Rocky Mountain spotted fever
Indian Health Service &
White Mountain Apache Tribe &
San Carlos Apache Tribe
Response

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BACKGROUND:
RMSF incidence by county, 1993-96
BACKGROUND: RMSF Cases, Arizona

- June 2002, a 10 year-old with fever of unknown origin evaluation had a +RMSF titer
- August 2003, a fatal case of RMSF in a 14-mo old in AZ – from same small community
- 2002 – 2004: 16 cases of RMSF cases from White Mountain Apache reservation
National RMSF Incidence by County, 2000-2007

RMSF rates by state and county, 2000—2007

Rate per 1,000,000 persons
- Yellow: > 0 – < 5
- Orange: 5 – < 15
- Red: 15 – < 30
- Dark red: >= 30
White Mountain Apache & San Carlos Reservations
RMSF in Eastern Arizona

• Since 2002, >200 cases of RMSF have occurred on the WMAT & SCAT reservations
• Incidence rate 50 times higher than national average
• Associated with *Rhipicephalus sanguineus*, brown dog tick
Clinical response
Education – White Mtn. Apache

Clinical

- Local clinician education
- Annual updates by CDC/IHS
- Referral hospital updates – CDC
- ADHS
- Prevention newsletter Nov/Dec 2003
- Alert to all clinicians
- MMWR 5/21/04
- Rocky Mountain Spotted Fever from an Unexpected Tick Vector in Arizona New England Journal of Medicine 8/11/05
2012 San Carlos Service unit

• 3 cases in 2012 resulting in RMSF plan
  – 3/9/12, 2012 a 55yo fatality
  – 3/19/2012 22mth old transferred to tertiary care center
  – 3/20/2012 above child’s sister transferred
  • Died on 3/22/2012

• Risk cause analysis performed 3/20/12
3/21/12 Incident command Team was formed. Given 3 objectives:

1. Perform chart review search for possible missed cases.
2. Contact patients ASAP to follow up with them to see if better or not
3. Create a surveillance program to ensure that all PSRMSF are identified and followed up.
Preliminary

SCSU RMSF Chart Review Data Summary

Conducted on:

I. Initial: 3-21-12
II. Follow-up: 3-22-12
III. Home visits by Tribal and IHS staff: 3-23-12

Conducted by:
PAO and SCSU physicians and nurses

Data Summary:

I. Initial for time period of March 11-20, 2012
   a. PSRMSF: Total=182
   b. SRMSF: Total=92
   c. Contacted by Phone: 37%, n=34, Total=92
   d. Unable to contact by Phone and referred to PHN: 63%, n=58 Total=92

II. Follow-up for time period of March 15-21, 2012
   a. PSRMSF: Total=1099
   b. SRMSF: Total=84
   c. Contacted by Phone: 86%, n=72, Total=84
   d. Unable to contact by Phone and referred to PHN: 14%, n=12, Total=84

III. Home Visits by Tribal and IHS
   a. Patient homes visited: Total=70
   b. Patients feeling normal: 56%, n=39, Total=70
   c. Patients not feeling well and referred to RMSF clinic: 16%, n=11, Total=70
   d. Patients referred to RMSF clinic and had return clinic visit: 55%, n=6, Total=11
   e. Patients not home/not found: 27%, n=19, Total=70

1 Possible Suspect Rocky Mountain Spotted Fever
2 Suspect Rocky Mountain Spotted Fever
2012 San Carlos Service unit
Provider Education

Power points
Algorithms
Order Sets
Provider Education – San Carlos

Power points

• Dr. Reagan provided an excellent power point used to Educate providers.
• Placed on the EHR at San Carlos and on the share point.
• 24-7 access to the latest updates on RMSF
• ADHS provides in-services for area hospitals
Community Education
San Carlos

- Cable TV infomercials
- Tribal newspaper articles
- Community events - handouts on RMSF
Public education

