

**Maricopa County
Department of Public Health**



**2004 Outbreak Report
End of Year Summary**

Submitted By
Division of Epidemiology/Data Services
October 28, 2005

This report brings together several documents previously distributed and/or presented in other venues.

Goals:

- To provide a general overview of the disease outbreak investigations during 2004 in Maricopa County.
- To describe the methodology followed in the investigation of outbreaks.

Overview:

In Arizona, health care providers (HCP), health care institutions (HCI), correctional facilities (CF), childcare establishments (CCE), administrators of schools, and shelters are all required to report outbreaks of infectious diseases to the Local Public Health Authority (*Table 1*), under the Arizona Administrative Code A.A.C. R9-6-203 and ARS Title 36.

Table 1: Diseases requiring outbreak notification within 24 hours.

Disease/Condition	Reporting by HCPs, HCIs, and CFs	Reporting by Schools, CCEs, and Shelters
Amebiasis	X	
Campylobacteriosis	X	
Conjunctivitis: acute	X	X
Cryptosporidiosis	X	
Diarrhea, Nausea, or Vomiting	X	X
Giardiasis	X	
Hepatitis A	X	
Hepatitis E	X	
Salmonellosis	X	
Scabies	X	X
Shigellosis	X	
Streptococcal Group A Infection		X
Taeniasis	X	
Vibrio Infection	X	
Yersiniosis	X	

Outbreaks are investigated to stop the spread of disease as soon as possible, identify the source of the disease, and prevent future outbreaks. Educational materials are provided to the public in order to help stop transmission and educate the public on safe practices. If possible and when indicated, biological and environmental specimens are collected as part of these investigations to obtain precise laboratory information and facilitate intervention. Maricopa County Department of Public Health (MCDPH) investigates outbreaks in conjunction with other agencies in Maricopa County such as the Environmental Services Department (ES). Single case reports of communicable diseases often lead to the identification of additional cases that may turn out to be part of an outbreak. Many outbreak investigations require the assistance of the Arizona Department of Health Services (ADHS), especially when laboratory services are necessary. All outbreak reports are submitted to ADHS. They are forwarded to the Centers for Disease Control (CDC). These reports are available by request.



Criteria For Investigation:

Not all reported outbreaks are investigated. Risk assessments are performed to weigh several factors to determine whether to investigate an outbreak. The size of the outbreak; the severity of the illness; and whether the outbreak results in hospitalizations and/or deaths, are considered. Recent outbreaks are more likely to be investigated, because the probability of good recall or effective intervention is higher. The level of vulnerability of affected individuals, type of facility (daycare, LTCF, food establishment, school, hospital, resort or other), and the degree to which the outbreak situation is under control are taken into consideration. Finally, availability of staff resources and the number of outbreaks currently under investigation affect the decision to investigate or not.

Important Methodological Issues:

Communication with all partners and all parties associated with the outbreak at every step of the investigation is of paramount importance. Email communication allowed the dissemination of information quickly and with the key persons. Personal contact with those involved in investigations as well as with any community partners was essential. Early identification of the most qualified contact person simplified the data collection process, eliminating unnecessary duplication. Documentation of the actions taken as they happen is very important for the success of outbreak investigations. Entering data as they are received is crucial to maintain ongoing data analysis. Timely completion of reports at the conclusion of an outbreak is essential.

