

A Coordinated Approach to Combating a Cryptosporidium Outbreak 2007-2008

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Cryptosporidiosis

Background Information

- ▶ Protozoan parasite – *Cryptosporidium*
 - Watery diarrhea, lasting 1-2 wks
- ▶ Fecal-oral transmission
 - Recreational or drinking water, food, person-to-person
- ▶ Nationally notifiable disease (1994)
 - 16 cases per year in Utah (2002-2006)
 - Increasing in US since 2004
 - ▶ 3,500 cases in 2003 to 8,200 in 2005
 - ▶ > 26 recreational water outbreaks in US in 2007
- ▶ Recreational water transmission
 - chlorine resistant, low infectious dose

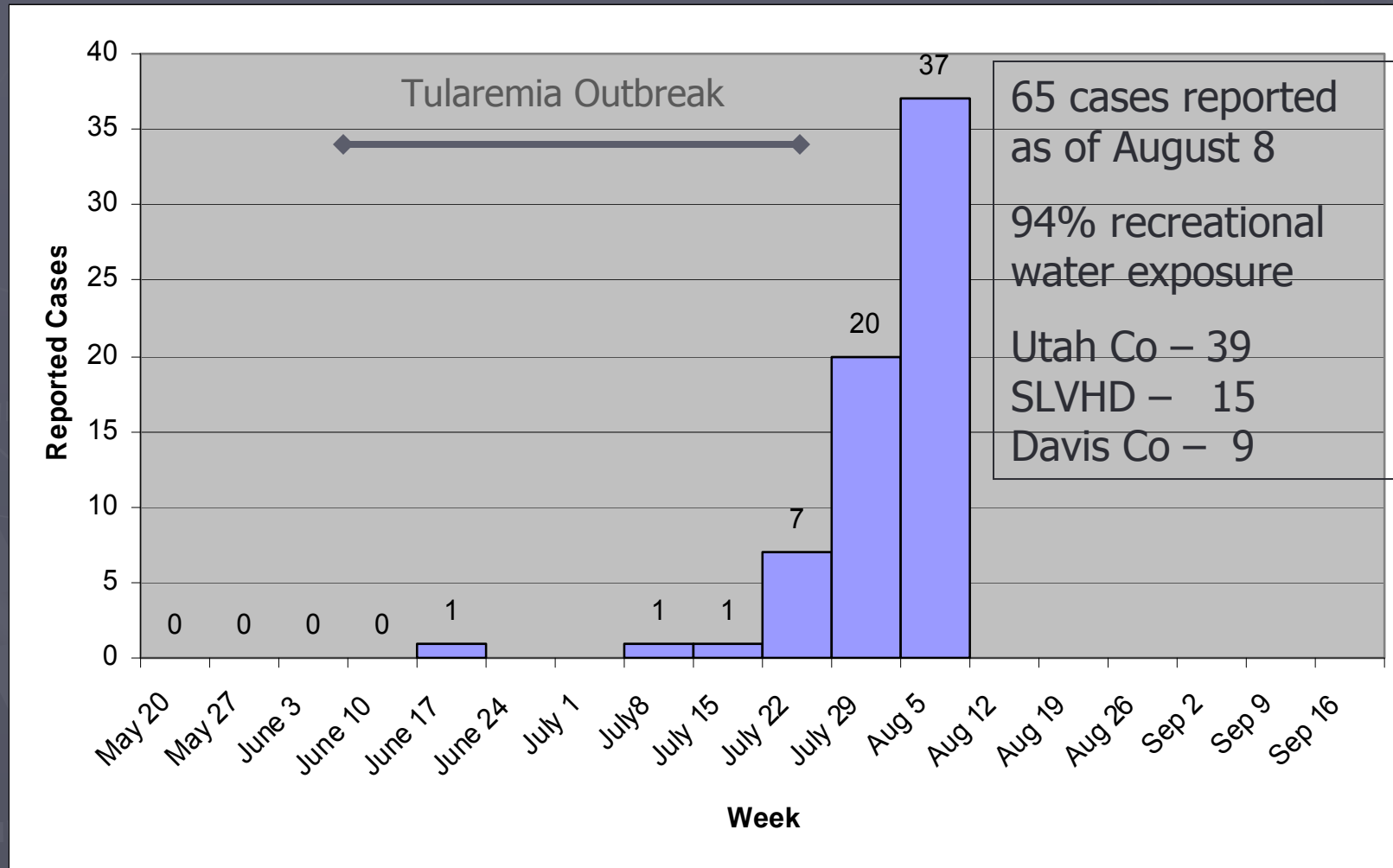
Crypto – Utah 2007

Timeline - Surveillance

- ▶ July 12 - Utah Co. - increased number crypto cases
 - 1 confirmed, 4 suspect
- ▶ July 26 – UDOH detected increase
 - 8 cases statewide (3 counties), baseline 16/year
- ▶ July 31 – SLVHD investigated GI illness cluster
 - Swimming pool party - 39/45 attendees ill (no lab tests)
- ▶ August 1 – Davis Co. reported increase
- ▶ August 2 – UDOH notified all LHD's
 - 23 cases reported to date, 5 counties (17 in Utah Co)
 - 19/22 with data reported recreational water exposure

Reported Cryptosporidiosis Cases – Utah 2007

Lab-confirmed, by date of report, through week of Aug. 5



What would you do?



