

Improving outcomes for patients with Rocky Mountain spotted fever

A Tribal, State, County, and Hospital partnership

Arizona Tribal Vector Borne Diseases Meeting

February 14, 2018



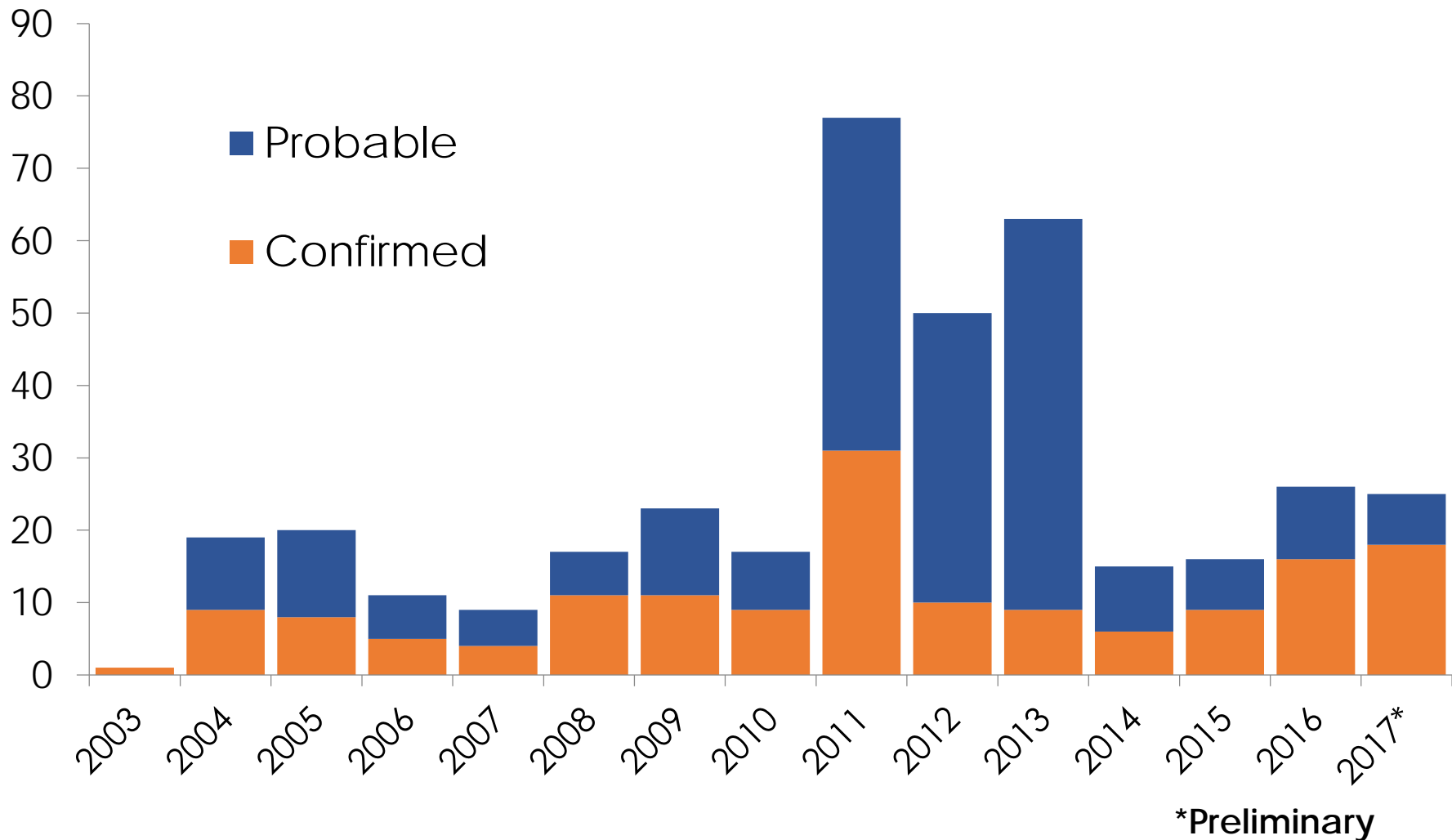
ARIZONA DEPARTMENT
OF HEALTH SERVICES

Health and Wellness for all Arizonans



Maricopa County
Department of Public Health

Confirmed and probable RMSF cases in Arizona, 2003-2017



RMSF in Arizona



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RMSF in Arizona



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Clinical presentation and treatment

- Symptoms include fever, headache, muscle pain, nausea and vomiting, abdominal pain
- Some cases develop a rash