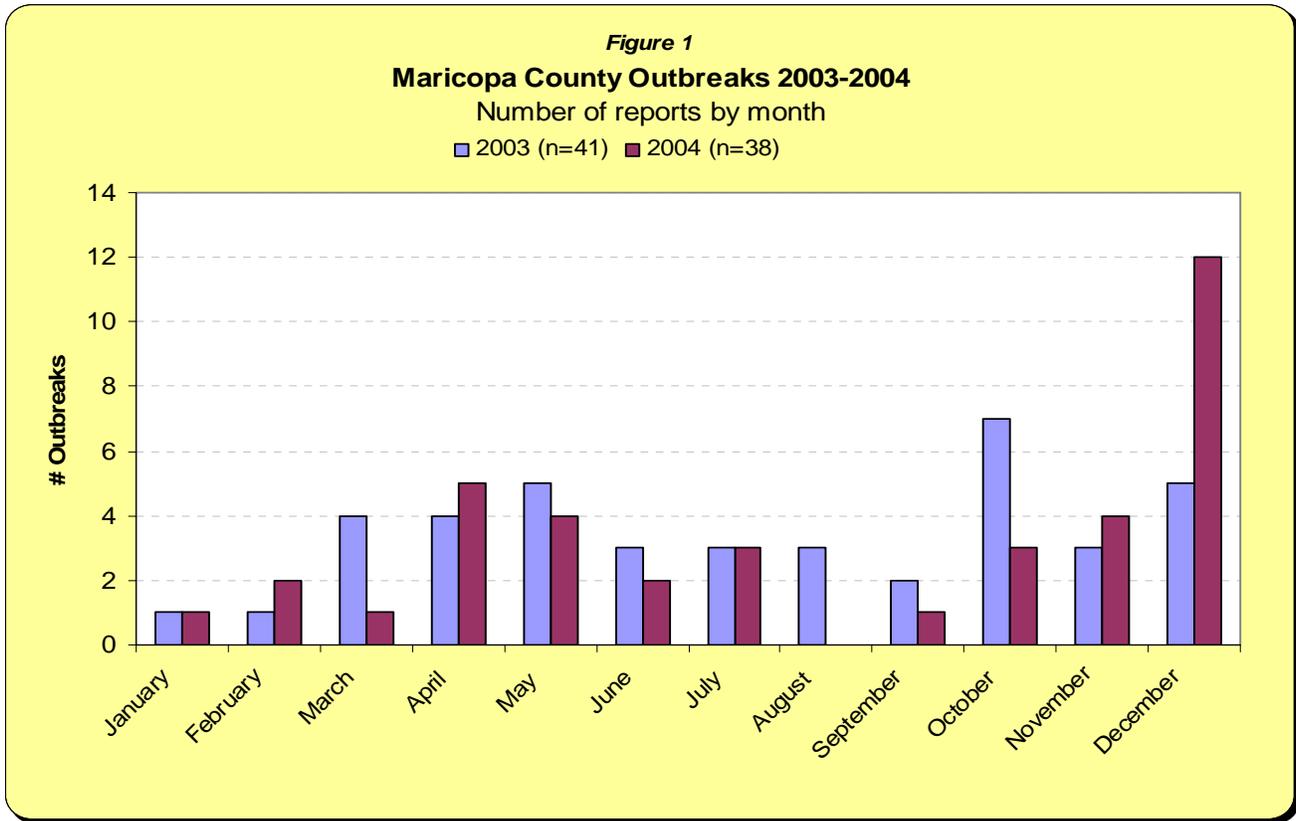
Challenges:

Persistent problems with investigations in 2004 included the shortage of staff, and the lack of a simplified outbreak protocol that minimally trained staff could use. Inability to collect specimens for all outbreaks was also a problem. Because too much time had elapsed from the onset of the disease to the date it was reported, specimens were either not appropriate, or the patients were hard to contact or not cooperative since their symptoms had abated.

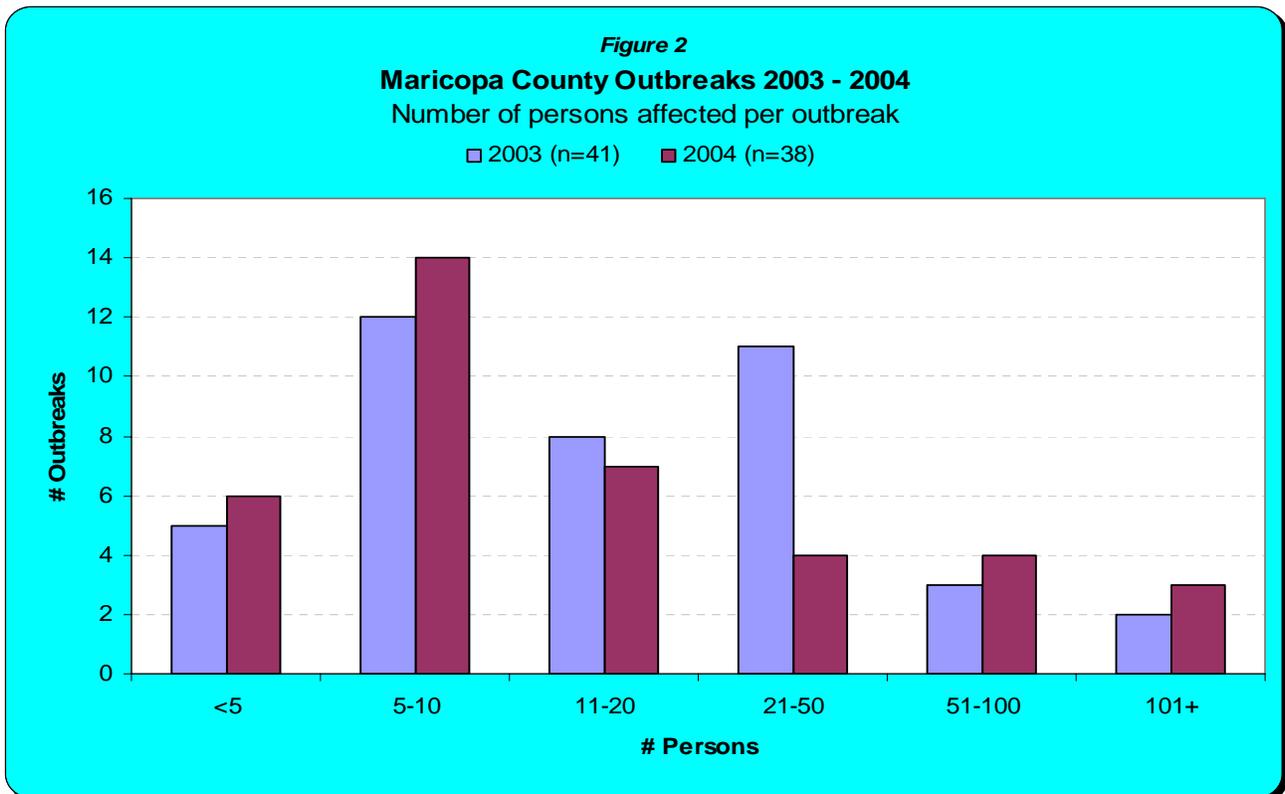
Results:

