Pancreatic Adenocarcinoma

Note: Consider Clinical Trials as treatment options for eligible patients

CLINICAL PRESENTATION

Clinical suspicion of pancreatic cancer (*e.g.*, jaundice) or evidence of dilated pancreatic duct and/or bile duct stricture

DIAGNOSTIC WORK-UP AND TISSUE ACQUISITION

- Pancreatic CT[1,2] scan protocol
- Obtain family history[3]
- Lifestyle risk assessment[4]

Mass in pancreas on imaging?

Yes

Metastases?

Yes → CT scan or ultrasound-guided biopsy of metastatic disease if accessible

No →
- Multidisciplinary planning presentation
- EUS with FNA
- Liver function tests, CA 19-9
- CT chest (preferred) or chest x-ray

No

- Multidisciplinary planning presentation
- Liver function tests, CA 19-9
- CT chest (preferred) or chest x-ray
- EUS with FNA if mass visualized in pancreas
- ERCP with brushings as clinically indicated

Biopsy or brushings positive?

Yes

No → Surgical consult

For treatment based on tissue confirmation and clinical staging, see Pages 2-5

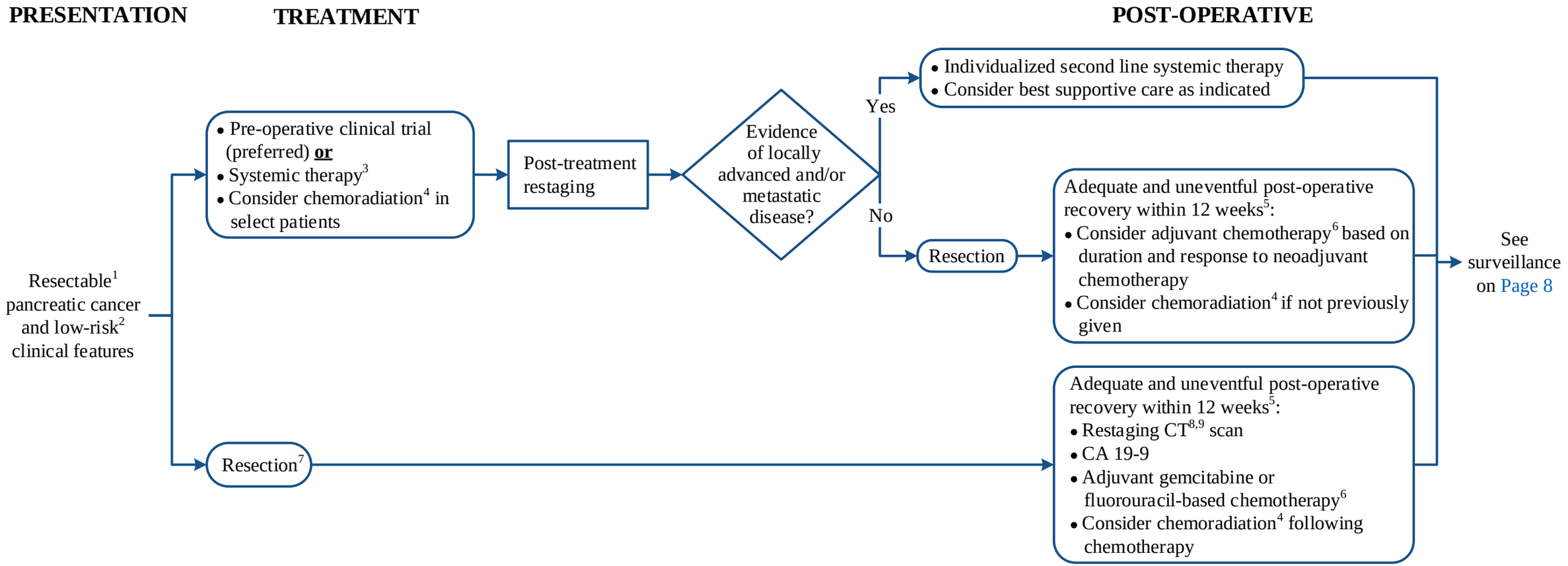
EUS = endoscopic ultrasound
FNA = fine needle aspiration
ERCP = endoscopic retrograde cholangiopancreatography

[1] Pancreatic CT scan protocol: multiphasic cross sectional imaging and thin slices; consider MRI, PET and/or EUS if CT results are equivocal
[2] For patients who cannot undergo contrast enhanced CT (allergy, renal issues, etc.) consider MRI as an alternative
[3] Consider referral for genetic counseling for patients with a family history of cancer. Universal gerrmline testing recommended for eligible patients.
[4] See Physical Activity, Nutrition, and Tobacco Cessation algorithms; ongoing reassessment of lifestyle risks should be a part of routine clinical practice

