

Necrotizing Fasciitis

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Disclosure:

- I have no relevant financial relationships to disclose.
- I am an Active-Duty Service member. The opinions expressed in this presentation are my own and do not necessarily reflect the opinions of the US Navy, the Department of Defense, or the United States government.
- Truly nothing new for decades.
- Paul Wisniewski, DO
- I have no disclosures

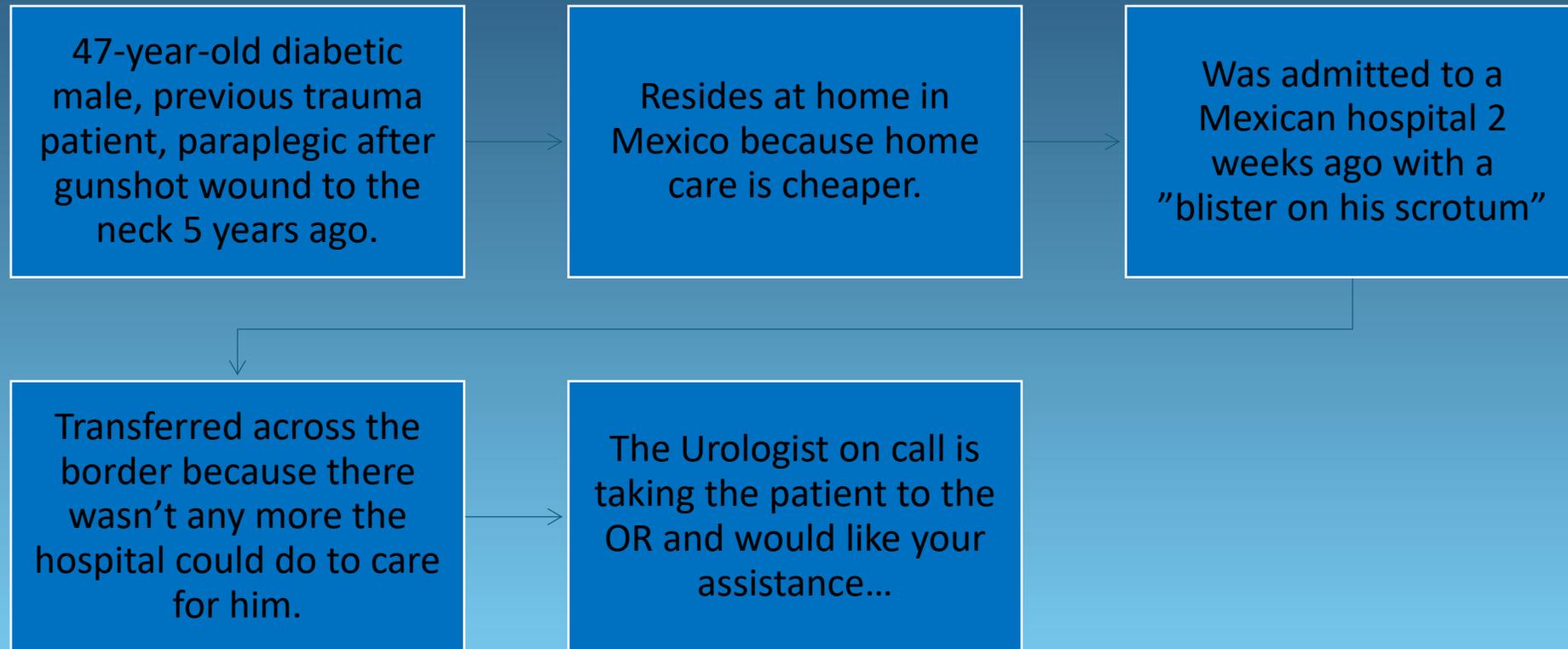


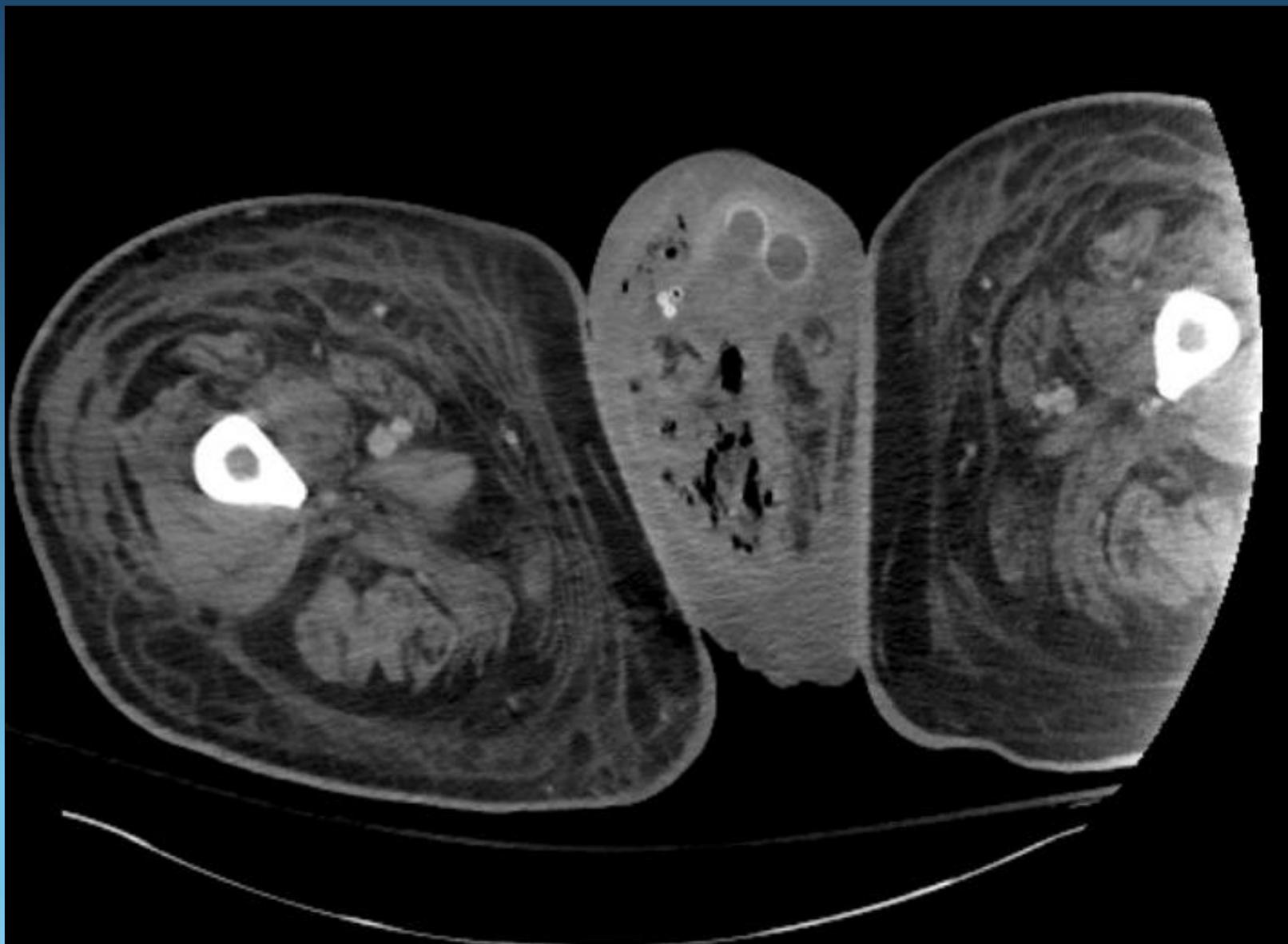
Learning Objectives

- 1. Discuss Necrotizing Fasciitis and what it is
- 2. Diagnosis of Necrotizing Fasciitis
- 3. Treatment for Necrotizing Fasciitis
- 4. Supportive care for Necrotizing Fasciitis
- 5. Antibiotic therapy for Necrotizing Fasciitis
- 6. Long term prognosis for Necrotizing Fasciitis