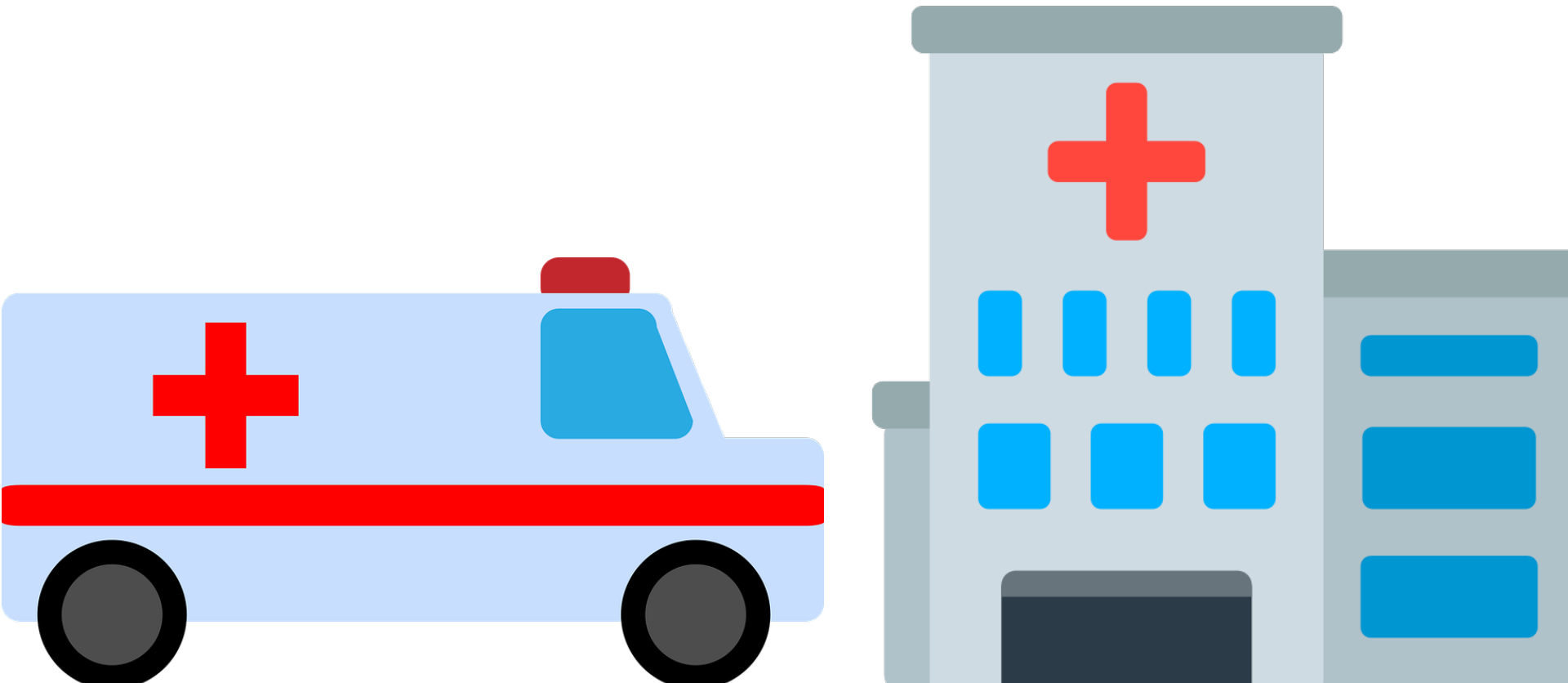
Clinical presentation and treatment

- Symptoms include fever, headache, muscle pain, nausea and vomiting, abdominal pain
- Some cases develop a rash
- Fatal if not treated
- Treatment = doxycycline