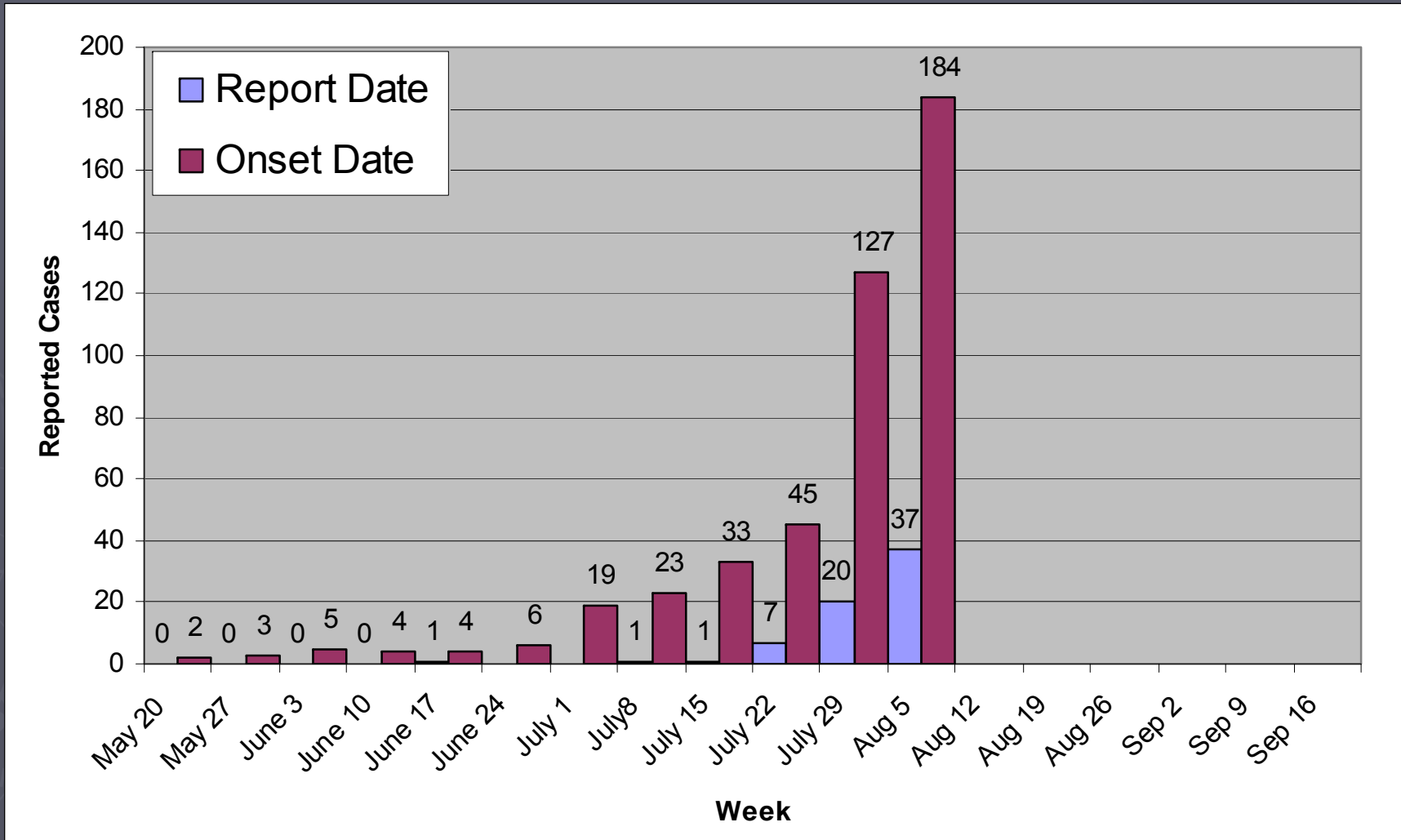
Crypto Outbreak – 2007

Timeline – Initial Response

- ▶ July 19- August 1 – local environmental health response to named pools
- ▶ August 2 – August 9
 - LHD press releases; local requests to pools to post signs; letters, faxes, emails, listserv to providers to test for crypto
- ▶ August 9 – UDOH organized conference call

Reported Cryptosporidiosis Cases – Utah 2007

Lab-confirmed, by dates of report and onset through week of Aug. 5



Cryptosporidiosis – Utah 2007 State Response (August 9-27)

- ▶ Aug. 9, 17, 24 – Conference calls
 - Identified consistent approach/messages
 - Began regular web postings, surveillance reports, requested daily reporting from large lab
- ▶ Aug 10, 17 – Joint state/local press releases
 - Avoid swimming when sick, “Health Alert – Outbreak”
- ▶ Other activities
 - Began web postings, implemented crypto mini-form, childcare facility contact, physician listserv

