# CRYPTOSPORIDIOSIS IN NEVADA, 2003-2012

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Edition 1.2

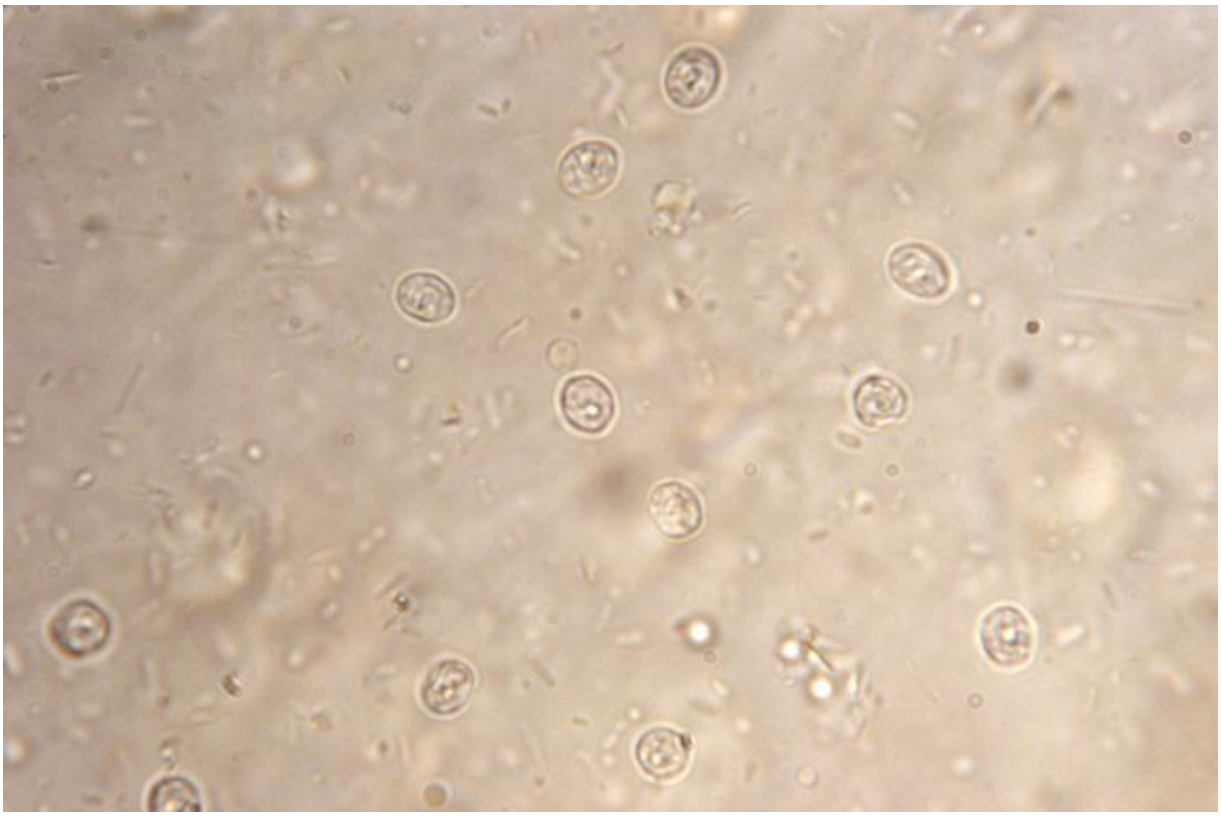


Photo: Centers for Disease Control and Prevention/ Dr. Peter Drotman


**DEPARTMENT OF HEALTH AND HUMAN SERVICES**
DIVISION OF PUBLIC AND BEHAVIORAL HEALTH
Office of Public Health Informatics and Epidemiology

BRIAN SANDOVAL
*Governor*

RICHARD WHITLEY, MS
*Administrator*

MICHAEL J. WILLDEN
*Director*

TRACEY D. GREEN, MD
*Chief Medical Officer*

# Purpose

The purpose of this report is to provide a general overview of the incidence and recent trends of cryptosporidiosis among Nevada residents. The report also includes Nevada data collected from cases of cryptosporidiosis from 2003 to 2012. Cryptosporidiosis is listed as one of Nevada's reportable diseases pursuant to NRS 441A (1). Cryptosporidiosis reporting is further regulated by NAC 441A.505 (2).

