Necortizing Fasciitis

Michael Krzyzaniak, MD, FACS
CDR MC USN

Paul Wisniewski, DO
Trauma Director edit 11/04/2024

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

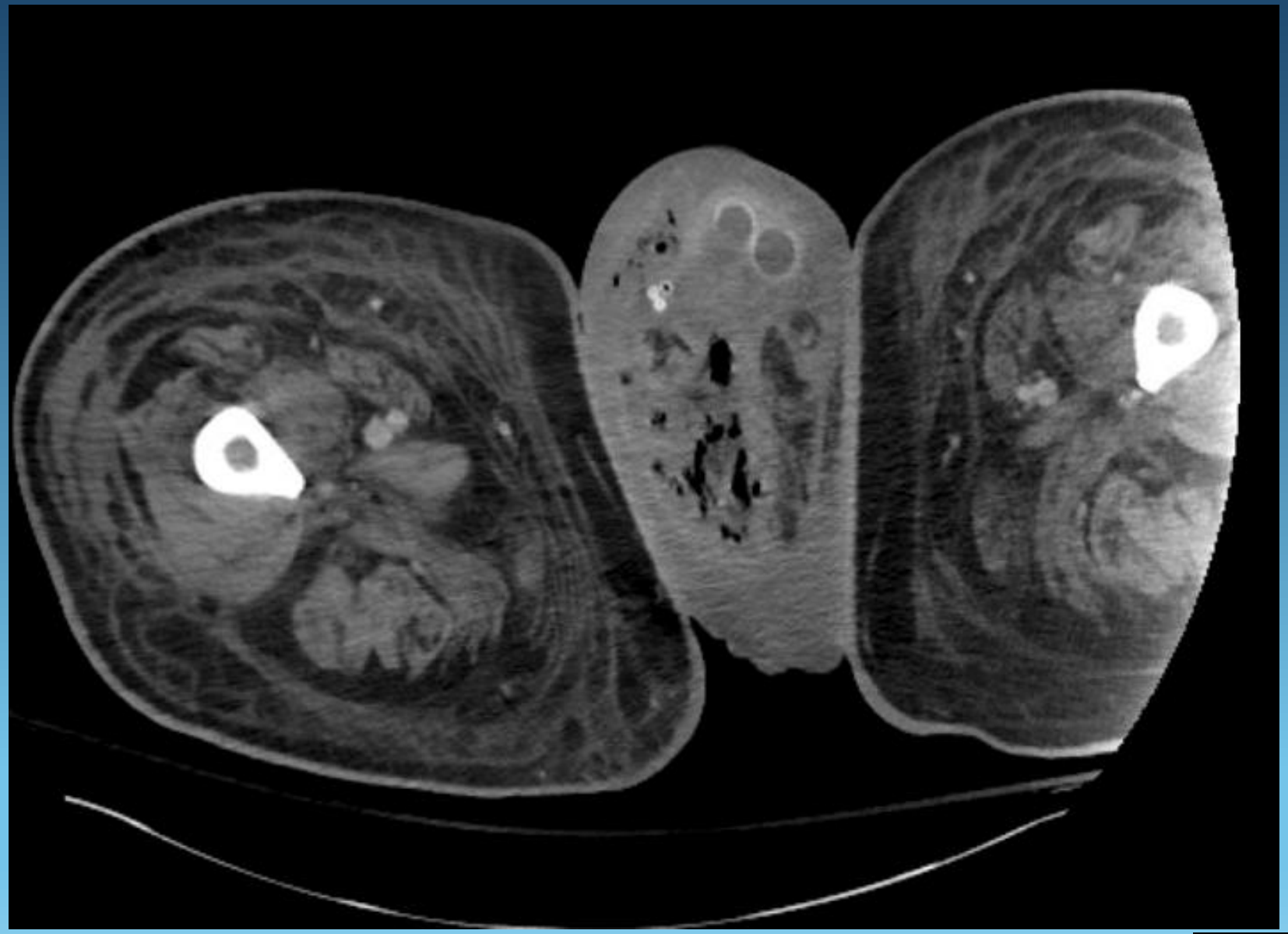
47-year-old diabetic male, previous trauma patient, paraplegic after gunshot wound to the neck 5 years ago.