Case Presentation



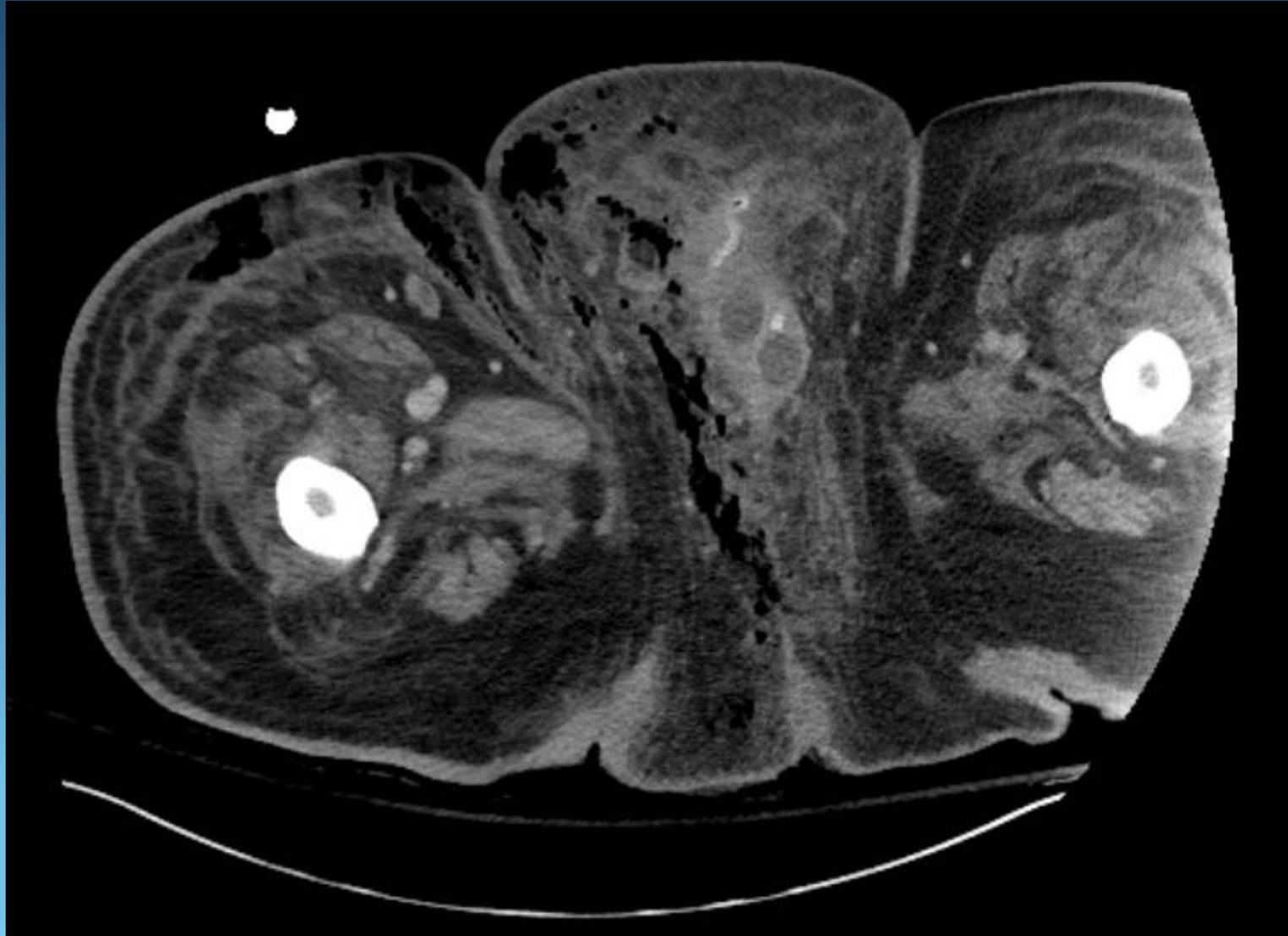


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At least I wasn't
alone...





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We need to flip this guy over.

