

# **2015 BEST OUTBREAK**

## **Epidemic Keratoconjunctivitis (EKC) in an Ophthalmology Practice**

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# BACKGROUND:

## Conjunctivitis (Pink Eye)

- **Common eye condition that causes inflammation of the conjunctiva.**
- **Symptoms:**
  - Pink or red eyes, swelling of conjunctiva, tearing, discharge, itching, irritation, burning, foreign body sensation, crusting of eyelids/lashes, respiratory symptoms, photophobia
- **Transmission:**
  - Contact with eyes by hands or objects that are contaminated
- **Caused by:**
  - Bacteria, **Viruses**, Allergens

# BACTERIAL CONJUNCTIVITIS



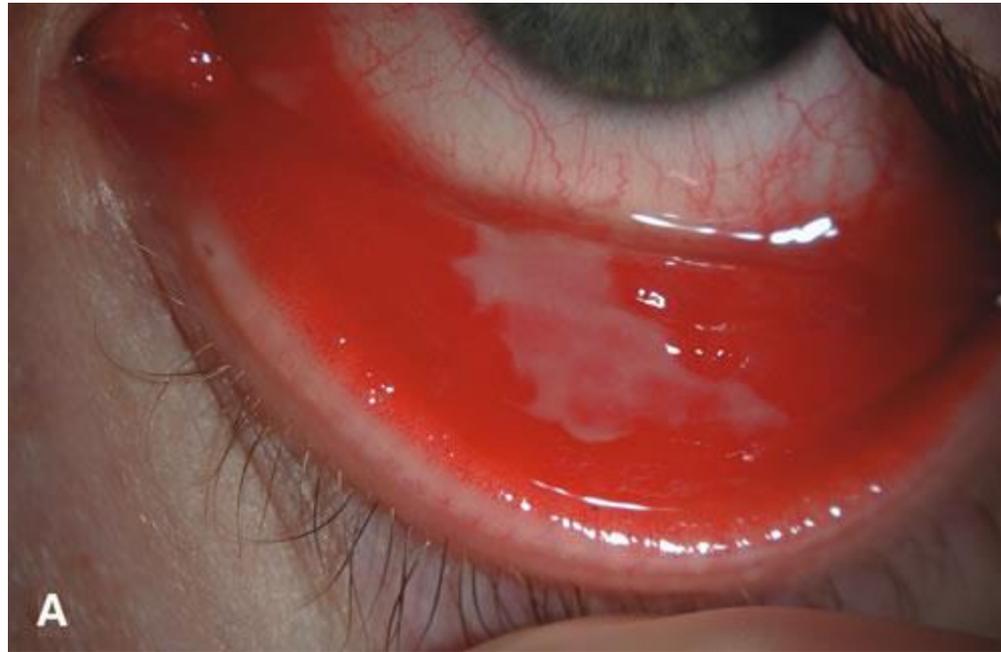
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# ALLERGIC CONJUNCTIVITIS



<http://allergyadvice.com/wp-content/uploads/2013/08/Allergic-Conjunctivitis.jpg>

# VIRAL CONJUNCTIVITIS



<http://www.oculist.net/downaton502/prof/ebook/duanes/graphics/figures/v4/0070/008af.jpg>

# Epidemic Keratoconjunctivitis (EKC)



[https://c1.staticflickr.com/9/8460/8045731614\\_d12a218e40.jp](https://c1.staticflickr.com/9/8460/8045731614_d12a218e40.jp)



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# **INITIAL CALL:**

## **September 4<sup>th</sup>, 2015**

- **KCHD was notified of outbreak by DIDE on 9/4/2015.**
- **An ophthalmologist reported to DIDE that their practice initially diagnosed 1 patient with EKC on 8/14/15.**
  - As of 9/4/2015, 12 additional patients were diagnosed with EKC.
  - As of the date of notification, only 1 of the 13 patients had been lab confirmed.
- **The index case is believed to have contracted the virus after visiting an ophthalmologist while travelling abroad. Her symptoms began upon return to the U.S., where she was seen by the ophthalmologist on 8/11/15 and diagnosed with EKC on 8/14/15.**

# INITIAL RESPONSE

## KCHD'S ACTIONS

- Took initial report from DIDE
- Conducted research on EKC
- Made contact with physician
- Discussed guidelines and made recommendations
- Requested a line list

## KCHD'S RECOMMENDATIONS

- Enforce hand hygiene
- Increase environmental cleaning
- Designate an isolated room for patients with EKC or suspected EKC

# INVESTIGATION OBJECTIVES



# METHODS:

## Outbreak Case Definition

### Probable case:

- Acute, non-bacterial eye disease characterized by conjunctival inflammation and lacrimation, as well as at least two of the following:
  - *foreign body sensation, palpebral edema, pain, and photophobia.*

