

Headquarters U.S. Air Force

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“Jacks’ Hack”: Respiratory Illness During Basic Cadet Training – USAFSA, 2007 – 2009



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Overview

- **Characterize respiratory morbidity during Basic Cadet Training (BCT) at US Air Force Academy (USAFA)**
- **Summarize research during BCT 2009**
- **Share recent experience with nH1N1 outbreak at USAFA**
- **Highlight opportunities for further understanding of respiratory illnesses and nH1N1 via data collected during BCT 2009**



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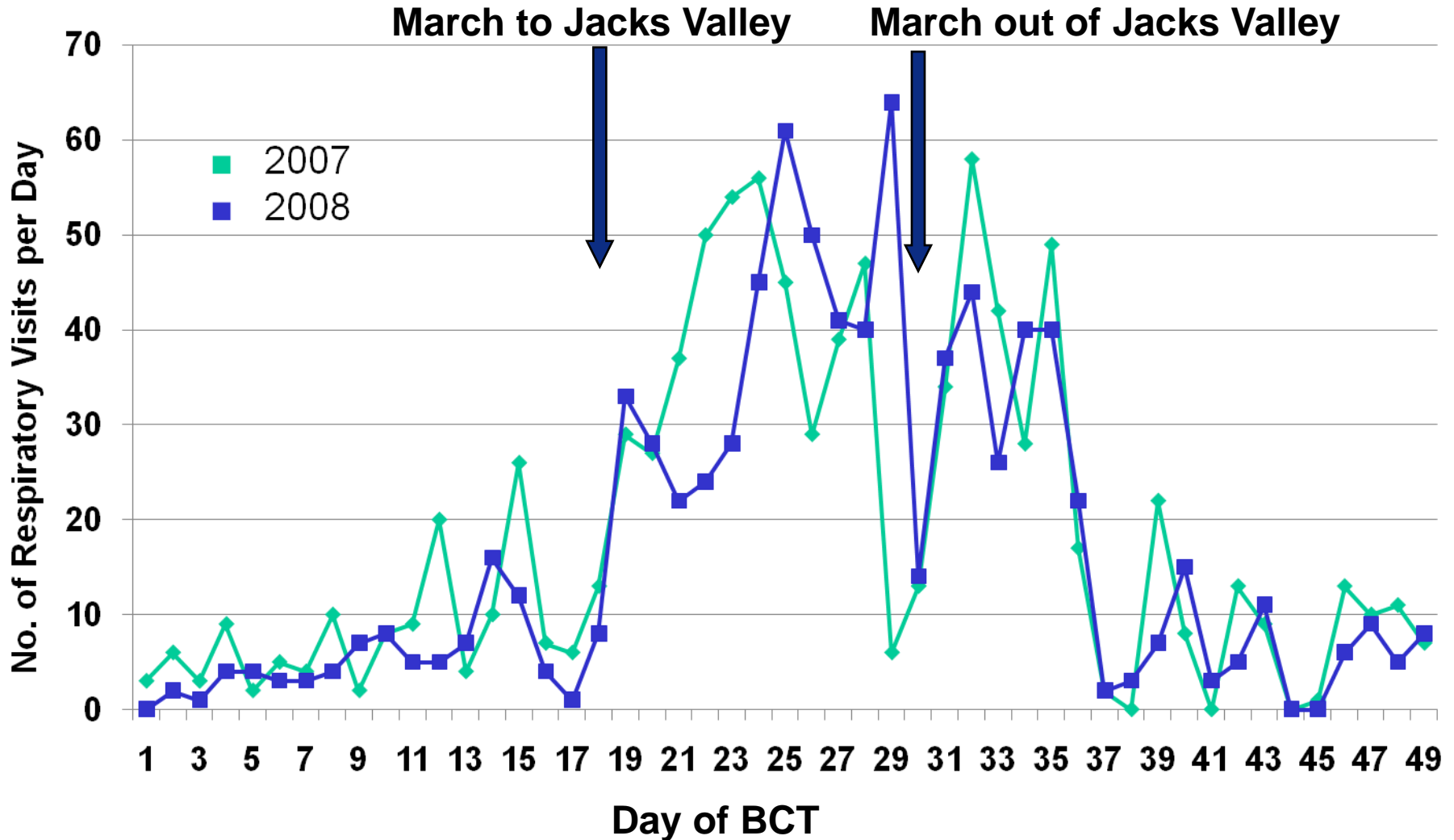
Basic Cadet Training (BCT)

