

# Gastrointestinal Outbreak at a Kentucky Youth Basketball Tournament February 2012

**Doug Thoroughman, PhD, MS**

CAPT, US Public Health Service

Kentucky Department for Public Health  
Division of Epidemiology and Health Planning



Office of Public Health Preparedness and Response

Office of the Director, Career Epidemiology Field Officer Program



# The Call

- ❑ **February 6, 2012**
- ❑ **Kentucky Department for Public Health**
- ❑ **Multiple cases of vomiting and diarrhea**
- ❑ **Players, coaches, spectators**
  - LHD Environmentalist notified Food Safety staff
  - Food Safety notified Foodborne Epidemiologist
  - Foodborne Epi notified State Epidemiologist
  - Etc.

# Initial Reports

- ❑ **Tournament Friday, February 3<sup>rd</sup> – Sunday 5<sup>th</sup>, 2012**
- ❑ **7<sup>th</sup> grade boys basketball tournament**
- ❑ **Lexington, Kentucky**
- ❑ **Statewide tournament**
- ❑ **52 schools, >600 players**

# First Day – February 6

## ❑ **Gathering information**

- Initially only two counties reporting cases
- Not clear if this was widespread
- All had been to tournament
- “Slushies” reportedly common among case patients
- Mostly vomiting, majority sick on Saturday and Sunday

## ❑ **Lexington/Fayette handed initial lead**

- Venue located there
- Not sure outbreak warranted large scale state response

## ❑ **By end of day, clear this was something bigger**

# First Thoughts?

- ❑ **Incubation period 24-48 hours**
- ❑ **Looks like point source**
- ❑ **Symptoms mostly vomiting**
- ❑ **Short-lived – 24-48 hour duration**
- ❑ **Could be toxin but incubation period too spread out**
- ❑ **Probably norovirus**

# Norovirus

- ❑ **21 million illnesses each year in United States**
- ❑ **Illness 1–3 days, peak viral shedding while symptomatic and immediately afterward**
- ❑ **Prolific viral shedding and low infectious dose**
- ❑ **Transmission**
  - Person-to-person
  - Contaminated surfaces
  - Contaminated food and water
- ❑ **Incubation period 24–48 hours**

# Investigation

- ❑ **State took lead on Day 2**
  - Multiple counties involved
  - Many teams/players affected
  
- ❑ **Full-scale investigation initiated**
  
- ❑ **Objectives**
  - **Determine the extent of the outbreak**
  - **Confirm the etiology**
  - **Evaluate mode of transmission**
    - Determine Risk Factors
    - Prevent further spread
    - Prevent recurrence in similar situation
  
- ❑ **First statewide call afternoon of February 7**

# Methods

- ❑ **Identify cases**
  - Basketball coaches
  - Absentee data from schools
  - Employees
- ❑ **Standard case investigation form**
  - Illness history
  - Food and water exposures
- ❑ **Stool samples requested for testing**
- ❑ **Investigate venues directly**

# Data Collection

- ❑ **Developed interview form by COB Tuesday, 7<sup>th</sup> (Day 2)**
- ❑ **Sent to Regional Epidemiologists to interview case patients**
- ❑ **Tried Google Docs, then Excel Spreadsheet, finally settled on Epi Info for data entry and basic analysis**
  - Google Docs – Unknown security risk
  - Excel – huge data problems for processing
- ❑ **Case interviews began that evening (February 7)**

# Possible Sources

## ❑ Venues

- Environmental Inspection
- Food vendor?
- Water source?
- Common court or site?
- Vomiting episode in bathroom?

## ❑ Area restaurants

## ❑ Kids coming in sick (knew of at least one if not two)

- Were they on the same team?
- Were they actively sick at the tournament?