### Confirmed case:

- Meets above criteria AND one of the following:
  1. Corneal epithelial infiltrates/erosions
  2. Adenovirus laboratory confirmation

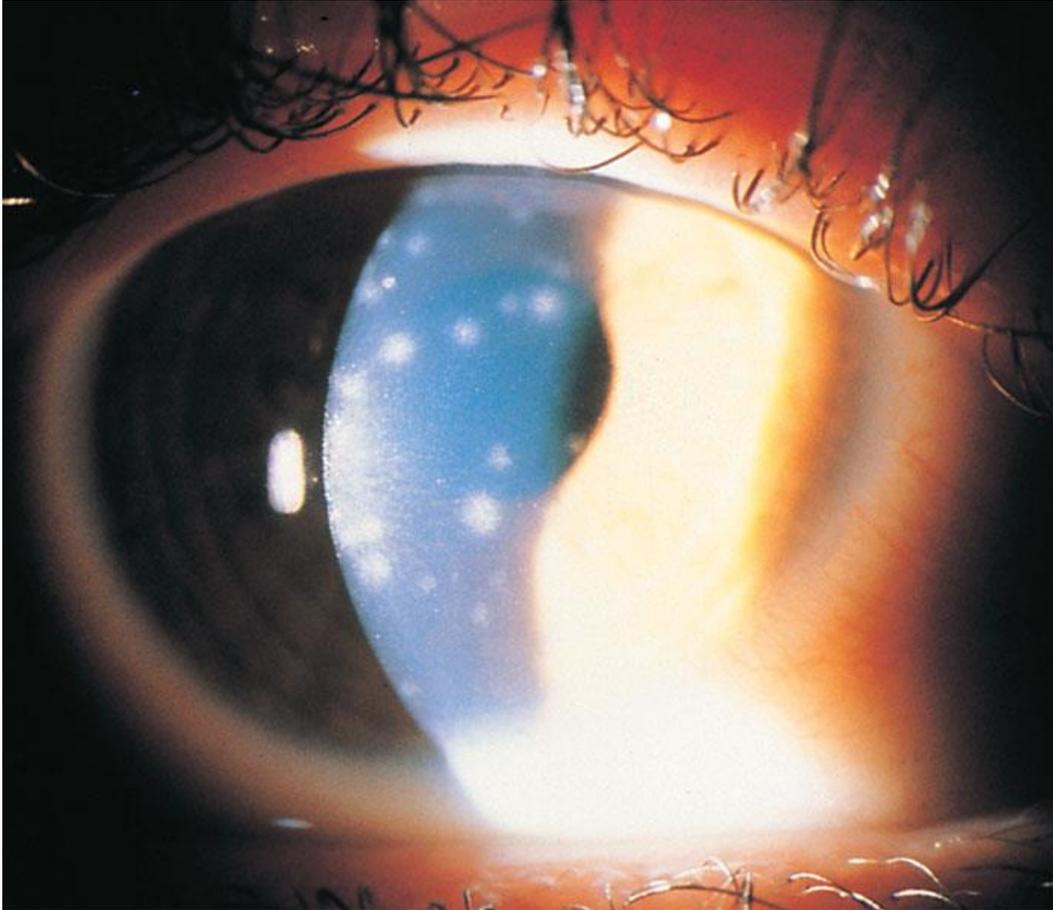
### Suspected healthcare-associated infection (HAI) cases:

- Probable or confirmed cases that were seen at the healthcare site under investigation within 14 days of developing symptoms of EKC.

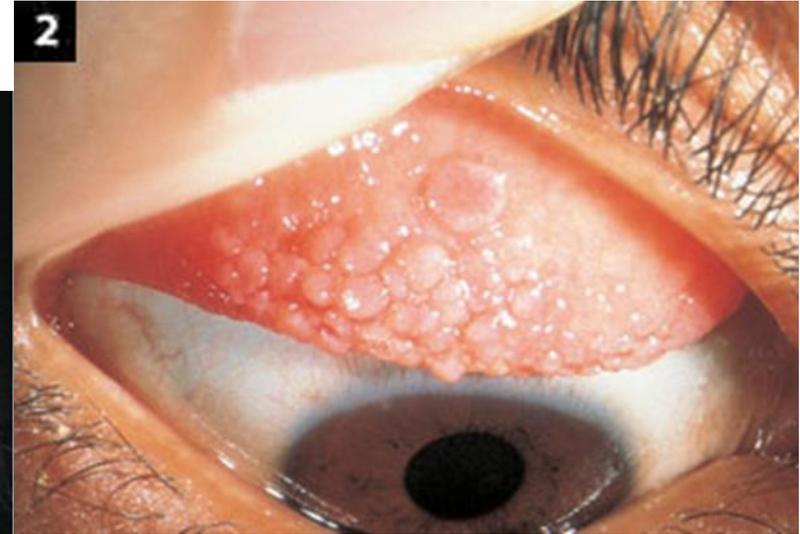
### Suspected community-acquired cases:

- Probable or confirmed cases that were seen at the healthcare site under investigation >14 days prior to symptom onset, or were not connected to the site, or were contacts of other known cases prior to visiting the site.