# Cryptosporidiosis

Cryptosporidiosis is a gastrointestinal illness caused by a parasitic infection by the protozoa *Cryptosporidium*. The *Cryptosporidium* parasite is transmitted by a fecal-oral route of infection and frequently occurs when an individual eats, drinks, or puts an item in their mouth that has been contaminated with fecal matter from an infected person or animal. Cryptosporidiosis infections are common in preschools and daycares because small children tend to put objects in their mouths. Cryptosporidiosis infections are also commonly traced back to contaminated bodies of water like pools, lakes, streams, and rivers. Many community-wide cryptosporidiosis outbreaks have been traced back to municipal water and recreational waters contaminated with the parasite. In adults, in addition to consuming contaminated food or drinks, the fecal-oral route of transmission includes mouth to anus oral sex, also known as "rimming" (3).

Symptoms of cryptosporidiosis usually appear within 3-14 days of being exposed, and patients may exhibit watery diarrhea, stomach cramps, weight loss, upset stomach, and fever. These symptoms may last anywhere from 1 to 2 weeks and in some cases, over a month. Some individuals infected with the parasite experience no symptoms at all. In immuno-compromised individuals, such as those with HIV/AIDS, cryptosporidiosis is an opportunistic infection–often chronic—that can be fatal. Special considerations must be made for the diagnosis and treatment of these individuals (3).

Diagnosis of cryptosporidiosis is difficult, because routine laboratory testing does not include the test for the parasite. A physician must specifically request a laboratory test for the *Cryptosporidium* protozoan, but the parasite is still difficult to detect (4). Most people experiencing cryptosporidiosis infections recover on their own without treatment. Anti-diarrheal medicine may be used to slow diarrhea, but a health care provider should be consulted before any medicine is taken. In severe cases, the prescription antiprotozoal drug Nitazoxanide has been U.S. Food and Drug Administration (FDA) approved for treating diarrhea in people with healthy immune systems. However, the effectiveness of this treatment in immuno-compromised individuals is unclear (3).

To prevent further spread of the parasite, the Centers for Disease Control and Prevention (CDC) recommends regularly washing hands, especially after changing diapers or cat boxes, after gardening, and after sexual intercourse. CDC also recommends avoiding ingestion of water from pools, streams, lakes, ponds, and other bodies of water. When traveling, it is important to remember that water in other countries may not be subject to the same regulations as the United States and may not be sanitary; this includes ice in particular. Therefore, CDC recommends drinking unopened bottled water/drinks when traveling to less developed countries. Additional recommendations include using a barrier during oral-anal sex and washing hands immediately after handling a condom used during anal sex (3).

# Summary

From 2003 to 2012, the annual number of reported cryptosporidiosis cases in Nevada ranged from a low of 2 cases in 2004 to a high of 38 cases in 2010. Over the ten years, a total of 187 cases were reported. The annual crude incidence of cryptosporidiosis ranged from a low of 0.4 cases per 100,000 population in 2003 to a high of 1.4 cases per 100,000 population in both 2007 and 2010; the incidence rate for 2004 was not calculated due to low case counts. During the 10-year time period, the years 2007 and 2010 had significantly higher crude incidence rates than all years except for 2009. The crude incidence rate from 2003 to 2012 was 0.7 cases per 100,000 population. There are no Healthy People 2010 or Healthy People 2020 objectives for cryptosporidiosis.