# Case Definitions

## ❑ Probable case

- Vomiting or diarrhea in a tournament attendee
- Onset within 72 hours of attendance
- No laboratory confirmation of norovirus

## ❑ Confirmed case

- Probable case with stool specimen positive for norovirus by real-time reverse transcription-polymerase chain reaction (RT-qPCR)

# Basketball Teams

**52 Participating Teams**



**49 (94%) Teams Contacted  
(573 players)**



**36 (69%) Teams  
≥1 Ill Person**

**Teams came from 33 counties – involving 8 district and 16 independent health departments**

# Identified Cases

	Number	%
Players	154/573	27
Employees	12/46	26
Coaches	11	
Spectators	<u>65</u>	
<b>Total</b>	<b>242</b>	

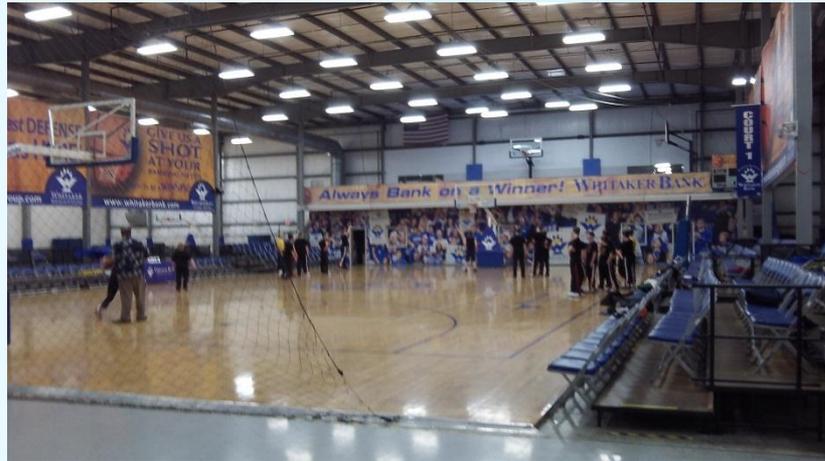
# Medical Care

	<b>Number</b>	<b>%</b>
Medical care	19/242	8
Primary care provider	12	
Emergency dept/urgent care	5	
Hospital admission	2	

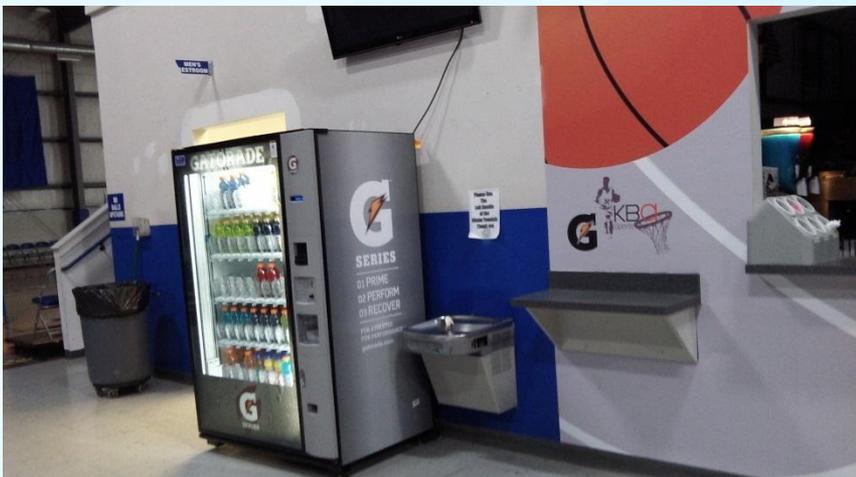
# Venues

- ❑ **Kentucky Basketball Academy (Vast majority of games)**
- ❑ **Ice Center Arena (across street from KBA)**
- ❑ **Beaumont Middle School**
- ❑ **Lexington Christian Academy**
- ❑ **Edith J. Hayes Middle School**
- ❑ **Only handful of ill played at venues other than KBA**