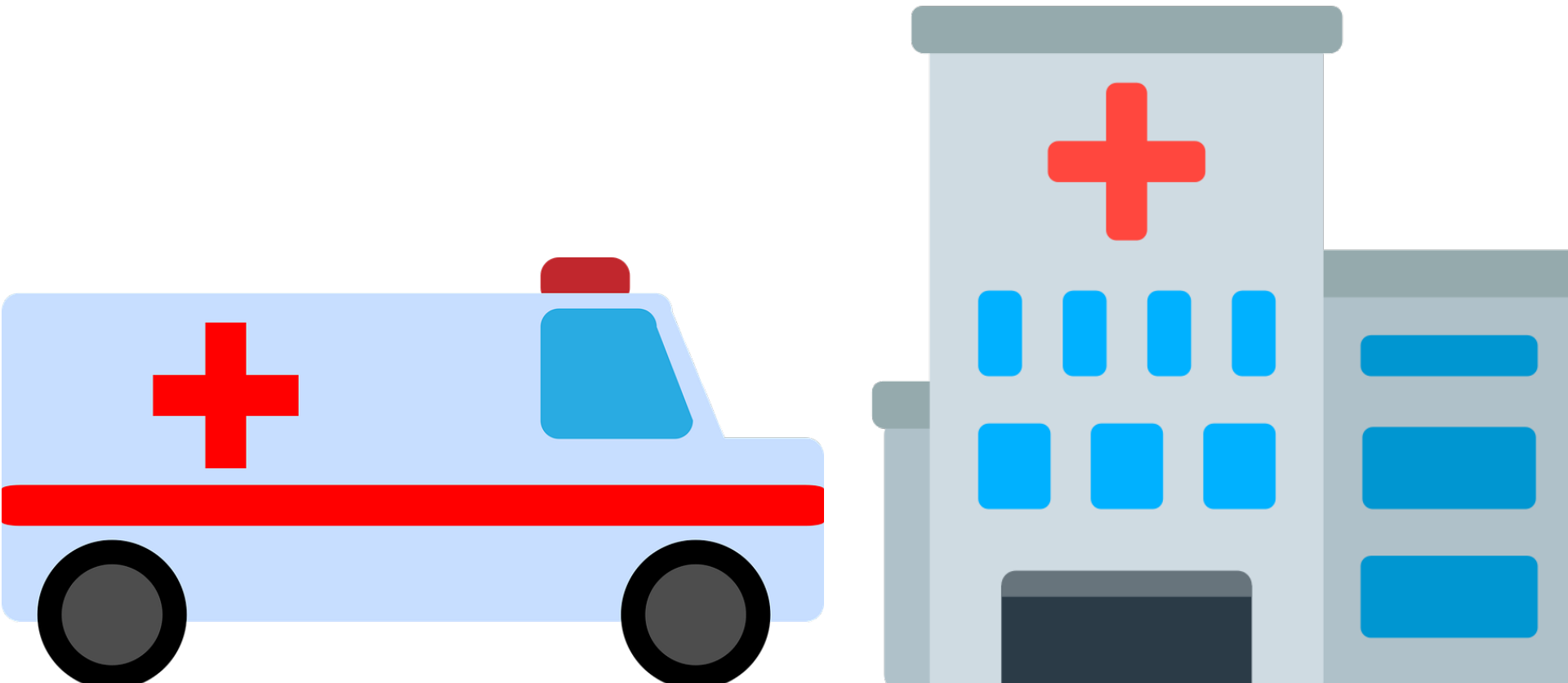
RMSF hospital transfers

- Patients frequently transferred from tribal lands to acute care hospitals in urban areas



RMSF hospital transfers

- Gaps in communication led to doxycycline discontinuation, missed diagnosis



RMSF hospital transfers

- Lack of awareness among providers about unique nature of RMSF in Arizona



Gaps in provider knowledge

ASSESSMENT:

1. Electrolyte abnormalities with hyponatremia, hypokalemia, dehydration.
2. Leukocytosis and thrombocytopenia.
3. Hypotension.
4. Elevated liver function tests.
5. Questionable tick bite.
6. Headache.

PLAN: The patient be admitted to the Medical Center telemetry floor. Will be rehydrated aggressively with serial labs. Will check for Lyme disease. She does complain about headaches and recent tick bite. She does have a scar on her left arm that she says she has been scratching. Once again, somewhat of a poor historian. Also, tobaccoism but denies alcoholism. Once again, will try to get hold of other family members since the patient is such a poor historian. DVT and GI prophylaxis. Previous home medications as we can find and her blood pressure tolerates.

MA

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Clinical presentation compatible with RMSF

Gaps in provider knowledge

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Clinically compatible symptoms

Report of tick bite

Gaps in provider knowledge

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Clinically compatible symptoms

Report of tick bite

Transferred from high-risk area

Gaps in provider knowledge

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Lyme disease?

