



Enterobacter cloacae complex

Genus: Enterobacter

Family: Enterobacteriaceae

Background

Initially described as *Bacillus cloacae* by Jordan in 1890, The organism underwent numerous taxonomical changes before Hormaeche & Edwards landed on *Enterobacter cloacae* in 1960.

Ubiquitous in terrestrial and aquatic environments, alongside forming part of the commensal flora of the intestinal tract in humans and animals.

Microbiology

Facultative anaerobe
Motile Gram –ve bacilli
Lactose fermenter
Oxidase, Urease, DNase –ve
Indole –ve
VP +ve Methyl red –ve
Citrate +ve

Mucoid colonies

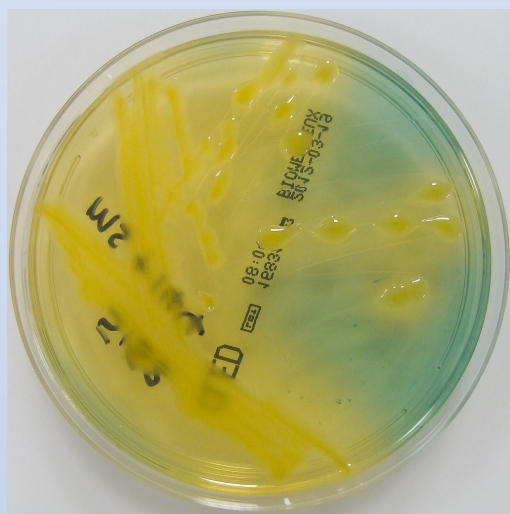


Image from Flickr: "Enterobacter cloacae complex on CLED" by Nathan Reading.
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Clinical manifestations

Causes a wide variety of **predominantly nosocomial** infections, including pneumonia, UTI, wound infections, infections of prosthetic devices and meningitis.

Antimicrobial therapy

Intrinsic resistance to ampicillin, co-amoxiclav, alongside 1st and 2nd generation cephalosporins, as a result of inducible AmpC chromosomal β -lactamase.

Emergence of stably derepressed resistant mutants may lead to treatment failure when 3rd generation cephalosporins are utilised, even if isolates test susceptible initially.

IDSA advise AVOID 3rd gen cephs.

Therefore carbapenems may be a better choice for significant infections especially if high bacterial burden or source control not achieved.

As in the setting of ESBL production therapeutic use of Tazocin
Is at best controversial^{3,4}

AmpC detection

Suspect if:

**Cefotaxime or ceftazidime RESISTANT
AND
Cefoxitin RESISTANT**

As AmpC confers cefoxitin resistance
(whereas ESBLs don't)

Can then confirm AmpC by seeing if it is inhibited by cloxacillin.

References:

2. Mandell, Douglas and Bennett's Principles and Practice of Infectious Diseases 8th Edition.
3. Effect of Piperacillin-Tazobactam vs Meropenem on 30-Day Mortality for Patients With *E coli* or *Klebsiella pneumoniae* Bloodstream Infection and Ceftriaxone Resistance. Merino group. JAMA. 2018;320(10):984.
4. Piperacillin-tazobactam versus other antibacterial agents for treatment of BSI due to ampC β lactamase-producing enterobacteriaceae. Cheng et al. Antimicrob agents chemother, 61:e00276-17