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Skin and Soft Tissue Infections

Addison K. May, MD

Surg Clin N Am 89 (2009)

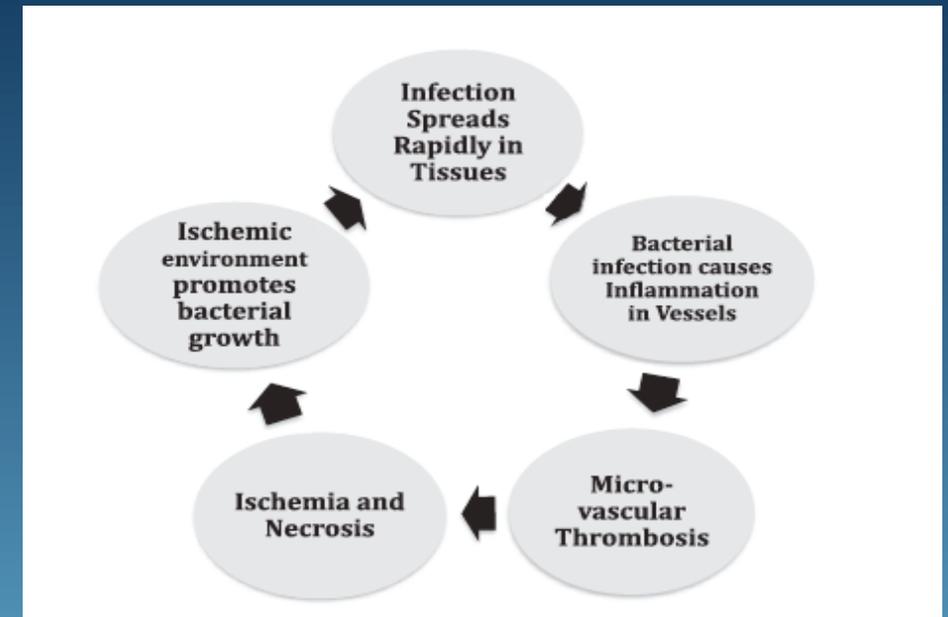
- Rare, life-threatening infections
 - Incidence of 0.2-6.9 per 100000 person-years
- Affecting skin, subcutaneous fat, fascia or possibly muscle
- Causes tissue death and destruction
- High morbidity and mortality if not treated quickly (20-30% mortality)
- Higher mortality if not recognized early
 - Cellulitis
 - Erysipelas
 - Necrotizing fasciitis
 - Necrotizing Myositis
 - Fournier's Gangrene
 - Meleney's Gangrene



Evaluation and Management of Necrotizing Soft Tissue Infections

Stephanie L. Bonne, MD, FACS^a, Sameer S. Kadri, MD, MS^{b,*}

Infect Dis Clin N Am 31 (2017)



- Type I -- 70-80% of case are polymicrobial
- Type II -- 20-30% are monomicrobial, skin or respiratory derived
- Type III – Gram negative only, often marine related (Vibrio)
- Type IV – Invasive Fungal (Trauma associated, military trauma)





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Common Pathogens in Necrotizing Infections

Table 3
Microbiologic organisms recovered from original wounds

Organism	N	n	%
<i>Aerobic</i>			
Streptococci	182	83	45.6
Enterococci	182	61	33.5
Staphylococci	182	64	35.2
<i>Escherichia coli</i>	182	57	31.3
<i>Proteus sp</i>	182	38	20.9
Other gram-negative rods ^a	182	76	41.8
<i>Anaerobic</i>			
Peptostreptococci	131	45	34.4
<i>Bacteroides species</i>	128	70	54.7
<i>Clostridium perfringens</i>	129	12	9.3
Other clostridial species	128	17	13.3
Other anaerobic species	128	27	21.1
Fungal species	171	9	5.3

Addison May, Surg Clin N Am 89
(2009) 403-420



Diagnostic adjuncts that could be useful



IMAGES



LABS



SCORING
SYSTEMS



Forget all that, in the words of Steve Shackford, “the only thing the patient needs is bright lights and cold steel.”



Imaging

- Plain Radiographs can confirm presence of subcutaneous emphysema and indicate gas-producing organisms
- CT can show you the extent of disease (Maybe), but operative debridement should not be delayed for imaging.
- MRI - If you need an MRI to diagnose necrotizing fasciitis or soft tissue infection, your patient needs a different doctor.