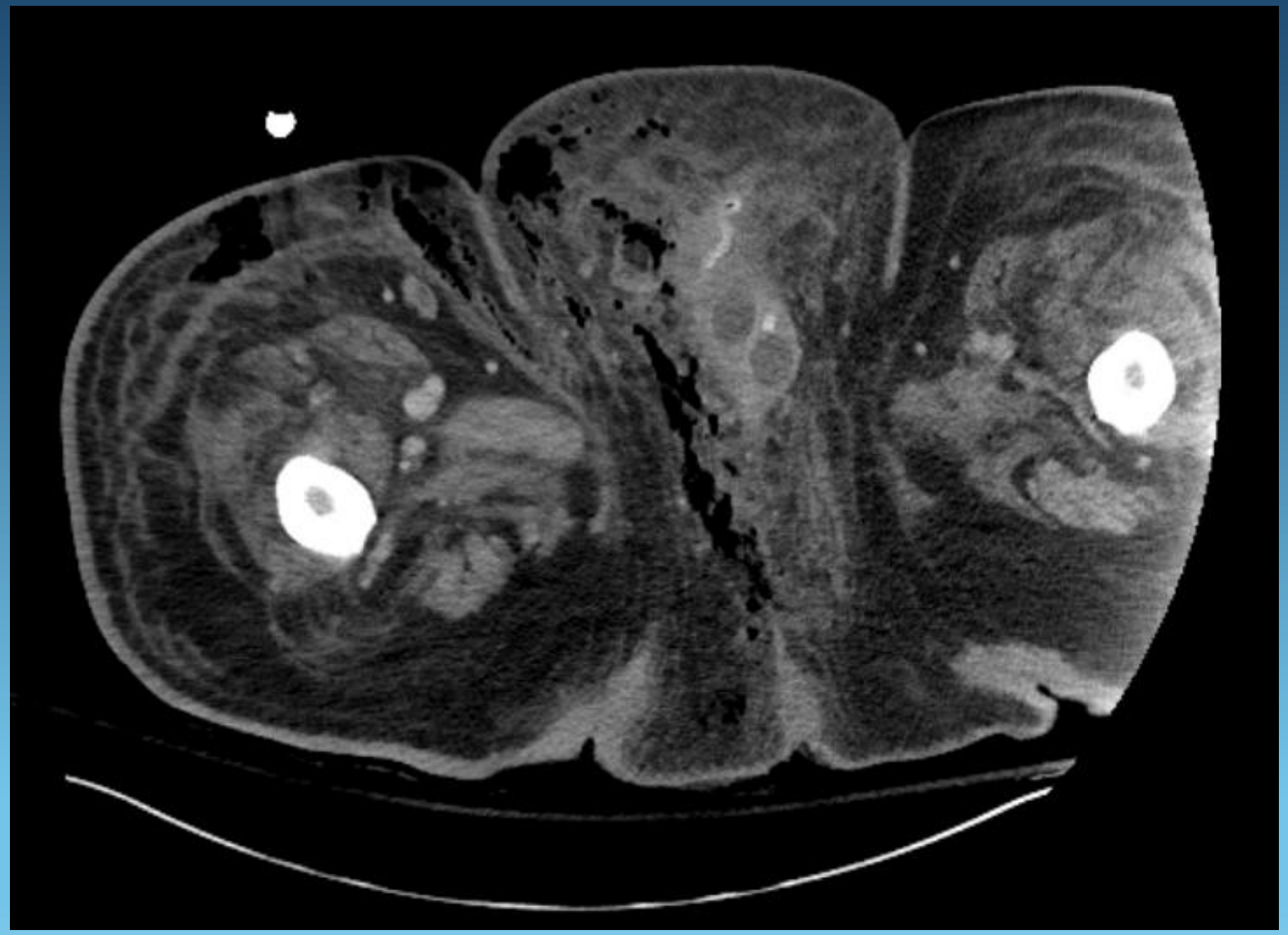
Resides at home in Mexico because home care is cheaper.