In 2004, 38 outbreaks were investigated by the MCDPH. The following sections summarize these data. For comparison purposes, 2003 data from 41 outbreaks have been included.





In 2004 38 outbreaks were reported to MCDPH, or an average of 3.2 per month, with a range of 0-12 per month. In 2003 the total was 41, an average of 3.4 per month, with a range of 1-7 per month. In 2003 the month of October had the most outbreaks reported with 7; in 2004 the month with the highest number of outbreaks was December with 12 (Figure 1).



Outbreaks in 2004 tended to be smaller than in 2003. The average number of persons affected per outbreak was 29.5 in 2004 (range 2-390) and 43.2 (range 2-800) in 2003. In 2004 71% of outbreaks involved fewer than 21 persons. In 2003, this percentage was only 61% (Figure 2).

Table 2: Number of Outbreaks by Etiology

Etiology of Outbreaks	2003	2004
Aseptic Meningitis	1	0
Conjunctivitis	1	0
Giardia	2	0
H. pylori	0	1
Head Lice	0	1
Influenza	2	0
Legionella	1	0
MRSA	1	0
Norovirus	4	12
Pneumonia	1	0
Salmonella	3	1
Scabies	1	3
Shigella	4	1
Strep Group A	1	0
Streptococcus	1	0
Unknown	18	15
Varicella	0	3
Viral Gastroenteritis	0	1
Total	41	38

In 2004, the percentage of outbreaks of unknown etiology was 40%. In 2003, this percentage was 44. Unknown etiology outbreaks were primarily gastrointestinal in nature (14 of 15 outbreaks or 93%). The pathogen of interest remained unknown for a variety of reasons including failure to obtain specimens for testing, outbreaks that reported too late for testing, and testing which did not identify a pathogen. Outbreaks identified as caused by Norovirus increased from 4 in 2003 to 12 in 2004. This may be explained by greater frequency of testing for norovirus in 2004 compared to 2003. The number of outbreaks caused by Shigella and Salmonella decreased from 2003 to 2004. Other outbreaks involving a variety of pathogens occurred sporadically over both years. The table above summarizes the number of outbreaks by pathogen for both years.

