

SIMULATION

Pediatric Toxic Shock Syndrome

Jennifer Yee, DO* and Andrew King, MD*

*The Ohio State University Wexner Medical Center, Department of Emergency Medicine, Columbus, OH

Correspondence should be addressed to Andrew King, MD at andrewking3@osumc.edu, Twitter: @akingermid

Submitted: August 15, 2017; Accepted: September 14, 2017; Electronically Published: October 15, 2017; <https://doi.org/10.21980/J8WK8J>

Copyright: © 2017 King, et al. This is an open access article distributed in accordance with the terms of the Creative Commons Attribution (CC BY 4.0) License. See: <http://creativecommons.org/licenses/by/4.0/>

ABSTRACT:

Audience: This scenario was developed to educate emergency medicine residents on the diagnosis and management of a pediatric patient with toxic shock syndrome. The case is also appropriate for teaching of medical students and advanced practice providers, as well as a review of the principles of crisis resource management, teamwork, and communication.

Introduction: Toxic shock syndrome is a low-frequency, high-acuity scenario requiring timely identification and aggressive management. If patients suffering from this condition are managed incorrectly, they may progress into multi-organ dysfunction and potentially death. Toxic shock syndrome has been associated with *Streptococcus* and *Staphylococcus aureus* (Staph). Approximately half of Staph cases are associated with menstruation, which was first described in the 1970s-1980s and was associated with the use of absorbent tampons.¹ Group A streptococcus may cause complications such as necrotizing fasciitis and gangrenous myositis.² Pediatric patients may present critically ill from toxic shock syndrome. Providers need to perform a thorough history and physical exam to discern the source of infection. Management requires aggressive care with antibiotics and intravenous (IV) fluids.

Objectives: By the end of this simulation session, the learner will be able to: 1) Recognize toxic shock syndrome. 2) Review the importance of a thorough physical exam. 3) Discuss management of toxic shock syndrome, including supportive care and the difference in antibiotic choices for streptococcal and staphylococcal toxic shock syndrome. 4) Appropriately disposition a patient suffering from toxic shock syndrome. 5) Communicate effectively with team members and nursing staff during a resuscitation of a critically ill patient.

Method: This session was conducted using high-fidelity simulation, followed by a debriefing session and lecture on toxic shock syndrome.

Topics: Medical simulation, pediatrics, toxic shock syndrome, sepsis, pediatric sepsis.



USER GUIDE

List of Resources:

Abstract	19
User Guide	20
Instructor Materials	21
Operator Materials	28
Debriefing and Evaluation Pearls	30
Simulation Assessment	33

Learner Audience:

Medical students, interns, junior residents, senior residents

Time Required for Implementation:

Instructor Preparation: 30 minutes

Time for case: 20 minutes

Time for debriefing: 45 minutes

Recommended Number of Learners per Instructor:

4

Topics:

Medical simulation, pediatrics, toxic shock syndrome, sepsis, pediatric sepsis.

Objectives:

By the end of this simulation session, the learner will be able to:

1. Recognize toxic shock syndrome.
2. Review the importance of a thorough physical exam.
3. Discuss management of toxic shock syndrome, including supportive care and the difference in antibiotic choices for streptococcal and staphylococcal toxic shock syndrome.
4. Appropriately disposition a patient suffering from toxic shock syndrome.
5. Communicate effectively with team members and nursing staff during a resuscitation of a critically ill patient.

Linked objectives and methods:

Toxic shock syndrome is a low-frequency, high-acuity scenario requiring timely identification and aggressive management. If patients suffering from this condition are managed incorrectly, they may progress into multi-organ dysfunction and, potentially, death. Toxic shock syndrome has been associated with *Streptococcus* and *Staphylococcus aureus* (Staph). Approximately half of Staph cases are associated with menstruation, which was first described in the 1970s-1980s and was associated with the use of absorbent tampons.¹ Group A *Streptococcus* may cause complications such as necrotizing fasciitis and gangrenous myositis.²

By working through the case learners will learn to recognize toxic shock syndrome through history and physical exam (objective 1 and 2), manage the patient (objective 3) and appropriately disposition the patient (objective 4) while effectively communicating with the team (objective 5). After the case, these points can be reiterated during debriefing and any points of confusion or errors clarified. This simulation scenario allows learners to rehearse their toxic shock syndrome management skills in a safe learning environment, then receive summative feedback and discuss treatment strategies with their peers and content experts.

