</sup>; Fernando Rosso, MD, MSc<sup>1</sup>; <sup>1</sup>Fundación Valle del Lili, Cali, Valle del Cauca, Colombia; <sup>2</sup>Universidad Icesi, Cali, Valle del Cauca, Colombia; <sup>3</sup>Stanford University, Stanford, California

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**Background.** Vector-borne diseases are a public health problem in Colombia, an area that has become hyperendemic for dengue virus. This situation has been aggravated by the introduction of other arboviruses such as chikungunya and Zika in the last 3 years. Mobile health (mHealth) offers new strategies for strengthening healthcare and surveillance systems. A large number of mHealth tools are available; however, very few have been evaluated regarding usability and acceptability. This study aimed to evaluate the usability and acceptability of a mobile application, FeverDX, as a support tool in the management of patients with febrile syndrome and suspected vector-borne infection by general practitioners from Colombia.

**Methods.** The usability and acceptability of FeverDX were evaluated using the modified version of the Mobile Application Rating Scale (uMARS). The evaluation included aspects of content, user engagement, functionality, user-interface design, impact, and subjective quality.

**Results.** Between December 2016 and January 2017, a total of 20 general practitioners evaluated FeverDX. Seventy-five percent of the evaluators reported being aware of the Colombian Ministry of Health guidelines for diagnosis and management of arboviruses. 80% of evaluators partially or completely agreed the application information agreed with management guidelines. On uMARS scale, FeverDX excelled regarding impact (median = 5/5, IQR = 5–5); functionality (5/5, 4.8–5); and information and scientific basis (4/5, 4–4). FeverDX scored well regarding user feedback (median = 4/5, IQR = 4–4.5); design and esthetics (4/5, 4–4.3); and subjective assessment of quality (4.5/5, 4.3–4.8).

**Conclusion.** Despite a large number of mHealth tools available, the literature lacks evaluated and evidence-based mobile technology. Applying Information and Communications Technologies in health areas can strengthen care processes and facilitate the detection and reporting of reportable surveillance diseases. Assess the usability and acceptability of mobile health applications increases the reliability of these technologies. The mobile app, FeverDX, can improve adherence to guidelines for management and prevention of prevalent diseases.

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### 1635. Analysis of Antibiotic-Related Malpractice Claims, 2007 to 2016

Sarah Kabbani, MD, MSc<sup>1</sup>; Penny Greenberg, MS, RN, CPPS<sup>2</sup>; Bianca Falcone, MPH<sup>3</sup>; Courtney DeRoo, BS<sup>4</sup>; C. Winnie Yu-Moe, MBA, MA<sup>2</sup>; Arjun Srinivasan, MD<sup>5</sup>; Lauri Hicks, DO<sup>1</sup>; <sup>1</sup>CDC, Atlanta, Georgia; <sup>2</sup>CRICO, Boston, Massachusetts; <sup>3</sup>CRICO Strategies, Boston, Massachusetts; <sup>4</sup>CRICO/The Risk Management Foundation, Carrboro, North Carolina; <sup>5</sup>Centers for Disease Control and Prevention, Atlanta, Georgia

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**Background.** The threat of medical liability can influence physician behavior and lead to the practice of “defensive medicine.” Concern for malpractice liability has been cited as a cause of inappropriate antibiotic prescribing. Data on malpractice claims related to antibiotic use (AU) are lacking. The objectives of this analysis were to describe malpractice claims associated with AU.

**Methods.** We conducted a retrospective analysis of pooled closed antibiotic-related claims from a malpractice carrier representing 30% of US malpractice cases from January, 2007 to December, 2016. We described antibiotic-related, malpractice claims, patient demographics, amount of indemnity paid, clinical severity, settings, responsible services, initial diagnoses, drug classes, and causes of allegation.

**Results.** From 2007 to 2016, 767 antibiotic-related claims were identified and represented less than 1% of overall claims. A total of \$123 million were paid for antibiotic-related claims. Claims classified as medium to high clinical severity constituted 97% of all claims, with 35% having permanent injury and 24% leading to death. Of all patients, 56% were female, 8% were  $< 20$  years of age, and 32% were  $\geq 60$  years old. Most claims (51%) were associated with outpatient settings, 37% with inpatient, and 11% with emergency department settings. Responsible services with the highest number of claims were medicine (44%), surgery (27%) and the emergency medicine (9%). The most common infection cited as an initial diagnosis was respiratory (10%), followed by urinary (7%) and skin and soft-tissue infections (6%). The most common class cited was  $\beta$ -lactams (19%), followed by fluoroquinolones (14%) and sulfa-drugs (11%). Allegations associated with antibiotic administration and management constituted 62% of all claims, 19% were related to failure or delay in diagnosis or treatment, and 19% were due to other causes.

**Conclusion.** Claims related to AU were not a common cause of malpractice claims in these data source. Antibiotic administration and management was more commonly associated with malpractice claims than failure or delay in AU. A better understanding of malpractice claims associated with AU can help guide messaging on improving antibiotic prescribing.

**Disclosures.** All authors: No reported disclosures.

### 1636. Antibiotic Treatment of Human Plague: A Systematic Literature Review of Worldwide Cases, 1937–2016

Christina Nelson, MD, MPH<sup>1</sup>; Shannon Fleck-Derderian, MPH<sup>1</sup>; Katharine Cooley, MPH<sup>2</sup>; Heidi Becksted, MPH<sup>1</sup>; Dana Meaney-Delman, MD, MPH<sup>1</sup>; Paul Mead, MD MPH<sup>1</sup>; <sup>1</sup>Centers for Disease Control and Prevention, Fort Collins, Colorado; <sup>2</sup>Synergy Inc., Fort Collins, Colorado