QUESTION 93 ID
A 39-year-old woman presents with signs and symptoms of pyelonephritis. Despite being treated for five days with oral cephalexin (500 mg four times/day), a midstream urine culture is positive for enterococci. The most likely explanation for the lack of response to the prescribed antibiotic is:
A. lack of tissue penetration.
B. poor compliance.
C. antibiotic resistance.
D. oral rather than intravenous therapy.
E. inadequate duration of therapy.

Enterococcal species (formerly known as Group D streptococci) responsible for serious infections
1) Bacteremia
2) Infective endocarditis
3) Meningitis
4) UTI
5) Nosocomial infections

Treatment complicated by Antimicrobial resistance
- E. faecalis and E. faecium are 2 most important enterococcal species
- E. faecalis more susceptible to antibiotics (more susceptible to ampicillin but resistant to quinupristin-dalfopristin)
- E. faecium hospital acquired ones more resistant to ampicillin or vancomycin but susceptible to quinupristin-dalfopristin

Bacteremia without Endocarditis
- common sources of community-acquired bacteremia are genitourinary and GIT tracts
- have to suspect the possibility of endocarditis in community-acquired enterococcal bacteremia

Treatment
- Ampicillin (2g 4/24ly) for susceptible strains
  Vancomycin (1g bd) if pt allergic to penicillin or resistance
  - If suspect valvular abnormalities,
    Add gentamicin 1mg/kg every 8hrs – but discontinued if organism has high level resistance
- Length of treatment
  If uncomplicated enterococcal bacteremia \(\rightarrow\) 7-10 days
  Complicated \(\rightarrow\) 4 -6 weeks
  1) osteomyelitis
  2) high grade bacteremia (2 or more positive blood cultures)
  3) Source not identified
  4) Bacteremia is high grade, pt has valvular heart disease, intravascular catheter

Urinary tract infections
- Enterococci are responsible for fewer than 5% of UTIs in young women who do not have risk factors such as urinary catheters prior instrumentation or an anatomical abnormality
- Nosocomial UTIs ass with enterococci are more common

Treatment
- removal of urinary catheter "1st line"
- single agent (ampicillin, amoxicillin, penicillin or vancomycin) is adequate and other beta lactam agents should be reserved for polymicrobial infections
- Nitrfurantoin can be used including for VRE
Meningitis
- Enterococci is an uncommon cause and more frequent in neonates
- more difficult to treat

Treatment
- Ampicillin or vancomycin + gentamicin
- Rifampicin has been used in combination with cell wall active agent for anteroccal meningitis except vancomycin

Back to the question: Answer C

Since they mention the causative organism is enterocci, the most likely reason why it is not responding to cephallexin is Antibiotic resistance. There are 3 mechanisms of resistance:
1) transfer of plasmids
2) transfer of plasmids among a broad range of species and genera
3) transfer of specialized transposons at low frequency but to a broad range of different kinds of bacteria