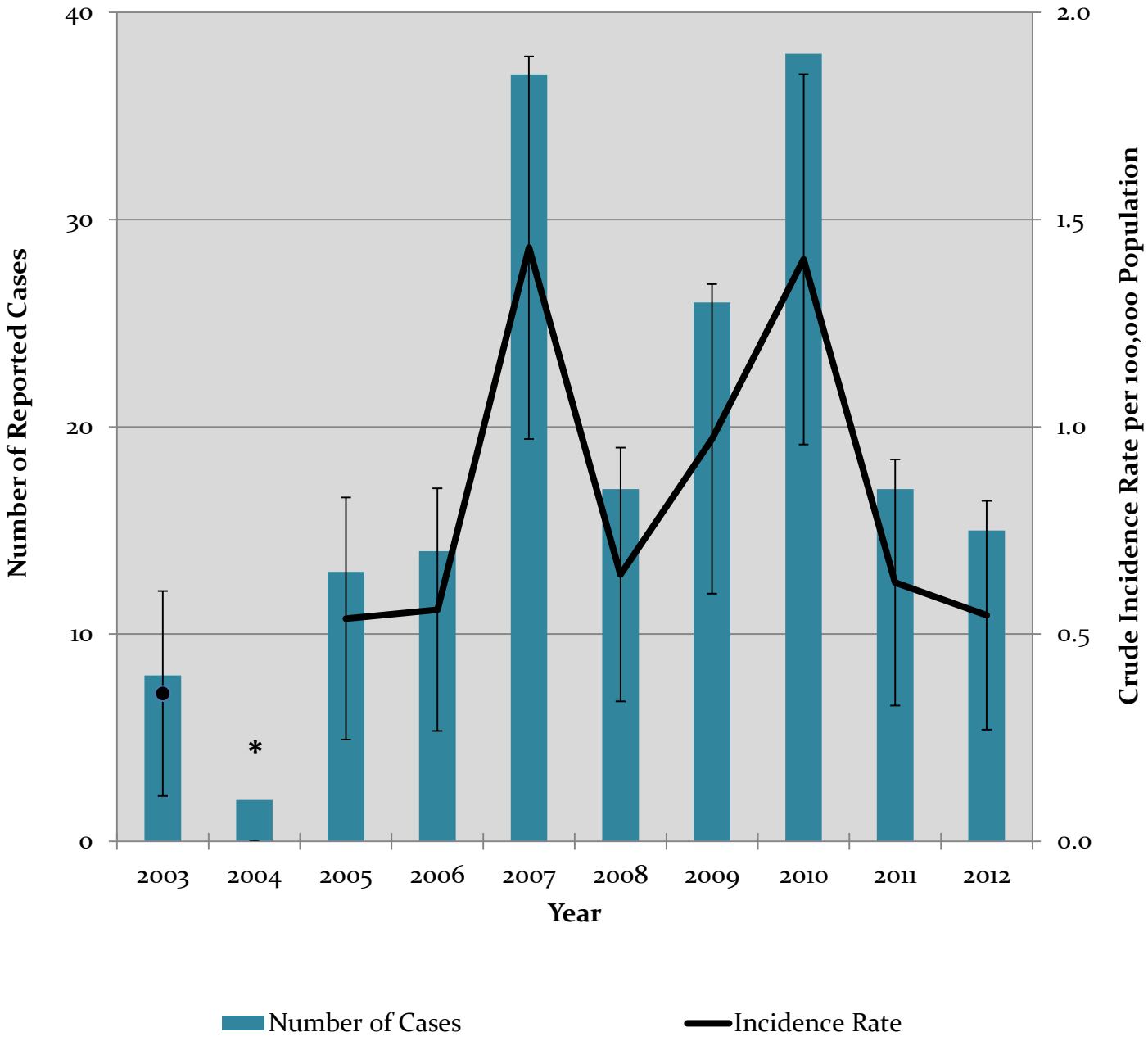
The rural and frontier counties and Washoe County Health District had significantly higher age-adjusted incidence rates (2.5 cases and 1.8 cases per 100,000 population, respectively) than Carson City Health and Human Services, Southern Nevada Health District, and the overall age-adjusted incidence rate for the state (0.9, 0.3, and 0.7 cases per 100,000 population, respectively), but the difference between the rural and frontier counties and Washoe County Health District was not significant. Southern Nevada Health District had a significantly lower age-adjusted incidence rate compared to the state rate.