# FOLLICLES & INFILTRATES



[http://pediatriccare.solutions.aap.org/data/Books/1017/chp215\\_F014.jpeg](http://pediatriccare.solutions.aap.org/data/Books/1017/chp215_F014.jpeg)



<http://www.aao.org/image.axd?id=d630f388-ac82-4acb-b25e-d13ddf5fcfe7&t=635596183507070000>

# **METHODS:**

## **Data Collection**

- **Two site visits made to meet with office staff**
  - Reviewed charts
    - Made a detailed line list
    - Requested that they begin testing EKC patients
- **Disseminated a HAN Alert to area urgent cares, hospitals and eye doctors**
  - Some community cases were reported

# **METHODS:**

## **Infection Control Assessment**

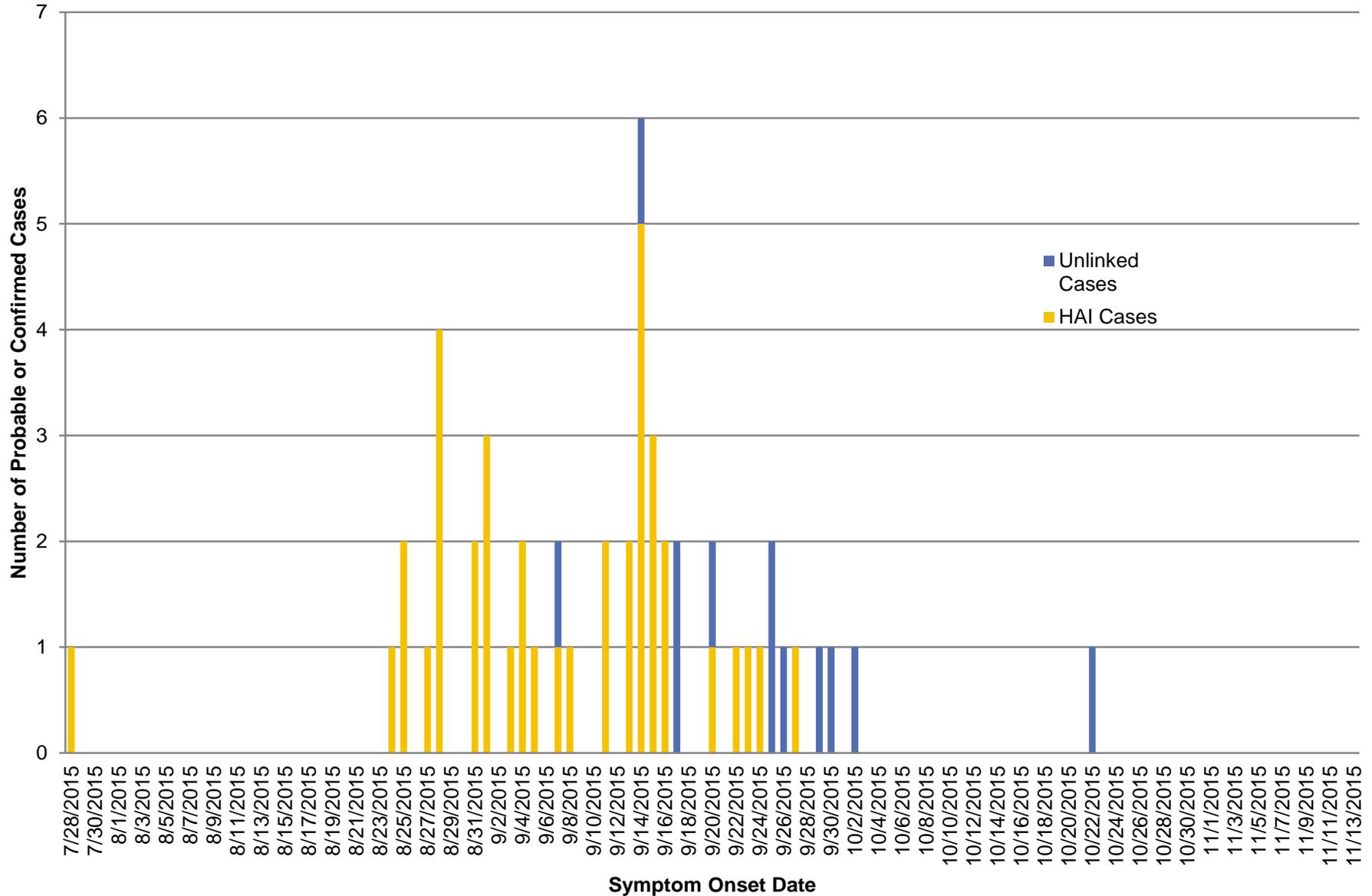
- **First site visit conducted by KCHD's Division of Epidemiology on 9/10/15:**
  - Team did a run through of the office with the technicians to evaluate their current cleaning practices.
  - Also met with office manager to conduct chart review.
- **Second site visit conducted by KCHD, EIS Officer, Hospital IP, and Clinical Virologist on 9/15/15:**
  - Conducted a more thorough assessment of IC procedures, while offering recommendations on how to improve procedures.
  - Took environmental specimens for testing.
  - Provided formal, written IC recommendations to the practice along with a review of their current practices.