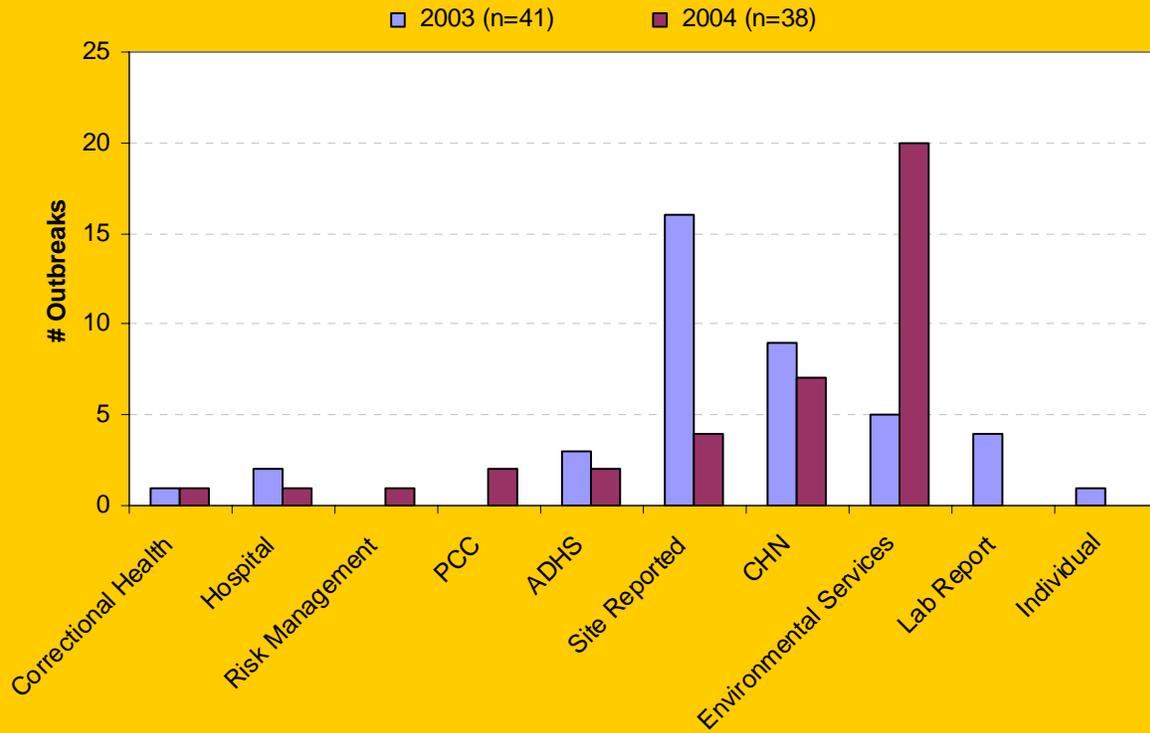
Table 3: Number of Outbreaks by Type

Outbreak Type Category	2003	2004	Total
Gastrointestinal	29	30	59
Respiratory	8	0	6
Rash	2	7	9
Other	2	1	5
Total	41	38	79

While a specific etiology is often not determined, most outbreaks can be broadly classified. In 2003 and 2004, most outbreaks were gastrointestinal in nature. Those numbers changed very little between the two years. More respiratory outbreaks were reported in 2003, whereas in 2004 more rash outbreaks were reported. Other types of outbreaks include conjunctivitis, head lice, and aseptic meningitis.



Figure 3
Maricopa County Outbreaks 2003 - 2004
 Number of outbreaks by report source



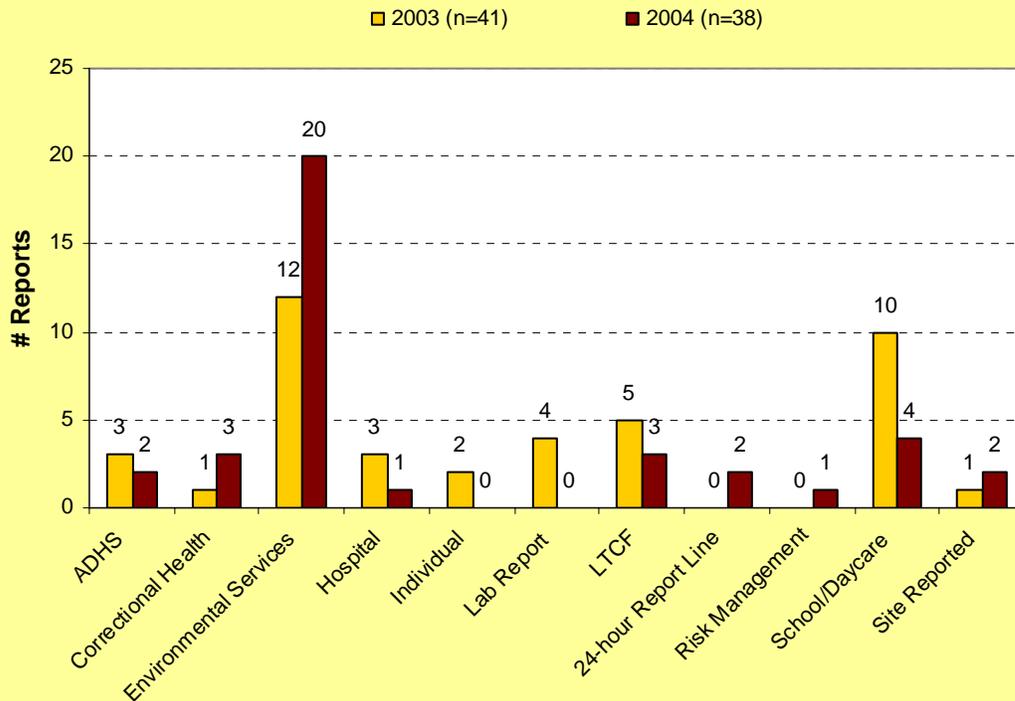
The distribution of reporting sources was similar for 2003 and 2004 with 3 major exceptions. Reports from Environmental Services (ES) increased in 2004 with 20 outbreaks reported compared to 12 in 2003. In 2004 a 24-hour reporting line was added through the Poison Control Center (PCC). In 2004 two outbreaks were identified by reports to the PCC line. Lab reports identified four outbreaks in 2003; however, in 2004 none was identified (*Figure 3*).



