OUTDOOR MASS GATHERINGS IN KANSAS:
AN EXAMINATION OF LOCAL HEALTH DEPARTMENT AWARENESS AND INVOLVEMENT

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INTRODUCTION

- Master’s of Public Health
  - Infectious Disease and Zoonosis
- Kansas Department of Health and Environment (KDHE) Bureau of Epidemiology and Public Health Informatics (BEPHI)
  - Provides education and support to the public and to local health departments (LHDs)
  - Works to prevent infectious disease in the state of Kansas
  - Assists LHDs in investigation of cases of reportable disease and disease outbreaks
INTRODUCTION

Field Experience

- Observation of an investigation of nosocomial *Burkholderia* at a hospital
- Input data from *Burkholderia* investigation into a database
- Performed a phone interview for an investigation
- Learned disease investigation processes
- Outdoor mass gathering (OMG) project
OUTLINE

- Outbreaks Associated with a Mass Gathering
- KDHE Definition of an OMG
- Methods
- Results
- Discussion
- Recommendations
- Limitations
OUTBREAKS ASSOCIATED WITH A MASS GATHERING

- Rainbow Family of Living Light Annual Gathering
- Taste of Chicago
- Biking Across Kansas (BAK)
RAINBOW FAMILY GATHERING

- July 1987
- Temporary camping community in Nantahala National Forest in North Carolina
- Peak attendance 12,700
RAINBOW FAMILY GATHERING

- United States Forest Service noted diarrheal illness amongst attendees
- North Carolina Division of Health Services notified
- Interviews on site:
  - 92 of approx. 1,300 still on site were interviewed
  - 54 out of 92 report diarrhea
- Mailed surveys:
  - Sent to 1,719 previous attendees
  - 185 out of 317 who responded fit case definition
Case definition

- Attendee with diarrhea or a stool sample positive for *Shigella sonnei*
- Onset during the gathering or within a week of leaving

*Shigella sonnei*

- Causes shigellosis
  - Enteric disease
  - Bloody stool
  - Diarrhea
- Fecal-oral route
RAINBOW FAMILY GATHERING

- Lack of hygiene
- Lack of hand-washing facilities
- Open trench latrines
- Secondary cases occurred in 27 people
Taste Of Chicago

- July 2007
- Large outdoor food festival
- An estimated 3.5 million people attended
Taste of Chicago

- Chicago Department of Public Health issued a press release and survey
- 802 people had Salmonella symptoms
- 191 met confirmed or probable case definition
  - Laboratory-confirmed Salmonella infection after eating at the implicated food booth
**Taste of Chicago**

- *Salmonella* Heidelberg
  - Causes salmonellosis
    - Enteric disease
    - Fever
    - Nausea
    - Vomiting
    - Diarrhea
  - Fecal-oral route

- Hummus shirazi from Pars Cove booth found responsible for outbreak
Biking Across Kansas

- June 2006
- Biking and camping on a pre-determined route across Kansas
- Approximately 870 participants
  - Volunteer workers not included
- Approx. 20 people initially reported ill with gastrointestinal symptoms
**Biking Across Kansas**

- KDHE assisted in LHD investigation on site
- Surveys conducted
- 126 met the case definition
- Case defined as:
  - Person associated with BAK 2006 and had diarrhea and/or vomiting between June 9-19, 2006
Biking Across Kansas

- Norovirus
  - Viral infection
    - Enteric disease
    - Diarrhea
    - Nausea
    - Vomiting
    - Stomach pain
  - Fecal-oral route

- Lack of hand-washing and bathroom facilities along the route
Since the 2006 BAK outbreak, KDHE has developed an interest in OMGs in Kansas

Important public health implications:

- Heat
- Injuries
- Infectious disease
  - Zoonotic
  - Foodborne
  - Person-to-person
OUTDOOR MASS GATHERING (OMG)

- No common definition for outdoor mass gatherings
- The Northwest Center for Public Health Practice defines a mass gathering in the following ways:
  - “…a preplanned event held at a specific location for a defined period of time that strains planning and response resources.”
  - “Some people define a mass gathering as having more than 5,000 attendees… any event with more than 25,000 attendees is considered a mass gathering”
- The World Health Organization defines a mass gathering as:
  - “…more than 1,000, but usually about 25,000 people at a specific location, for a specific purpose, for a period of time.”
OUTDOOR MASS GATHERING (OMG)

- KDHE has defined an OMG as meeting the following criteria:
  - Has a specifically defined outdoor location(s)
  - Utilizes temporary facilities such as portable food vendors, hand washing stations, portable restrooms, etc.
  - Is preplanned
  - Occurs over the course of 2 or more days
  - Has a total attendance of 1,000 or more visitors and staff
METHODS: INTERNET SURVEY

A survey was created using SurveyMonkey

- Contained 13 questions
- A notification and link to the survey was sent via e-mail
- An administrator or a representative from each LHD were to respond
- At least 4 e-mail attempts and 4 phone call attempts were made to contact the LHDs
METHODS: OMG DATABASE

- A database containing OMGs was created using Microsoft Excel
- OMGs were obtained from:
  - The internet survey
  - Kansas Department of Commerce database
  - Internet research
- Database contains:
  - Name of OMG
  - County of occurrence
  - Attendance size
  - Dates of occurrence and time frame
  - City and site of location
  - Source OMG was obtained from
  - Season in which event occurs
RESULTS: INTERNET SURVEY