# **METHODS:**

## **Environmental Cleaning Methods**

- **Increase cleaning with antiviral wipes effective against Adenoviruses.**
  - Clean every surface between patients.
  - Make sure cleaning supplies are available and easily accessible in every room.
- **Wear gloves and change gloves between patients.**
- **Exclude symptomatic employees for 14 days.**
- **Date multiuse vials, throw away 28 days after opening.**
- **Enforce proper hand hygiene.**
- **Use separate dedicated rooms and ensure intensified cleaning procedures are carried out for all patients symptomatic for infection.**
- **Have a written infection control protocol; review it regularly with all clinic staff to ensure standardized implementation.**

# NUMBER OF CASES BY SYMPTOM ONSET DATE



# RESULTS

- **51 cases of EKC were reported during the outbreak period, 8/14/15-11/13/15.**
  - **39** of these cases came from the particular ophthalmologist's practice.
    - **15** lab tested
      - **14** tested positive for adenovirus
      - **10** of 12 submitted for further testing tested positive for *adenovirus-8*
    - **44** clinical diagnosis only
  - **12** were reported from other providers and were not linked to the ophthalmology practice or their EKC patients.
    - **2** lab confirmed
    - **10** clinical diagnosis only

# RESULTS:

## Site Visit

### POSITIVES

- **Understanding of EKC**
- **Willing to make changes**
- **Germicidal wipes were available in all areas**

### NEGATIVES

- **No written IP/C policy**
- **No written cleaning procedures**
- **Gloves not available in every room**
- **Germicidal wipes used were ineffective**
- **Were only cleaning touched surfaces once a day and exam rooms once a week**
- **Multiuse vials were not dated**

# RESULTS:

## Laboratory Testing

### PATIENTS

- **17 of 51 cases were tested by Multiplex-PCR**
  - **16** + for adenovirus
  - **12** sent to *NY State DOH's Wadsworth Lab* for additional next gen testing and serotyping
    - **10** + for adenovirus-8

### ENVIRONMENTAL

- **7 environmental samples**
  - Tonometer- Room 3
  - **Exam Chair- Room 4**
  - Cyclo- Room 2
  - Ocular- Room 1
  - **Chin Rest- Room 4**
  - **Tonometer- Room 4**
  - Topicide
- **3 tested positive**

# DISCUSSION

- From 9/4/15 to 11/13/15, the ophthalmologist's practice reported 39 case of EKC, and an additional 12 cases were reported from other providers. Serotyping of 21 specimens (human & environmental) confirmed that the EKC cases from the ophthalmologist's practice were in fact related.
- A combination of delayed notification of the outbreak, poor infection prevention practices at this medical practice, and the easy communicability of this virus allowed for this outbreak to reach the levels that it did.
- However, great support from our Health Officer, State Partners, and Hospital Partners allowed us to quickly and effectively get this under control.

# LIMITATIONS

- The practice notified DIDE about the outbreak after 13 patients had been diagnosed and the outbreak had been going on for over 1 week.
- After the HAN alert was sent out, KCHD began to receive reports for all types of conjunctivitis, not just cases that met the case definition.
- No one on the outbreak team had experience with EKC, and there was very little information out there on EKC. We had to do a lot of research quickly in order to develop guidelines and recommendations.
- Poor environmental cleaning practices.

# RECOMMENDATIONS

- Every clinical practice should have a comprehensive infection control plan understood by all members of the staff, regardless of pathogen.
- During an outbreak, a room should be designated only for symptomatic patients.
- It is a good practice to note what room a patient was seen in on their chart, even when there is no outbreak occurring.

# REFERENCES

- <http://www.cdc.gov/conjunctivitis/index.html>
- Pihos, AM. Epidemic keratoconjunctivitis: A review of current concepts in management. Journal of Optometry 2013; 6:69-74.

# ACKNOWLEDGMENTS

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## **Hospital Partners**

- Linda Minnich, Deana Samms

# QUESTIONS?

**Thank You!**

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