Figure 4

2003 & 2004 Maricopa County Outbreaks

Number of outbreaks reported by facility



Two main differences are observed in the distribution of outbreaks by type of site between 2003 and 2004. In 2003, more daycare and schools reported outbreaks than in 2004. Almost 1.5 more restaurant outbreaks were reported in 2004 than in 2003 (Figure 4).

2004 Outbreaks Summaries

Gastrointestinal

H. pylori

One investigation for *H. pylori* was done at the request of the Maricopa County office of Risk Management. The investigation involved workers at a Maricopa County Women Infants and Children (WIC) site.

Norovirus

Twelve norovirus outbreaks were investigated in 2004. Most outbreaks were associated with restaurants or resorts. Buffet style meals were associated with six outbreaks. Identification of norovirus as the pathogen was aided by prompt submission of specimens, while symptoms either were ongoing or immediately after symptoms had resolved, and by submission of specimens from multiple patients.

Salmonella and Shigella

One outbreak of *Salmonella oranienburg* was investigated by ADHS. The outbreak was associated with a convention held in Maricopa County, but no local cases were discovered during the investigation. One outbreak of *Shigella flexneri* was reported in a daycare. Exclusion of ill children from the daycare and requirement of 'proof of cure' before returning were helpful in controlling this outbreak.



Viral Gastroenteritis

One outbreak of viral gastroenteritis of unknown etiology was investigated. Stool specimens were submitted for testing and although virus was present, no specific virus could be positively identified.

Unknown

Fourteen outbreaks of gastrointestinal illness were investigated without determination of specific etiology. Reasons for not determining the etiology of a reported outbreak included the following:

- Late reporting.
- Cases unwilling to submit specimens for testing.
- Testing did not identify a pathogen.
- Cases declined being interviewed.

Rash

Scabies

Three outbreaks involved scabies mites; two at long-term care facilities (LTCF) and one at a prison. Consultation with dermatologists for diagnosis, prompt treatment of all affected, and prophylactic treatment of all close contacts was recommended.

Varicella

Three outbreaks of varicella were reported; two in county jails and the other in a county juvenile detention facility. The outbreaks in the county jail system lasted several months in several separate facilities. Procedures for testing of inmates for immunity and isolation of non-immune inmates were instituted.

Unknown

One outbreak of rash illness of unknown etiology was reported at a Long Term Care Facility. A definitive diagnosis was not obtained but clinical presentation indicated scabies mites as the probable cause, and patients were treated.

Other

One investigation into head lice at a school was conducted. Only two confirmed cases and several suspect cases were reported. Many additional case reports were ruled out.

Summary:

There were 38 outbreaks of different etiologies in Maricopa County in 2004. The average number of outbreaks reported per month was just over three. The outbreaks ranged in size from 2-390 persons affected. December had the highest number of outbreaks for the year. Data from subsequent years will allow better characterization of the seasonal pattern of outbreaks in Maricopa County. 71% of the outbreaks involved fewer than 21 persons. By far the most common pathogen isolated in outbreaks was norovirus; however, 40% of outbreaks were of unknown etiology. All three varicella outbreaks occurred in correctional facilities. ES reported the majority of outbreaks, which stemmed primarily from restaurant complaints. Most investigations involved restaurants followed by nursing homes or long-term care facilities.