Was admitted to a Mexican hospital 2 weeks ago with a ”blister on his scrotum”

Transferred across the border because there wasn’t any more the hospital could do to care for him.

The Urologist on call is taking the patient to the OR and would like your assistance…





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)

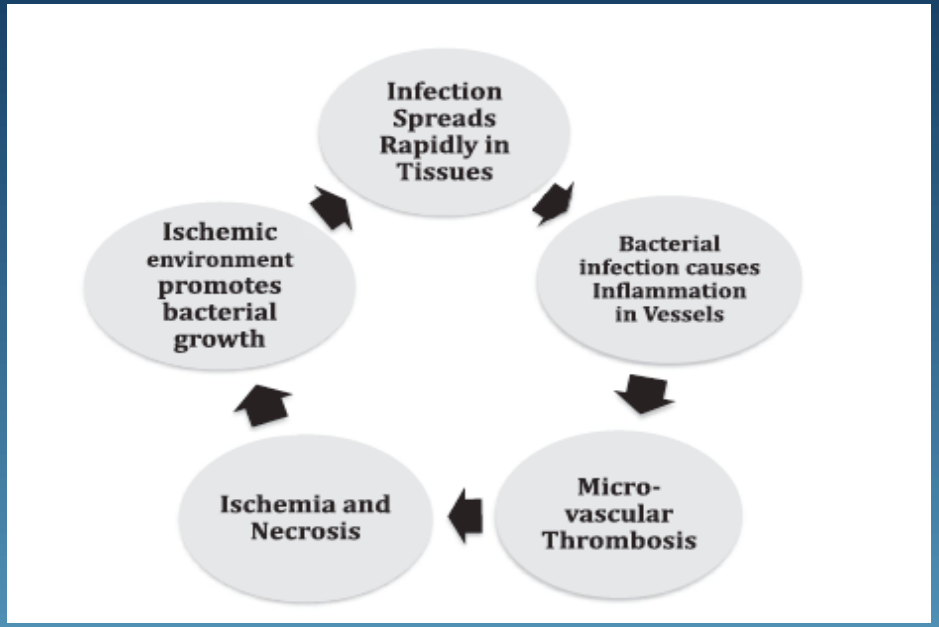
- Rare, life-threatening infections
  - Incidence of 0.2-6.9 per 100000 person-years
- Affecting skin, subcutaneous fat, fascia or possibly muscle
- Causes tissue death and destruction
- High morbidity and mortality if not treated quickly (20-30% mortality)
- Higher mortality if not recognized early

  - 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)

Common Pathogens in Necrotizing Infections

Table 3
Microbiologic organisms recovered from original wounds

Organism	N	n	%
Aerobic			
Streptococci	182	83	45.6
Enterococci	182	61	33.5
Staphylococci	182	64	35.2
Escherichia coli	182	57	31.3
Proteus sp	182	38	20.9
Other gram-negative rods[a]	182	76	41.8
Anaerobic			
Peptostreptococci	131	45	34.4
Bacteroides species	128	70	54.7
Clostridium perfringens	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 Necrotizin
for distinguishing necrotizing fasciitis fr
ons*

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%)