# Kentucky Basketball Academy



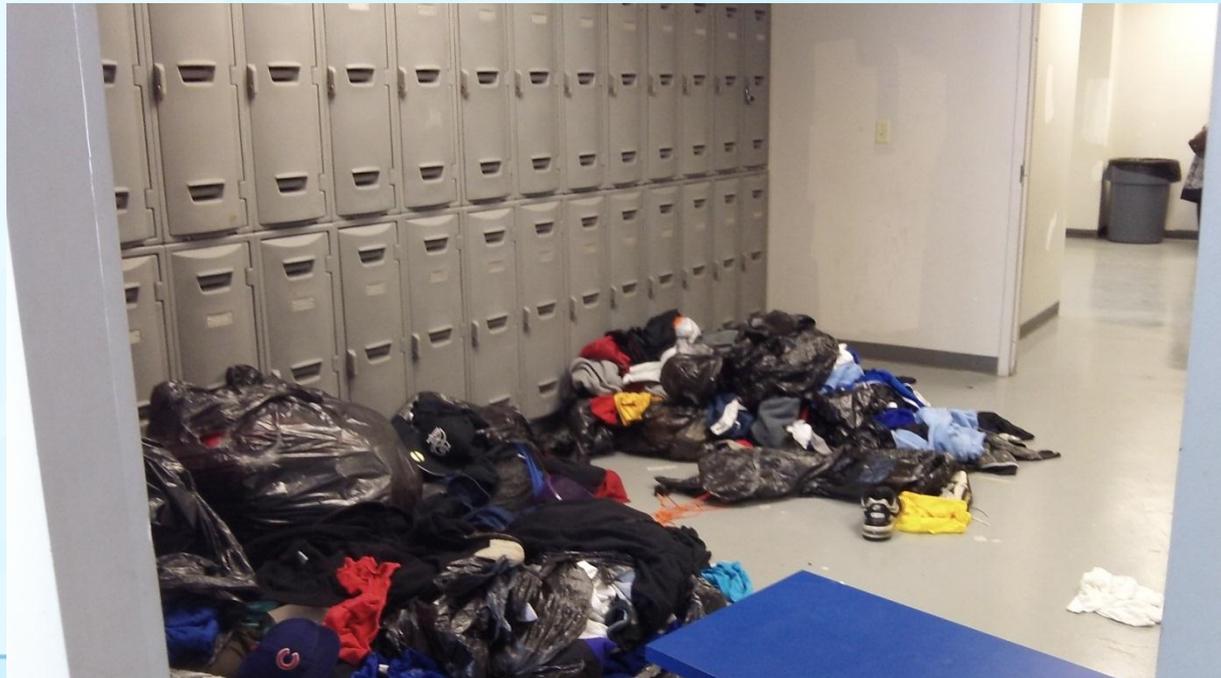
# KBA Facilities



# Men's Room



# More of the Men's Room



# Food Vendor

321 KBA Sports Cafe

Meals include:  
24 oz FOUNTAIN DRINK  
and choice of FRIES or CHIPS  
for GATORADE or AQUAFINA add \$1.00

**MEAL**

HOT DOG	\$2.00	\$4.95
CHILI DOG	\$2.50	\$5.50
HAMBURGER	\$3.50	\$5.95
CHEESEBURGER	\$3.75	\$6.50
POPCORN CHICKEN	\$3.75	\$6.50
CHICKEN STRIPS	\$4.00	\$6.50
CORN DOG NUGGETS	\$3.75	\$6.50
FRIED CHICKEN SANDWICH	\$3.95	\$6.50
SPICY CHICKEN SANDWICH	\$3.95	\$6.50
GRILLED CHICKEN SANDWICH	\$3.95	\$6.50

**Fountain Drinks**

Small... \$1.50  
Medium... \$2.00  
Large... \$2.50

Peppi, Diet Peppi, Sierra Mist, Mt Dew,  
Diet Mt Dew, Dr. Pepper, Crush, Raspberry Tea

**GATORADE AQUAFINA**

**\$2**

**KBA FREEZE**

Raspberry  
Cherry

Coffee...\$1.25  
Hot Chocolate...\$1.25  
Cappuccino...\$1.25

**Juice**

Apple or \$2  
Orange

**KBA Smoothie**

Strawberry/Banana Lg.\$5.00  
Sm.\$3.00

Fruit Shoots Reg.\$1.50

Strawberry/Raspberry, Berry Burst &  
Orange  
Low Sugar  
Strawberry/Raspberry  
Apple