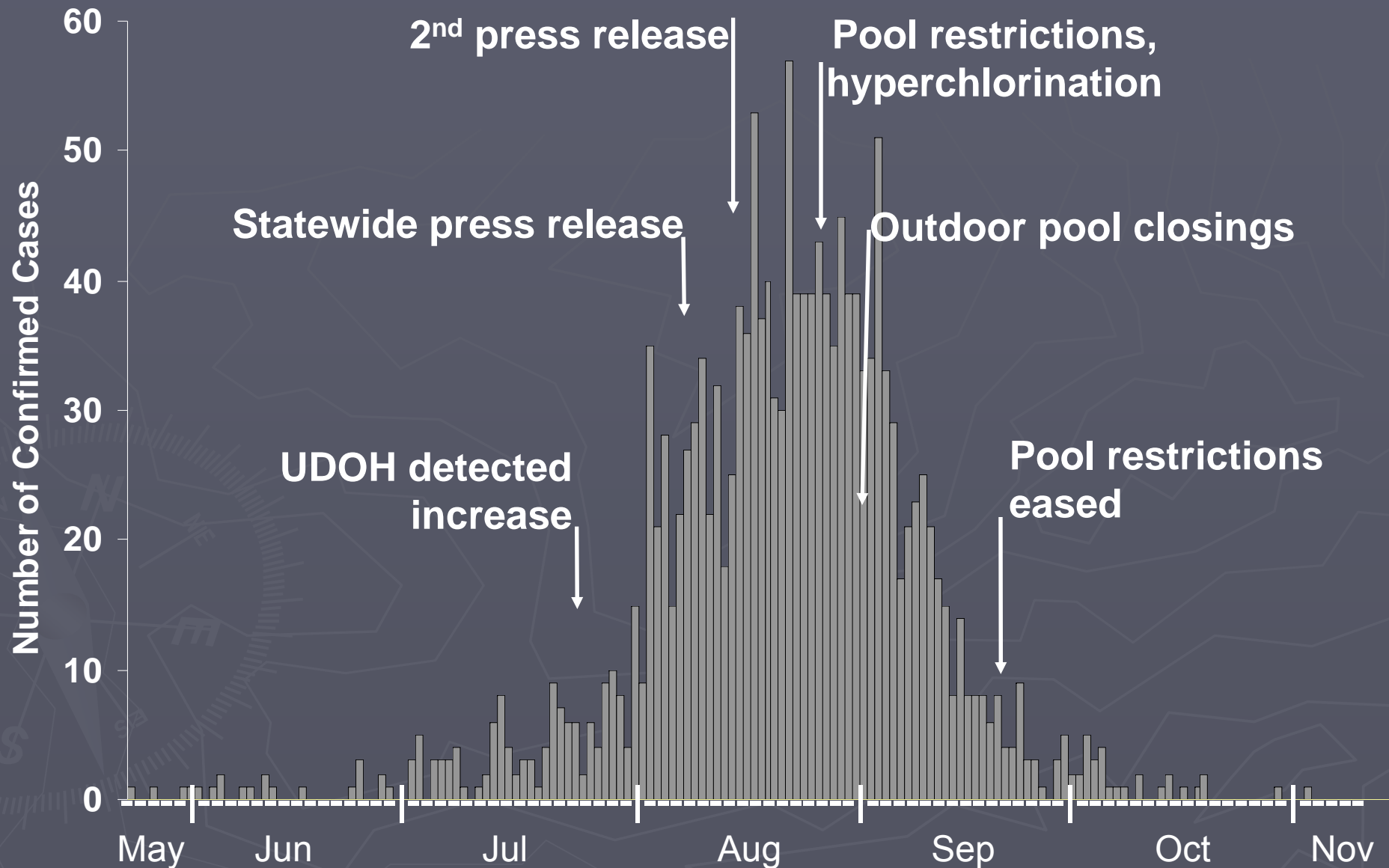
Cryptosporidiosis – Utah 2007 Joint Response - August 28 →

- ▶ August 28 – Press Conference (joint state/local)
 - Agreed on multijurisdictional intervention
 - Children < 5 yrs/diapers banned from public pools
 - Weekly hyper-chlorination, increased minimum level, post information materials
 - Childcare – avoid recreational water activities, enforce diarrheal exclusion, guidelines