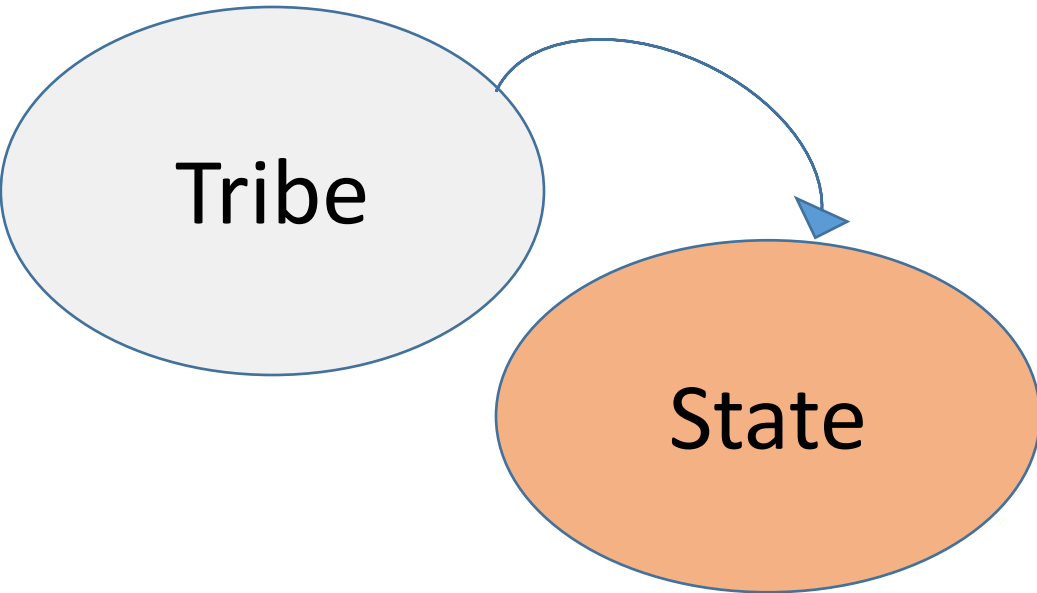
RMSF transfer protocol 2012

RMSF transfer protocol 2012

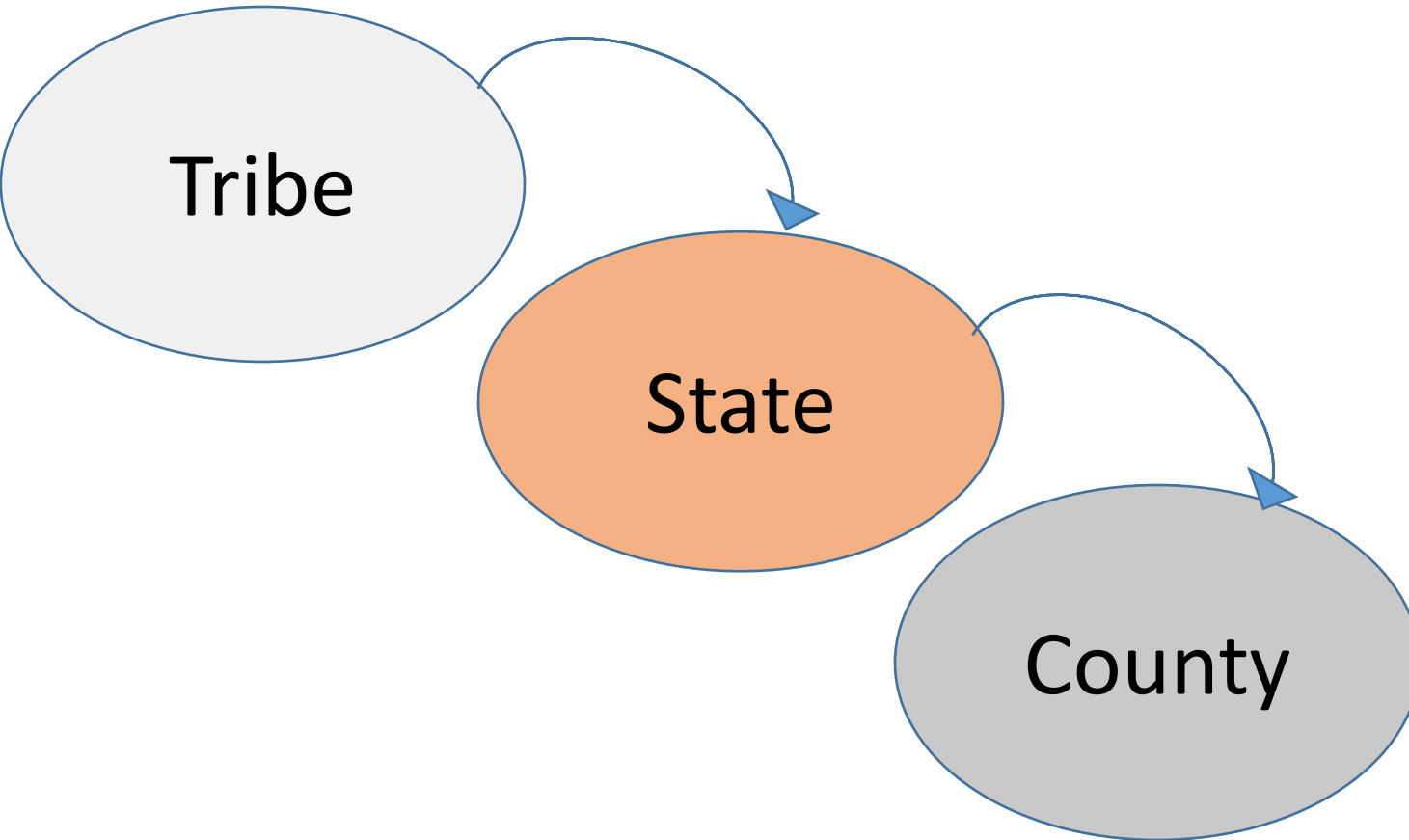


Tribe

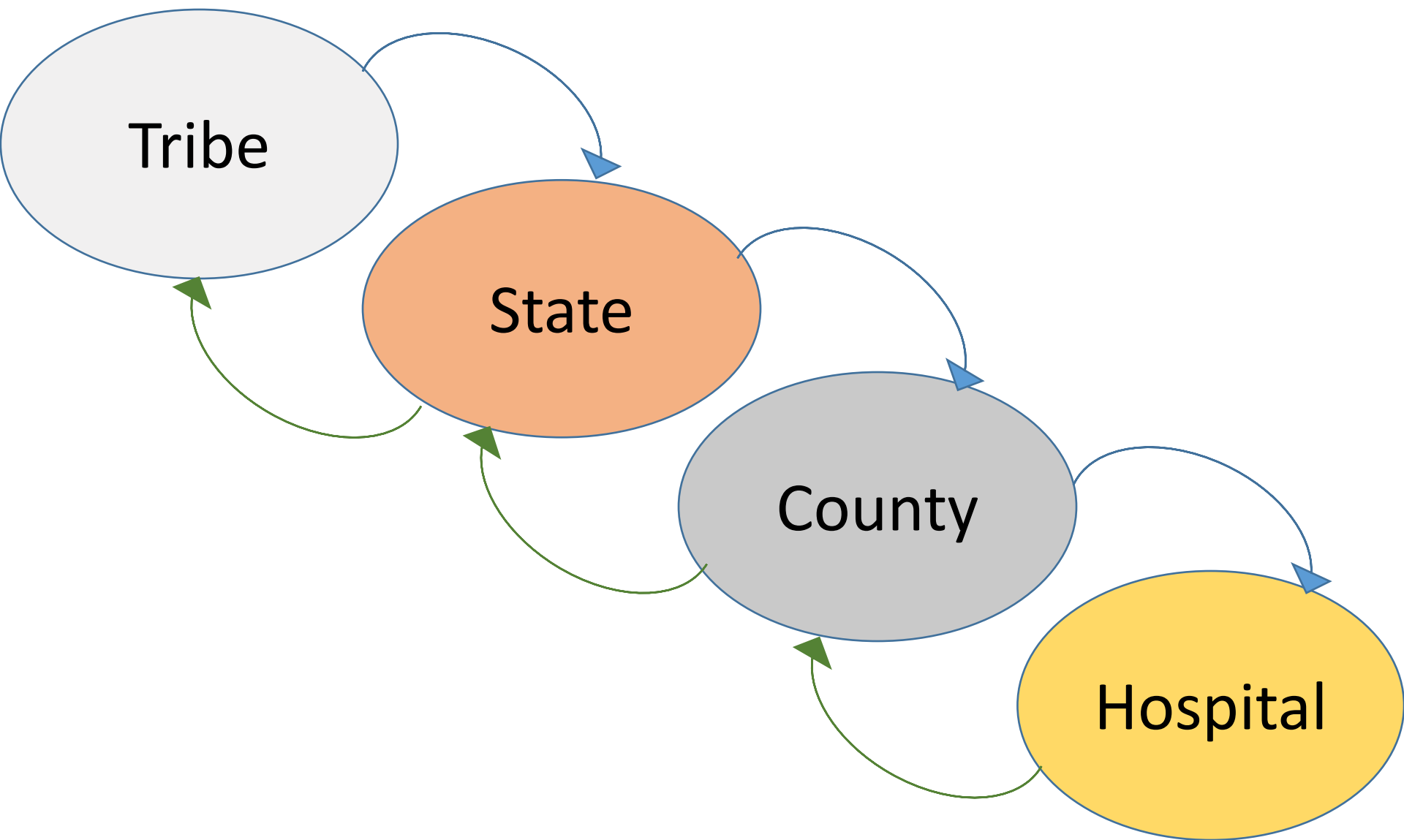
RMSF transfer protocol 2012



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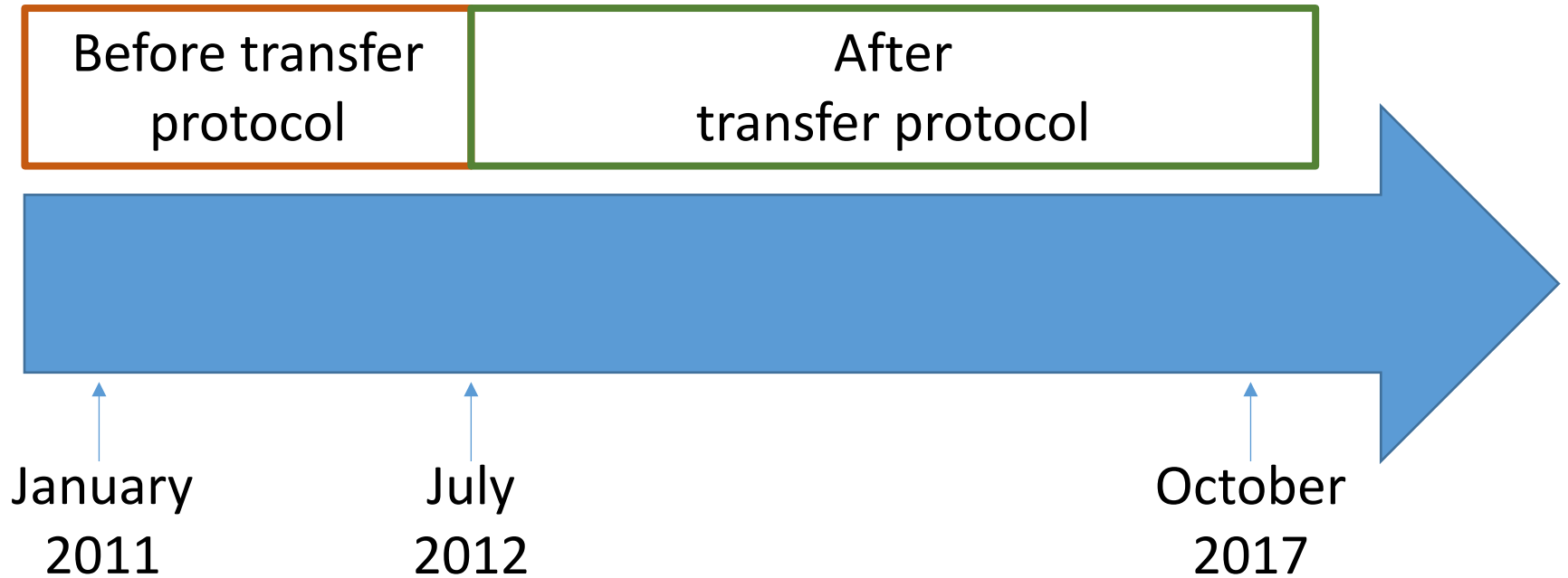
RMSF algorithm

- 
- ALL patients from Tribal Lands or transferred from Indian Health Services

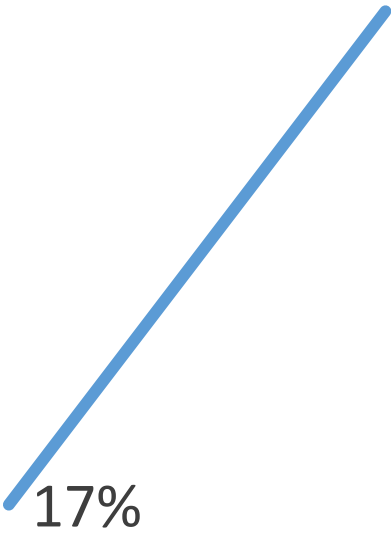
- 
- With measureable or subjective fever

- 
- Initiate and/or maintain doxycycline and order RMSF testing.