Like most food-borne diseases, cryptosporidiosis cases typically increase in the summer months and decrease in the fall and winter months. Between 2008 and 2012 (years for which monthly data is available), the monthly occurrence of cryptosporidiosis was fairly regular, typically varying from 0 to 4 reported cases each month with no discernible pattern. August and September 2010 showed a larger number of reported cases per month (15 and 11, respectively).

From 2003 to 2012, a significantly lower age-adjusted incidence rate (0.3 cases per 100,000 population) was observed among residents of Hispanic origin compared to Whites and American Indian/Alaskan Natives (0.9 and 2.1 cases per 100,000 population, respectively). There were no other significant differences between the other racial/ethnic groups.

It is known that cryptosporidiosis infections are common among children in preschools and daycare centers (3). Children 1-4 years of age had a significantly higher incidence rate (1.3 cases per 100,000 population) compared to the 15-24 year-old age group (0.4 cases per 100,000 population). There were no other significant differences between the other age groups. The rate for infants less than 1 year of age was not calculated due to low case counts.

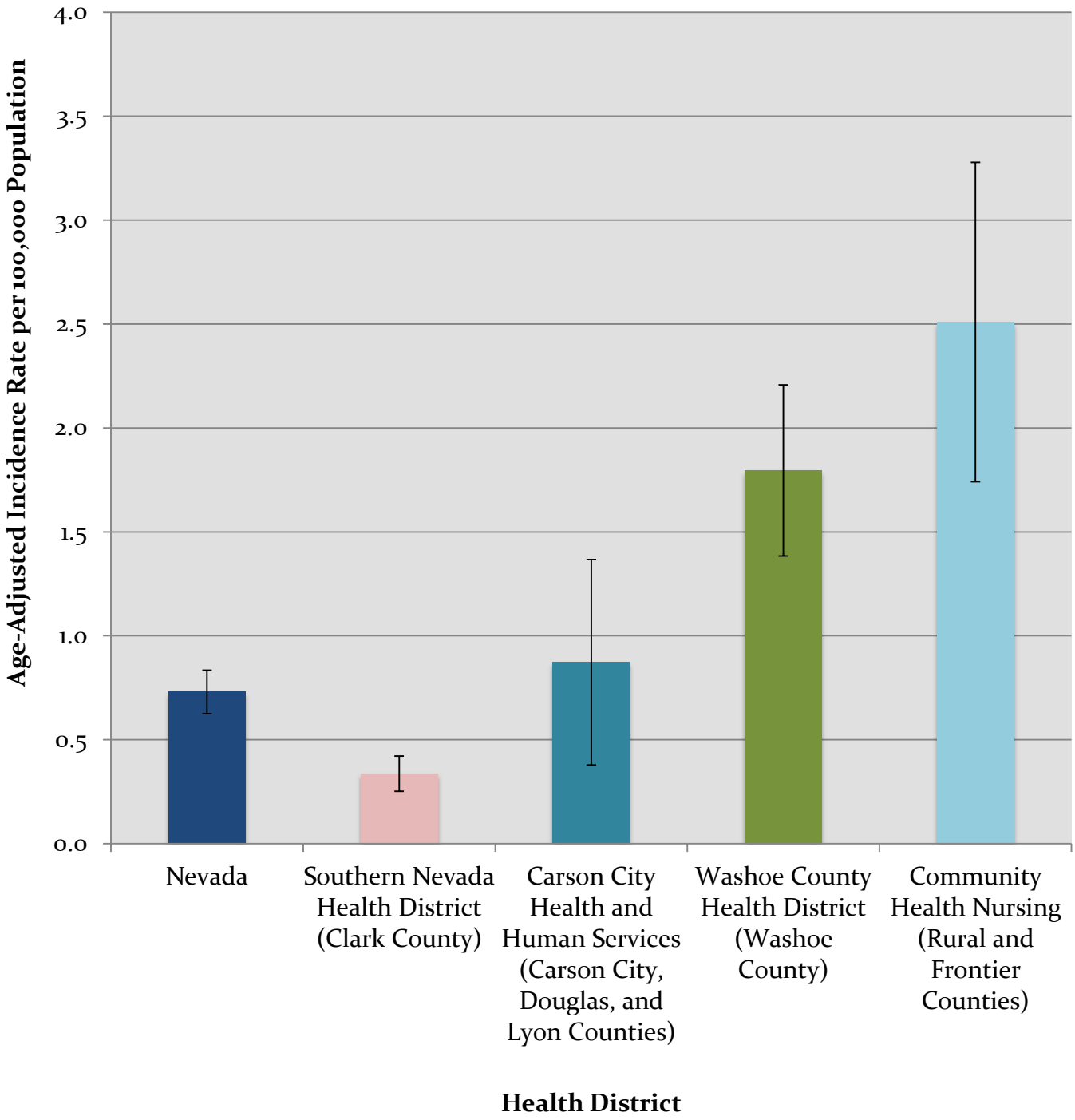
# Figure 1. Number of Reported Cases and Crude Incidence Rates of Cryptosporidiosis in Nevada: 2003-2012



