Post-operative antibiotics following pancreatoduodenectomy ("Whipple's") Surgery

University Hospitals of Leicester NHS
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1. Introduction

This guideline aims to advise on the routine antibiotic management of patients following pancreatoduodenectomy (also known as a "Whipple's" procedure), to reduce the incidence of surgical site infection (SSI).

Pancreatoduodenectomy is a surgical procedure which involves removal of the head of the pancreas, the duodenum, gallbladder, a portion of the bile duct, and associated lymph nodes. It is most commonly performed for the removal of malignancy.

SSI following pancreatoduodenectomy is common, with rates of 10-30% reported in the literature [(1)] . Post operative infection may be caused by spillage of contaminated bile into the peritoneal cavity during transection of the bile duct. Positive intra-operative bile cultures have been shown to correlate with increased risk of SSI [(2)] , and a meta-analysis of targeted vs empirical antibiotics found that targeting antibiotics to the organisms grown from bile samples significantly reduced the risk of post operative infection in patients undergoing pancreatoduodenectomy[(3)].

The 2019 Enhanced Recovery After Surgery (ERAS) guidelines for perioperative care after pancreatoduodenectomy [(4)] advise against routine 'prophylactic' antibiotic, but state that antibiotics " may be considered therapeutic in positive bile culture". The 2021 World Society of Emergency Surgery global clinical pathways for patients with intra-abdominal infections recommend 5 days of antibiotic for patients with abdominal infections who have undergone source control [(5)].

2. Scope

All UHL prescribers caring for patients immediately after undergoing pancreatoduodenectomy.

3. Recommendations, Standards and Procedural Statements

Patients undergoing pancreatoduodenectomy should receive antibiotic prophylaxis in line with UHL policy B14/2007 'Antibiotic Guide for Surgical Prophylaxis In Adults' [(6)].

Intra-operatively, samples of bile to be sent to the microbiology laboratory for culture and sensitivity testing. These should be phoned through and transported urgently to the laboratory.

Following the procedure, empirical antibiotic therapy can be commenced, pending the results of the bile culture.

Empirical regimes (pending bile culture results):

No penicillin allergy: IV co-amoxiclav 1.2g TDS for 5 days

Mild-moderate penicillin allergy: IV Meropenem 1g TDS for 5 days

Severe penicillin allergy (e.g. Anaphylaxis, Stevens-Johnson syndrome): discuss with microbiology

For patients known to be colonised with MDR/XDR/VRE –discussion with microbiologist advised, prior to the procedure as these empirical agents may not be appropriate.

Further antibiotic therapy should be guided by the result of the bile culture:

If no growth on bile culture: stop antibiotics (unless needed for another indication)

If growth on bile culture: Adjust antibiotics based on sensitivity results to the narrowest spectrum possible. Prescribe 5 days total duration of effective antibiotic. i.e., if bile cultures yield an organism sensitive to the empirical regime, then the antibiotic already received would count towards the 5 days total. If bile cultures yield an organism resistant to the empirical antibiotic regime, then a further 5 days of effective antibiotic should be prescribed. If the patient shows signs of infection at day 5, they should be investigated for an ongoing source and antibiotic management discussed with a microbiologist.

It is outside the scope of this guidance to provide a specific antibiotic regime for every possible pathogen. Antibiotics should be prescribed in line with UHL antimicrobial prescribing policy (B39/2006) [(7)], aiming for the narrowest spectrum possible to cover confirmed/strongly suspected pathogens, and taking into account any contra-indications such as allergies/interacting medications. If necessary, advice should be sought from a microbiologist. Both the Intensive Care Unit (ICU) and the HPB wards have regular microbiology input.

4. Education and Training

None required.

5. Monitoring and Audit Criteria

Key Performance Indicator	Method of Assessment	Frequency	Lead
Antibiotic resistance profile of organisms from bile samples compared to antibiotic prescribed	Audit of microbiology data versus prescription charts	3 years	Dr Veater

6. Supporting Documents and Key References

1. Yamamoto, Saori, et al. "Perioperative and anesthetic risk factors of surgical site infection in patients undergoing pancreaticoduodenectomy: A retrospective cohort study." *PLoS One* 15.10 (2020): e0240490.

2. Cortes, Alexandre, et al. "Effect of bile contamination on immediate outcomes after pancreaticoduodenectomy for tumor." *Journal of the American College of Surgeons* 202.1 (2006): 93-99.

3.Pham, Helen, et al. "The role of targeted versus standard antibiotic prophylaxis in pancreatoduodenectomy in reducing postoperative infectious complications: a systematic review and meta-analysis." *Annals of Surgery* 275.2 (2022): 315-323.

4. Melloul, Emmanuel, et al. "Guidelines for perioperative care for pancreatoduodenectomy: enhanced recovery after surgery (ERAS) recommendations 2019." World journal of surgery 44 (2020): 2056-2084.

5. Sartelli, Massimo, et al. "WSES/GAIS/SIS-E/WSIS/AAST global clinical pathways for patients with intra-abdominal infections." *World journal of emergency surgery* 16.1 (2021): 1-48.

6. Antibiotic Guide for Surgical Prophylaxis In Adults. Trust reference B14/2007

7. UHL Antimicrobial Prescribing Policy. Trust reference B39/2006

7. Key Words

Antibiotic, Whipple's, Pancreatoduodenectomy, post operative

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Author / Lead Officer:	Dr James Veater	**Job Title:** Consultant Medical Microbiologist
Reviewed by:	Professor Giuseppe Garcea, Consultant HPB surgeon	
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