

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

**CAPT Marc Traeger MD**

Whiteriver Service Unit

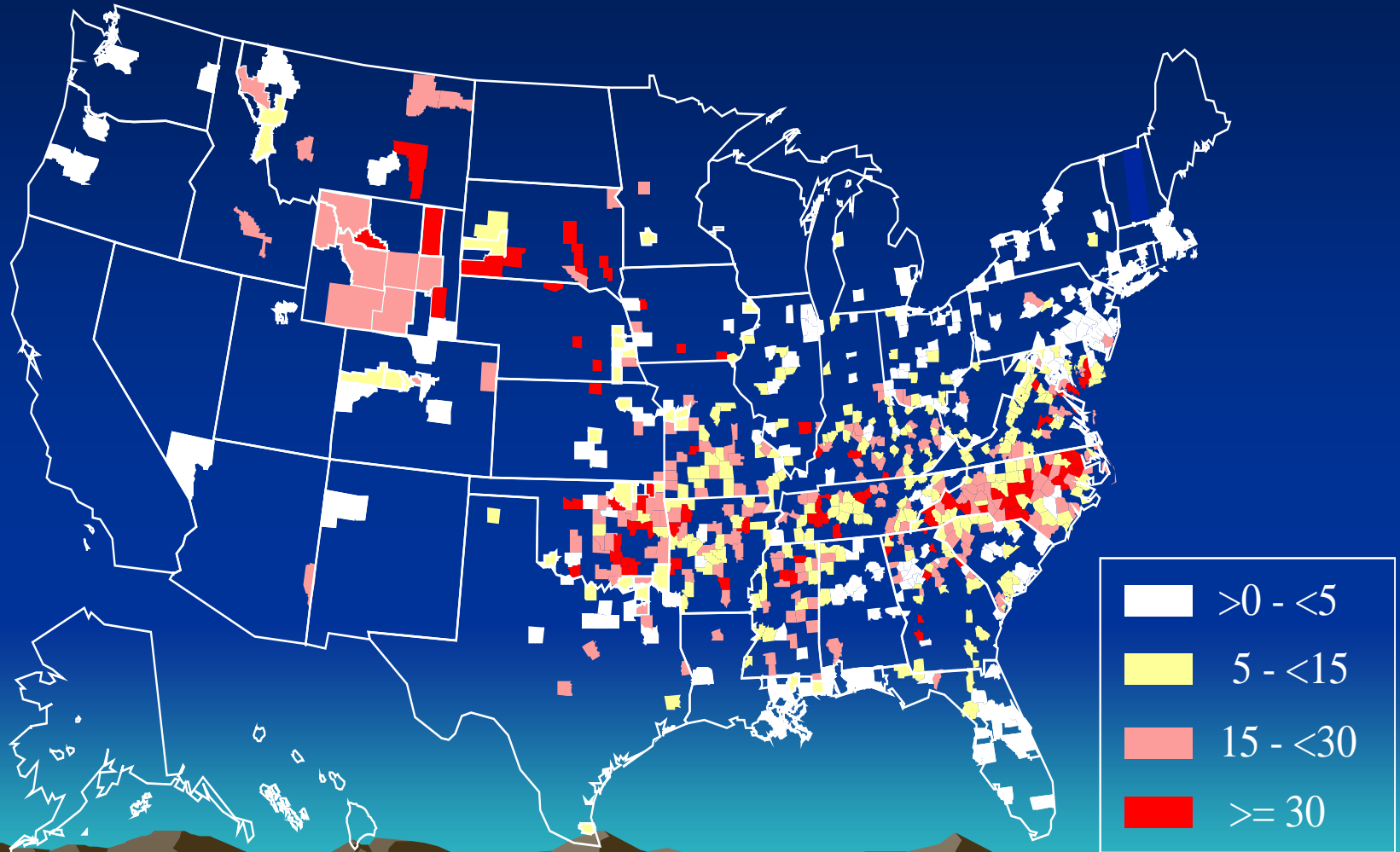
**LCDR Brian Hamilton RN, BSN**

San Carlos Service Unit  
Indian Health Service

August 1, 2012



# BACKGROUND: RMSF incidence by county, 1993-96



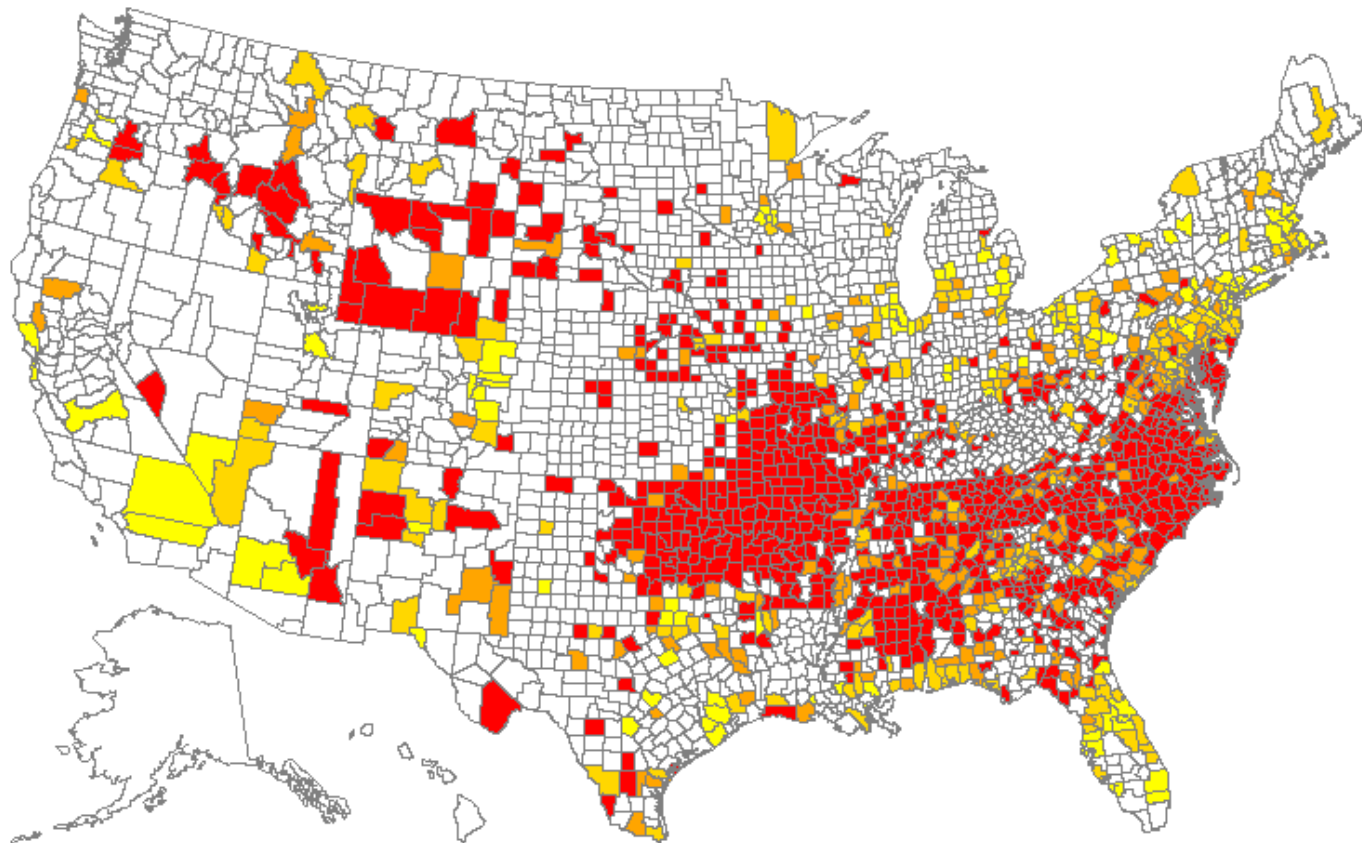
# **BACKGROUND: RMSF Cases, Arizona**

- **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

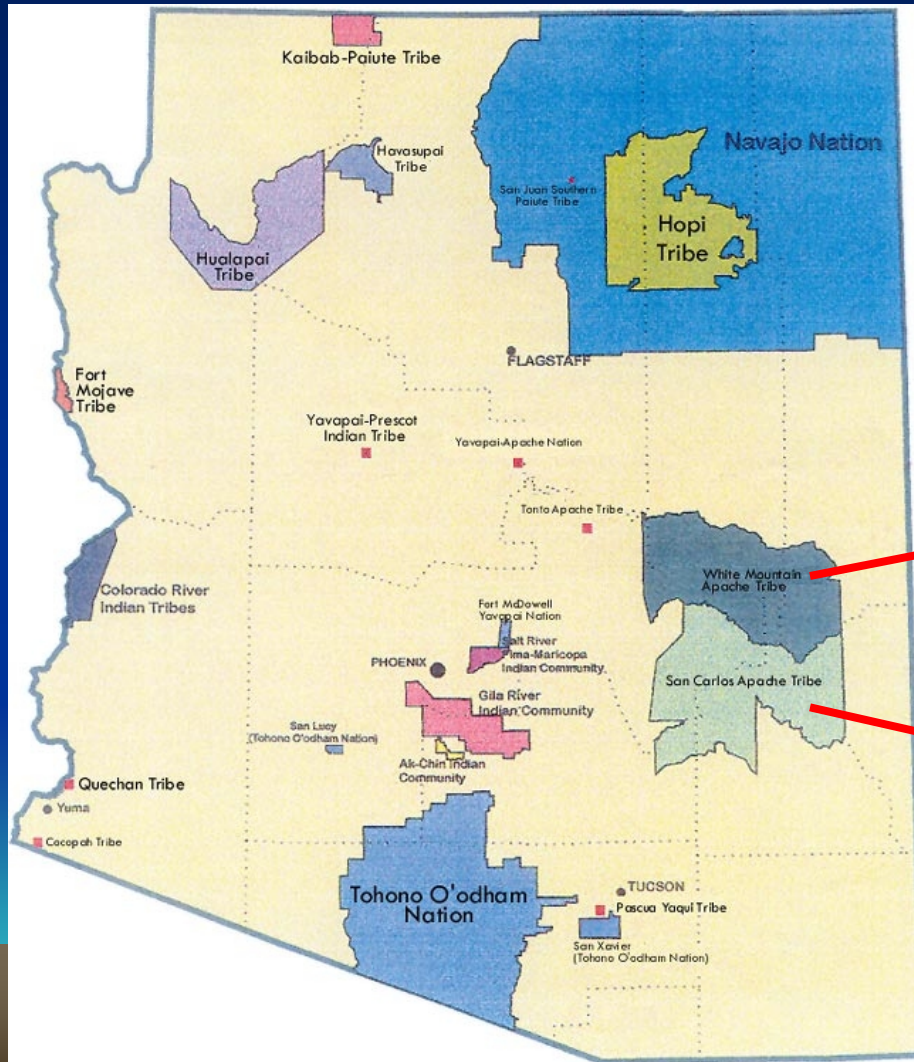
RMSF rates by state and county, 2000–2007



Rate per 1,000,000 persons

Yellow	>0—<5	Orange	5—<15
Light Orange	15—<30	Red	>=30

