

# Pseudo-outbreak of Adenovirus in a Bronchoscopy Suite



Duke Center for  
Antimicrobial Stewardship  
and Infection Prevention

Jessica Seidelman, MD, MPH<sup>1,2</sup>, Ibukunoluwa Akinboyo, MD<sup>1,2</sup>, Bonnie Taylor, MPH, BSN, RN, CIC<sup>2</sup>, Carol McLay, DrPH, MPH, FAPIC, CIC<sup>2</sup>, Becky Smith, MD<sup>1,2</sup>, Sarah Lewis, MD, MPH<sup>1,2</sup>

1. Division of Infectious Diseases and International Health, Department of Medicine, Duke University School of Medicine, Duke University, Durham, North Carolina, 2. Duke Center for Antimicrobial Stewardship and Infection Prevention, Duke University Medical Center, Durham, North Carolina.



Duke University  
School of Medicine

## Abstract

**Background:** Adenoviruses (Adv) are non-enveloped viruses that can survive for long periods on environmental surfaces. However, only 1 prior publication describes an adenovirus pseudo-outbreak associated with bronchoscopes. In 1/2020 infectious disease physicians noted a cluster of Adv PCR-positive bronchiolar lavage (BAL) samples, which prompted an outbreak investigation.

**Methods:** We reviewed medical charts, clinical microbiology, procedure logs, bronchoscope reprocessing logs, bronchoscope cleaning, and high-level disinfection (HLD) practices.

**Results:** On 1/28/20 an infectious diseases physician alerted infection prevention to a cluster of 5 lung transplant patients diagnosed with Adv positive BAL samples. Four out of the 5 patients had the bronchoscopy in the same bronchoscopy suite. We reviewed BAL results from all bronchoscopies performed in this suite from 10/1/19 to 1/24/20 and found a total of 10 patients with positive Adv PCR results. Eight out of the 10 patients had bronchoscopies with one of two bronchoscopes. Of all patients who had a bronchoscopy with the bronchoscope from 11/1/19 to 1/24/20 and had respiratory viral panel sent at that time, 6 of 11 (55%) who underwent procedure with Scope A and 4 of 24 (17%) who underwent procedure with Scope B had positive Adv PCR results. Sham BALs were performed on both bronchoscopes and testing for Adv was negative. However, on inspection by the manufacturer, one scope failed both wet and dry leak tests and had several physical defects. Following removal of both bronchoscopes from service we did not find any positive Adv samples from the bronchoscopy unit.

**Conclusion:** Previously, very few pseudo-outbreaks of Adv have been linked to bronchoscopes. We identified a pseudo-outbreak of Adv associated with 2 bronchoscopes in a hospital-based bronchoscopy suite that stopped once we removed the associated bronchoscopes from the procedural unit. Bronchoscopy-related pseudo-outbreaks occur despite standardized procedures for HLD. Bronchoscopy clinics, particularly those with a high volume of immunocompromised patients, should prospectively review BAL cultures to identify unusual pathogen trends. These trends may be a sign of damaged equipment that would otherwise go undetected.