Recommended pre-reading for instructor:

- We recommend that instructors review literature regarding the diagnosis and management of toxic shock syndrome. Suggested reading includes the materials listed below under “References/suggestions for further reading.”

Results and tips for successful implementation:

This simulation was written to be performed as a high-fidelity simulation scenario, but may also be used as a mock oral board case. The scenario was based on an actual patient case.

If participants do not ask about tampon use or if they fail to perform a urogenital exam, the confederate nurse should tell participants that the patient hasn’t urinated all day. The nurse should then ask for a Foley catheter or straight catheterization. Nursing should begin catheterization, then tell participants that the patient asked if she needed to take out her tampon for a catheter. This should prompt the participants to perform a urogenital exam.

References/suggestions for further reading:

1. Chu VH. Staphylococcal toxic shock syndrome. In: Baron EL, ed. *UpToDate*. Waltham, MA: UpToDate Inc. <https://www.uptodate.com/contents/staphylococcal-toxic-shock-syndrome>. Accessed August 7, 2017.
2. Stevens, DL. Epidemiology, clinical manifestations, and diagnosis of streptococcal toxic shock syndrome. In: Baron EL, ed. *UpToDate*. Waltham, MA: UpToDate Inc. <https://www.uptodate.com/contents/epidemiology-clinical-manifestations-and-diagnosis-streptococcal-toxic-shock-syndrome>. Accessed August 7, 2017.
3. Liang SY. Toxic shock syndromes. In: Tintinalli JE, Stapczynski J, Ma O, Yealy DM, Meckler GD, Cline DM, eds. *Tintinalli’s Emergency Medicine: A Comprehensive Study Guide*. 8th ed. New York, NY: McGraw-Hill; 2016:1017-1021.
4. Pallin DJ, Nassisi D. Skin and soft tissue infections. In: Marx J, Walls R, Hockberger R, eds. *Rosen’s Emergency Medicine: Concepts and Clinical Practice*. 8th ed. Philadelphia, PA: Elsevier; 2013:1851-1864.



INSTRUCTOR MATERIALS

Case Title: Pediatric Toxic Shock Syndrome Case Scenario

Case Description & Diagnosis (short synopsis): 13-year-old girl presents with a day of malaise. She reports fevers, malaise, headache, myalgias, presyncope, rash, and nausea secondary to toxic shock syndrome from a retained tampon. The goal is early recognition and management.

Equipment or Props Needed:

High-fidelity pediatric simulation mannequin

Moulage material for mannequin for rash

- Commercial moulage kits are available. Cream-based cosmetic blush may also be used.

Angiocatheters (20g, 22g, 24g)

Oxygen (Nasal cannula, face mask, non-rebreather mask)

Cardiac monitor

Pulse oximetry

Bag-valve mask

Intravenous (IV) pole

Foley catheter

Tampon for insertion into mannequin

Broselow equipment

Normal saline (1L, 500cc, 250cc)

Medications = IV clindamycin, IV vancomycin, IV linezolid, IV nafcillin

Confederates needed:

Primary nurse, dad or mom

Stimulus Inventory:

- #1 Complete blood count (CBC)
- #2 Basic metabolic panel (BMP)
- #3 beta-human chorionic gonadotropin (hCG) qualitative
- #4 Prothrombin time (PT)/international normalized ratio (INR)
- #5 Liver function tests (LFTs)
- #6 Arterial blood gas (ABG)
- #7 Lactate
- #8 Urinalysis (UA)
- #9 Chest X-Ray (CXR)
- #10 Electrocardiogram (ECG) 1 – sinus tachycardia



INSTRUCTOR MATERIALS

#11 Skin Exam

#12 ECG 2 – normal sinus

Background and brief information: Parent brings patient into small community emergency department by private vehicle.

Initial presentation: That patient is placed in a bed after being triaged. She complains of significant abdominal pain.

How the scenario unfolds: A 13-year-old girl presents with her mom for a day of malaise. She reports fevers, malaise, headache, myalgias, presyncope, and nausea. She's had four episodes of non-bloody emesis and loose stools without hematochezia or melena. She's been eating, drinking, and urinating less.