Materials

- RMSF brochure 10,000 – distributed by Animal Control, CHR, and IHS
- Tick control product brochure 6,000 copies
- PHN using new flyer with clinical focus
- 12 month RMSF education calendar: about 2,500 copies printed by CDC - distributed by Animal Control
- IHS Area Public Health Education Office purchased 4,000 laminated magnetic tick check flyers with tweezers
Protect Your Dog

- The ticks that cause RMSF live on dogs.
- Treat your dogs with medicines, collars, or shampoos that kill ticks.
- These medicines and collars will need to be repeated. Some tick collars last longer than others; make sure you follow the directions on the package.
- Check your dogs for ticks every day in the summer.
- Remove ticks with tweezers.
- Keep your own dogs close to your yard and away from strays.

Protect Your Home

- Cut high grass around your home.
- Remove old furniture and mattresses from your yard. These stay wet and give the ticks a place to hide.
- Put up fencing to prevent dogs and children from getting under homes and porches. Ticks like to live in these areas.
- Treat your yard with a chemical that kills ticks.
- Yard chemicals like Permethrin and Bifenthrin are recommended, kill ticks, and are safe for your yard when used according to the label.
- Yard chemicals last 3-4 weeks. Yards with ticks should be treated regularly, especially April through September.
- Do your part to get rid of stray dogs!

For More Information

- San Carlos CHR (928) 475-2688
- Animal Control 475-2798 x1102
- IHS Env Hlth 475-4040

Know the signs
(Fever, Headache, Spots)

Inspect your body

Collar dogs

Kill ticks in yards

www.cdc.gov/rmsf
www.azdhs.gov/phs/oids/vector/rmsf/index.htm
Protect Your Family From Rocky Mountain Spotted Fever

Keep Ticks Off Children

Ticks can spread Rocky Mountain spotted fever. A tick bite can make you sick. To help you and your family stay healthy, keep ticks off children. Spray children with insect repellent before they go outside.

Check for Ticks on Children

Check these parts of your child's body for ticks:

- In and around the hair
- In and around the ears
- Under the arms
- Inside belly button
- Between the legs
- Back of the knees
Education – White Mtn. Apache

Community

- Tribal council briefing
- Tribal Heath Board briefing
- Radio shows
- Community meetings
- Flyers for public
  - RMSF illness
  - Removing ticks
  - Tick treatments
June 1, 2005

Rocky Mountain Spotted Fever

How to Kill Ticks:
On Dogs • In Doghouses • Inside the Home • Outside the Home

Dog Products
Collars: Place around neck of dog. Effective for 3 to 5 months, depending on the collar. Do not use on cats unless directed by label.

Zodiac Flea Collar
Available at Wal-Mart for approximately $1.00.
Hartz 2 in 1 Flea/Tick Collar
Available at Wal-Mart for approximately $3.00.

Spot-on: This is a liquid that is applied to the skin between shoulder blades on the back of a dog. Must be reapplied every 30 days. Each package provides a 3 or 4 month supply. Sold in different sized tubes depending on size of dog. Use 1 tube per application.

Hartz Flea and Tick Drops

Areas Where Dogs Sleep
Dusts: Intended for application to indoor or outdoor areas where dogs rest and sleep. Must be reapplied every 4 weeks or according to package directions.

Garden Tech Sevin-5 Dust
Available at Wal-Mart, Home Depot, and K-Mart for approximately $6.00.

Inside Homes
Ready-to-Use Sprays: These products are sold ready to apply with no mixing required. Products may be used for indoor areas where ticks have been seen. Must be reapplied according to package directions.

Ortho Home Defense Max

Outside Homes
Ready-to-Spray (RTS)-Hose:
Pesticide is in a container that attaches to a garden hose. Pesticide is dispensed in a specific concentration as water flows from hose through the pesticide container.

Spectracide Triazicide RTS Insect Killer Concentrate
Available at Wal-Mart for approximately $11.00.
Cutter Bug-Free Backyard Spray Concentrate
Available at Wal-Mart for approximately $9.00.