## Background

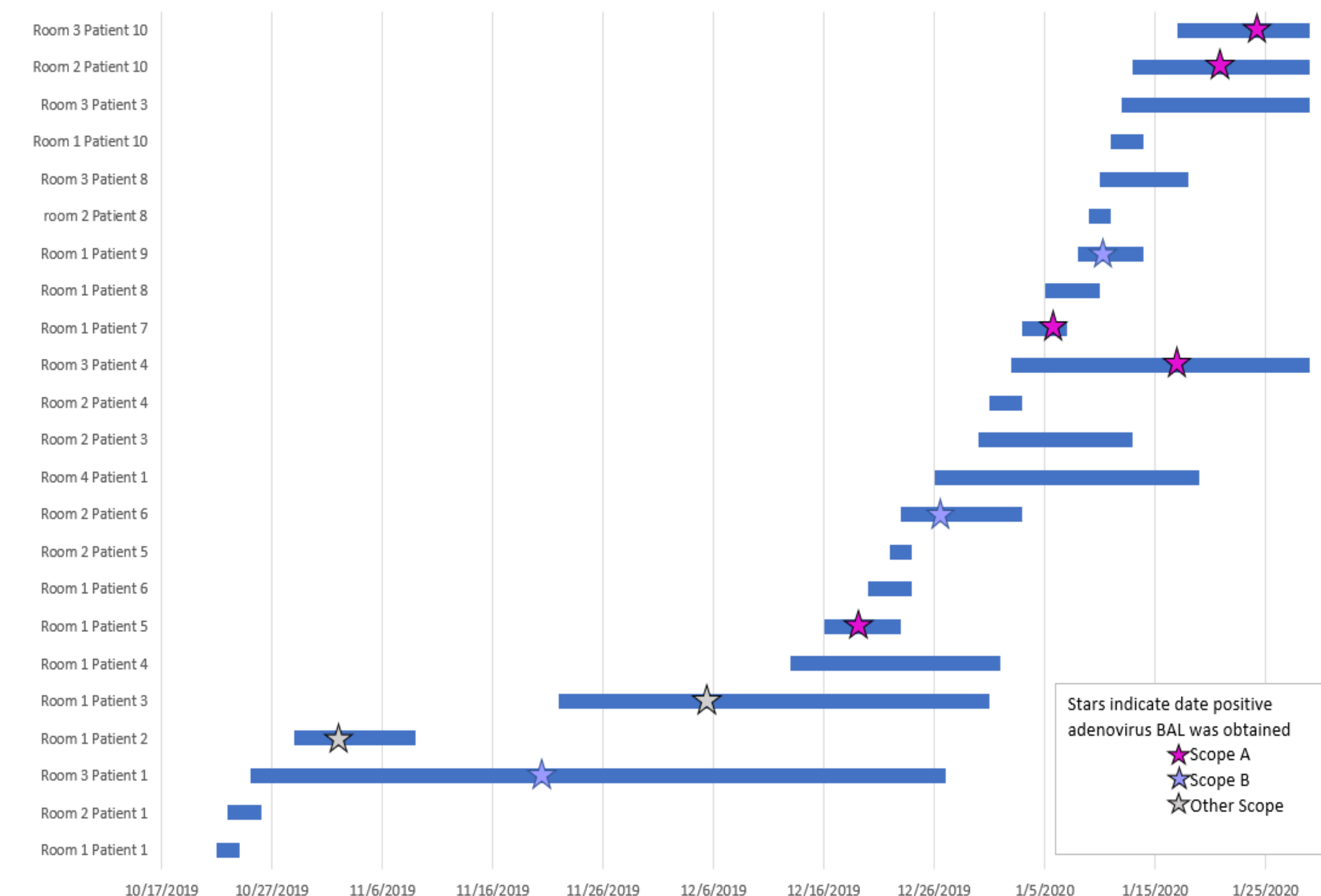
- In 1/2020 infectious disease physicians noted a cluster of Adv PCR-positive bronchiolar lavage (BAL) samples, which prompted an outbreak investigation.

## Methods

- We reviewed medical charts, clinical microbiology, procedure logs, bronchoscope reprocessing logs, bronchoscope cleaning, and high-level disinfection (HLD) practices.