(Laboratory Risk Indicator for Necrotizing
for distinguishing necrotizing fasciitis from
ions*

MRCS; Lay-Wai Khin, MD, MSC; Kien-Seng Heng, MD, FRCS;
RCS; Cheng-Ooi Low, MD, FRSC

Crit Care Med 2004



Risk of Necrotizing Infection

- ▶ < 5 = Low risk (<50%)
- ▶ 6-7 = Moderate Risk
- ▶ 8 or more = High Risk (>75%)

Table 2. Laboratory Risk Indicator for Necrotizing Fasciitis (LRINEC) score

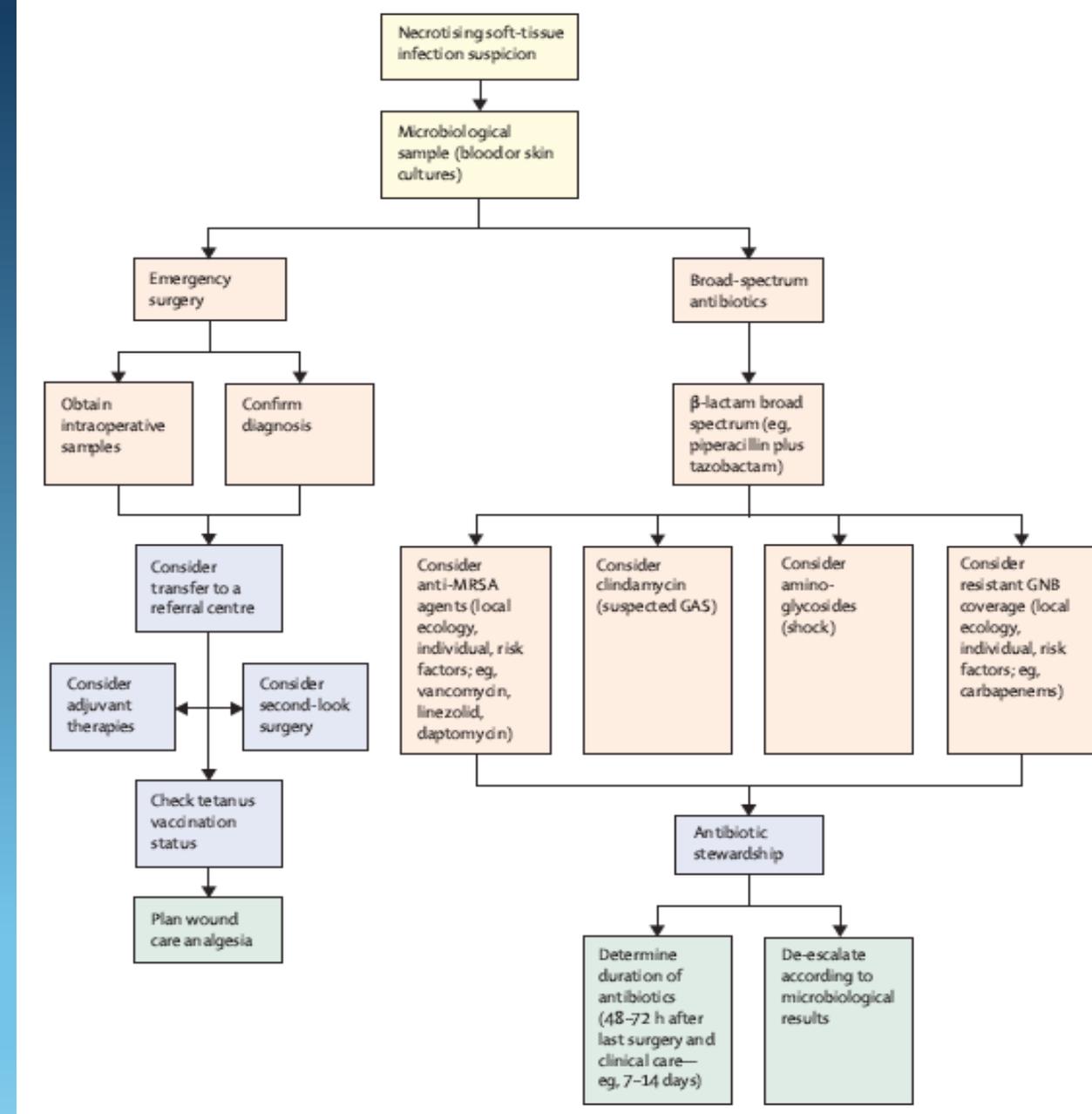
Variable, Units	β	Score
C-Reactive Protein, mg/L		
<150	0	0
\geq 150	3.5	4
Total white cell count, per mm ³		
<15	0	0
15-25	0.5	1
>25	2.1	2
Hemoglobin, g/dL		
>13.5	0	0
11-13.5	0.6	1
<11	1.8	2
Sodium, mmol/L		
\geq 135	0	0
<135	1.8	2
Creatinine, μ mol/L		
\leq 141	0	0
>141	1.8	2
Glucose, mmol/L		
\leq 10	0	0
>10	1.2	1