- **Basic Training for approximately 1500 cadets**
 - **High levels of mental and physical stress**
 - **Phase 1: Academic/military training on main campus**
 - **Phase 2: Field training in Jacks Valley**
- **“Jacks’ Hack”**: Lay term for a variety of respiratory ailments that occur during field training



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Respiratory Illnesses BCT 2007-2008



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Respiratory Illnesses BCT 2007-2008

Year	Respiratory visits in Jacks Valley	Respiratory visits during BCT	% of visits occurring in Jacks Valley
2007	426	807	53%
2008	380	755	50%



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“Epidemiology of Infectious Disease During BCT”

■ Objectives

- Rule out adenovirus as cause of “Jacks’ Hack”**
- Rule out other pathogens as causative/associative**
- Evaluate possible associated risk factors**

■ Time period: 25 Jun - 14 Aug 2009

■ Inclusion criteria

- Cadet aged 18 and above**
- 2009 BCT participant**
- Presents for care at cadet clinic or infirmary tent**



- **Group 1: Febrile Respiratory Illness (FRI Group)**
 - **Cough / sore throat**
 - **Oral temperature of 100.5 F or greater**

- **Group 2: Afebrile Respiratory Illness Group**
 - **Cough / sore throat**
 - **Oral temperature of less than 100.5 F**

- **Group 3: Control Group**
 - **Any other complaint (e.g. musculoskeletal, skin)**



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Methods

- **Questionnaire completed**
- **Clinical exam documented**
- **Throat swab and nasal wash obtained**
- **Specimens shipped to Advanced Diagnostic Laboratory (ADL) at Lackland AFB, TX**



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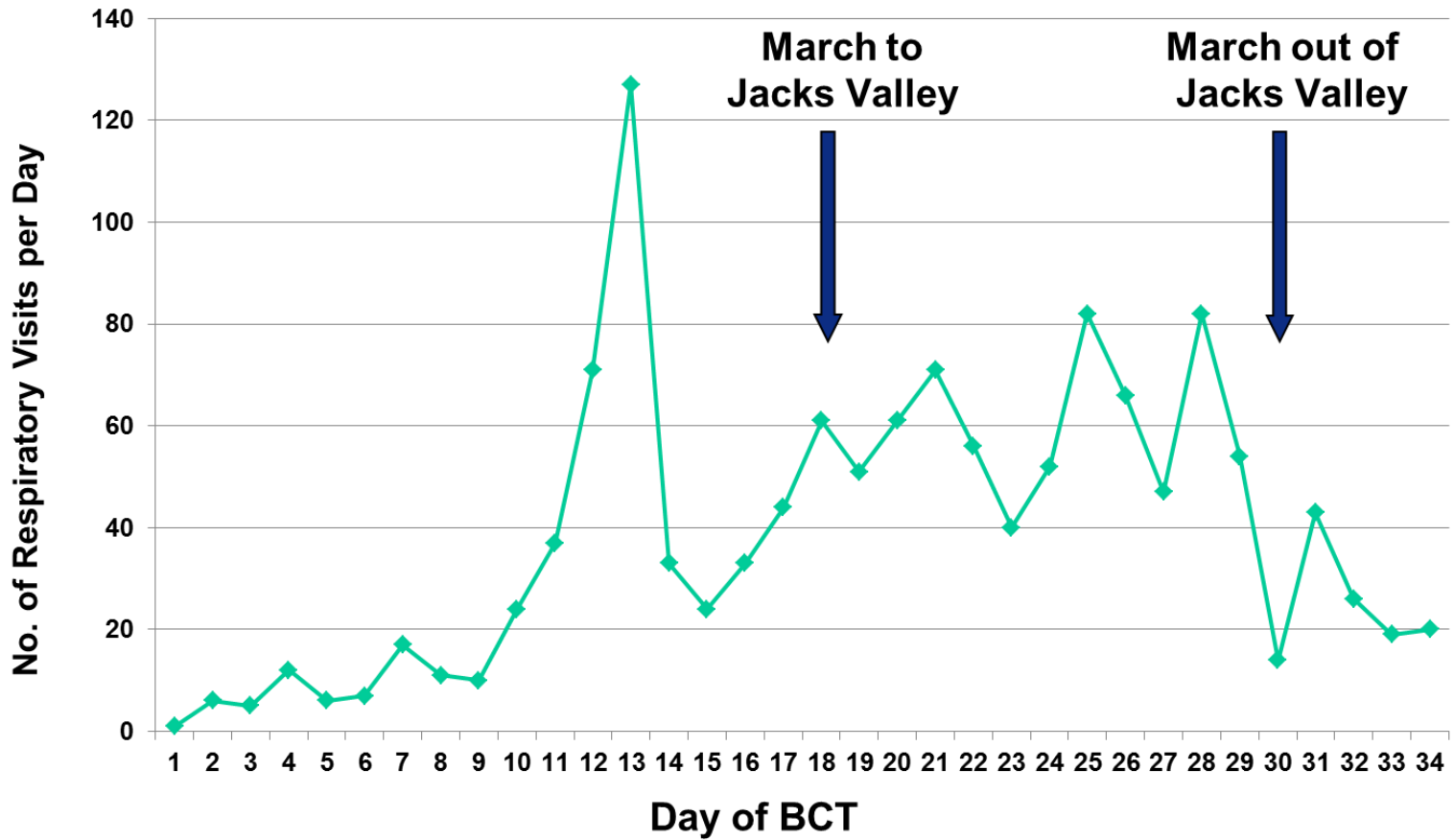
Pathogens Tested