**POPCORN...\$2.00**

**FRIES...\$2.75**

**CHEESE FRIES...\$3.25**

**CHILI CHEESE FRIES...\$3.75**

**NACHOS...\$3.25**

**CHILI CHEESE NACHOS...\$3.75**

\*Peppers available upon request at no extra charge

**SOFT PRETZEL...\$3.00**

**CHEESE PRETZEL...\$3.25**

**CINNABON PRETZEL...\$3.50**

Theater size Candy...\$2.75

**MINUTEMAID FROZEN Lemonade & Strawberry** \$3.00

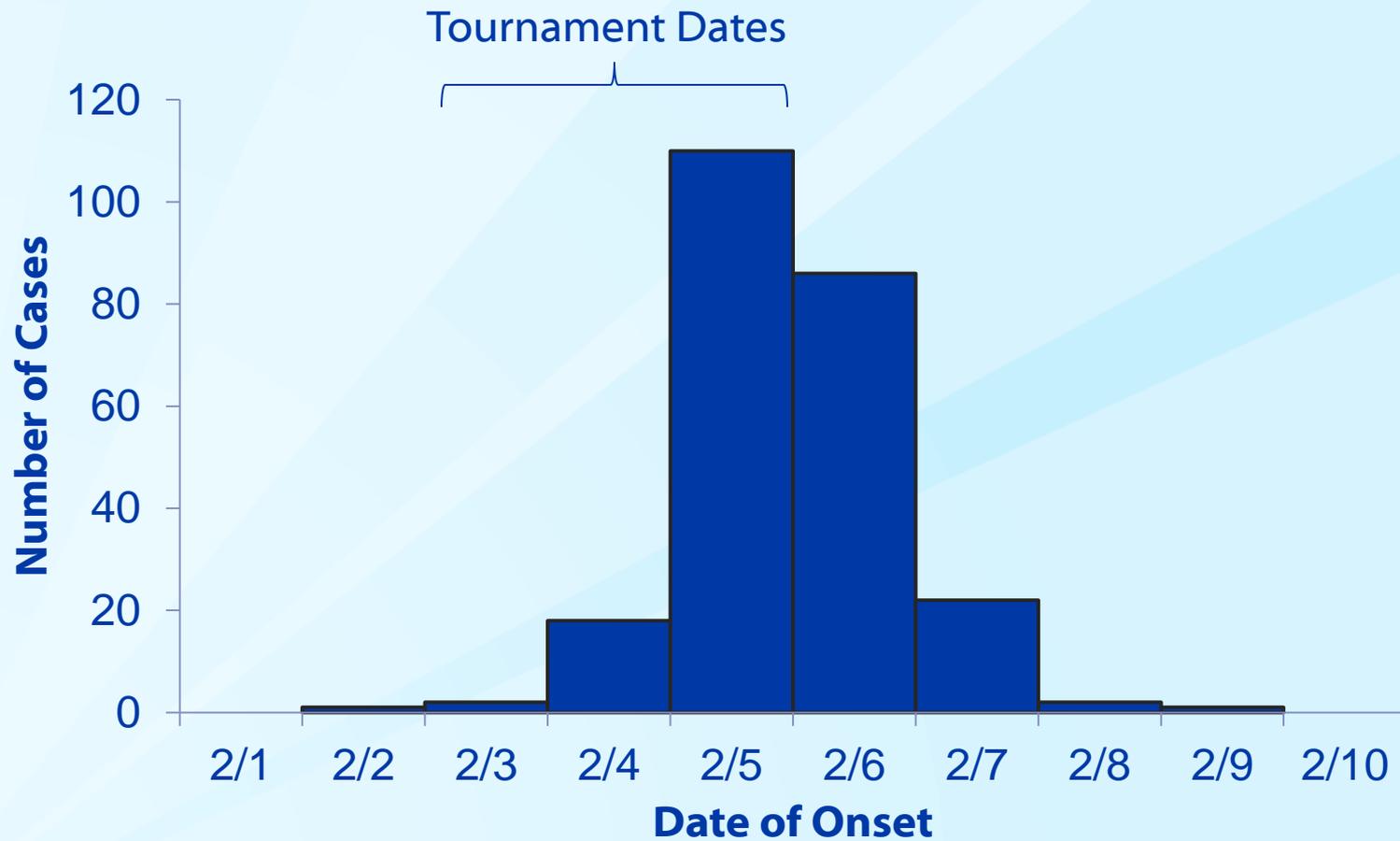
**CHIPS...\$1.00**

WITH FROSTING

# Initial Findings

- ❑ **Virtually all sick kids played at KBA venue**
  
- ❑ **Food possibility**
  - < 50 % of sick ate at on-site food vendor
  - No particular foods stood out
  - Food not commonly associated with norovirus
  - Slushies were not very common among sick people
  
- ❑ **Restaurants**
  - Very few reported eating in restaurants
  - No commonalities between case patients – no fav restaurant

