

Necrotizing Fasciitis / Fournier's Gangrene

Section 1: Case Summary

Scenario Title:	Necrotizing Fasciitis / Fournier's Gangrene
Keywords:	Necrotizing Fasciitis, Infections Disease, Interdisciplinary, surgical care
Brief Description of Case:	This case involves the approach to and management of necrotizing fasciitis. If treated aggressively (IV fluids, early broad-spectrum antibiotics and source control with surgical referral) the patient will stabilize. If not the patient will deteriorate into a PEA arrest.

Goals and Objectives	
Educational Goal:	Demonstrate approach to the diagnosis and management of NF.
Objectives: (Medical and CRM)	<ol style="list-style-type: none"> 1. Recognize NF 2. Initiate appropriate and timely treatment 3. Advocate on behalf of their patient
EPAs Assessed:	

Learners, Setting and Personnel			
Target Learners:	<input checked="" type="checkbox"/> Junior Learners	<input type="checkbox"/> Senior Learners	<input type="checkbox"/> Staff
	<input checked="" type="checkbox"/> Physicians	<input type="checkbox"/> Nurses	<input type="checkbox"/> RTs
	<input type="checkbox"/> Other Learners:		
Location:	<input checked="" type="checkbox"/> Sim Lab	<input type="checkbox"/> In Situ	<input type="checkbox"/> Other:
Recommended Number of Facilitators:	Instructors: (1) MD facilitator		
	Confederates: RN		
	Sim Techs: One as available		

Scenario Development	
Date of Development:	March 23, 2020
Scenario Developer(s):	Dr. Jasdeep Gill



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Section 5: Scenario Progression

Scenario States, Modifiers and Triggers				
Patient State/Vitals	Patient Status	Learner Actions, Modifiers & Triggers to Move to Next State		Facilitator Notes
1. Baseline State Rhythm: Regular HR: 118 BP: 105/70 RR: 22 O ₂ SAT: 92 % T:38.5 °C GCS: 10 (E3V3M4)	Confused, Diffuse Abdo pain	<u>Expected Learner Actions</u> Focused H & P IV fluids (20cc/kg) Broad spectrum IV Abx Blood work/blood cultures Cap glucose Monitors O ₂	<u>Modifiers</u> <i>Changes to patient condition based on learner action</i> -O ₂ applied → Sat 95% - IVF → Hr 110 <u>Triggers</u> <i>For progression to next state</i> - No fluids/Abx by 2 min → Phase 2 -All actions complete → Phase 2	



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<p>2. Worsening HR: 130 BP: 70/50 RR: 26 O₂SAT: 90 % T:38.5 °C GCS: 8 (E2V2M4)</p>	<p>More Confused, Increasing RR with obvious Tachypnea</p>	<p><u>Expected Learner Actions</u></p> <p>Recognize that instability of patient in shock Emergent need to RSI Vasopressors</p>	<p><u>Modifiers</u> -Bp will drop further despite fluids and Abx</p> <p><u>Triggers</u> -Intubation complete —>Phase 3 - No intubation —> 4</p>	
<p>3. Response HR: 110 BP: 95/50 RR: 22 O₂SAT: 94 % T:38.0 °C GCS: Intubated</p>	<p>Intubated No source identified</p>	<p><u>Expected Learner Actions</u></p> <p>Source control. Find the infection based on examination if completed already. May come across GU exam if inserting foley.</p> <p>Call surgery/ICU if not done so</p>	<p><u>Modifiers</u> - no further changes - Gen surgery or plastics pushes back asking for CT with ICU admit and abx with reassessment</p> <p><u>Triggers</u></p> <p>- if demanding for Gen Sx consult —> 5</p> <p>- if succumbs to pushback -> 4 - Patient codes</p>	



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<p>4. PEA arrest</p>	<p>no response to ACLS</p>	<p><u>Expected Learner Actions</u> - ACLS - x 2 rounds → ROSC - Calls back general surgery for OR</p>	<p><u>Modifiers</u> - learner demands they come in for source control</p> <p><u>Triggers</u> - if call back Gen Sx → 5 - otherwise PEA → Death (end of case)</p>	
<p>5. Disposition HR: 110 BP: 95/60 RR: 22 O₂SAT: 96 % T:38.0 °C GCS: 9</p>	<p>Stable on pressors if Gen surgery made to agree to take pt. to OR</p>	<p><u>Expected Learner Actions</u> Ongoing monitoring Call ICU Ensure appropriate Abx May arrange for CT</p>	<p><u>Modifiers</u> -no further changes</p> <p><u>Triggers</u> - speak with ancillary staff and consultant - End of case</p>	



Appendix C: Facilitator Cheat Sheet & Debriefing Tips

1. Review the initial approach, management, and treatment for NF
2. Discuss the importance of source control and early referral
3. No need for imaging, focus on clinical examination and need for Broad spec abx.

Include key errors to watch for and common challenges with the case. List issues expected to be part of the debriefing discussion. Supplemental information regarding any relevant pathophysiology, guidelines, or management information that may be reviewed during debriefing should be provided for facilitators to have as a reference.

Discussion Points:

- Rapid, yet often subtle, spread of inflammation and necrosis across fascial and subcutaneous tissues, leading to systemic signs of toxicity and pervasive tissue destruction and resulting in high morbidity and mortality
- Case fatality rate of NF remains between 11% and 76% (1)
- Risks and predisposing factors for NF include extremes in age, diabetes mellitus, peripheral vascular disease, immunocompromised states, and skin injury from surgery, procedures, burns, blunt trauma, childbirth, or IV drug use
- Any patient presenting with inflammatory skin changes and additional symptoms of fever, toxic appearance, crepitation, pain out of proportion to the exam, blisters or bullae, and/or rapid clinical deterioration should be evaluated for NF
 - Exposing patient for physical examination if you see what appears to be a cellulitis on the lower abdomen examine the perineum for signs of Fournier's Gangrene.
 - Role of the physician to advocate for his or her patient when inappropriate pushback despite need for definitive care
 - Learners may overlook the obvious subcutaneous emphysema on physical exam the character of the pain, and the general appearance of the patient.
- Surgical exploration remains the gold standard for definitive diagnosis and treatment of NF and should never be delayed, especially in the presence of subcutaneous emphysema or rapidly evolving soft tissue

Empiric antibiotic therapy for suspected Necrotizing Fasciitis

Meropenem 1 g IV q8h OR Piperacillin-tazobactam 3.375 g IV q6h
PLUS Vancomycin 15 mg/kg q12 h IV OR Linezolid 600 mg IV q12h

References

1. Group A Streptococcal (GAS) Disease. [Jul;2016]; Group A. <http://www.cdc.gov/groupastrep/clinicians.html> 20142.
2. <https://emergencymedicinecases.com/necrotizing-fasciitis/>

