in congregated settings. ILI incidence rates for the trainees are based on passive surveillance of those presenting to medical clinics. Such clinic-based surveillance may under-estimate the true ILI burden because trainees with ILI may not seek health care due to mild symptoms or fear of missing training. We aimed to estimate the hidden ILI burden among trainees and behaviors related to healthcare seeking for illnesses.

Methods. A 1-page voluntary, anonymous ILI survey was administered during the end of program sessions for military medical trainees at Fort Sam Houston (JBSA-FSH), TX. The survey was started in January 2017 and is ongoing.

Results. Between January and April 2017, 724 surveys were returned: responded ages were 17–42 years (median 20 yo), 299 (41%) were female, and 442 (62%), white. The trainees maintained a healthy and active life style: 94% exercised at least 3 times a week; 79% never smoked and only 3% were obese. Overall, 68% trainees reported ILI symptoms during training; the proportion decreased from 75% in January to 46% in April (P-for-trend <0.01). History of travel and self-reported contact to people with ILI were associated with reporting having ILI. Of those reporting ILI, only 36% sought health care, and the proportion did not change over the four month period. Females were more likely to seek health care if they developed ILI: 43% of females vs. 31% of males (P = 0.02). While the majority of trainees washed their hands or used hand sanitizer at least 4 times a day, only 60% of trainees washed their hands after covering their mouth/nose for a sneeze, which may facilitate ILI circulation.

Conclusion. Among young and healthy medical trainees at JBSA-FSH, ILI was reported frequently during winter and decreased in spring. Trainees often did not seek health care for mild symptoms. The high prevalence of self-reported ILI among trainees despite their healthy life styles and good personal hygiene was unexpected. A better understanding of the impact of self-reported ILI on performance and of factors associated with health-seeking care are needed.

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662. First Mumps Outbreak in a Decade: Measuring Impact of Mumps Among Naïve Population—Tokunoshima Island, Japan

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Background. Currently, mumps vaccine is not included in the routine vaccination program in Japan and consequently, nationwide mumps outbreak is observed approximately every 4 years. Tokunoshima Island, located in the southern part of Japan with population of 25,000, experienced island-wide mumps outbreak since July 2015. This outbreak was unique because unlike the rest of the country, the Island was not hit by mumps virus for last 10 years. Island being in an inconvenient location, and with less than 2% mumps vaccine coverage rate among 1 year old children even prior to the outbreak, the population, especially less than 10 years old, is basically naïve to mumps virus. We conducted a comprehensive outbreak investigation to analyze the disease burden of mumps among naïves Island population.

Methods. We collected information of epidemiological characteristics for all mumps cases which visited medical facility in the Island from July 1, 2015 to June 30, 2016. In addition, to capture those who developed mumps but not sought medical care, we conducted questionnaire survey targeting all students and their family members. We conducted descriptive analysis to evaluate public health impact of mumps among naïve Island population.

Results. From chart review, we found 1,191 mumps cases. Median age was 6 years old (range: 0–77). Among them, six cases were tested positive by RT-PCR and its genotype was type G. Genome sequence of the all collected viruses matched 100%. This result indicated that 5.1% of the population developed mumps by a single strain. If we focus on under 10 years old population, the incidence rate is 37,824 cases per 100,000 person-years. We also found 24 (2%) cases of aseptic meningitis and 2 (0.2%) cases of deafness. This disease burden is under-estimated as we captured 35 additional cases with symptoms but did not visited medical facility with 61% questionnaire collection rate.

Conclusion. We investigated large mumps outbreak which took place in an island with high mumps susceptible population. This disease burden clearly indicates that mumps vaccine should be included in routine vaccination and maintain high coverage rate to prevent periodic outbreaks.