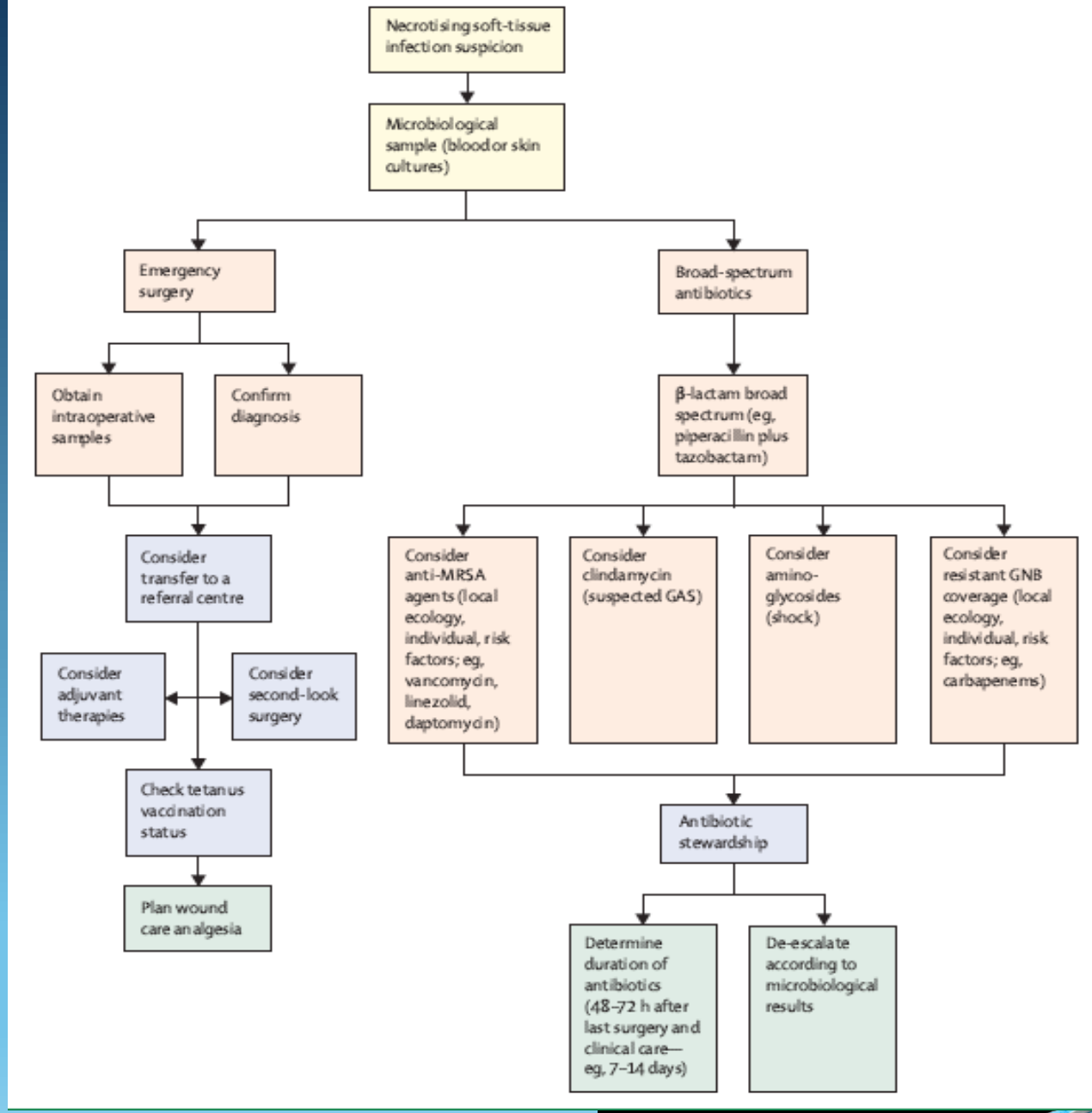
Table 2. Laboratory Risk Indicator for Necrotizing Fasciitis (LRINEC) score

Variable, Units	β	Score
C-Reactive Protein, mg/L		
<150	0	0
≥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		
≥135	0	0
<135	1.8	2
Creatinine, μmol/L		
≤141	0	0
>141	1.8	2
Glucose, mmol/L		
≤10	0	0
>10	1.2	1