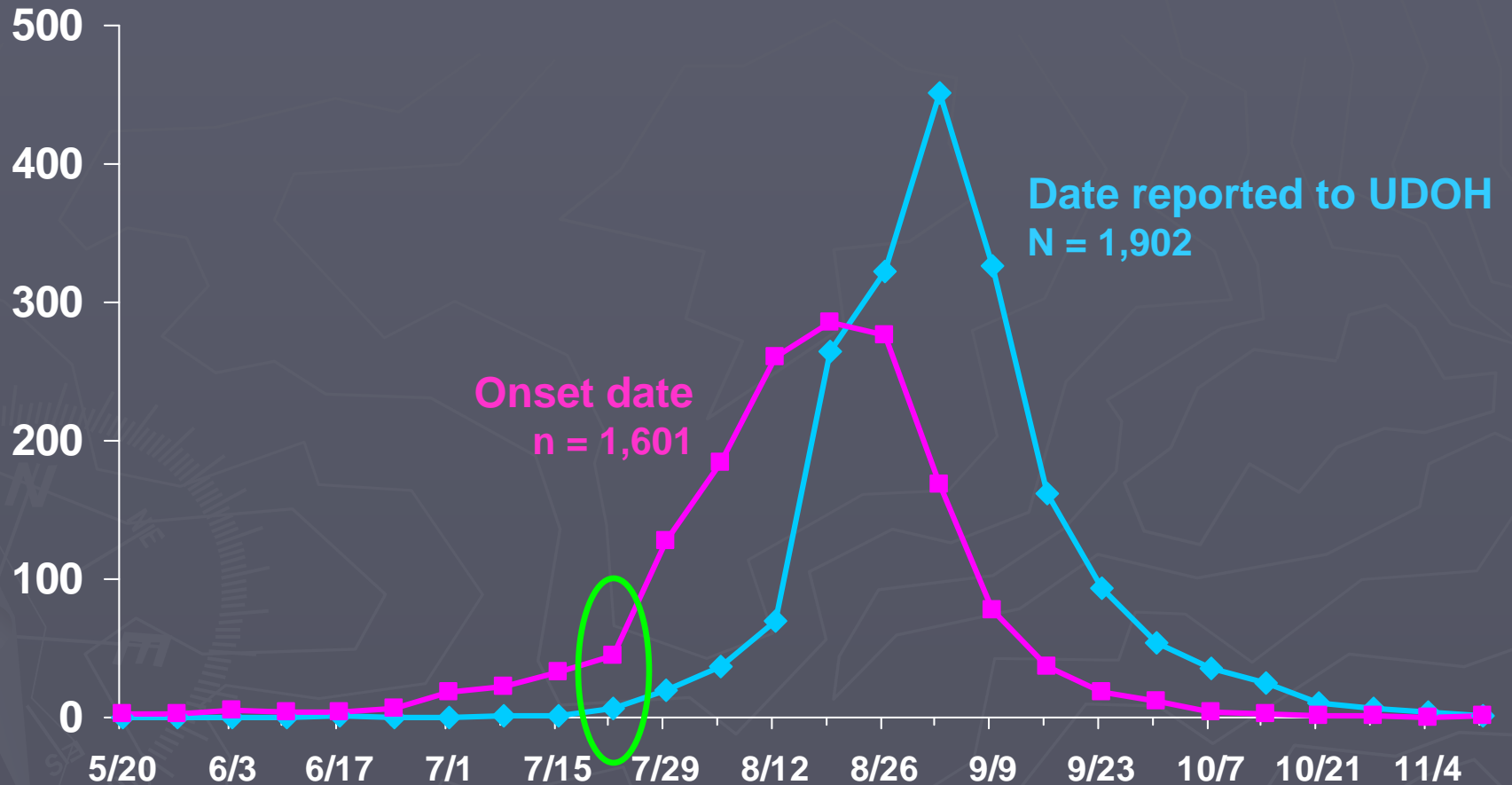
Local Response

- ▶ August 28 – Public pool restrictions ordered
- ▶ Sept 10-11 – extended restrictions
- ▶ Sept 25 – allowed kids <5 but no diapers to swim
- ▶ October 11 –increased chlorine requirements removed
- ▶ November 14 – swimming restrictions removed

Epidemic Curve: Detection and Interventions



Number of Cases by Onset Date and Date Reported to UDOH



Reported Cases, June-December

- ▶ 1,902 confirmed cases
- ▶ 1,601 (84%) had known onset date
 - May 23–November 11
- ▶ Median age 9 years (<1–101 years)
- ▶ 51% female (953 / 1,878)
- ▶ 8% hospitalized (97 / 1,144)
- ▶ No deaths

Lessons Learned

- ▶ Conference call decision making
 - Difficult, but ultimately effective
 - ▶ Pick key issues!
 - ▶ Needed right people present
 - ▶ Structure might improve efficiency
- ▶ Consensus approach across jurisdictions
 - Consistent approach important for key issues
 - ▶ Messages and basic approach
 - But local differences required flexibility

Crypto 2008

Preventing another outbreak

- ▶ January 2008 meeting
 - Commitment to long-term review of pool rule
 - Urgent timeline for short term rule changes
 - ▶ by Memorial Day
 - Public education – general and targeted at swimmers/pools
 - Increased collaboration & training with pool operators
 - Rapid detection and response plan
 - ▶ Enhanced surveillance
 - ▶ Planned responses with triggers
 - ▶ Tool-kit