Evaluation of effectiveness



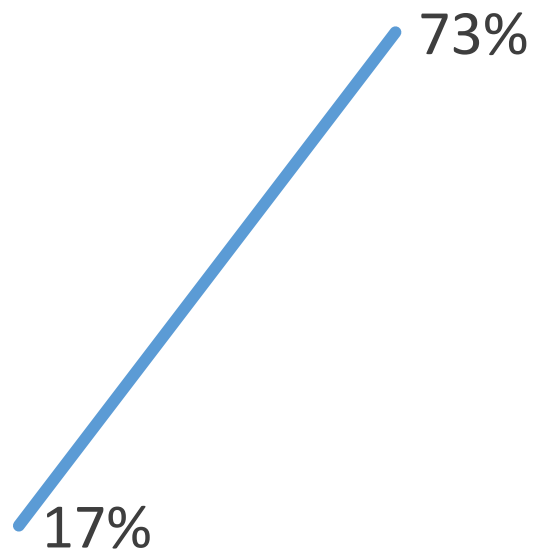
Improvements in outcomes Continuous doxy through transfer



Before

After

Improvements in outcomes Continuous doxy through transfer

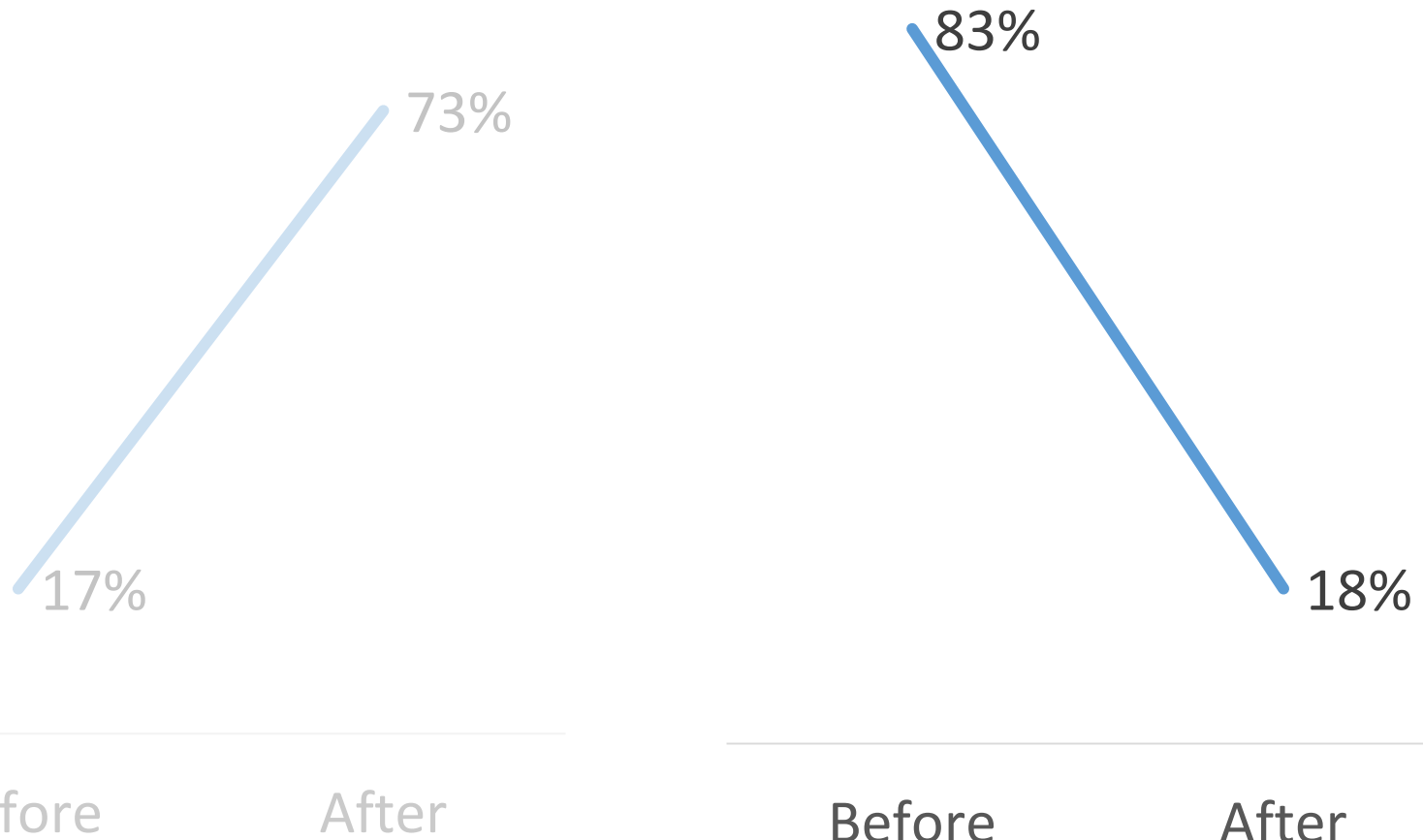


Before

After

Improvements in outcomes

Fatalities



Improvements in outcomes Following treatment protocol

Plan

Plan: Follow blood culture from St. Carlos (P: 928-475-7250).

Restart oral doxycyclin (as per health department recommendation for suspected RMSF).

Follow clinically.

Discussed with mother..