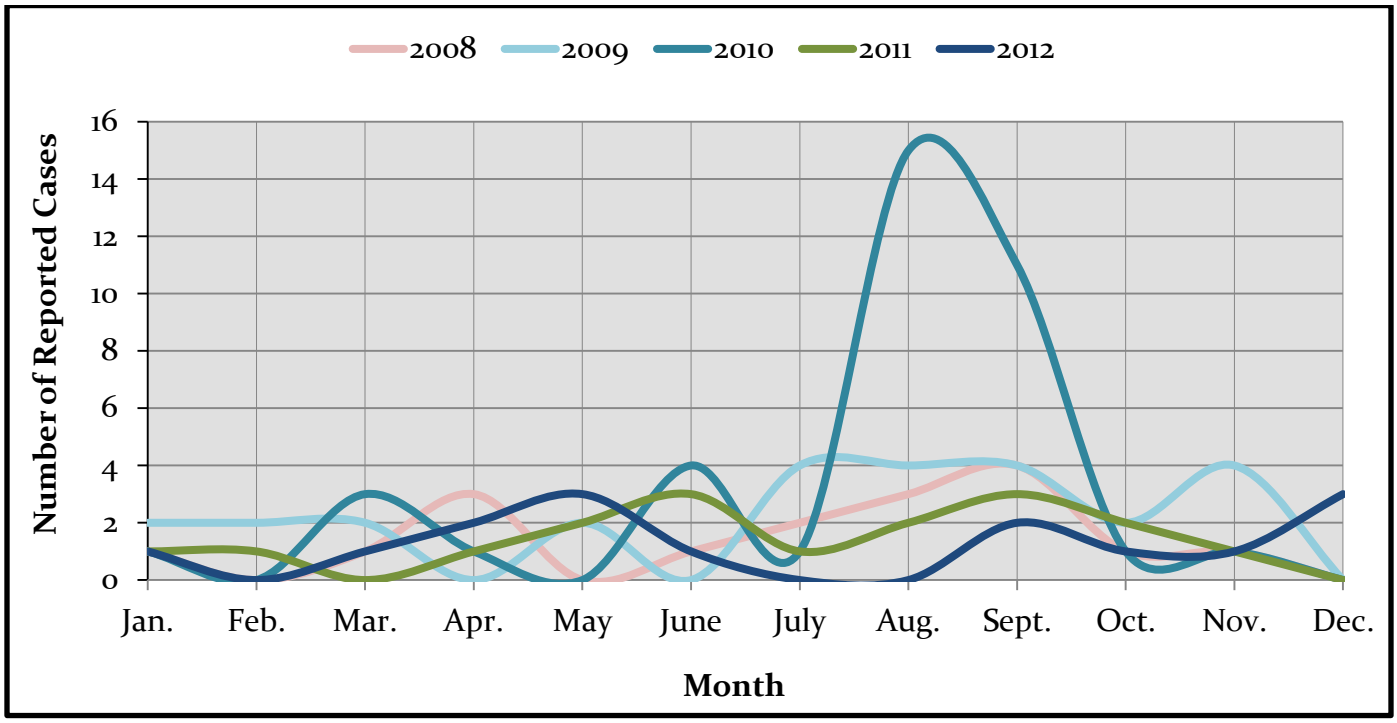

* Incidence rate not presented due to low case counts.

The crude incidence rate in Nevada from 2003 to 2012 was 0.7 cases per 100,000 population.