<http://health.utah.gov/epi/diseases/crypto/>

Pool Rule Changes – Utah 2008

Effective 5/22/08

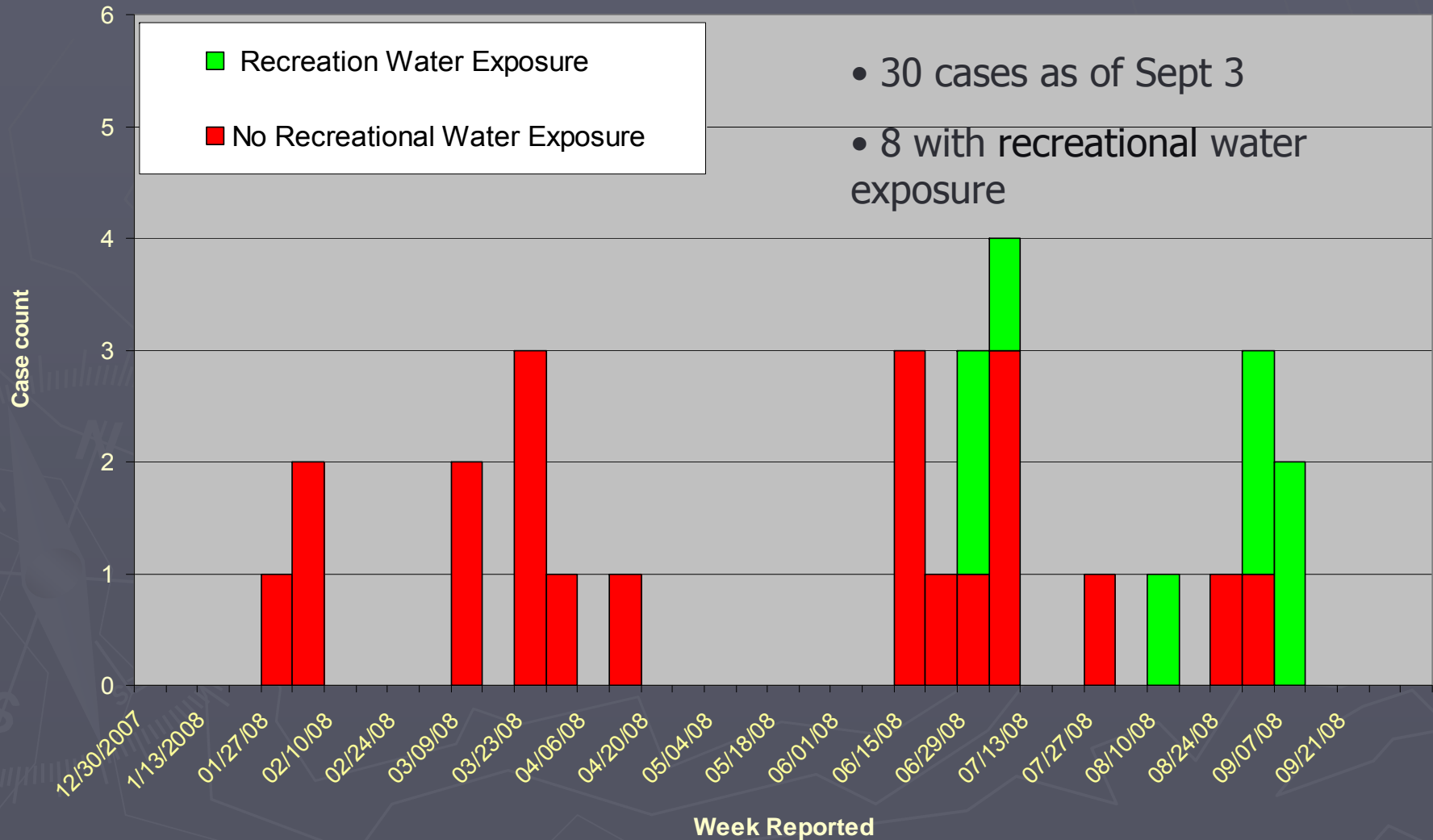
- ▶ Required and defined cleansing shower
- ▶ People with diarrhea not allowed to swim
- ▶ Kids ≤ 3 (or incontinent) required to wear swim diaper and waterproof swimwear
- ▶ Diaper changes only in approved locations
- ▶ Required fecal response protocol/records
- ▶ Crypto Watch and Warning defined

Pre-swim season: What was done

- ▶ Working with labs
- ▶ Pharmacy reporting
- ▶ Improved communication
- ▶ Engineered controls (voluntary)
- ▶ Media event – Partnership between public health, public pools, and public (with media help)
- ▶ Public education – TV commercials, written materials, info at pools

Reported Cryptosporidiosis Cases, Utah 2008

Laboratory Confirmed Cases, by Report Date, as of Sept. 3



THE SALT LAKE TRIBUNE

Editorial - May 21, 2008

Crypto conundrum: New rules leave swimmers at risk

But, unable to absolutely confirm the obvious - most of the fecal matter in public pools comes from babies and toddlers who aren't potty trained - the Health Department stopped short of a much-needed baby ban, ...

Instead, the Health Department issued new rules, including: No swimming if you have, or have had, diarrhea within the past two weeks. Babies, untrained toddlers and incontinent adults must wear swim diapers and/or waterproof pants. And patrons, before swimming and after using the restroom, must take a "cleansing" shower with soap. ...

So, swim at your own risk. The Health Department has done too little to protect citizens from waterborne illnesses.

