

Antibiotic prophylaxis for pancreatoduodenectomy: an international survey amongst surgeons

Although most of the international guidelines recommend the use of only perioperative antibiotic prophylaxis for pancreatoduodenectomy, the Enhanced Recovery After Surgery (ERAS) protocol acknowledges that extended antibiotic prophylaxis could be considered for patients with contaminated bile. Consequently, the antibiotic policy for pancreatoduodenectomy varies substantially between (inter)national centers, and is currently the subject of several randomized controlled trials. We would like to elucidate the antibiotic practices in international centers performing pancreatoduodenectomy. In this survey, the use of antibiotic prophylaxis during and after pancreatoduodenectomy, as well as the performance of intraoperative bile cultures, is evaluated.

The survey will take approximately 5 minutes of your time. Please, provide an email address, so that we will be able to contact you for further information if required.

On behalf of the Dutch Pancreatic Cancer Group, we thank you in advance for completing this survey.

For questions regarding this survey, please contact us via D.H.M.Droogh@LUMC.nl



Perioperative antibiotic prophylaxis

This section evaluates the type and indication of **perioperative** antibiotic prophylaxis: antibiotics that are administered **during** pancreatoduodenectomy.

1. 1. Which antibiotics are given **perioperatively** in your center?

Mark only one oval.

- ☐ Cefazolin
- ☐ Cefazolin + metronidazole
- ☐ Cefazolin + metronidazole + gentamicin
- ☐ Cefazolin + metronidazole + levofloxacin
- ☐ Cefazolin + metronidazole + fluconazole
- ☐ Ceftriaxone
- ☐ Ceftriaxone + metronidazole
- ☐ Ceftriaxone + metronidazole + gentamicin
- ☐ Ceftriaxone + metronidazole + levofloxacin
- ☐ Ceftriaxone + metronidazole + fluconazole
- ☐ Piperacillin + tazobactam
- ☐ Other (please fill out the text field below)

2. In case of other, please explain:

3. 2. Which patients receive additional or adjusted **perioperative** antibiotic prophylaxis during pancreatoduodenectomy?

Check all that apply.

- ☐ None, all patients receive above mentioned perioperative antibiotic prophylaxis
- ☐ Patients with preoperative biliary drainage
- ☐ Patients with preoperative cholangitis
- ☐ Other groups of patients (please fill out the text field below)

4. In case of other groups: which patients receive additional or adjusted **perioperative** antibiotic prophylaxis?

5. 3. *What additional or adjusted antibiotic agent is administered to this group of patients?*

Extended antibiotic prophylaxis

This section evaluates the type and indication of **extended** antibiotic prophylaxes: antibiotics that are administered **after** pancreatoduodenectomy.

6. 4. *What is the indication for **extended** antibiotic prophylaxis after pancreatoduodenectomy?*

Check all that apply.

- ☐ No indication for extended prophylaxis
- ☐ Preoperative biliary drainage
- ☐ Preoperative cholangitis
- ☐ Papillotomy without placement of a biliary stent
- ☐ An ampullary malignancy
- ☐ Perioperative findings (for instance cholecystitis, pancreatitis, abscesses or extensive spillage of contaminated bile)
- ☐ A confirmed positive bile culture
- ☐ Standard in all patients undergoing pancreatoduodenectomy
- ☐ Other (please fill out the text field below)

7. *In case of other, please explain:*

8. 5. Which antibiotics are administered as **extended** antibiotic prophylaxis after pancreatoduodenectomy

Mark only one oval.

- ☐ None, postoperative antibiotics are only administered therapeutically
- ☐ Cefuroxime
- ☐ Cefuroxime + metronidazole
- ☐ Cefuroxime + metronidazole + gentamicin
- ☐ Cefuroxime + metronidazole + levofloxacin
- ☐ Cefuroxime + metronidazole + fluconazole
- ☐ Ceftriaxone
- ☐ Ceftriaxone + metronidazole
- ☐ Ceftriaxone + metronidazole + gentamicin
- ☐ Ceftriaxone + metronidazole + levofloxacin
- ☐ Ceftriaxone + metronidazole + fluconazole
- ☐ Piperacillin + tazobactam
- ☐ Other (please fill out the text field below)

9. In case of other, please explain:

10. 6. What is the duration of **extended** prophylaxis after pancreatoduodenectomy?