- **Adenovirus**
 - **Universal and 3, 4, 7, 14, 21**
- **Influenza A (subtyped) & B**
- **Parainfluenza types 1, 2, 3**
- **Rhinovirus**
- **Coronavirus**
 - **HCoV229E and HCoVOC43**
- **Respiratory syncytial virus**
- **Human metapneumovirus**
- **Epstein Barr Virus**
- **Bocavirus**
- **Strep pneumonia**
- **Strep pyogenes**
- **Mycoplasma pneumonia**
- **Chlamydia pneumonia**
- **Bordetella pertussis I**
- **Bordetella pertussis II**
- **Legionella pneumophila**
- **Haemophilus influenza**
- **Neisseria meningitides**



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Respiratory Illnesses BCT 2009



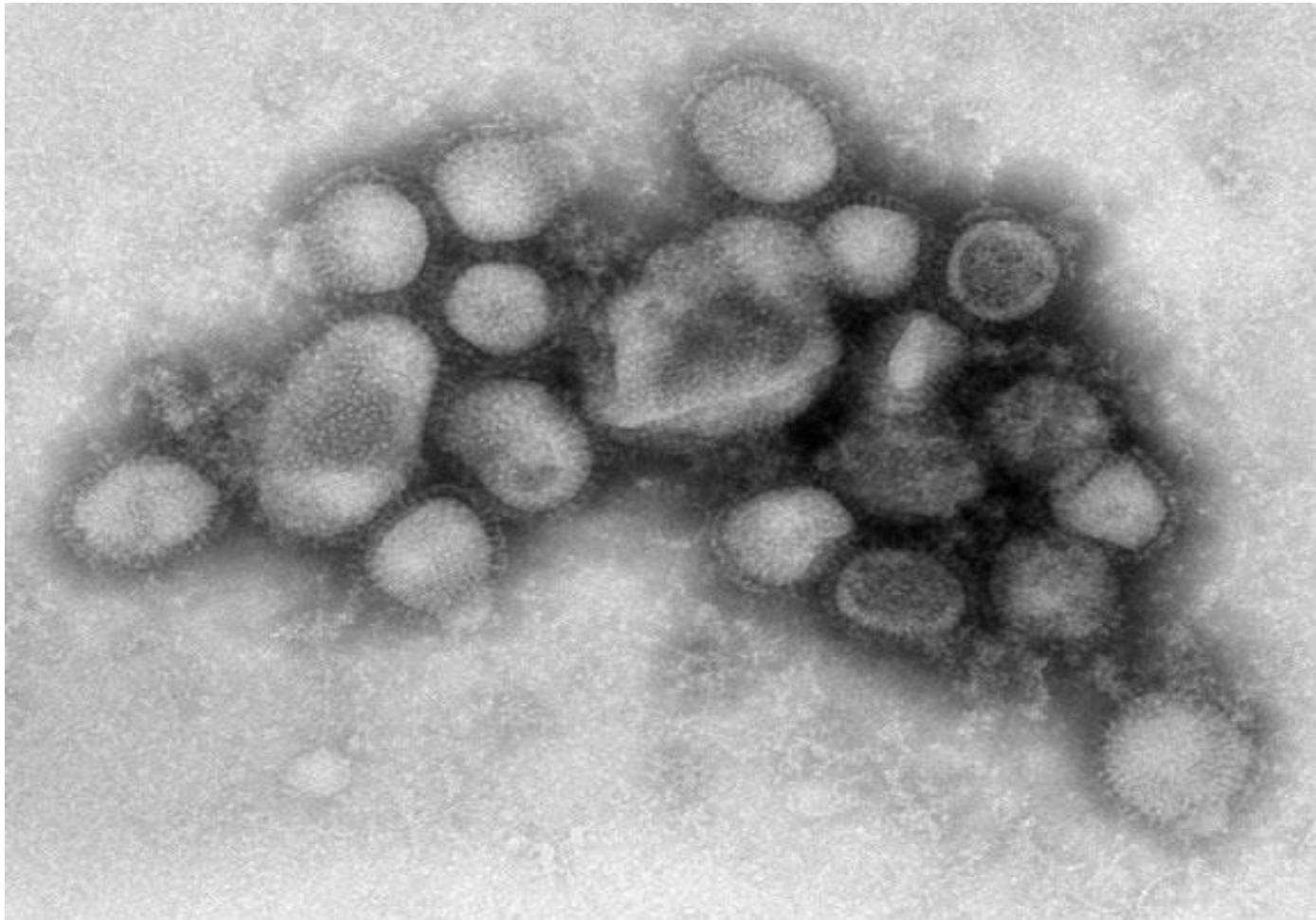
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Novel Influenza A (H1N1)