- If asked: No one else at home is sick. No recent travel. She is up to date on immunizations. Her rash began this morning.
- If asked: last menstrual period (LMP) began four days ago.
 - If specifically asked: She last took her tampon out three days ago.
- Past medical history: asthma
- Past surgical history: none
- Immunizations are up to date
- Medications: albuterol as needed for shortness of breath
- Allergies: no known drug allergies
- Family history: noncontributory
- Vital signs:
 - Heart Rate (HR) – 140
 - Respiratory rate (RR) – 20
 - Temperature (T) – 102°F
 - Blood Pressure (BP) – 84/66
 - Pulse oximetry (O₂ sat) – 98% on room air (RA)
- Weight: 50 kg

Assessment: Appears toxic, lying in bed quietly. Conjunctiva and oropharyngeal membranes are erythematous but dry. Heart tachycardic, no murmur, 4-5 second capillary refill. Mild tachypnea at rest. Lungs clear to auscultation bilaterally. Abdomen soft, mildly generally tender to palpation (especially suprapubic region) without guarding, rebound, distention, or rigidity. Skin dry with rash. There is hyperemia of vaginal mucosa. If pelvic exam is performed, tampon is found. Mild vaginal bleeding is present, consistent with period. No cervical motion



INSTRUCTOR MATERIALS

tenderness or tenderness/fullness on bimanual. Glasgow coma score (GCS) is 14 (E3V5M6). No focal motor or sensory deficits.

How the scenario unfolds: Patient should be given IV fluid until her blood pressure and heart rate improve, obtain blood and urine cultures, start antibiotics, and admit to the pediatric intensive care unit.

- If patient does not receive 3L of normal saline, she will remain hypotensive and tachycardic.
- If patient is not asked about a tampon or have a genitourinary exam performed, nurses will ask for a straight catheter or Foley catheter to obtain urine sample; then the nurse will report that the patient asked if she needs to remove her tampon for the catheter.

Critical Actions:

1. Intravenous access x 2
2. Continuous cardiac monitoring started
3. Administer 3L normal saline bolus
4. Order blood and urine cultures
5. Check hCG quantitative
6. Diagnose toxic shock syndrome
7. Start broad spectrum antibiotics
8. Reassessment of the patient's clinical status and vital signs
9. Admit to pediatric intensive care unit



INSTRUCTOR MATERIALS

Case title: Pediatric Toxic Shock Syndrome Case Scenario

Chief Complaint: 13-year-old girl presents with a day of malaise. She reports fevers, malaise, headache, myalgias, presyncope, and nausea.

Vitals: HR 140 BP 84/66 RR 20 Temp 102.0 O2Sat 98% on room air

General Appearance: Appears toxic, lying supine in bed

Primary Survey:

- **Airway:** intact
- **Breathing:** mild tachypneic at rest, clear to auscultation bilaterally
- **Circulation:** tachycardic, 2+ symmetric pulses, cap refill 4-5 seconds

History:

- **History of present illness:** 13-year-old girl presents with a day of malaise. She reports fevers, malaise, headache, myalgias, presyncope, and nausea. She's had four episodes of non-bloody emesis and loose stools without hematochezia or melena. She's been eating, drinking, and urinating less.
 - If asked: No one else at home is sick. No recent travel. She is up to date on immunizations. Her rash began this morning.
 - If asked: LMP began four days ago.
 - If specifically asked: She last took her tampon out three days ago.
- **Past medical history:** asthma
- **Past surgical history:** none
- **Patients medications:** albuterol metered dose inhaler
- **Allergies:** No known drug allergies
- **Social history:** no smoking, drugs, alcohol.
- **Immunizations:** up to date
- **Family history:** non-contributory

Secondary Survey/Physical Examination:

- **General appearance:** appears toxic, lying supine in bed
- **Head, ears, eyes, nose and throat (HEENT):**
 - **Head:** within normal limits
 - **Eyes:** conjunctival membranes are injected (needs to ask)



INSTRUCTOR MATERIALS

- **Ears:** within normal limits
- **Nose:** within normal limits
- **Throat:** oropharyngeal membranes are erythematous, dry. (needs to ask)
- **Neck:** within normal limits
- **Heart:** tachycardic, no murmur (needs to ask about murmur), cap refill 4-5 seconds
- **Lungs:** mild tachypnea at rest without accessory muscle use.
- **Abdominal/GI:** soft, mildly generally tender to palpation, especially suprapubic region. No guarding, rebound, distention, rigidity. Normal bowel sounds. No signs of trauma (needs to ask)
- **Genitourinary:** hyperemia of vaginal mucosa. If pelvic performed, tampon is found. Mild vaginal bleeding consistent with period. No cervical motion tenderness or tenderness/fullness on bimanual (needs to ask)
- **Rectal:** within normal limits
- **Extremities:** within normal limits
- **Back:** within normal limits
- **Neuro:** GSC 14 (E3V5M6). No focal motor/sensory deficits
- **Skin:** diffuse macular erythema without vesicles, bullae, target lesions, petechiae, or purpura. Negative Nikolsky sign
- **Lymph:** within normal limits
- **Psych:** within normal limits