Conclusions

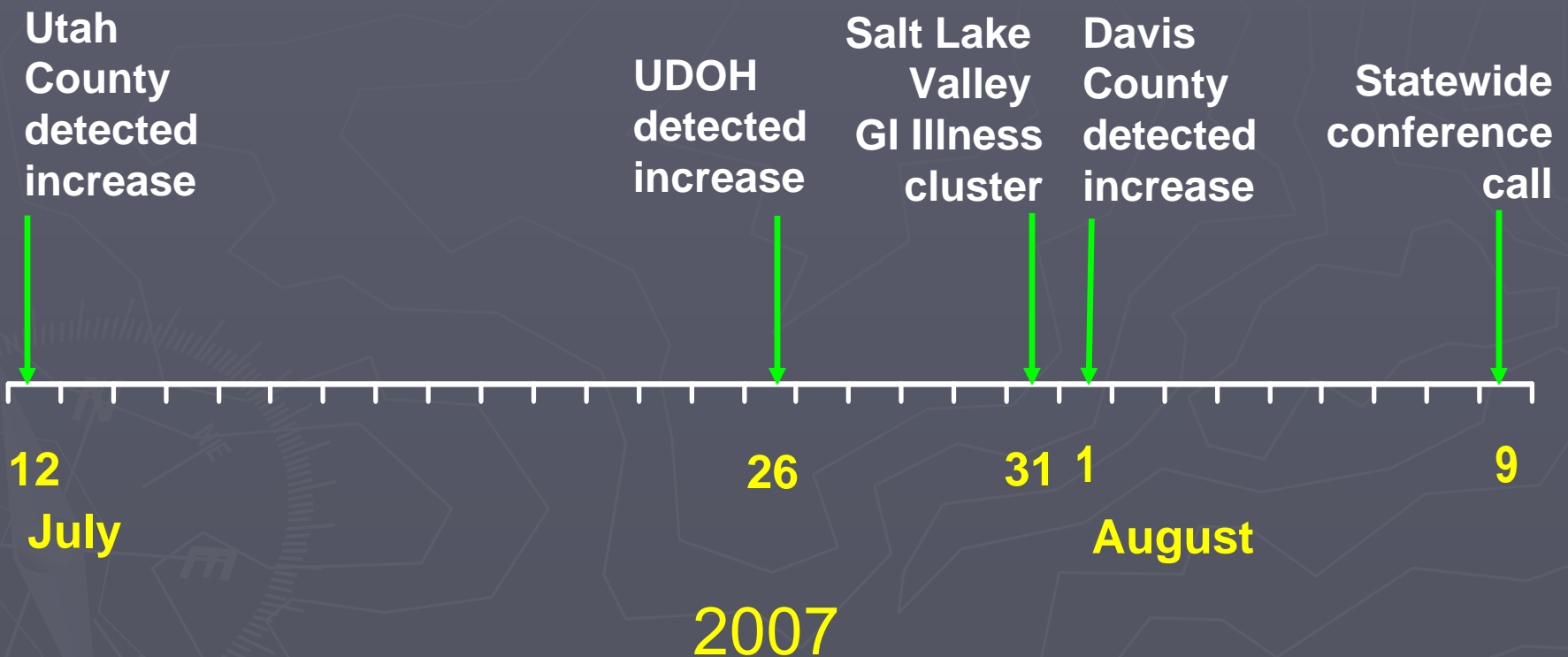
- ▶ No large outbreak occurred in subsequent year.
 - Can't know to what extent measures were responsible
- ▶ State-local cooperation enabled robust response during outbreak and in preparing for future