# Epi Curve



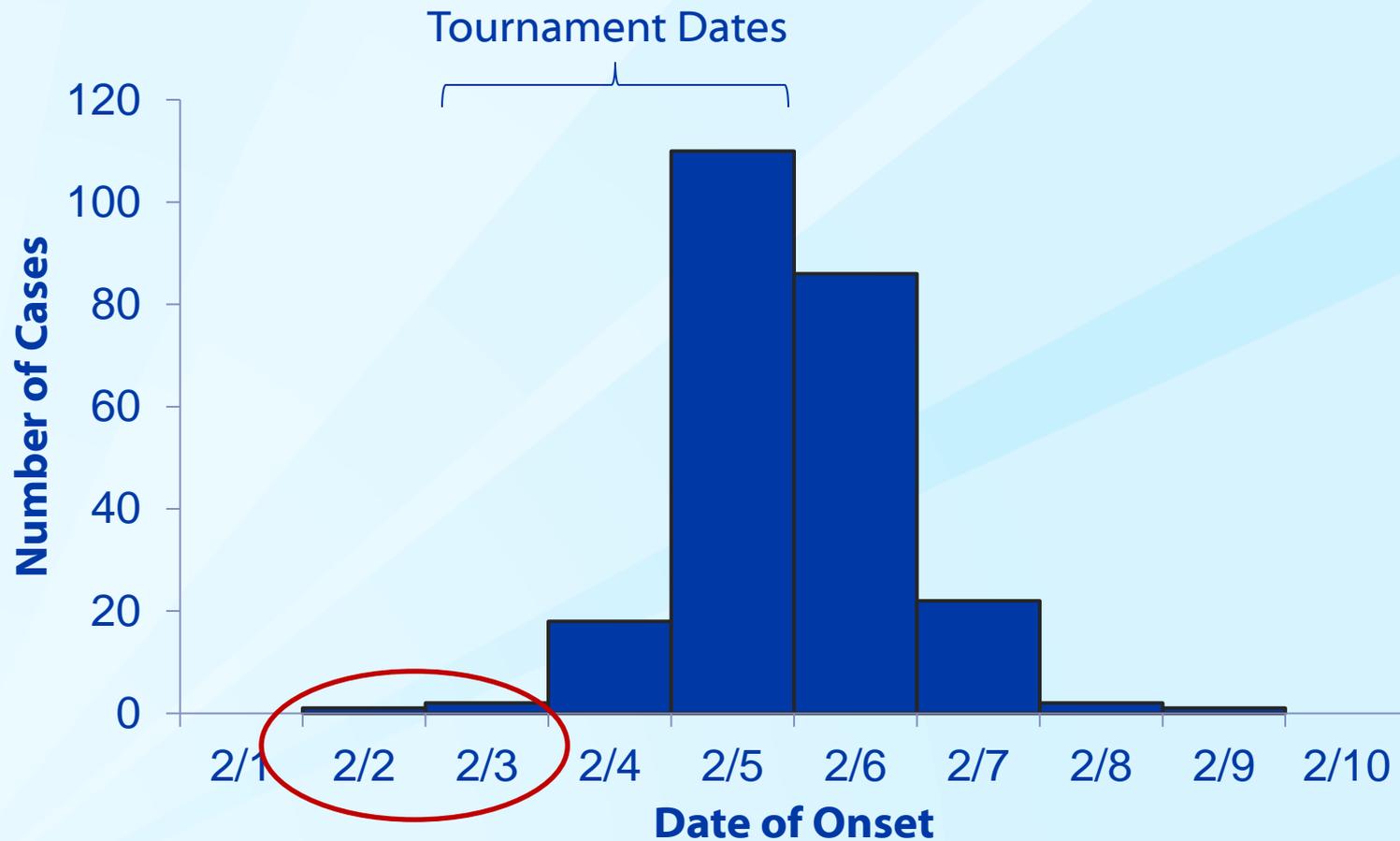
# Lab Results

- ❑ **First norovirus positive on February 10**
- ❑ **6 (100%) stool specimens tested positive for norovirus**
- ❑ **Genogroup II type 7 (GII.7)**
- ❑ **Represented 4 different teams**

# Further Investigation

- ❑ **One food worker sick**
  - Not until end of shift Saturday evening
  - No other food workers sick