Department of Clinical Effectiveness V6
Approved by the Executive Committee of the Medical Staff on 09/17/2019

Pancreatic Adenocarcinoma

Note: Consider Clinical Trials as treatment options for eligible patients



[1] Resectable is defined as:
- Patent superior mesenteric vein-portal vein (SMV-PV) confluence
- No interface between tumor and superior mesenteric artery (SMA) or celiac
- No metastases

[2] Low-risk features:
- No suspicion of metastatic disease
- CA 19-9 less than or equal to 500 units/mL with normal bilirubin
- Manageable and optimized comorbidities

[3] Typically gemcitabine plus paclitaxel or FOLFIRINOX (see Appendix A – Chemotherapy Regimens)

[4] See Appendix B – Chemoradiation and Stereotactic Body Radiation Therapy Regimens

[5] If post-operative recovery is greater than 12 weeks, adjuvant therapy will be at the discretion of the treating provider

[6] Typically FOLFIRINOX or GemCape or single agent gemcitabine (see Appendix A – Chemotherapy Regimens)

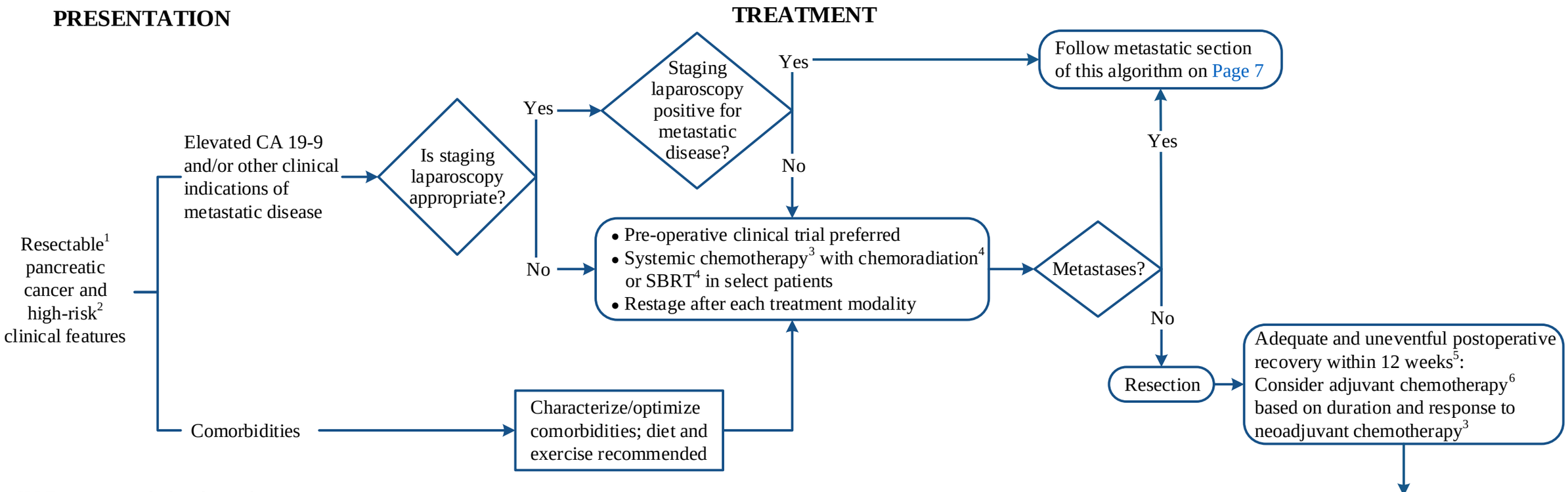
[7] If patient exhibits all low-risk features and all other factors are favorable, primary resection can be considered

[8] For patients who cannot undergo contrast enhanced CT (allergy, renal issues, etc.) consider MRI as an alternative

[9] Pancreatic CT scan protocol: multiphasic cross sectional imaging and thin slices; consider MRI, PET and/or EUS if CT results are equivocal

Pancreatic Adenocarcinoma

Note: Consider Clinical Trials as treatment options for eligible patients



SBRT = stereotactic body radiation therapy

[1] Resectable is defined as:
- Patent superior mesenteric vein-portal vein (SMV-PV) confluence
- No interface between tumor and superior mesenteric artery (SMA) or celiac
- No metastases