Necrotising soft-tissue infections

Camille Hua, Tomas Urbina, Romain Bosc, Tom Parks, Shiranee Sriskandan, Nicolas de Prost*, Olivier Chosidow*

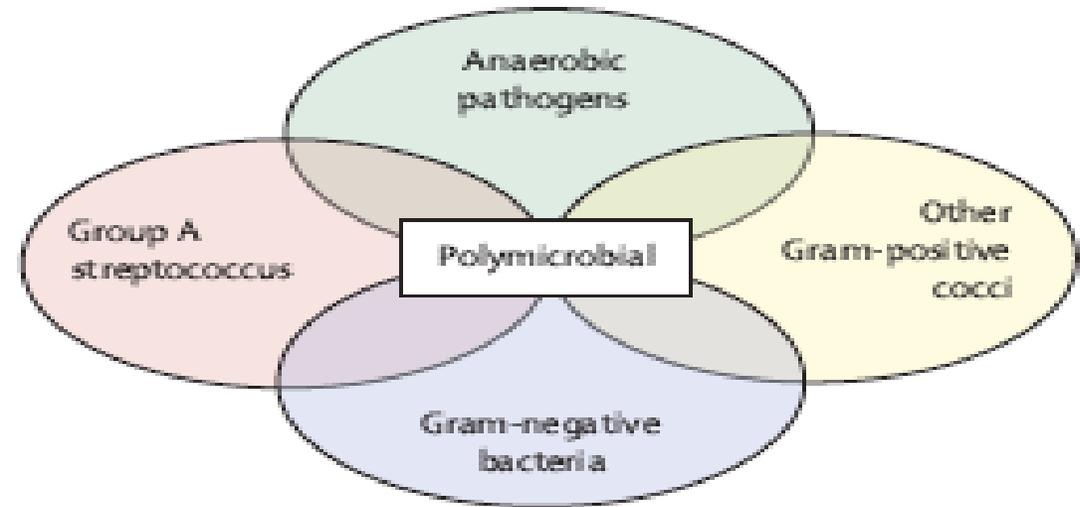
Lancet Infect Dis 2023;
23: e81–94



Antimicrobial Therapy

- ≥50% of infections are polymicrobial
- Broad spectrum and narrow based on culture data when available

- Broad spectrum β -lactam (eg, piperacillin plus tazobactam)
- Consider aminoglycoside if shock



- Consider coverage of resistant Gram-negative bacteria, according to local ecology or individual risk factors (eg, carbapenems)**
- High local Gram-negative bacteria drug resistance prevalence
 - Nosocomial infection
 - β -lactam or quinolone exposure <3 months
 - History of ESBL colonisation or infection <3 months
 - Travel to ESBL high endemicity areas <3 months



Principles of Surgical Therapy

- Debridement
 - Extensive
 - Removes all necrotic tissue
 - Look for contractile muscle
 - Glistening fat
 - Bleeding tissue at borders
- Re-Debridement in 12-24 hours
 - Or sooner!
- Critical Care
 - Resuscitation
 - Broad spectrum antibiotics
 - Pressor support
 - Respiratory support
 - Renal replacement therapy
 - Close monitoring



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