  - Environmental inspection non-remarkable
  
- ❑ **Vomiting episode occurred in gymnasium**
  - Not in bathroom as previously believed
  - Happened Friday evening – 1<sup>st</sup> day of event
  - Cleaned up by parents
  - No disinfectant used until several days later

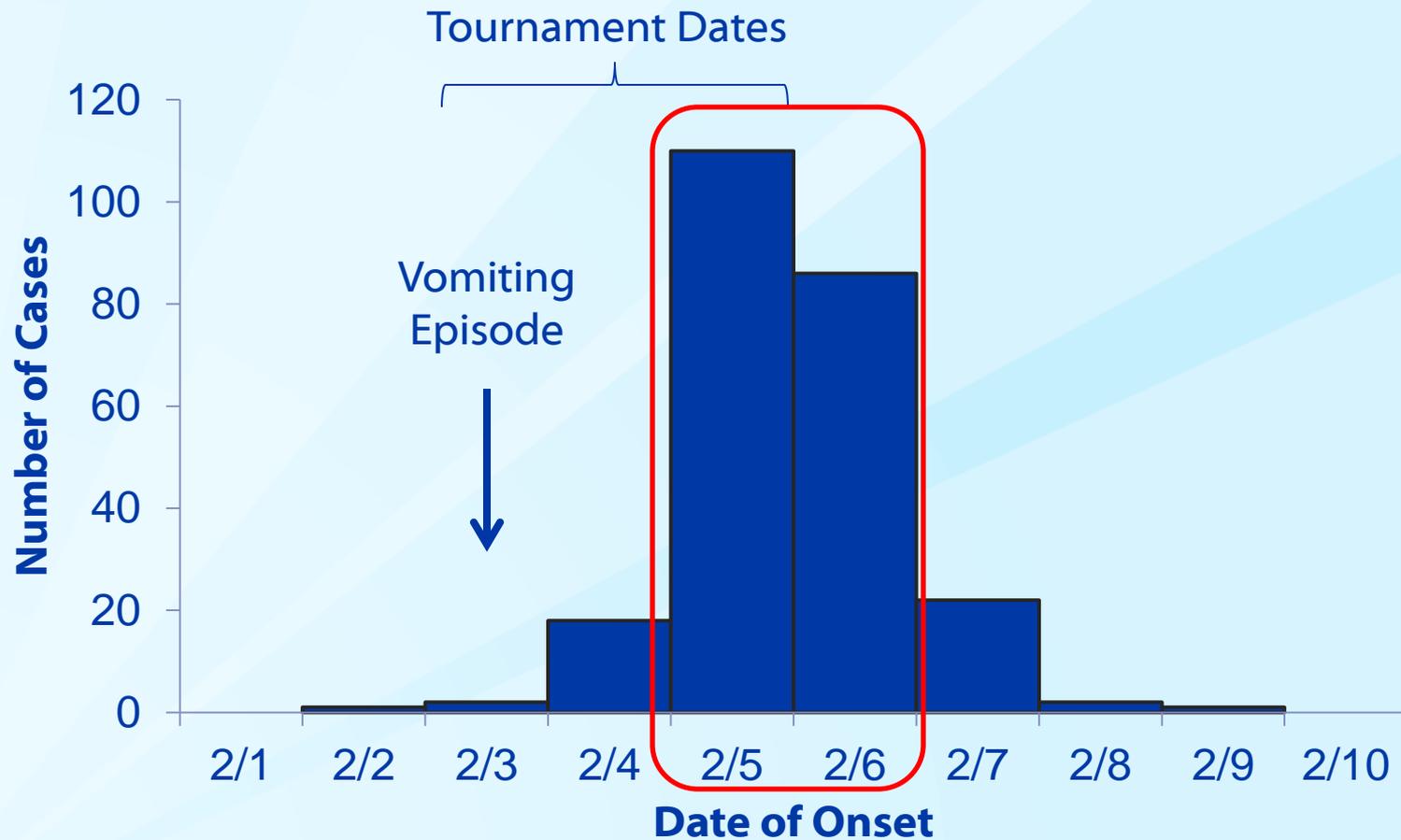
# Cases of Acute Gastroenteritis, by Date of Onset