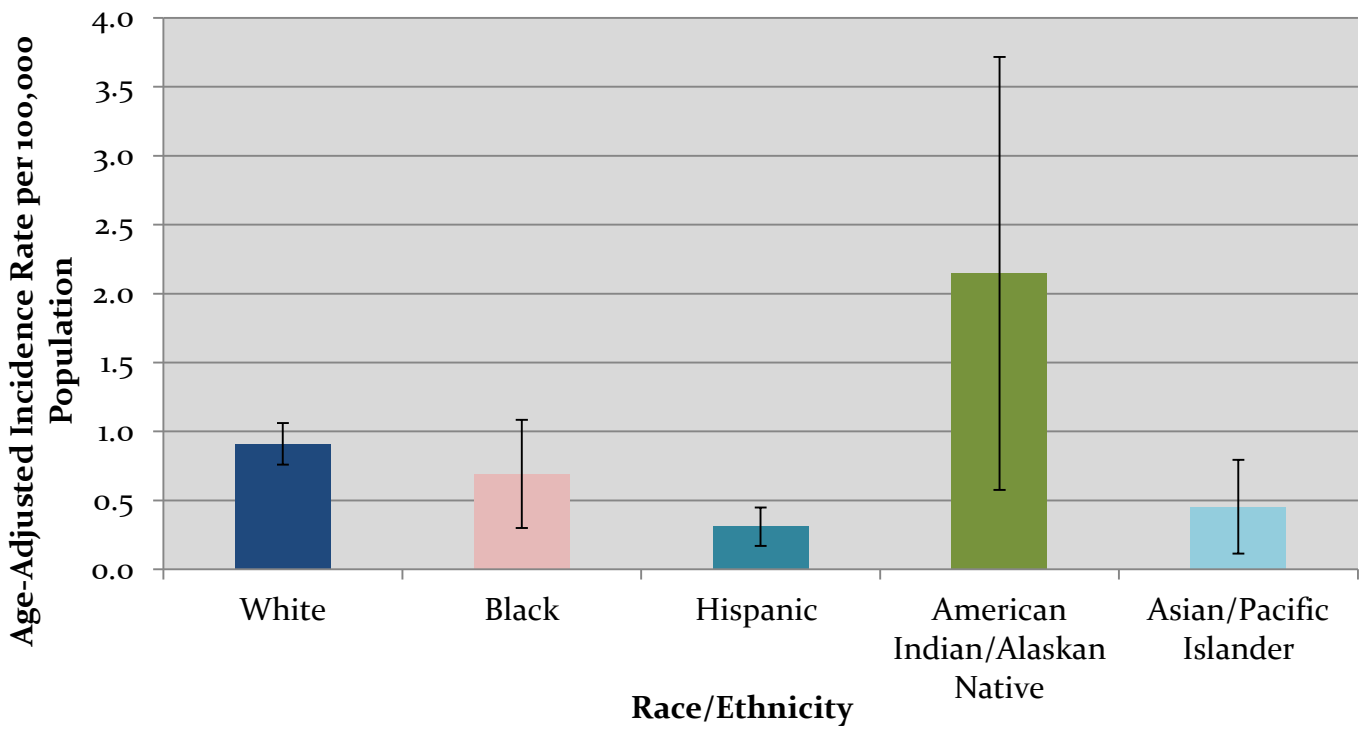
# Figure 2. Age-Adjusted Incidence Rates of Cryptosporidiosis in Nevada and Nevada Health Districts: 2003-2012