[2] High-risk features:
- Suspicion of metastatic disease
- CA 19-9 greater than 500 units/mL with a normal bilirubin
- Reversible and optimizable comorbidities

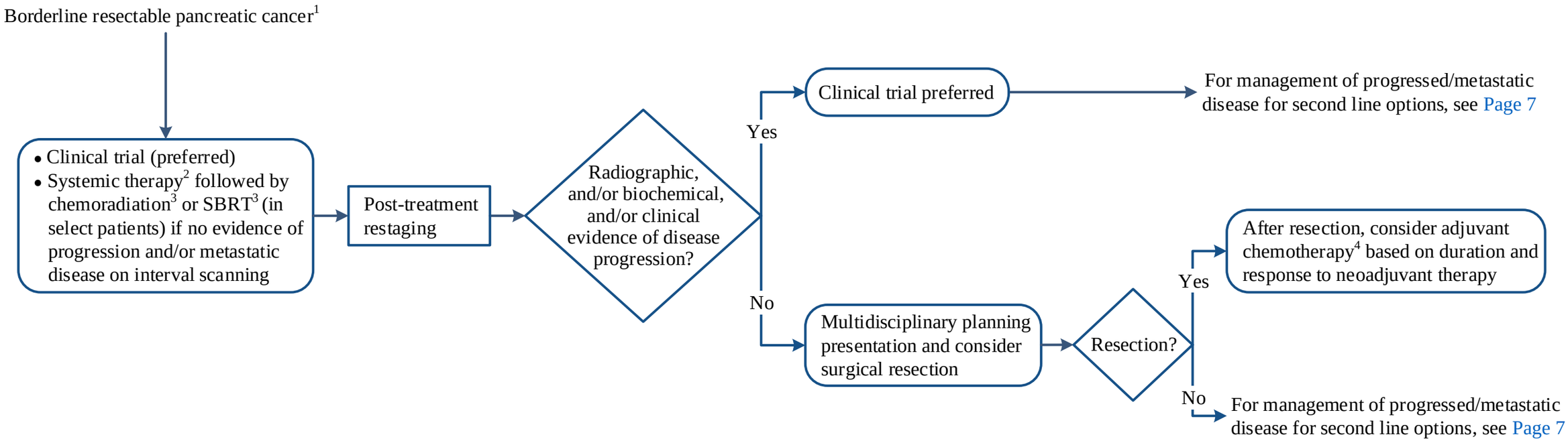
[3] Typically gemcitabine plus paclitaxel or FOLFIRINOX (see Appendix A – Chemotherapy Regimens)
[4] See Appendix B – Chemoradiation and Stereotactic Body Radiation Therapy Regimens
[5] If post-operative recovery is greater than 12 weeks, adjuvant therapy will be at the discretion of the treating provider
[6] Typically FOLFIRINOX or GemCape or single agent gemcitabine (see Appendix A – Chemotherapy Regimens)

Pancreatic Adenocarcinoma

Note: Consider Clinical Trials as treatment options for eligible patients

PRESENTATION

TREATMENT



[1] MD Anderson Cancer Center's definition for **borderline resectable pancreatic cancer with or without high risk features:**
Based on anatomic considerations; a tumor abutment of less than or equal to 180° of circumference of superior mesenteric artery (SMA); short-segment encasement abutment of the common hepatic artery **or** gastroduodenal artery; short-segment occlusion of superior mesenteric vein (SMV) **or** superior mesenteric vein-portal vein (SMV-PV) and patent vessel above and below.
High-risk features:
- Suspicion of metastatic disease
- CA 19-9 greater than 500 units/mL with a normal bilirubin
- Reversible and optimizable comorbidities