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663. Epidemiological Characteristics of Congenital Rubella Syndrome Cases during Rubella Epidemic in Japan, 2012–2013

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Background. Rubella infection during the first 20 weeks of pregnancy can cause congenital rubella syndrome (CRS). The main defects of CRS are known as classic triads; hearing impairment, congenital heart disease, and cataract. In Japan from 2011 to 2013, rubella outbreak occurred mainly among adults in their 20s to 40s, and consequently notification of CRS cases increased.

Methods. We collected information of epidemiological characteristics regarding all reported CRS cases and their mothers retrospectively by questionnaire to the physicians and interview to the several members of patients’ association of CRS. We conducted descriptive analysis to evaluate public health impact on CRS in Japan.

Results. A total of 45 CRS cases were reported from October 2012 to October 2014. Majority of cases (96%: 43/45) were diagnosed at least than three months old, except for two cases whose diagnoses at 9 months old and 13 months old due to late onset of cataract and hearing impairment. Males accounted for 56% (25/45). The median gestational week at birth was 38 weeks (range: 31 to 41 weeks) and mean birth weight was 2,171 g (standard deviation: ± 626 g). Frequencies of clinical manifestations for disease at the time of diagnosis revealed that 67% (30/45) of cases had hearing impairment, 58% (26/45) had congenital heart disease, and 16% (7/45) had cataract. The most frequent heart diseases was patent ductus arteriosus (77%: 20/26), followed by pulmonary stenosis (15%: 4/26), and atrial septal defect (15%: 4/26). Only 7% (3/45) had classical triads. Thrombocytopenia which accounted for 73% (33/45) was the most frequent manifestation developed other than classic triads. Eleven cases died at the time of investigation, indicating 24% of case fatality proportion of reported CRS cases in this outbreak. Among ten cases died before 6 months old, nine were complicated by congenital heart disease. None of the mothers of reported CRS cases had two doses of Rubella Containing Vaccine (RCV) before pregnancy; meanwhile 24% (11/45) of mothers had one dose of RCV.

Conclusion. High case fatality proportion of CRS pointed out obvious high public health impact in Japan. Vaccination of two doses of RCV before pregnancy is necessary to preventing CRS.

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664. Establishing Outbreak Thresholds for Army Active Duty Soldiers, 2013–2016

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Background. Gastrointestinal illness (GII) in military personnel can have a serious impact on missions both in and out of combat zones. In late 2016, a Salmonella outbreak at a major Army installation, coupled with multiple reports of Salmonella at other Army installations, led to heightened concern surrounding GII among US Army Medical Command leadership. Cases of GII are reported to the Army Public Health Center daily and compiled into weekly and monthly reports, but no threshold exists to detect outbreaks. The objective of this analysis was to determine the burden of gastrointestinal illness among US Army soldiers over the past 4 years and to develop an epidemic threshold to warrant a formal outbreak investigation and response efforts.

Methods. GII case counts among Active Duty Army soldiers were obtained from the Disease Reporting System Internet (DRSi), the Army’s disease surveillance system, for the period of January 2013 to December 2016. Incidence rates among Army soldiers were compared with national rates published by the Centers for Disease Control and Prevention. The probability of seeing a specific number of cases was calculated by dividing the number of times that each case count was observed by the number of time points in the time series. For each of the three most common GI pathogens, null Poisson and negative binomial regression models were fit and compared in order to establish alarm thresholds indicating statistically abnormal high weekly case count levels that could be suggestive of an outbreak event.

Results. There were a total of 665 cases of GII among Army soldiers reported in DRSi during the study period. The majority of the cases were Campylobacter (44.2%), closely followed by Salmonella (39.5%). The weekly case count that fell within the top 10th percentile for Campylobacter, Salmonella, and Shigella were 3 cases, 3 cases, and 2 cases, respectively. The weekly case count that would fall within the top 5th percentile response for Campylobacter, Salmonella, and Shigella are 4 cases, 4 cases, and 2 cases, respectively.

Conclusion. Public health practitioners can use these thresholds, in collaboration with clinicians at Military Treatment Facilities, to improve GII surveillance and outbreak response protocols.

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