BCT 2009

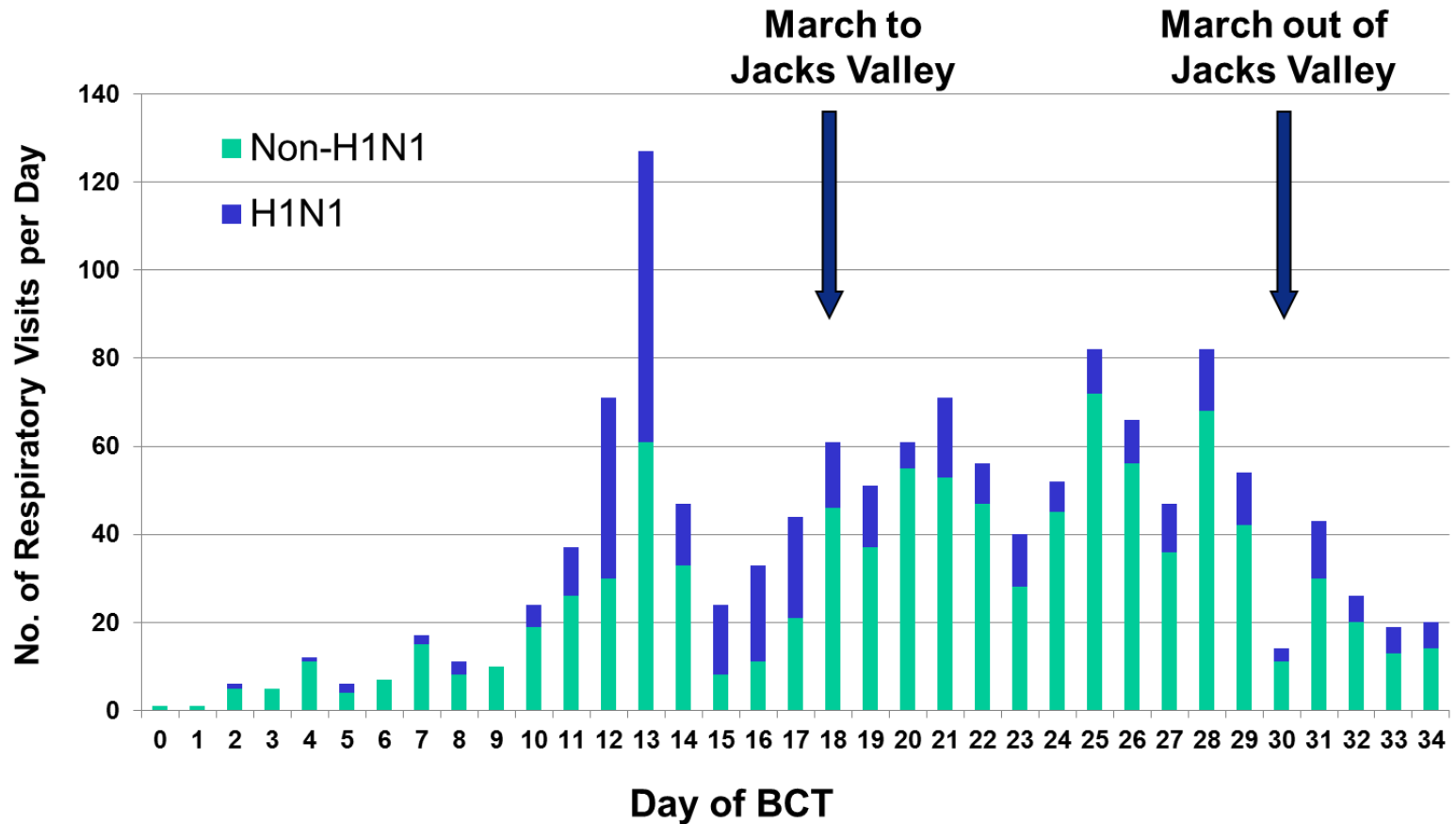


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Respiratory Illnesses BCT 2009