# Figure 3. Number of Cryptosporidiosis Cases Reported in Nevada by Month: 2008-2012

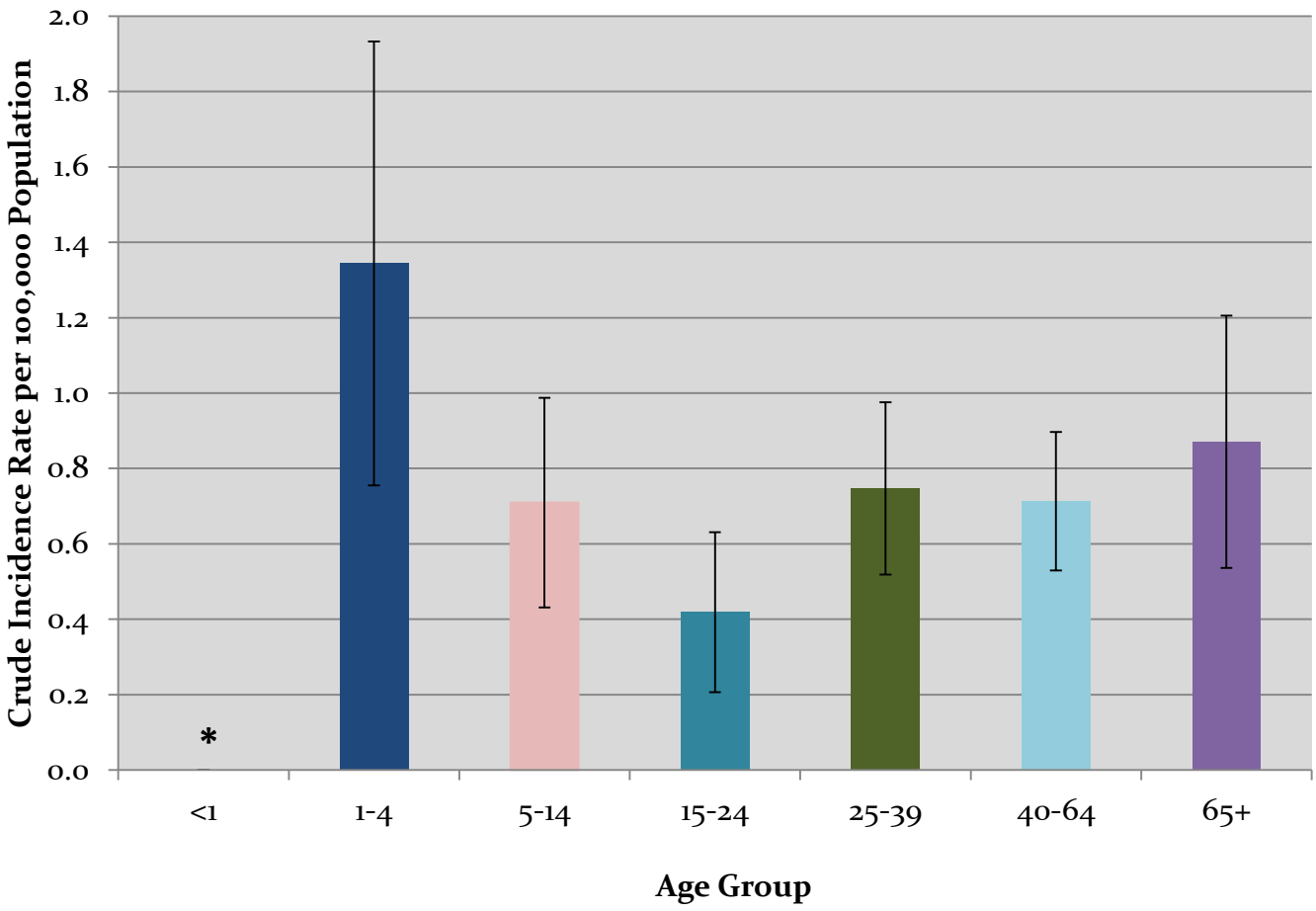



# Figure 4. Age-Adjusted Incidence Rates of Cryptosporidiosis in Nevada by Race/Ethnicity*: 2003-2012




*If Hispanic ethnicity was reported with a race, cases were categorized as Hispanic; therefore, all races can be considered non-Hispanic.

# Figure 5. Crude Incidence Rates of Cryptosporidiosis in Nevada by Age Group: 2003-2012




* Data not presented due to low case counts.

# Technical Notes

All Nevada data from 2003 to 2012 came from reported *Cryptosporidium* infections among Nevada residents (5, 6). The CDC and Council of State and Territorial Epidemiologists case definition of cryptosporidiosis encompasses all cases classified as probable or confirmed; all cases of cryptosporidiosis used for this report follow this definition (7). Population estimates were obtained from Nevada State Demographer's Office (8). Age-adjusted rates per 100,000 population were calculated using the 2000 U.S. standard population. Cases with unknown race/ethnicity (13 cases) were imputed among racial/ethnic groups based upon the distribution of each racial/ethnic group within the general population. Cases with race and ethnicity listed as "other" or those with multiple races were excluded from Figure 4; 2 such cases were excluded. When used for rates, error bars represent 95% confidence intervals. The Keyfitz method was used to calculate confidence intervals of age-adjusted rates (9). Due to their inherent unreliability, rates were not calculated for case counts lower than five.