INSTRUCTOR MATERIALS

Results:

CBC

WBC: 19.0 x1000/mm³(H)

HGB: 13.5g/dL

HCT: 37.0%

PLT: 190 x1000/mm³ (H)

Segs: 81% (H)

Bands: 16% (H)

BMP

Na 133 mEq/L

Cl 99 mEq/L

K 4.2 mEq/L

HCO₃ 16 mEq/L (L)

BUN 80 mg/dL (H)

Cr 2.8 mg/dL (H)

Glucose 100 mg/dL

Calcium 8.0 mg/dL

hCG qualitative:

negative

PT/INR

12 seconds / 1.0

Liver Function Tests

Total bilirubin 0.8 mg/dL

Direct bilirubin 0.2 mg/dL

Albumin 3.0 g/dL

Alkaline Phosphate 100 U/L

Total Protein: 7 g/dL

ABG

pH 7.29 (L)

pCO₂ 32 mm Hg (L)

pO₂ 89 mm Hg



INSTRUCTOR MATERIALS

HCO₃ 16 mEq (L)

O₂ sat 98%

Lactate

4.2 mEq/L (H)

Urinalysis

Leukocyte esterase: negative

Nitrites: negative

Blood: none

Ketones: trace

Glucose: none

Color: dark yellow

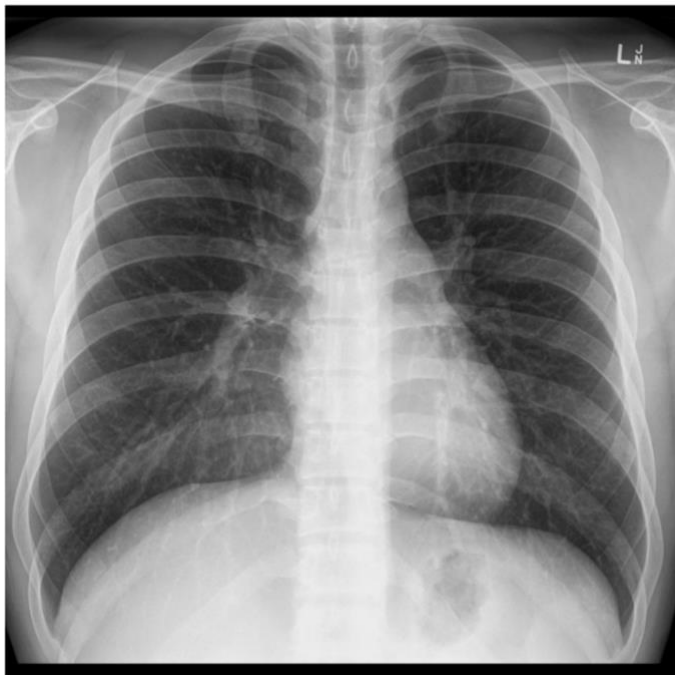
WBC: 10-15 WBCs/HPF

RBC: 0-5 RBCs/HPF

Squamous epithelial cells: 0-5 cells/HPF

Specific gravity: 1.025

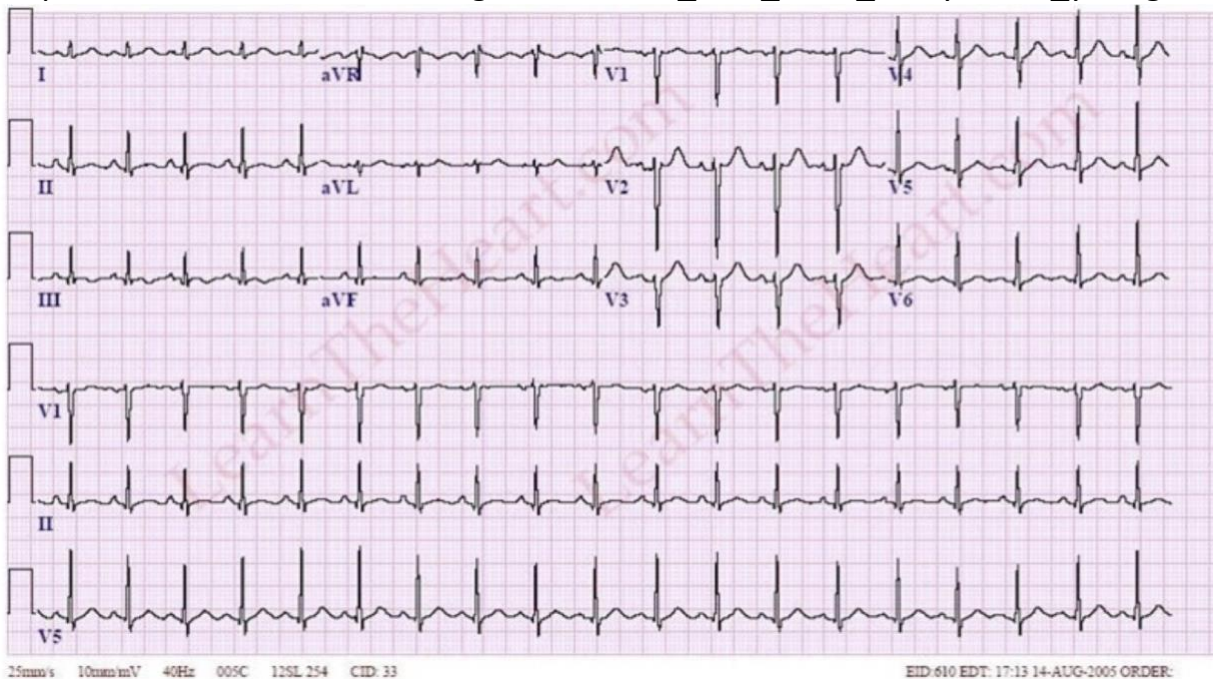
CXR (Courtesy of Wikimedia Commons, Stillwaterising, Public Domain,
https://commons.wikimedia.org/wiki/File:Chest_Xray_PA_3-8-2010.png)





INSTRUCTOR MATERIALS

ECG 1 – sinus tachycardia (Courtesy of Wikimedia Commons, Glenlarsen, Public Domain, https://commons.wikimedia.org/wiki/File:12_lead_sinus_tachycardia_young.JPG)



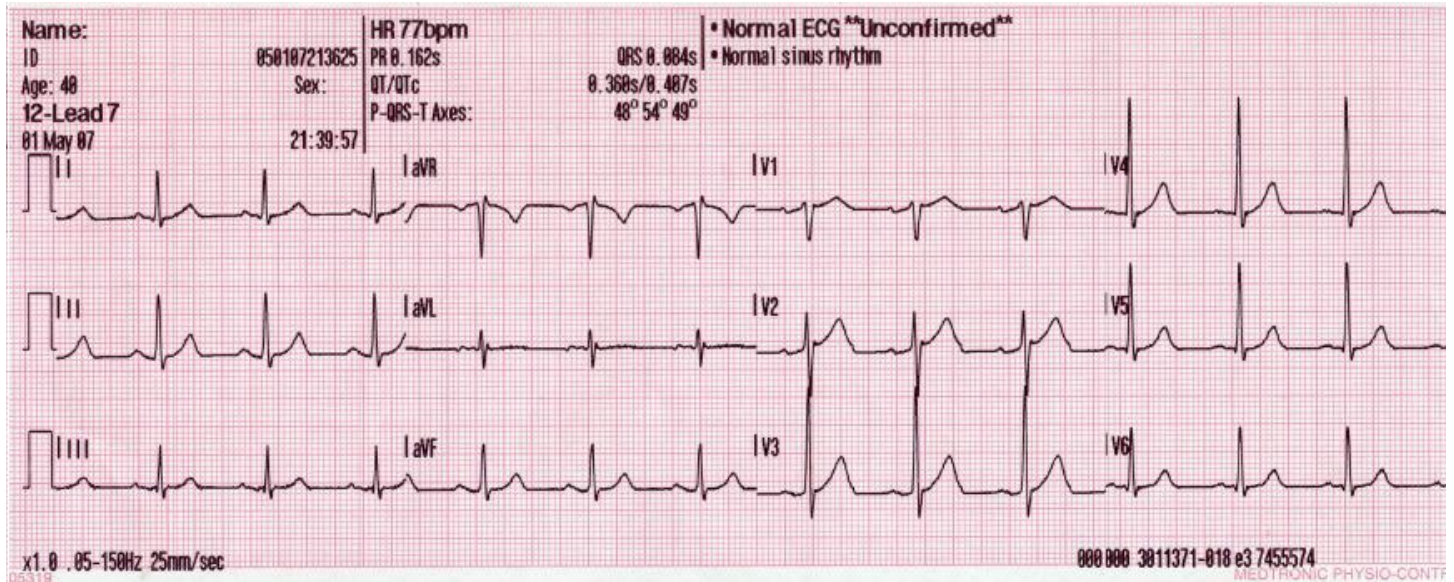
Skin Exam (Courtesy of Wikimedia Commons, Cross_Reaction_Rash.jpg: Matibot, CC BY-SA 3.0, https://commons.wikimedia.org/wiki/File:Cross_Reaction_Rash_cropped.jpg)