# White Mountain Apache & San Carlos Reservations



White Mountain Apache Reservation

San Carlos Apache Reservation

# 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**

# 2012 San Carlos Service unit

- **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<sup>1</sup>: Total=182
  - b. SRMSF<sup>2</sup>: 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<sup>1</sup>: Total=1099
  - b. SRMSF<sup>2</sup>: 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

[www.cdc.gov/rmsf](http://www.cdc.gov/rmsf)  
[www.azdhs.gov/phs/oids/vector/rmsf/index.htm](http://www.azdhs.gov/phs/oids/vector/rmsf/index.htm)

## You Can Prevent Rocky Mountain Spotted Fever (RMSF)



### KNOW THE SIGNS

(FEVER, HEADACHE, SPOTS)

### INSPECT YOUR BODY

### COLLAR DOGS

### KILL TICKS IN YARDS





1 / 2



66.7%



Find



## 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**

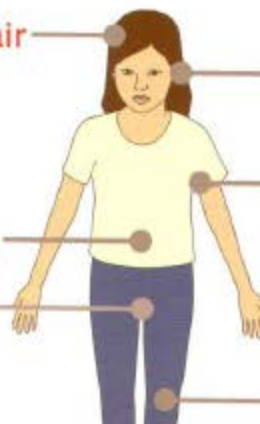
**In and around the ears**

**Under the arms**

**Inside belly button**

**Between the legs**

**Back of the knees**



# Education – White Mtn. Apache

## Community

- Tribal council briefing
- Tribal Health Board briefing
- Radio shows
- Community meetings
- Flyers for public
  - RMSF illness
  - Removing ticks
  - Tick treatments