Conclusions and Recommendations

- Patient treatment and outcomes improved after implementation of multi-jurisdictional partnership

Conclusions and Recommendations

- Patient treatment and outcomes improved after implementation of multi-jurisdictional partnership
- Combination of targeted education and structured communication

Acknowledgements

- Maricopa County Department of Public Health
 - Nicole Fowle
 - Mel Kretschmer
 - Craig Levy
 - Jigna Narang
 - Rebecca Sunenshine
 - Ron Klein
 - Tammy Sylvester
- Tribal Partners
 - Jeanette Brislan, SCAT
- Hospital Partners
 - Chris Ireland, PCH
 - Esther Munoz, PCH
- Arizona Department of Health Services
 - Michael Allison
 - Kristen Herrick
 - Kenneth Komatsu
 - Heather Venkat
 - Hayley Yaglom
- Centers for Disease Control and Prevention
 - Kris Bisgard
 - Sally Ann Iverson

Panel Discussion

San Carlos Apache Tribe

Jeanette Brislan, Public Health Nurse

Maricopa County Department of Public Health

Melissa Kretschmer, Epidemiologist

Craig Levy, Epizootologist

Arizona Department of Health Services

Heather Venkat, Acting State Public Health Veterinarian

Hayley Yaglom, RMSF Epidemiologist

Phoenix Children's Hospital

Christine Ireland, Infection Preventionist



Date:	Time:	Patch <input type="checkbox"/>	Courtesy Notification <input type="checkbox"/>	Call Back? YES NO						
Name - Unit Calling	Referring Facility	Contact Number		DOB	AGE					
					Sex M <input type="checkbox"/> F <input type="checkbox"/>					
Patient Name / Alarm Number :										
Chief Complaint / Reason for Referral:										
Physical Findings :										
Vital Signs:	Temp	Pulse	Rhythm	BP	Resp	O2 Sat	Pupils	Glucose	LOC / GCS	Wt
Time:										
Time:										
Trauma	<input type="checkbox"/> Level 1 Activation Time: _____		<input type="checkbox"/> Level 2 Activation Time: _____							
	Transfer from: <input type="checkbox"/> Scene <input type="checkbox"/> Outside Facility									
Treatment Started:										
<input type="checkbox"/> IV <input type="checkbox"/> SVN <input type="checkbox"/> EKG <input type="checkbox"/> AIRWAY <input type="checkbox"/> SPINAL MOTION RESTRICTION <input type="checkbox"/> Other _____										
Past Medical History :										
<input type="checkbox"/> Cardiac <input type="checkbox"/> Seizures <input type="checkbox"/> DM <input type="checkbox"/> Asthma <input type="checkbox"/> Sickle Cell <input type="checkbox"/> Oncology <input type="checkbox"/> Metabolic <input type="checkbox"/> CP/Developmental Delay										
<input type="checkbox"/> Other _____										
Medications:						Allergies:				
Physician Orders:										
Destination:	Transport Mode: <input type="checkbox"/> Air <input type="checkbox"/> Ground <input type="checkbox"/> POV		ETA:	Time Notified:	Person Notified:					
Staff Signature:				Physician Signature :				ALS Refusal <input type="checkbox"/>		
<input type="checkbox"/> No Change from PreHospital Report						<input type="checkbox"/> See EMR for EMS Handoff Documentation				
Patient Status Change :										
Additional Information:										
Staff Signature:				Name of Person Notified:				Date / Time:		

PREHOSPITAL REPORT

HOSPITAL

Trauma Activation Criteria Checklist

Trauma Level I Activation Criteria	
<input type="checkbox"/> Traumatic injury with signs of shock	
<input type="checkbox"/> Penetrating injuries to the head, neck, chest, abdomen or pelvis	
<input type="checkbox"/> Respiratory distress secondary to trauma	
<input type="checkbox"/> Facial or tracheal injury with airway compromise	
<input type="checkbox"/> Neurological injury with GCS \leq 12	
<input type="checkbox"/> Suspected spinal cord injury	
<input type="checkbox"/> Amputation proximal to the wrist or ankle	
<input type="checkbox"/> Crushed, de-gloved, or pulseless extremity	
<input type="checkbox"/> Fracture of two or more proximal long bones	
<input type="checkbox"/> Skull fractures that are both open and depressed	
<input type="checkbox"/> Patients requiring blood products to maintain vital signs	
<input type="checkbox"/> Traumatic cardiopulmonary arrest from trauma with or without vital signs en route	
<input type="checkbox"/> Thoracic Esophageal button battery ingestions (following X-ray identification)	
Trauma Level II Activation Criteria	
<input type="checkbox"/> Motor Vehicle Crashes with history of:	
<input type="checkbox"/> Ejection of the patient from the vehicle	<input type="checkbox"/> Death of an occupant in same vehicle
<input type="checkbox"/> Prolonged extrication (>20 minutes)	<input type="checkbox"/> A rollover collision
<input type="checkbox"/> Intrusion of 18" into passenger compartment or 12" into space occupied by patient	
<input type="checkbox"/> Neurological injuries with a GCS 13 or 14	
<input type="checkbox"/> Hanging or strangulation mechanisms	
<input type="checkbox"/> Motor vehicle vs. pedestrian or bicycle crashes involving speeds > or = 10 mph	
<input type="checkbox"/> Motorized vehicle (motorcycle, motorized scooter, ATV) vs. any object, involving speeds > or = 10 mph	
<input type="checkbox"/> Falls > 1 story or 10 feet	
<input type="checkbox"/> Trauma transfers less than 12 hours from injury with a grade 3, 4 or 5 solid organ injury has had recent hemodynamic instability or recent signs of bleeding but does not meet Level 1 criteria	
Trample injuries (horse, cow, etc.)	

