CPD Nov 2022: Daptomycin

Day 1: [#daptomycin](https://twitter.com/search?q=%23daptomycin) was discovered in the late 1980s, when Streptomyces roseoporus bacteria was isolated from a Turkish soil sample. Adverse effects led to delays in clinical trials (muscle/neuro toxicity), until research into dosing regimens afforded safe & effective once daily use. Licensed 2003

Day 2: #daptomycin is used in those over 1 year by i.v infusion for complicated skin & soft tissue infections, endocarditis & bacteraemia from a broad range of gram +ve bacteria e.g S.aureus/MRSA/VRSA/VRE. Therapeutic range depends on infection & age e.g child 2-17yrs range 5-12mg/kg; adult 4-6mg/kg once daily (NOT exhaustive)

Day 3: [#daptomycin](https://twitter.com/search?q=%23daptomycin) kinetics: no oral absorption therefore i.v infusion once/day for 7-14 days. Low Vd & unknown metabolism processes. Renal excretion with around 50% unchanged drug. T½ ~7-9 hrs, which is increased if renal impairment. Monitor renal function & if severe, decrease dose or change dose interval to alternate days

Day 4: [#daptomycin](https://twitter.com/search?q=%23daptomycin) is a bactericidal cyclic lipopeptide antibiotic, which has a fatty acid ‘tail’. Full MOA is unclear, but known to insert the ‘tail’ into the bacterial cell membrane, complexing with Ca+. This causes changes in fluidity & membrane potential, leading to leakage & cell death

Day 5. Common [#daptomycin](https://twitter.com/search?q=%23daptomycin) side-effects include fungal infections, UTIs, anaemia, anxiety, insomnia, hyper/hypotension, GI disorders, rash. Severe; hypersensitivity reactions eg SJS, DRESS; rhabdomyolysis; nephritis, colitis. Monitor renal function regularly (NOT exhaustive)

Day 6: [#daptomycin](https://twitter.com/search?q=%23daptomycin) drug-drug interactions. Any drug which reduces renal function e.g NSAIDs, ciclosporin, or co-administration with any drugs which can cause myopathy, e.g statins, fibrates; advised to discontinue during treatment (NOT exhaustive)

Day 7: There are increasing reports of resistance to [#daptomycin](https://twitter.com/search?q=%23daptomycin), especially for longer treatment durations. Resistant genes encoding cell membrane stress responses; phospholipid metabolism & fluid regulation are all being investigated

CPD: in addition to the tweets, read the BNF and BNFc sections on principles of antimicrobial stewardship and antibacterial therapy, as well as the SPC for daptomycin

<https://bnf.nice.org.uk/medicines-guidance/antimicrobial-stewardship/>

<https://bnf.nice.org.uk/treatment-summaries/antibacterials-principles-of-therapy/>

<https://www.medicines.org.uk/emc/product/8766/smpc#gref>

1. Daptomycin is a fungus extracted from soil

TRUE or FALSE

1. Early work developing the antibiotic was halted because of dosing concerns and myopathy

TRUE or FALSE

1. Daptomycin can be used for all ages

TRUE or FALSE

1. Daptomycin is usually a first-line option for serious gram +ve infections

TRUE or FALSE

1. Daptomycin can only be given by intravenous injection

TRUE or FALSE

1. Which of the following about daptomycin is TRUE?
2. It has a high volume of distribution
3. Most of the drug is metabolised before excretion
4. The half-life will increase in renal impairment
5. The drug should never be used in severe renal impairment
6. Daptomycin works by disrupting cell membrane functions leading to cell death

TRUE or FALSE

1. Which if the following is a common adverse drug event
2. Anxiety
3. Stevens-Johnson syndrome
4. Renal impairment
5. Colitis
6. Statins are usually stopped temporarily if daptomycin is needed

TRUE or FALSE

1. There is no known antibiotic resistance to daptomycin

TRUE or FALSE