Necrotising soft-tissue infections

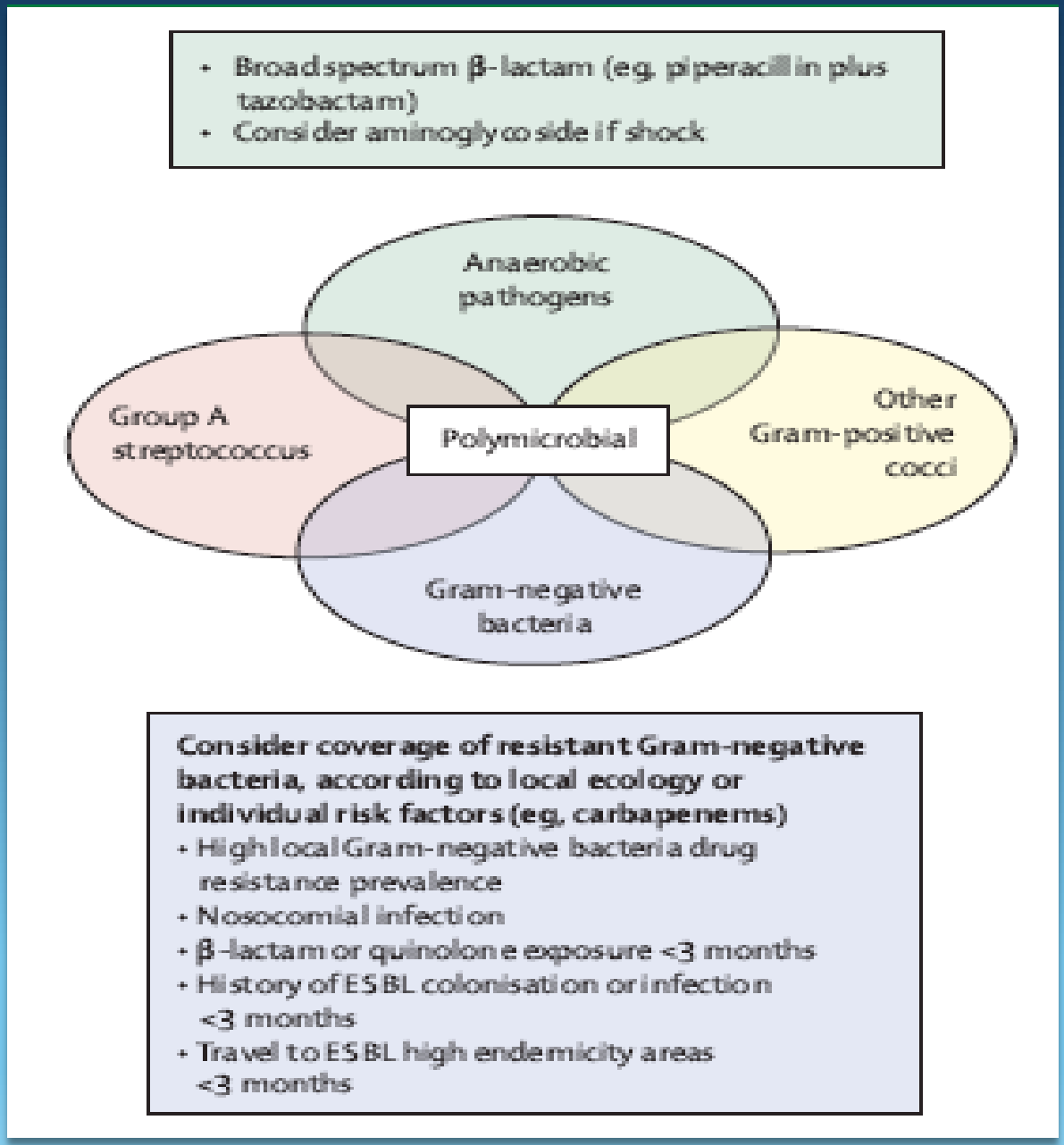
Camille Hua, Tomas Urbina, Romain Bosc, Tom Parks, Shiranee Sriskandan, Nicolas de Prost*, Olivier Chosidow*

Lancet Infect Dis 2023; 23: e81–94



Antimicrobial Therapy

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



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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