INSTRUCTOR MATERIALS

ECG 2 – normal sinus (Courtesy of Wikimedia Commons, Glenlarsen, Public Domain, https://commons.wikimedia.org/wiki/File:12_lead_generated_sinus_rhythm.JPG)





OPERATOR MATERIALS

SIMULATION EVENTS TABLE:

Minute (state)	Participant action/ trigger	Patient status (simulator response) & operator prompts	Monitor display (vital signs)
0:00 (Baseline)	Patient just placed into bed in ED	If patient is given 2L of fluid, go to State A If 3L of fluid given, go to State B If no fluids given, go to State C If Tylenol is given, drop temp to 100F	T 102F HR 140 BP 84/66 RR 20 O ₂ sat 98% RA
4:00 State A	IV placed, labs drawn, 2L fluids given	State A: If 2L, tachycardia and hypotension will improve, but not resolve If an additional 1L of fluids given go to State B	T 102F HR 115 BP 90/70 RR 18 O ₂ sat 98% RA
4:00 State B 7:00 State B	IV placed, labs drawn, total 3L fluids given	State B: If performed correctly, tachycardia and hypotension will improve further If not performed correctly, patient's vitals will remain unchanged from state A If 3L of fluids and antibiotics are ordered go to State D	T 102F HR 108 BP 98/78 RR 16 O ₂ sat 98% RA
4:00 State C	IV placed, labs drawn, no fluids given	State C: If not performed correctly, patient will become hypotensive to 70/palp, tachycardic to 150, and will require intubation (GCS 8, E2V2M4) If 2L of fluids are given go to State A, if 3L of fluids are given go to State B	T 102F HR 150 BP 70/palp RR 22 O ₂ sat 98% RA GCS 8 (E2V2M4)
7:00 State C	Patient intubated	If no fluids given patients will become more tachycardic and hypotensive, nurse will ask "should we give fluids?" If 2L of fluids are given go to State A, if 3L of fluids are given go to State B	T 102F HR 170 BP 50/palp RR 22 O ₂ sat 98% RA GCS 8 (E2V2M4)
7:00 State D	IV fluid bolus and antibiotics are given, PICU admission	If 3L of fluids and antibiotics are given, PICU will admit the patient. If not performed, nursing should ask "is there anything else we can do for her?" and go to 7:00 State C	T 102F HR 108 BP 98/78 RR 16 O ₂ sat 98% RA



OPERATOR MATERIALS

Diagnosis:

Pediatric Toxic Shock Syndrome

Disposition:

Pediatric Intensive Care Unit



DEBRIEFING AND EVALUATION PEARLS

Pediatric Toxic Shock Syndrome

Pearls:

Patients with toxic shock syndrome may present acutely ill and decompensate quickly, requiring aggressive management.

Providers should always evaluate for inciting events for sepsis, including retained tampons and pelvic inflammatory disease in women.

Staph aureus and Group A Strep create an exotoxin which may activate large numbers of T cells at once, resulting in massive cytokine production and release.

Skin manifestations may take different forms. There may be a diffuse red macular rash that involves the hands and soles, which may be subtle and resolve within a short time frame. There may also be hyperemia of mucosa, and in severe cases, superficial ulcerations of the mucus membranes. Late-onset skin manifestations have also been described approximately 1-2 weeks after the illness develops, with desquamation of the palms and soles.

Patients require anti-staphylococcal antibiotic coverage, such as clindamycin and vancomycin.

Other debriefing points:

Closed-loop communication amongst team: was it used? Why or why not? Were there any implications of this during case execution?

Was the Broselow tape used? Why or why not?