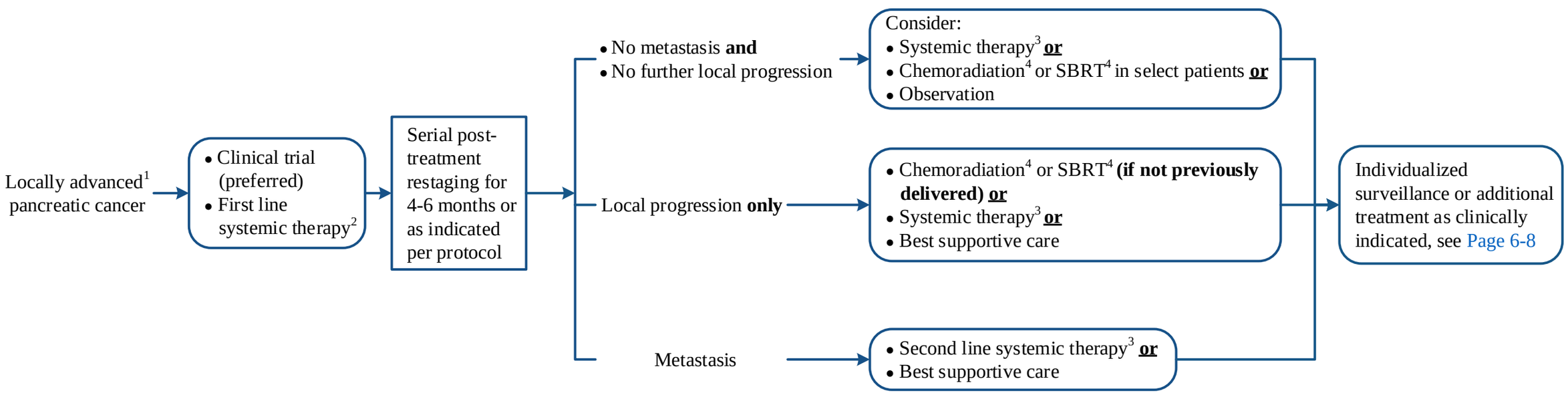
[2] Typically gemcitabine plus paclitaxel or FOLFIRINOX (see Appendix A – Chemotherapy Regimens)
[3] See Appendix B – Chemoradiation and Stereotactic Body Radiation Therapy Regimens
[4] Typically FOLFIRINOX or GemCape or single agent gemcitabine (see Appendix A – Chemotherapy Regimens)

Pancreatic Adenocarcinoma

Note: Consider Clinical Trials as treatment options for eligible patients

PRESENTATION

TREATMENT



[1] Locally advanced defined as:
- Interface between tumor and SMA or celiac greater than 180°
- Interface with aorta
- Unresectable venous occlusion

[2] Typically gemcitabine plus paclitaxel or FOLFIRINOX (see Appendix A – Chemotherapy Regimens)

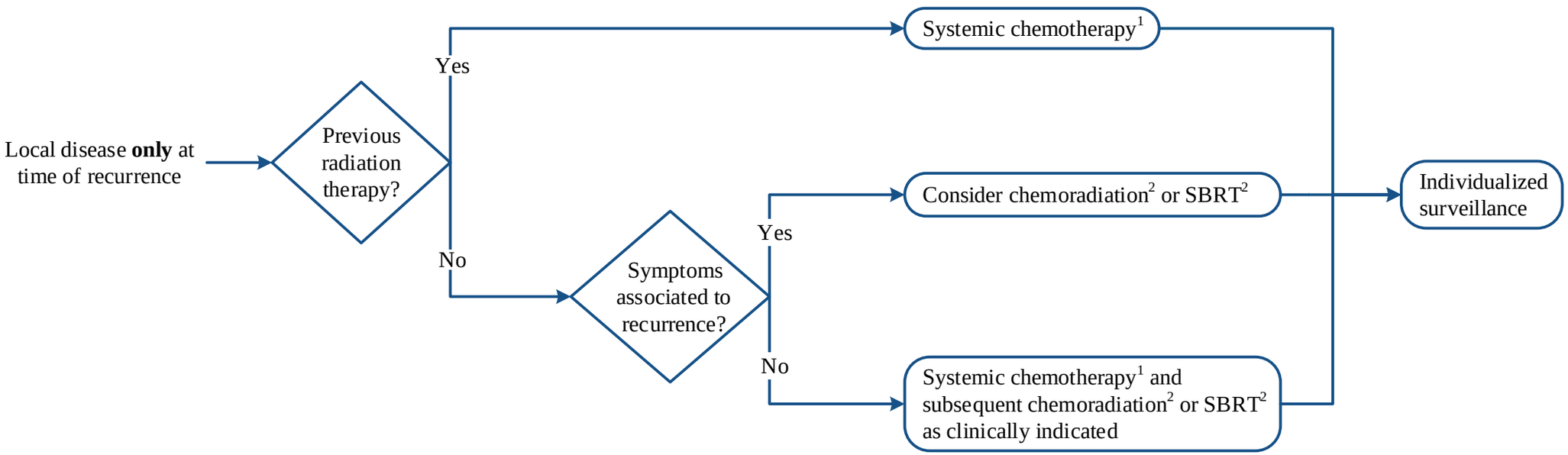
[3] See Appendix A – Chemotherapy Regimens