# Cases of Acute Gastroenteritis, by Date of Onset



# Cases of Acute Gastroenteritis, by Date of Onset



# Vomiting Episode – Possible Point Source?

## ❑ **Clogging event 2011**

- Vomiting Episode
- Changing room

## ❑ **Washington State Cheerleading Competition Event**

- Same weekend
- Very similar circumstances

## ❑ **Tennessee Hockey Tournament**

- Following weekend
- Similar circumstance again

# Causality?

## ❑ **Temporality**

- Vomiting episode preceded bulk of cases
- Incubation period fits

## ❑ **Biologic plausibility**

- Certainly plausible – virus lives on surfaces, highly infectious, etc.

## ❑ **Consistency**

- Have seen similar situation repeatedly

## ❑ **Coherence**

- Evidence fits what is known about biology of norovirus

# Conclusions

- ❑ **Norovirus outbreak at basketball tournament**
  - Affected high proportion of participating teams
- ❑ **Person-to-person transmission most likely**
- ❑ **Public vomiting episode provided point source**
- ❑ **Contaminated environmental surfaces**
- ❑ **Secondary transmission accounted for additional cases**

# Public Health Recommendations

- ❑ **Exclusion of players with gastroenteritis symptoms within 24 hours**
- ❑ **Increased education on personal hygiene**
- ❑ **Clean and disinfect environmental surfaces**
- ❑ **Be prepared for timely and proper clean-up of vomiting episodes in mass gathering events!!!**
  - Bleach cleanser needed

# Acknowledgments

## Kentucky Department for Public Health

Sean Benton  
Robert Brawley  
Vinay Chiguluri  
Alex Freiman  
Kraig Humbaugh  
Sara Robeson  
TJ Sugg

## Centers for Disease Control and Prevention

Rishi Desai  
Nicole Gregoricus  
Aron Hall  
Eddie Weiss

Lexington-Fayette County Health Department  
Kentucky's Regional Epidemiologists  
Kentucky Basketball Association

### **For more information please contact Centers for Disease Control and Prevention**

1600 Clifton Road NE, Atlanta, GA 30333

Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348

E-mail: [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov) Web: <http://www.cdc.gov>

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.



Office of Surveillance, Epidemiology, and Laboratory Services  
Scientific Education and Professional Development Program Office



# Your KBA Experience...