DEBRIEFING AND EVALUATION PEARLS

Toxic Shock Syndrome Management Pearls Handout

Microbiology

- Classically due to *S. aureus* or group A Strep (*Streptococcus pyogenes*), which are gram positive bacteria that produce exotoxins that promote cytokine expression for a proinflammatory state
- Toxic shock syndrome (TSS) linked to menstruation is linked to Staph
- Non-menstrual TSS risk factors include female barrier contraceptives and nasal packing material
- Strep is associated with necrotizing fasciitis and myositis. Groups B, C, and G are now being linked to TSS. Cases of group A strep have been reported with increased frequency, predominately in North America and Europe
- Staph TSS mortality is <3%, however, Strep TSS has a mortality rate of 30-70%
- Staph infections may be secondary only to colonization, while Strep often has an identifiable infectious source

Signs and Symptoms

- Patients may initially have a nonspecific prodrome, including fever, chills, headache, sore throat, vomiting, abdominal pain
- Subsequent hypotension results from systemic vasodilation
- The classic erythroderma is a painless diffuse red macular rash, which may be patchy or confluent. Patients may have desquamation of the palms and soles 1-3 weeks after initial symptom onset
 - Mucosal involvement includes oropharyngeal hyperemia and ulceration. For those with menstrual TSS, a pelvic exam may reveal vaginal mucosal involvement
- Patient with surgical wounds may not have associated erythema, induration, or drainage, and they should be considered a potential source of TSS
- Patients with Group A Strep have pain that precedes physical findings of infection, such as erythema

Diagnosis

- TSS is a clinical diagnosis
- Order labs to evaluate for organ hypoperfusion/dysfunction
- Blood cultures should be obtained, but positive blood cultures are uncommon in Staph TSS. 60% positive in Strep.



DEBRIEFING AND EVALUATION PEARLS

- Wound, mucosal, and retained foreign material cultures are often positive for *S. aureus*

Complications

- May include acute respiratory distress syndrome (ARDS), gangrene, disseminated intravascular coagulation, and renal failure
- Less common complications: rhabdomyolysis, seizures, pancreatitis, pericarditis, and cardiomyopathy¹

Management

- Aggressive IV fluid resuscitation
- Supplemental oxygen
- Remove retained foreign bodies
- Surgical consult for debridement of potentially infected wounds
- Empiric Staph antibiotic therapy: Vancomycin or linezolid if *methicillin resistant S. aureus* is prevalent. Otherwise, may consider oxacillin
 - Add Clindamycin to inhibit protein synthesis and toxin production
- Empiric Strep antibiotic therapy: meropenem and piperacillin/tazobactam. Add Vancomycin if MRSA is prevalent in the community
 - Add Clindamycin for same reasons as aforementioned

References

1. Pallin DJ, Nassisi D. Skin and Soft Tissue Infections. In: Marx J, Walls R, Hockberger R, eds. *Rosen's Emergency Medicine – Concepts and Clinical Practice E-Book*. 8th ed. Philadelphia, PA: Elsevier Mosby; 2013. 1851-1864.
2. Chu VH. Staphylococcal toxic shock syndrome. *UpToDate*, Waltham, MA: UpToDate; 2017. www.uptodate.com. Accessed on August 07, 2017.
3. Liang SY. Toxic Shock Syndromes. In: Tintinalli JE, Stapczynski J, Ma O, Yealy DM, Meckler GD, Cline DM, eds. *Tintinalli's Emergency Medicine: A Comprehensive Study Guide*. 8th ed. New York, NY: McGraw-Hill; 2016:1017-1021.
4. Stevens, DL. Epidemiology, clinical manifestations, and diagnosis of streptococcal toxic shock syndrome. *UpToDate*, Waltham, MA: UpToDate; 2016. www.uptodate.com. Accessed on August 07, 2017.



SIMULATION ASSESSMENT

Pediatric Toxic Shock Syndrome Case Scenario

Learner: _____

Assessment Timeline

This timeline is to help observers assess their learners. It allows observer to make notes on when learners performed various tasks, which can help guide debriefing discussion.

Critical Actions

1. IV access x2
2. Continuous cardiac monitoring started
3. Administer 3L normal saline bolus
4. Order blood and urine cultures
5. Check hCG quantitative
6. Diagnosis toxic shock syndrome
7. Start broad spectrum antibiotics
8. Reassessment of the patient's clinical status and vital signs
9. Admit to pediatric intensive care unit

0:00



SIMULATION ASSESSMENT

Pediatric Toxic Shock Syndrome Case Scenario

Learner: _____

Critical Actions:

- ☐ Intravenous access x 2
- ☐ Continuous cardiac monitoring started
- ☐ Administer 3L normal saline bolus
- ☐ Order blood and urine cultures
- ☐ Check hCG quantitative
- ☐ Diagnose toxic shock syndrome
- ☐ Start broad spectrum antibiotics
- ☐ Reassessment of the patient's clinical status and vital signs
- ☐ Admit to pediatric intensive care unit