# Sources


1. Nevada Revised Statute (NRS) 441A. https://leg.state.nv.us/NRS/NRS-441A.html
2. Nevada Administrative Code (NAC) 441A.505. http://www.leg.state.nv.us/NAC/NAC-441A.html#NAC441ASec505
3. Centers for Disease Control and Prevention. (2013). Parasites-*Cryptosporidium*. National Center for Emerging and Zoonotic Infectious Diseases. Retrieved 2013-10-02. http://www.cdc.gov/parasites/crypto/
4. Yoder, J., Harral, C., Beach, M. (2010). *MMWR-Cryptosporidiosis Surveillance-United States, 2006-2008.* National Center for Emerging and Zoonotic Infectious Diseases. 59(SS06): 1-14. http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5906a1.htm
5. NBS. NEDSS. All counties except Clark. 2005 to 2012.
6. NETSS. All counties from 2000 to 2004 and Clark. 2005 to 2012.
7. Centers for Disease Control and Prevention. (2012). Cryptosporidiosis. National Notifiable Diseases Surveillance System. Retrieved 2014-02-04. http://wwwn.cdc.gov/NNDSS/script/casedef.aspx?CondYrID=648&DatePub=1/1/2012 12:00:00 AM
8. Nevada State Demographer's Office. 2003-2012 ASRHO Estimates and Projections. Division of Public and Behavioral Health edition. Vintage 2012.
9. Keyfitz, Nathan. Human Biology. *Sampling variance of standardized mortality rates.* September 1966. 38(3): 309-17.


# Recommended Citation

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For additional information regarding this publication, please contact:


Office of Public Health Informatics and Epidemiology
(775) 684-5911
outbreak@health.nv.gov



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