Extras



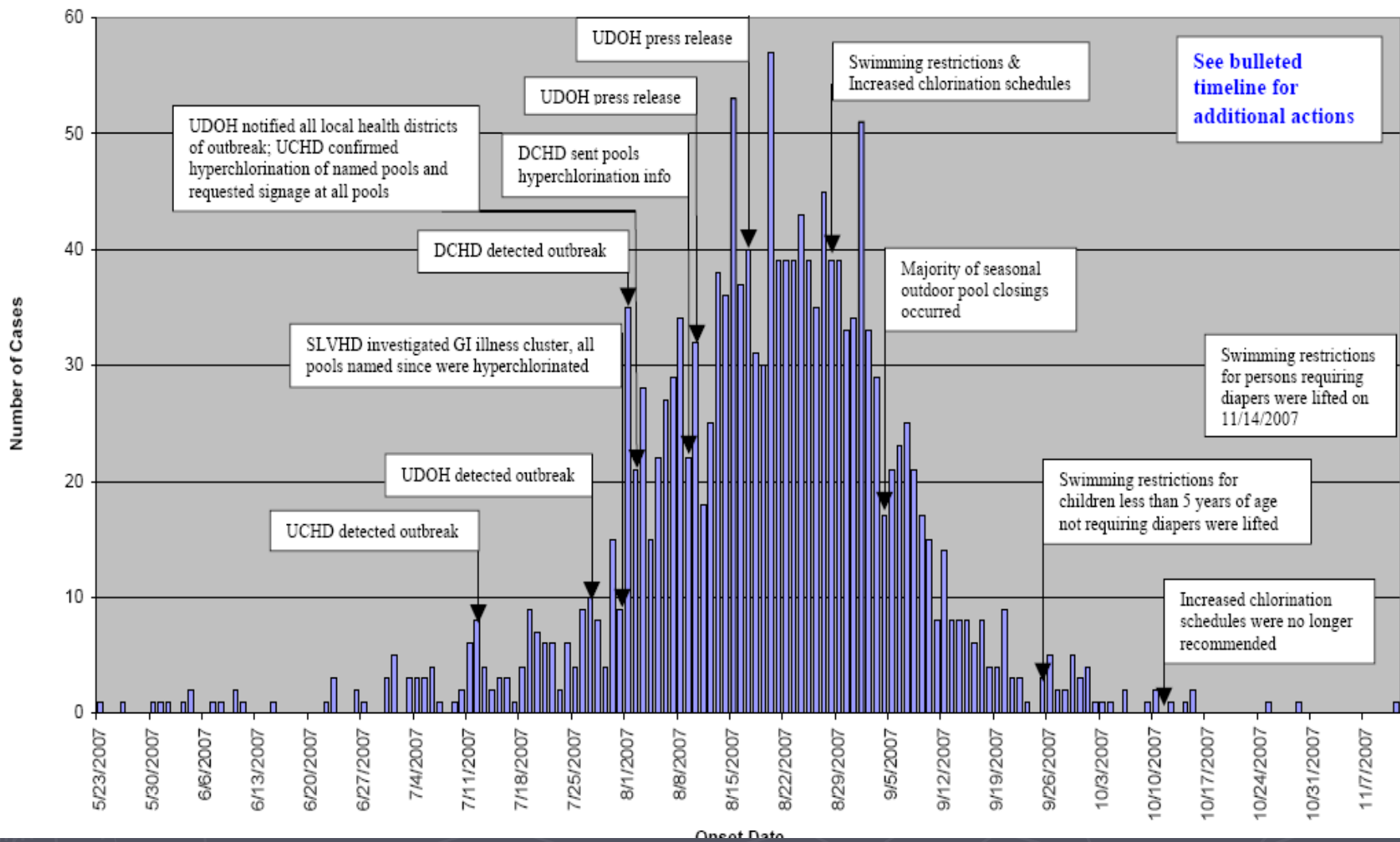
Timeline of Cryptosporidiosis Outbreak



Crypto – Utah 2007

Timeline - Surveillance

- ▶ July 12 - Utah Co. - increased number crypto cases
- ▶ July 26 – UDOH detected increase
- ▶ July 31 – SLVHD investigated GI illness cluster related to pool party (no lab tests)
- ▶ August 1 – Davis Co. reported increase



See bulleted timeline for additional actions

Case-Control Methods

▶ Case-patients

- $n = 1,518$
- All laboratory-confirmed crypto cases
- May 23–September 3

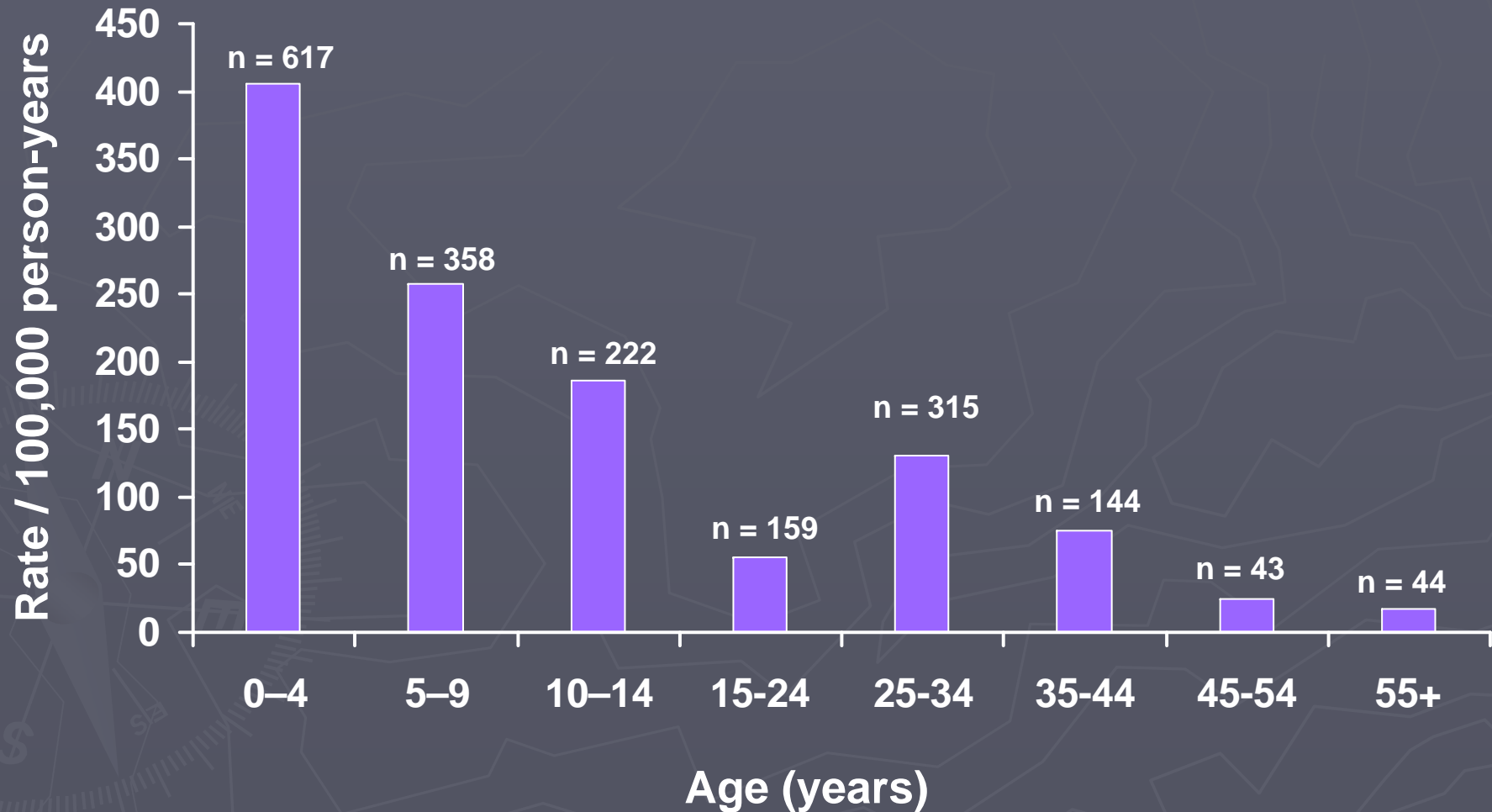
▶ Control subjects

- $N = 333$
- Reported cases of *Campylobacter*, shiga toxin-producing *Escherichia coli*, *Salmonella*, or *Shigella* infection
- May 23–September 3