Summative and formative comments:

Milestones assessment:

	Milestone	Did not achieve level 1	Level 1	Level 2	Level 3
1	Emergency Stabilization (PC1)	☐ Did not achieve Level 1	☐ Recognizes abnormal vital signs	☐ Recognizes an unstable patient, requiring intervention Performs primary assessment Discerns data to formulate a diagnostic impression/plan	☐ Manages and prioritizes critical actions in a critically ill patient Reassesses after implementing a stabilizing intervention



SIMULATION ASSESSMENT

Pediatric Toxic Shock Syndrome Case Scenario

Learner: _____

	Milestone	Did not achieve level 1	Level 1	Level 2	Level 3
2	Performance of focused history and physical (PC2)	☐ Did not achieve Level 1	☐ Performs a reliable, comprehensive history and physical exam	☐ Performs and communicates a focused history and physical exam based on chief complaint and urgent issues	☐ Prioritizes essential components of history and physical exam given dynamic circumstances
3	Diagnostic studies (PC3)	☐ Did not achieve Level 1	☐ Determines the necessity of diagnostic studies	☐ Orders appropriate diagnostic studies. Performs appropriate bedside diagnostic studies/procedures	☐ Prioritizes essential testing Interprets results of diagnostic studies Reviews risks, benefits, contraindications, and alternatives to a diagnostic study or procedure
4	Diagnosis (PC4)	☐ Did not achieve Level 1	☐ Considers a list of potential diagnoses	☐ Considers an appropriate list of potential diagnosis May or may not make correct diagnosis	☐ Makes the appropriate diagnosis Considers other potential diagnoses, avoiding premature closure
5	Pharmacotherapy (PC5)	☐ Did not achieve Level 1	☐ Asks patient for drug allergies	☐ Selects an medication for therapeutic intervention, consider potential adverse effects	☐ Selects the most appropriate medication and understands mechanism of action, effect, and potential side effects Considers and recognizes drug-drug interactions



SIMULATION ASSESSMENT

Pediatric Toxic Shock Syndrome Case Scenario

Learner: _____

	Milestone	Did not achieve level 1	Level 1	Level 2	Level 3
6	Observation and reassessment (PC6)	☐ Did not achieve Level 1	☐ Reevaluates patient at least one time during case	☐ Reevaluates patient after most therapeutic interventions	☐ Consistently evaluates the effectiveness of therapies at appropriate intervals
7	Disposition (PC7)	☐ Did not achieve Level 1	☐ Appropriately selects whether to admit or discharge the patient	☐ Appropriately selects whether to admit or discharge Involves the expertise of some of the appropriate specialists	☐ Educates the patient appropriately about their disposition Assigns patient to an appropriate level of care (ICU/Tele/Floor) Involves expertise of all appropriate specialists
9	General Approach to Procedures (PC9)	☐ Did not achieve Level 1	☐ Identifies pertinent anatomy and physiology for a procedure Uses appropriate Universal Precautions	☐ Obtains informed consent Knows indications, contraindications, anatomic landmarks, equipment, anesthetic and procedural technique, and potential complications for common ED procedures	☐ Determines a back-up strategy if initial attempts are unsuccessful Correctly interprets results of diagnostic procedure
20	Professional Values (PROF1)	☐ Did not achieve Level 1	☐ Demonstrates caring, honest behavior	☐ Exhibits compassion, respect, sensitivity and responsiveness	☐ Develops alternative care plans when patients' personal beliefs and decisions preclude standard care



SIMULATION ASSESSMENT

Pediatric Toxic Shock Syndrome Case Scenario

Learner: _____

	Milestone	Did not achieve level 1	Level 1	Level 2	Level 3
22	Patient centered communication (ICS1)	☐ Did not achieve level 1	☐ Establishes rapport and demonstrates empathy to patient (and family) Listens effectively	☐ Elicits patient's reason for seeking health care	☐ Manages patient expectations in a manner that minimizes potential for stress, conflict, and misunderstanding. Effectively communicates with vulnerable populations, (at risk patients and families)
23	Team management (ICS2)	☐ Did not achieve level 1	☐ Recognizes other members of the patient care team during case (nurse, techs)	☐ Communicates pertinent information to other healthcare colleagues	☐ Communicates a clear, succinct, and appropriate handoff with specialists and other colleagues Communicates effectively with ancillary staff