# Education – White Mtn. Apache

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**



# 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

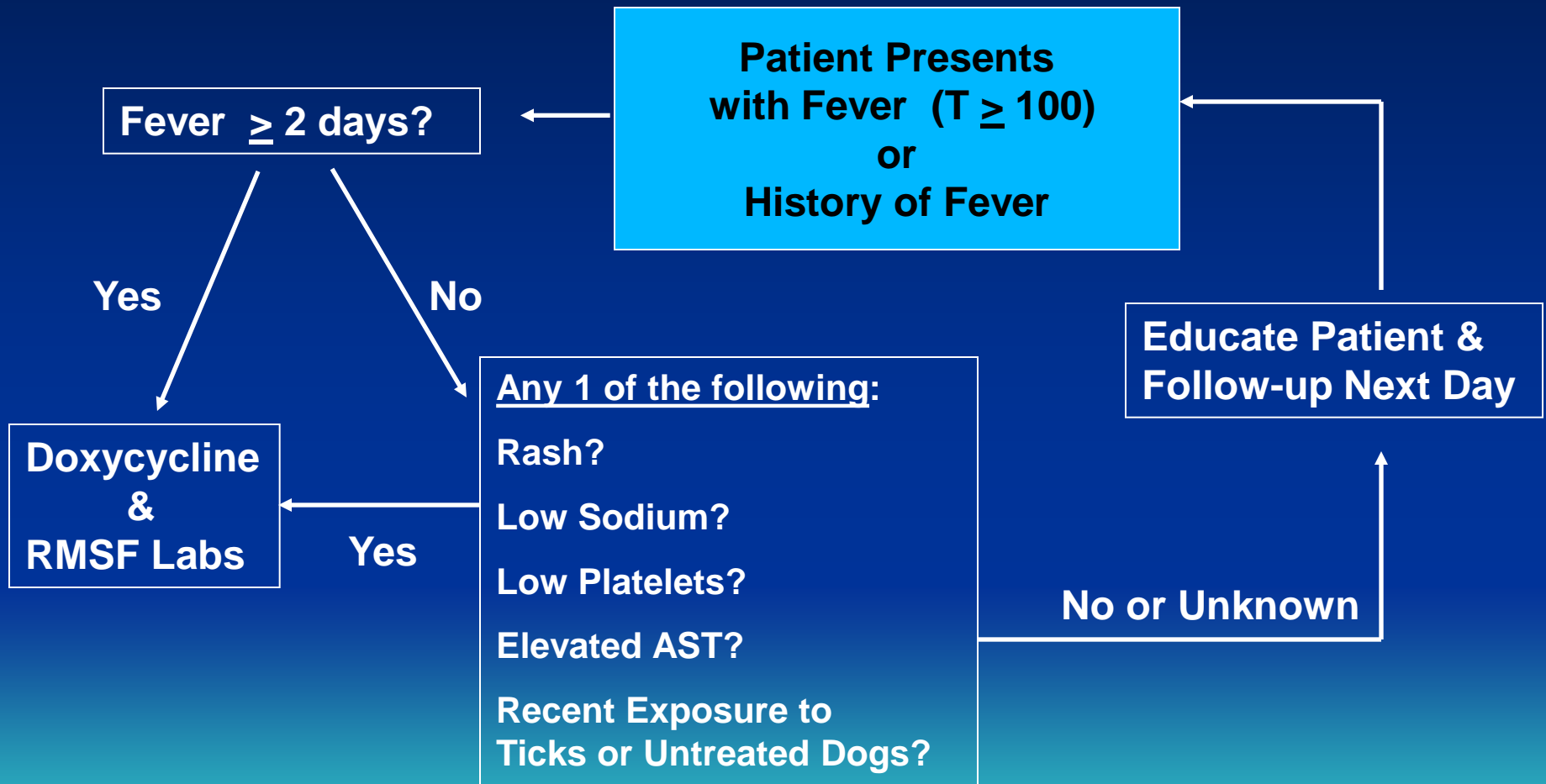


# Clinical Treatment San Carlos

**“Don’t delay! Doxy today!”**

- If we suspect, we treat.
- We do not wait for the results of the Titters 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



# 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**