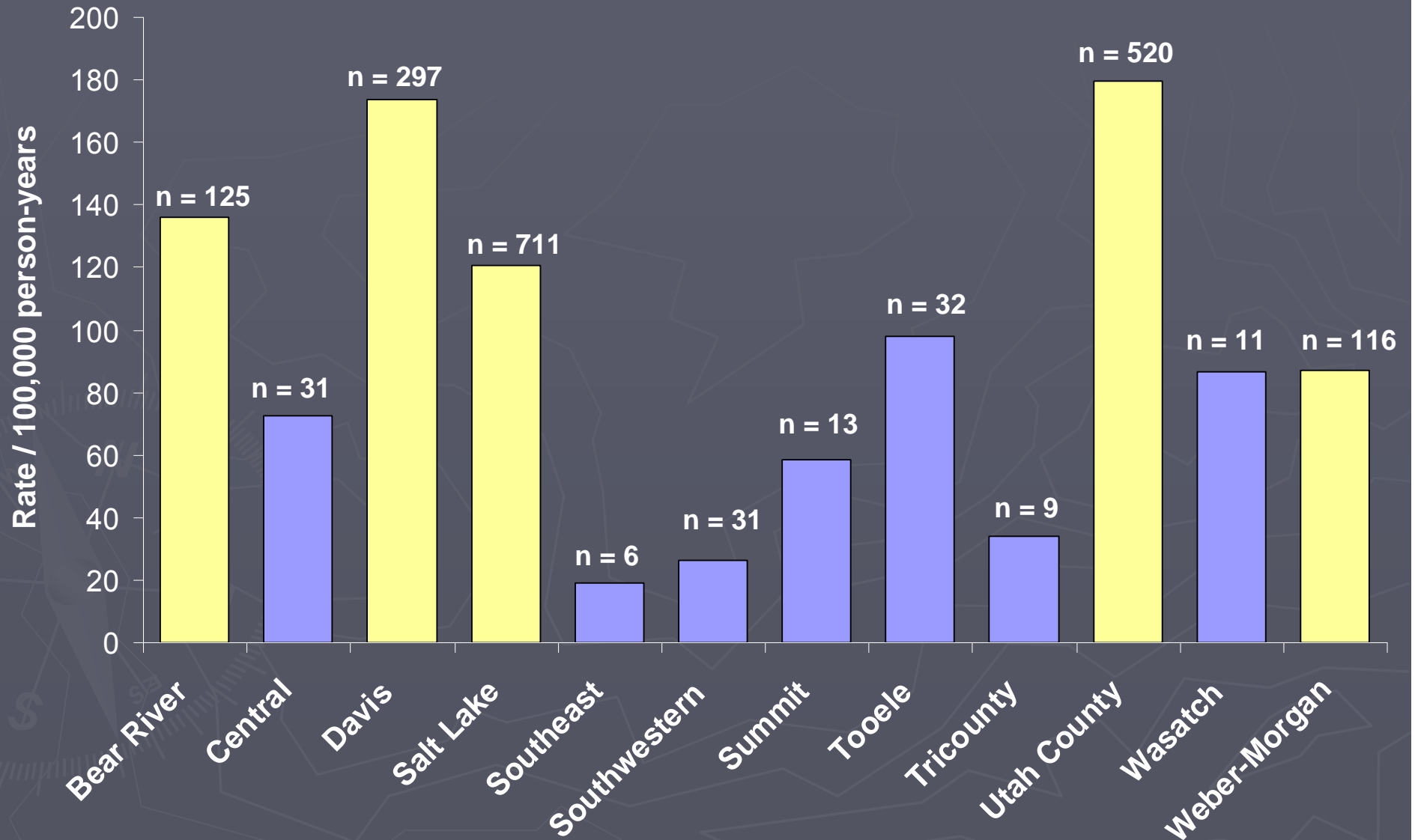
Potential Risk Factors

Risk factor	Case Patients (%)	Control subjects (%)	OR (95% CI)
Recreational water	86	29	14.4 (10.3–20.0)
Treated venue	78	18	16.7 (11.5–24.3)
Untreated venue	24	17	1.6 (1.1–2.3)
Ill contacts	73	31	5.9 (4.3–8.0)

Incidence Rates by Age



Incidence Rates by Health District



Recreational Water Exposures

- ▶ >400 unique venues were named
- ▶ 33% named multiple venues (401 / 1,209)
- ▶ 22% named one of four water parks (268 / 1,209)
- ▶ Water park A
 - Named by residents of 10 of 12 health districts