Granules: This formulation is intended for outside use and as a barrier around the outside of the house. The product is applied to soil, and is activated when the soil is moistened by rainfall or light spraying with a garden hose after application.

Ortho Bug-B-Gon Max Insect Killer for Lawns

June 1, 2005
Education – White Mtn. Apache

Community - continued

- Newspaper articles
- Rabies vaccination clinics – information, dog collars, tick treatment
- >1500 “Tick kits” distributed to homes by CHRs
- Survey, 2004: “Widespread awareness of RMSF”
- January 2005 – Multi-agency intervention planning meeting
Tick Control – White Mtn. Apache

- Multi-agency intervention
- IHS, WMAT, ADHS, CDC, USDA, others
- May 1-8, 2005
- Community clean-up
- Tick kit distribution, other education
- Tick-repelling dog collar distribution
- Pesticide application
- Skirting applied around elevated homes
Tick Control – White Mtn. Apache
Tick Control – White Mtn. Apache

- Tick collections
  - Ticks only found in dog environments
  - >6000 ticks collected
  - None were *Dermacentor* ticks
  - All were *Rhipicephalus sanguineus* (*Brown Dog tick*)
  - + PCR and culture for *R. rickettsii*
San Carlos Tribal Health

- Focused on by a CDC study 2011 summer Peridot heights was identified as a “hot spot”. Multi agency response CDC ADHS SCAT IHS
- RMSF Rodeo- door to door campaign Tx yards (1900) and collar dogs (>300). Spay neuter clinics (169), (289 vaccinated) Tick trapping before during post intervention
Clinical Treatment
“Don’t delay! Doxy today!”

- If we suspect, we treat.
- We do not wait for the results of the Titers to treat for RMSF.
- Utilize order set provided to make orders
  - 1. CMP
  - 2. CBC
  - 3. acute RMSF titer
  - 4. convalescent titer
  - 5. Public health consult
  - 6. Doxycycline order
**RMSF Clinical Algorithm**

Patient Presents with Fever (T ≥ 100) or History of Fever

- **Fever > 2 days?**
  - Yes: Doxycycline & RMSF Labs
  - No: Educate Patient & Follow-up Next Day

Doxycycline & RMSF Labs

Any 1 of the following:
- Rash?
- Low Sodium?
- Low Platelets?
- Elevated AST?
- Recent Exposure to Ticks or Untreated Dogs?

Educate Patient & Follow-up Next Day

No or Unknown
Order Sets for Providers San Carlos

- Doxycycline orders
- CMP (liver enzymes, Sodium)
- CBC (platelets)
- RMSF Acute titer
- RMSF Convalescent
- Public Health Nurse Referral
Clinical Treatment
San Carlos

Hold the first titer until it is accompanied by the second.

Send paired titers to ADHS Lab
Surveillance
San Carlos

- Notifications
  - All RMSF titers trigger a notification to Public Health Nurse, Infection Control Officer, Clinical Director, Nurse Executive
- V-gen reports (pov narrative fever)
- Q-Man reports (all temps >100)
- ERS transfer reports (county public health follows up all SRMSF transfers)
- Doxycycline reports by Pharmacy
Clinical response
White Mtn. Apache

- Vigilance for potential cases
- Use algorithm
- Surveillance & follow-up
- Primary care provider clinic follows up on their patients seen in ER
- 2011 statistics for RMSF
  - 12 cases, 1 fatality
  - 128 had at least one titer drawn
  - 46 ruled out (had 2 titers, not a case)
  - Many others treated with no titers
Animal Control – White Mtn. Apache

- Many stray dogs roam the reservation
- 0.8 dogs/household
- ~70% of dogs are free-roaming
- Former tribal animal control program had been disbanded
- Tribal council, Health board advised on need for animal control
- Grants written, were not funded
- No animal control program currently exists
Animal control
San Carlos

• Four animal control officers
• One vehicle
• Id strays vs. owned (over 60 have collected)
• Adoption and euthanasia
• Provide presentations on RMSF to various tribal groups
Thank you