NOT APART OF THE PATIENT RECORD

Justification:

Decision By:

- ED Attending
- ED Fellow
- CS
- TCCNL

CS/TCCNL Printed Name

PEDIATRIC SEPTIC SHOCK COLLABORATIVE TRIAGE TRIGGER TOOL

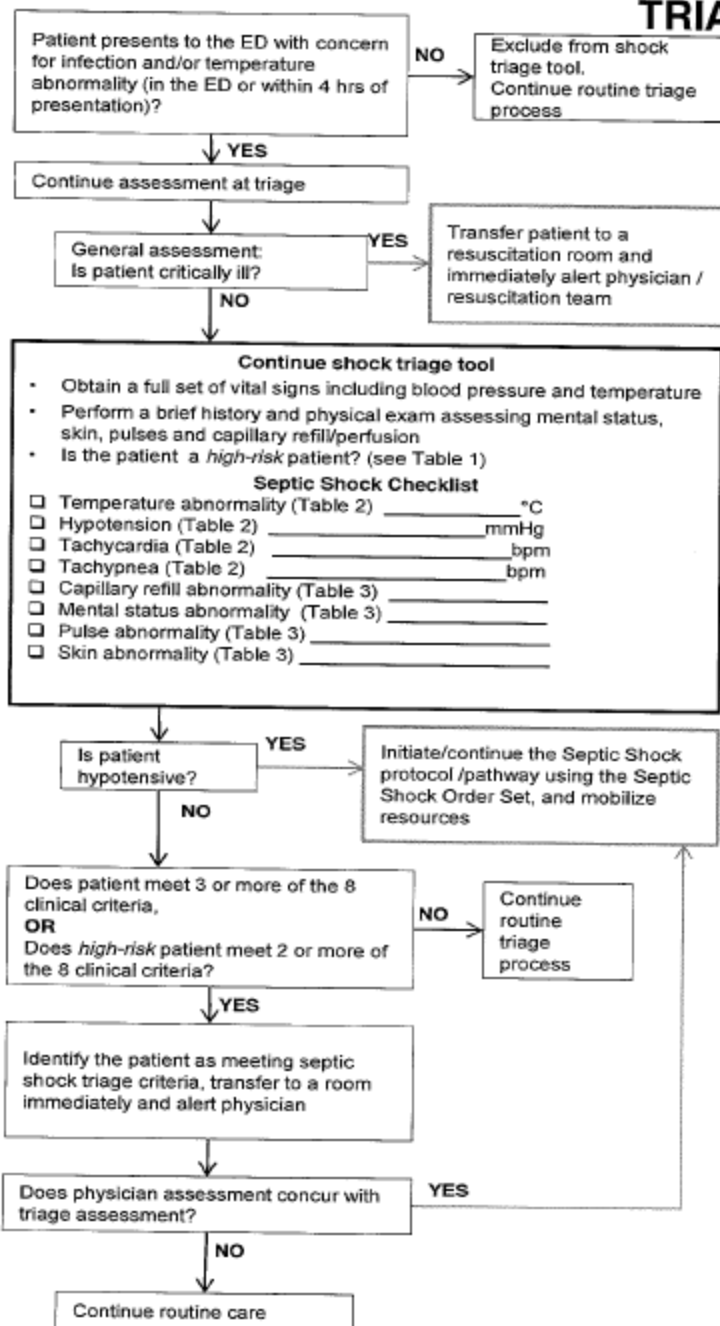


Table 1. High Risk Conditions

- Malignancy
- Asplenia (including SCD)
- Bone marrow transplant
- Central or indwelling line/catheter
- Solid organ transplant
- Severe MR/CP
- Immunodeficiency, immunocompromise or immunosuppression

Table 2. Vital Signs (PALS)

Age	Heart Rate	Resp Rate	Systolic BP	Temp (°C)
0 d - 1 m	> 205	> 60	< 60	<36 or >38
≥ 1 m - 3 m	> 205	> 60	< 70	<36 or >38
≥ 3 m - 1 r	> 190	> 60	< 70	<36 or >38.5
≥ 1 y - 2 y	> 190	> 40	< 70 + (age in yr × 2)	<36 or >38.5
≥ 2 y - 4 y	> 140	> 40	< 70 + (age in yr × 2)	<36 or >38.5
≥ 4 y - 6 y	> 140	> 34	< 70 + (age in yr × 2)	<36 or >38.5
≥ 6 y - 10 y	> 140	> 30	< 70 + (age in yr × 2)	<36 or >38.5
≥ 10 y - 13 y	> 100	> 30	< 90	<36 or >38.5
> 13 y	> 100	> 16	< 90	<36 or >38.5

Table 3. Exam Abnormalities

	Cold Shock	Warm Shock	Non-specific
Pulses (central vs. peripheral)	Decreased or weak	Bounding	
Capillary refill (central vs. peripheral)	≥ 3 sec	Flash (< 1 sec)	
Skin	Mottled, cool	Flushed, ruddy, erythroderma (other than face)	Petechiae below the nipple, any purpura
Mental status			Decreased, irritability, confusion, <u>inappropriate</u> crying or drowsiness, poor interaction with parents, lethargy, diminished arousability, obtunded

THANK YOU

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