Background
• Parainfluenza virus (PIV) is a chief cause of croup.
• Less is known about the role of PIV in causing influenza-like illness (ILI) among healthy adults and children.
• We evaluated the rates and clinical characteristics of PIV compared to influenza (flu) infection in healthy subjects diagnosed with ILI.

Methods
• Dates: From 2009-16, we enrolled otherwise healthy military personnel and beneficiaries into an observational, longitudinal study of influenza-like illness (ILI) at 5 military treatment facilities across the continental U.S.
• Eligibility: Patients presenting for care <72h after the onset of ILI, defined as fever (temperature of 100.4°F) or greater at the time of evaluation, or by self-report) and sore throat or one of the following respiratory symptoms: cough, sputum production, shortness of breath, or chest pain. Patients with underlying medical conditions were excluded.
• Procedures: Clinical and demographic information, and a nasopharyngeal swab were collected at baseline (day 0). Participants returned on days 3, 7, 14, and 28±7; a daily symptom diary was completed for the first seven days following onset.
• Symptom presence and severity were recorded as: 0 (none); 1 (mild); 2 (moderate); and 3 (severe). Participants were trained by research personnel on the definitions of each score.
• Virus identification: Swabs were tested for influenza by real-time reverse transcription polymerase chain reaction (rRT-PCR) at the Naval Health Research Center (San Diego, CA). A target-enriched multiplex PCR (TEM-PCR) panel for adenovirus, Coxackie/echovirus, bocavirus, coronavirus, human metapneumovirus, rhinovirus, influenza A/B, parainfluenza and respiratory syncytial virus was also performed by Diatherix Laboratories, LLC (Huntsville, AL).
• Statistical analyses: Performed using SAS (Version 9.3; SAS Institute, Cary, NC). The study was approved by the Infectious Disease Institutional Review Board of the Uniformed Services University of the Health Sciences (IDCRP-045).

Results-Demographics
• In comparison with influenza, PIV did not account for a large proportion of ILI in our population: 43/961 (4.7%) were PIV+ versus 153/961 (15.9%) flu+.
• Co-detections occurred in 8/43 (18.6%) of PIV+ subjects, but co-detected viruses did not show any specific pattern, with 5 different viruses found (rhinovirus, influenza A, RSV, Coxaseckie/echovirus, HCoV).
• Sex, race, smoking status and BMI did not differ between PIV + and PIV - subjects with ILI.
• There was no difference in the frequency of PIV detection according to the site nor year of enrollment.
• Age < 5 years and presence of a child < 5 yrs of age in the household were more common in PIV+ subjects.
• On multivariable analysis, the presence of a child < 5y in the household remained associated with an increased risk of PIV detection (OR=2.58; 95%CI: 1.39, 4.80).
• When comparing detection of PIV to detection of influenza as the cause of ILI, the only demographic difference was that flu+ subjects were more often ≤ 2 years (p<0.001), and PIV+ subjects more often had a household member in daycare (p<0.001).

Results Symptomatology
• In comparing symptom profile and severity of 22 adults who had PIV+ ILI vs 118 with flu+ ILI, we found no differences in:
  – The presence or severity of 20 symptoms—although flu+ ILI adults tended to have higher reports of presence and severity of GI and systemic symptoms
  – The severity scores for each of 5 categories (upper respiratory, lower respiratory, systemic, GI, and composite symptom scores) at enrollment, nor on the first seven days of illness as recorded on the symptom diaries
• The proportion of hospitalization and antibiotic use
  – The durations of illness
  Comparison of severity measures between cases with parainfluenza and influenza virus. (FDR: false discovery rate adjusting for multiple comparison)

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