Mark only one oval.

- ☐ 24 hours
- ☐ 48 hours
- ☐ 72 hours
- ☐ 5 days
- ☐ 10 days
- ☐ Depending on the results of the bile culture obtained during pancreatoduodenectomy
- ☐ Other (please fill out the text field below)

11. *In case of other, please explain:*

Bile cultures obtained during pancreatoduodenectomy

This section evaluates the performance of bile cultures obtained during pancreatoduodenectomy after transection of the common bile duct.

12. *7. Are bile cultures routinely obtained during pancreatoduodenectomy?*

Mark only one oval.

- ☐ Never
- ☐ Only in patients with preoperative biliary drainage
- ☐ Only in other specific groups of patients (please fill out the text field below)
- ☐ Yes

13. *In case of specific groups of patients, please explain:*

14. *8. Is the postoperative antibiotic regime adjusted based on bile culture results?*

Mark only one oval.

- ☐ No
- ☐ Yes, antibiotic prophylaxis is discontinued in case of a negative bile culture, and continued according to a standard antibiotic regime in case of a positive bile culture
- ☐ Yes, a positive bile culture is therapeutically treated, regardless of the patient's clinical course
- ☐ Bile cultures are used as a guide for therapeutic antibiotics in case of clinical deterioration

Clinical relevance of contaminated bile during pancreatoduodenectomy

15. 9. *How many centers do you think routinely perform intraoperative bile cultures during pancreatoduodenectomy?*

Mark only one oval.

- ☐ <5% of the centers
- ☐ 5-49% of the centers
- ☐ 50% of the centers
- ☐ 51-95% of the centers
- ☐ >95% of the centers

16. 10. *How often do you expect that bile is contaminated in patients undergoing pancreatoduodenectomy without biliary interventions?*

Mark only one oval.

- ☐ 0-25%
- ☐ 26-50%
- ☐ 51-75%
- ☐ 76-100%

17. 11. *How often do you expect that bile is contaminated after preoperative biliary drainage prior to pancreatoduodenectomy?*

Mark only one oval.

- ☐ 0-25%
- ☐ 26-50%
- ☐ 51-75%
- ☐ 76-100%

18. *12. Which microorganisms cultured in contaminated bile do you suspect to be most virulent regarding postoperative morbidity?*

Mark only one oval.

- ☐ Gram positive bacteria (for instance Enterococcus spp, Streptococcus spp, or Staphylococcus spp.)
- ☐ Gram negative bacteria (for instance Klebsiella spp, Enterobacteriodes, Escheria coli, Citrobacter spp, Pseudomonas or Morganella spp)
- ☐ Yeasts (for instance Candida spp)
- ☐ Other specific microorganisms (please fill out the text field below)

19. In case of other specific microorganisms: please explain

20. *13. What rate of antibiotic resistance (for instance E.coli) do you expect in your country?*

Mark only one oval.

- ☐ <10%
- ☐ 10-50%
- ☐ 51-90%
- ☐ >90%
- ☐ I don't know

21. *14. Do you think that contaminated bile during pancreatoduodenectomy increases the risk of postoperative abdominal infectious complications and/or pancreatic fistula?*

Mark only one oval.

- ☐ No
- ☐ Yes, only the risk of abdominal infectious complications
- ☐ Yes, only the risk of pancreatic fistula
- ☐ Yes, both the risk of abdominal infectious complications and pancreatic fistula

22. 15. *Do you think that a therapeutic antibiotic course based on positive bile cultures (obtained during pancreatoduodenectomy) reduces postoperative morbidity?*

Mark only one oval.

- ☐ No
- ☐ Yes, particularly the risk of abdominal infectious complications
- ☐ Yes, particularly the risk of pancreatic fistula
- ☐ Yes, overall postoperative morbidity

General questions

It is optional to provide your name and email address below, so that we will be able to contact you for further information if required, and if you want to be informed about the results of this survey.

23. *Name*

24. *Email address*

25. *In which center and country are you currently employed?*

26. *How many pancreatoduodenectomies are performed annually in your center?*

Mark only one oval.

- ☐ 0-20
- ☐ 20-50
- ☐ 50-100
- ☐ 100-150
- ☐ 150+

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