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Shorter Duration of Dual Antiplatelet Therapy Following Second Generation Drug Eluting Stent Placement

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Question to answer- why is duration of DAPT duration s/p second generation DES placement questionable

- Why do we need DAPT s/p stent (and what is DAPT)
- What are the consequences of longer duration of DAPT
- How are 2nd gen stents different from 1st gen & are the current recommendations based on 1st generation?

Heart disease is currently the leading cause of death in the United States, claiming 697,000 lives in 2020 with just over half comprised of coronary artery disease (CDC 2022). It is also estimated that about 805,000 people in the U.S. have a heart attack each year requiring medical intervention in various forms (CDC 2022). Percutaneous coronary intervention (PCI) is a minimally invasive technique utilized following an episode of acute coronary syndrome (ACS) to reopen blocked coronary arteries and restore blood flow to the myocardium (UTD Abbott 2022). It usually involves balloon angioplasty to mechanically reopen the vessel followed by placement of a stent, either drug eluting or bare metal (UTD Abbott 2022). Drug eluting stents are preferred over bare metal stents due to their efficacy in maintaining vascularization and preventing restenosis or re-occlusion following placement (UTD Abbott 2022). These stents have 3 main components: the metal stent, a polymer (in some models) and an anti-stenotic drug contained within the polymer to slowly be released anywhere between 2-14 weeks (based on the model) (UTD Cutlip 2022). Newer, second generation drug eluting stents are preferred to the first generation due to their rapid endothelialization and lower inflammatory effect which is thought to lower the probability of a second myocardial infarction (UTD Cutlip 2022).

Following stent placement, it is recommended that patients be started on dual antiplatelet therapy (DAPT), usually Aspirin and a P2Y12 receptor blocker such as Clopidigrel (UTD Cutlip 2022 DAPT). This further reduces the risk of a second cardiac insult by preventing thrombi from forming on or around the stent which is at its highest risk before the metal stent is able to endothelialize ((UTD Cutlip 2022 DAPT). Because metal has the particular ability to induce clotting, two antiplatelet agents are recommended vs aspirin alone to prevent this occurrence ((UTD Cutlip 2022 DAPT).

How long is the recommendation for DAPT s/p PCI for different populations

Why might a population who is at risk for bleeding want to be on less antiplatelet therapy

<https://www.cdc.gov/heartdisease/facts.htm>

https://www.uptodate.com/contents/percutaneous-coronary-intervention-with-intracoronary-stents-overview?search=percutaneous%20coronary%20intervention&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1

https://www.uptodate.com/contents/drug-eluting-intracoronary-stents-stent-types?search=percutaneous%20coronary%20intervention&topicRef=1569&source=see_link
https://www.uptodate.com/contents/long-term-antiplatelet-therapy-after-coronary-artery-stenting-in-stable-patients?search=dual%20antiplatelet%20therapy&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1

https://www.uptodate.com/contents/coronary-artery-disease-patients-requiring-combined-anticoagulant-and-antiplatelet-therapy?sectionName=SUMMARY%20AND%20RECOMMENDATIONS&search=dual%20antiplatelet%20therapy&topicRef=1572&anchor=H24&source=see_link#H24

<https://www.ncbi.nlm.nih.gov/books/NBK537062/>