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## Public Health

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## Original Research

# Student outbreak response teams: lessons learned from a decade of collaboration



K. Pogreba-Brown <sup>a,\*</sup>, J. Weiss <sup>b</sup>, G. Briggs <sup>c</sup>, A. Taylor <sup>d</sup>, M. Schumacher <sup>e</sup>,  
B. England <sup>f</sup>, R.B. Harris <sup>a</sup>

<sup>a</sup> Mel and Enid Zuckerman College of Public Health, University of Arizona, Tucson, AZ, USA

<sup>b</sup> Arizona Department of Health Services, Phoenix, AZ, USA

<sup>c</sup> Pinal County Public Health Services District, Casa Grande, AZ, USA

<sup>d</sup> Pima County Health Department, Tucson, AZ, USA

<sup>e</sup> Coconino County Health Department, Flagstaff, AZ, USA

<sup>f</sup> Maricopa County Department of Public Health, Phoenix, AZ, USA

## ARTICLE INFO

## Article history:

Received 22 November 2016

Received in revised form

10 April 2017

Accepted 11 April 2017

Available online 25 May 2017

## Keywords:

Outbreak investigations

Graduate student education

Infectious disease

Surveillance

## ABSTRACT

**Objectives:** Student response teams within colleges of public health effectively address important concerns for two stakeholders. For universities, students learn the fundamentals of field epidemiology and provide popular training and networking opportunities. For health departments, students serve as surge capacity as trained workforce available during outbreak investigations and potentially for routine tasks.

**Study design:** This paper describes the interaction between a student response team and several health departments utilizing specific examples to demonstrate the various roles and activities students can fulfill. Lessons learned from both University team leaders and the various health departments are also included.

**Methods:** The program evolved over time, beginning with a needs assessment of local health departments and a determination of student training needs, collection, and confidential transmission of data, and interviewing techniques. Over the last decade students have worked on outbreak investigations, case-control studies, program evaluations, and in-field responses. **Results:** Since 2005, over 200 public health graduate students have contributed more than 1800 h investigating 62 separate disease outbreaks in Arizona. In addition, over the past four years students also worked an additional 2500 h to assist county health departments in routine enteric investigations, specifically for *Campylobacter* and *Salmonella*. Best practices and lessons learned found that communication, preplanning and a willingness to collaborate increased the learning opportunities for students and ability for health departments to increase their capacity both during an emergency and for routine work.

**Conclusions:** Establishment of a student response team (1) trains students in field experiences; (2) creates trained surge capacity for health departments; (3) increases collaboration between schools of public health and state/local health departments; (4) establishes a way to share funding with a local health department; and (5) increases the number of students being placed in health departments for projects, internships, and jobs following graduation.

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\* Corresponding author. 1295 N. Martin, PO Box 245211, Tucson, AZ 85724, USA. Tel.: +520 626 3076.

E-mail address: [kpogreba@email.arizona.edu](mailto:kpogreba@email.arizona.edu) (K. Pogreba-Brown).

<http://dx.doi.org/10.1016/j.puhe.2017.04.013>

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## Introduction

Public health university degree programs have historically included 'real-world' experiences such as internships, but coursework is often still focused on didactic lectures rather than hands-on, skill-based training, particularly in epidemiology.<sup>1</sup> Outbreak investigations are an ideal public health activity that can be used to demonstrate the application of key epidemiological concepts.<sup>2–4</sup> Students gain important public health training from practising public health professionals, make future career contacts, and gain real-world experience. It also provides much needed assistance to health departments through additional staff time, serves as a way to recruit or 'prescreen' students before they apply for internships or jobs, and strengthens the relationship with a partner university, potentially increasing future projects and applied research.<sup>5,6</sup>

The Student Aid for Field Epidemiology Response (SAFER) program at the Zuckerman College of Public Health at the University of Arizona is a unique hybrid of a student outbreak response team and a service learning public health course. Like other service learning courses, students are required to spend a large amount of their coursework interacting with the public; but unlike many other community engaged experiences, SAFER students work to collect data and conduct analyses for health departments related to outbreak investigations as well as perform routine surveillance activities for enteric diseases.<sup>7</sup>

The focus of this paper is to detail the lessons learned over a decade of collaboration between the University of Arizona's College of Public Health and state and local health departments. We will highlight example case studies of successful investigations and detail the specific roles that students were able to play.

## Methods

Activation of the SAFER team is initiated when a health department contacts the program director and requests assistance. This initial request includes a description of the public health event, expectations of the number of students needed, determination of the specific tasks students can best assist at, and a timeline for activation. Once the scope of the response is agreed upon, the program director will contact students directly through an email listserv and initiate online scheduling for students to sign up for needed shifts. Details of the numbers of responses, time to response (usually in 12 h or less) and number of participating students has been previously published.<sup>7</sup> This paper uses case studies to demonstrate the situations in which this student team has been activated and the specific role the team played at each event.

## Results

### *No way to end a ski vacation*

#### *Outbreak*

On February 26, 2013 the Arizona Department of Health Services received two separate complaints linking travel to a

northern Arizona ski resort to several cases of gastroenteritis. Stories of groups with multiple people ill were also starting to circulate on social media. Given the symptoms and secondary cases 24–48 h after initial onset, the health departments suspected norovirus. On February 27th, the Pima County Health Department contacted SAFER for assistance with interviewing cases and controls.

#### *Role of student team*

Interview forms and the line list were provided by secure email network and trained students began interviewing people the same day. Within 4 h of the request, students interviewed 13 cases and eight controls. During the next several days, students interviewed 71 people while an additional 102 residents from other counties were interviewed by their respective jurisdictions. Of those who were ill, 89% reported eating at the base lodge. Stool samples were positive for norovirus genotype 2 (GII+). A simultaneous environmental health inspection found resort staff had recently switched from using bleach-based to quaternary-ammonia products (which are not effective against norovirus) in the interest of their customers (the specific reason was not provided to investigators).

A SAFER student using Pima County data found French fries to be a statistically significant food item (odds ratio = 4.36; 95% confidence interval = 1.27–17.1). This information was then presented by the student at both a statewide infectious disease conference (AZID) and in a recent publication.<sup>8</sup>

### *Dinner theater leaves people less than inspired*

#### *Outbreak*

On February 26th, 2013 (the same exact day as the outbreak above), the Pinal County Public Health Services District's Environmental Health Section received numerous complaints from unrelated ill individuals naming a local restaurant and popular tourist attraction. A facility inspection revealed several ill staff members and at least one person vomited during an earlier show requiring a mop and bucket to clean it up. Sanitarians obtained a menu, seating chart (all patrons had pre-assigned seats for each show), credit card receipts, and contact information of those who made the initial reservations.

All 14 cases initially interviewed by county epidemiologists, reported eating at either the matinee or dinner show on the same day (February 23rd), had similar symptoms (sudden onset of nausea, vomiting, or diarrhea) within 35 (median) hours of their meal and knew many other people who had also become ill.

#### *Role of student team*

Using the attendee list, students assigned a randomization strategy to begin contacting the more than 1000 people. Students spent approximately 80 h over nine days contacting cases and controls and completed 106 interviews (58 cases and 39 controls included in the final study). No specific food item was found to be statistically significant. Two students also volunteered to map the cases and controls using a layout of the tables provided by the restaurant. No clustering was

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