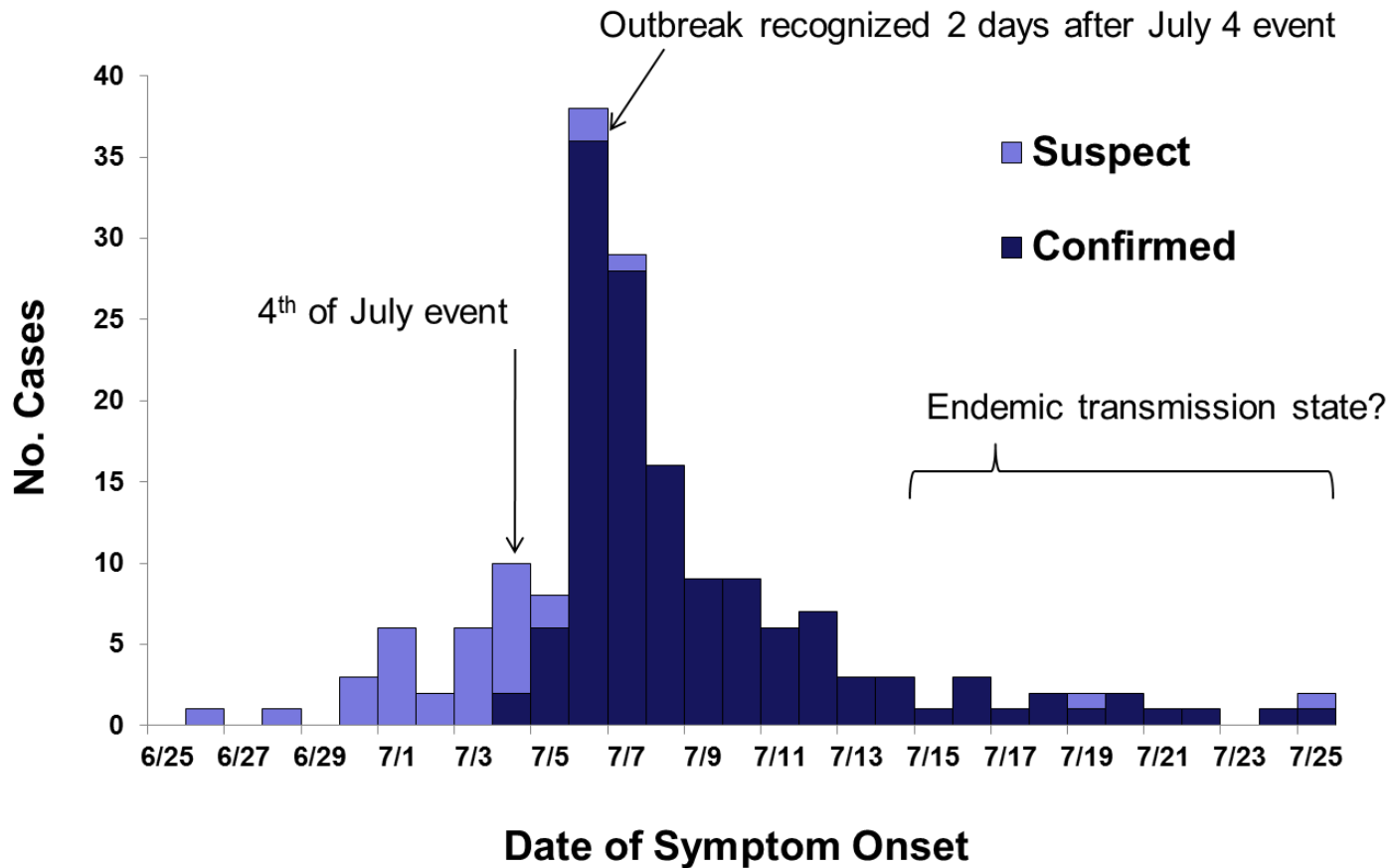
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Preliminary Results

- **Adenovirus not etiologic agent**
- **Rhinovirus most commonly identified pathogen**
- **Bordetella species (non-Pertussis) identified in a number of individuals**
- **Influenza A/H1N1 identified in early specimens**
- **Influenza A/H1N1 identified in some subjects who did not meet CDC criteria for influenza-like illness**



Epidemiologic Curve





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July 4th “Mixing Bowl”



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Opportunities from H1N1 Outbreak

- **Share lessons learned from containing an outbreak**
 - **Large training/university setting**

- **Highlight involvement of non-medical participation**

- **Utilize experience for planning**
 - **Screening protocols**
 - **Preventive measures**
 - **Rapid response**

- **Analyze data from serial shedding study**



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Shedding Duration

- **Subset of isolated cadets**
 - **Serial nasal wash performed**
 - **Documented temperature at repeat sampling**
 - **Documented first date asymptomatic**

- **Samples tested by rRT PCR; if positive, then cultured**
 - **(+) on culture = evidence of viable virus shedding**

- **Analyze shedding duration relative to**
 - **Symptom onset, resolution, defervescence**
 - **Oseltamivir treatment factored into analysis**



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In Summary

- **Typical respiratory morbidity during BCT 2009 confounded by nH1N1 outbreak**
- **Adenovirus not an etiologic factor in Jacks' Hack during BCT 2009**
- **Rhinovirus most commonly identified virus in patients with respiratory illness who did not have H1N1**
- **nH1N1 outbreak at USAFA provided a unique opportunity to better understand shedding of H1N1**



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