- 103 of 105 LHDs responded to the survey
  - 66 of 103 (64%) said their counties do host OMGs
  - 58 of 103 (56%) are not notified by organizers of the OMG
  - 72 of 103 (70%) do not have any involvement in planning OMGs
  - 62 of 101 (61%) of LHD representatives agreed that it is important for their LHD to have some involvement with planning OMGs
  - 31 of 103 (30%) do have some type of involvement in OMG planning
NUMBER OF LOCAL HEALTH DEPARTMENTS INVOLVED IN OUTDOOR MASS GATHERING PLANNING, BY TYPE OF PLANNING INVOLVEMENT (N=103)

- Advised on number of portable restrooms: 7
- Advised on number of hand-washing stations: 8
- Provided contacts at KDA for food vendor licensing: 9
- Provided safety/response plans: 12
- Contacting local hospitals: 2
- Provided educational materials/posters: 14
- Provided contacts at KDHE: 10
- Provided active disease surveillance: 6
- No involvement: 72
**RESULTS: OMG DATABASE**

- 185 OMGs in the database
- 125 (60%) occur during summer
- 39 of 185 (21%) have estimated attendance size listed
  - 18 of 39 (46%) have an attendance of 10,000 and over
- Barton County has 9 OMGs, the most in the database
- Franklin and Marion Counties both have 7 OMGs in the database
**SELECTED ANNUAL OUTDOOR MASS GATHERINGS IN KANSAS.**

<table>
<thead>
<tr>
<th>Name of OMG</th>
<th>County</th>
<th>Attendance</th>
<th>Length</th>
<th>Month of Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kansas State Fair</td>
<td>Reno</td>
<td>350,000</td>
<td>10 days</td>
<td>September</td>
</tr>
<tr>
<td>Riverfest</td>
<td>Sedgwick</td>
<td>275,000</td>
<td>9 days</td>
<td>June</td>
</tr>
<tr>
<td>KC Renaissance Festival</td>
<td>Wyandotte</td>
<td>200,000</td>
<td>20 days</td>
<td>September-October</td>
</tr>
<tr>
<td>Country Stampede</td>
<td>Pottawatomie</td>
<td>160,000</td>
<td>4 days</td>
<td>June</td>
</tr>
<tr>
<td>Dodge City Days</td>
<td>Ford</td>
<td>100,000</td>
<td>10 days</td>
<td>July-August</td>
</tr>
<tr>
<td>Neewollah</td>
<td>Montgomery</td>
<td>75,000</td>
<td>9 days</td>
<td>October</td>
</tr>
<tr>
<td>KanRocksUs</td>
<td>Wyandotte</td>
<td>60,000</td>
<td>2 days</td>
<td>August</td>
</tr>
<tr>
<td>Walnut Valley Festival</td>
<td>Cowley</td>
<td>20,000</td>
<td>4 days</td>
<td>September</td>
</tr>
<tr>
<td>Finney County Fair</td>
<td>Finney</td>
<td>10,000</td>
<td>5 days</td>
<td>July</td>
</tr>
<tr>
<td>Trego County Fair</td>
<td>Trego</td>
<td>6,000</td>
<td>5 days</td>
<td>August</td>
</tr>
<tr>
<td>Osborne County Fair</td>
<td>Osborne</td>
<td>2,700</td>
<td>4 days</td>
<td>July</td>
</tr>
<tr>
<td>Mitchell County Fair</td>
<td>Mitchell</td>
<td>1,400</td>
<td>7 days</td>
<td>August</td>
</tr>
</tbody>
</table>
**Discussion**

- **Primary objectives:**
  - Define an OMG
  - Build a database of OMGs in KS
  - Determine LHD awareness and involvement in OMGs

- **185 OMGs recorded in database**

- **The majority of LHDs:**
  - Are not involved with OMGs
  - Agree they should be involved
Discussion

- Coordination is needed between the event organizers and other entities to ensure a safe environment for attendees

- City hosting the event
  - Permit required before event can take place

- Private entities
  - Rental facilities

- Kansas Department of Agriculture (KDA)
  - Licensing for food vendors
RECOMMENDATIONS

- Municipality hosting the event should require organizers to notify LHD and KDA as part of the approval process
  - Ensure these entities are aware of OMG
- Event organizers should inform the LHD of the upcoming OMG
  - Monitor for infectious disease outbreaks
  - Monitor for weather and accident related illnesses
  - Provide public health resources
- Event organizers should inform KDA of the upcoming OMG
  - KDA can ensure food vendors are currently licensed
RECOMMENDATIONS

- A standard tool with planning guidelines should be made available for LHDs, municipalities, and event organizers
  - Contain estimations for correct numbers of hand-washing stations and portable restrooms from reputable sources
  - Contain the list of organizations that should be notified of the OMG
    - LHD
    - KDA
    - Local hospitals
    - Local police and fire departments
    - Local emergency management office

- These recommendations may be useful for all events that occur in Kansas, not just those that fit the OMG definition
LIMITATIONS

- Recall bias
  - Answering survey based on memory
  - Listing OMGs based on memory

- Interview bias
  - Survey answered online, directly by responder
  - Survey answered via phone interview

- OMG database not comprehensive:
  - Lack of reporting protocol for events
  - Currently no good way to find them all
  - Not all attendance sizes could be found
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QUESTIONS?
REFERENCES


I M A G E   R E F E R E N C E S

5. BAK photos courtesy of KDHE