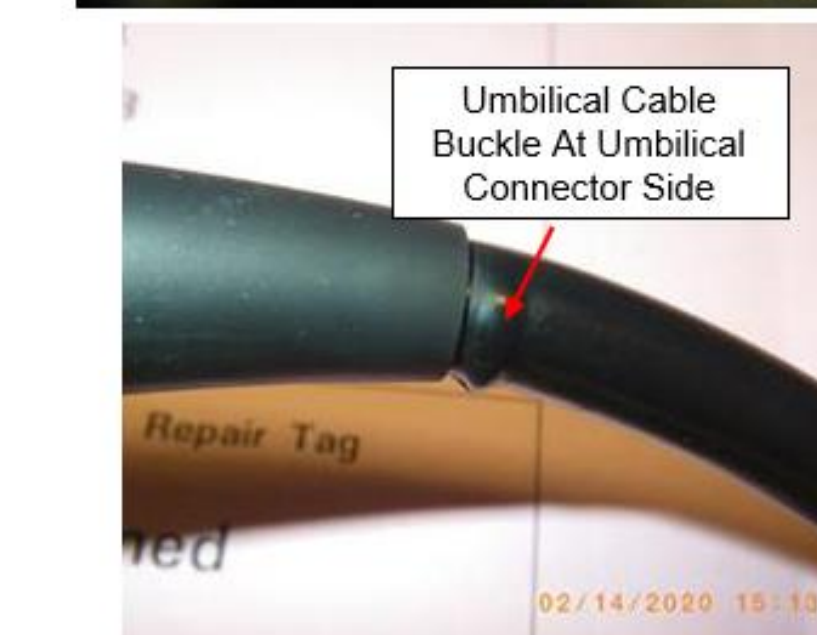
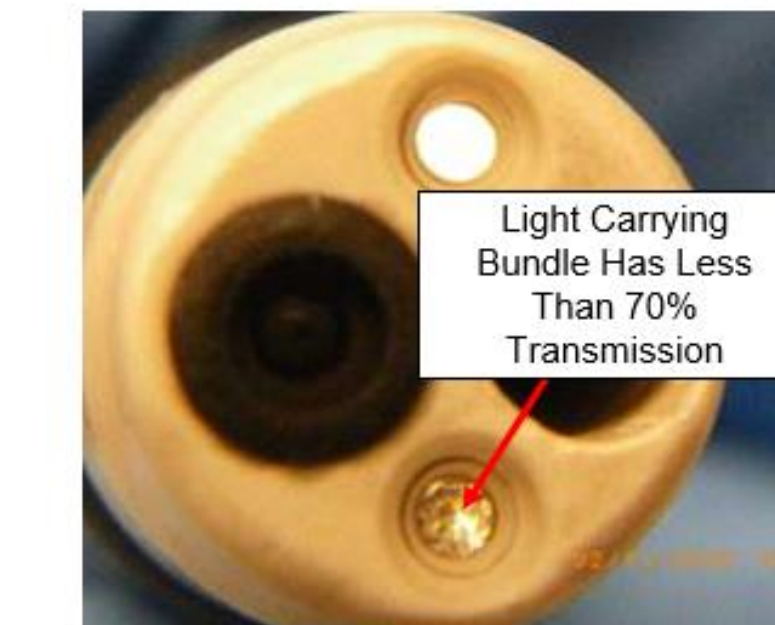
## Results

- Between 10/1/19 to 1/24/20 we found 10 patients with positive Adenovirus PCR results in the bronchoscopy suite.
- 8 of 10 patients had bronchoscopies with 2 bronchoscopes
- 11 patients had a bronchoscopy with Scope A with an adenovirus PCR sent
  - 6 of 11 (55%) had a positive Adenovirus PCR
- 24 patients had a bronchoscopy with Scope B with an adenovirus PCR sent
  - 4 of 24 (17%) had a positive Adenovirus PCR
- Sham BALs performed on Scopes A and B were negative



## Results

- Both scopes sent back to manufacturer for inspection
  - Scope A: failed dry and wet leak tests and several physical defects found upon inspection
  - Scope B: passed dry and wet leak tests and minimal physical issues found upon inspection



- 6 months following bronchoscope removal, no additional adenovirus cases identified in bronchoscopy suite

## Conclusions

- Bronchoscopy-related pseudo-outbreaks occur despite standardized procedures for HLD.
- Bronchoscopy clinics, particularly those with a high volume of immunocompromised patients, should prospectively review BAL cultures to identify unusual pathogen trends. These trends may be a sign of damaged equipment that would otherwise go undetected.