[4] See Appendix B – Chemoradiation and Stereotactic Body Radiation Therapy Regimens

Pancreatic Adenocarcinoma

Note: Consider Clinical Trials as treatment options for eligible patients

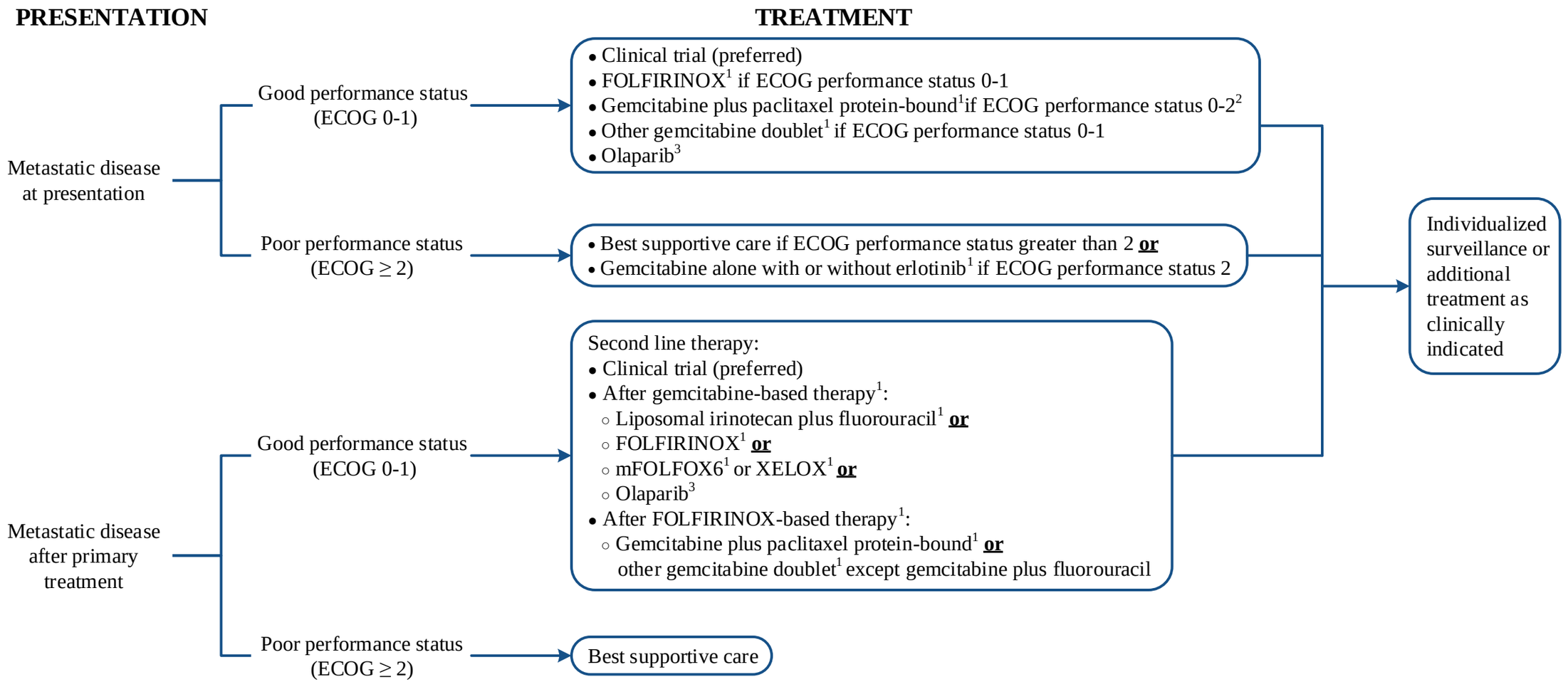
RECURRENCE **TREATMENT**



[1] See Appendix A – Chemotherapy Regimens
[2] See Appendix B – Chemoradiation and Stereotactic Body Radiation Therapy Regimens

Pancreatic Adenocarcinoma

Note: Consider Clinical Trials as treatment options for eligible patients



ECOG = Eastern Cooperative Oncology Group

[1] See Appendix A – Chemotherapy Regimens

[2] For patient with ECOG performance status 2, modify dose as appropriate (refer to dosing for average performance status in Appendix A)

[3] Olaparib may be used as maintenance treatment in the setting of platinum sensitive tumors with BRCA family mutations and no disease progression during > 16 weeks of first-line, platinum-based chemotherapy

SURVEILLANCE
(For patients who had surgery as primary treatment)

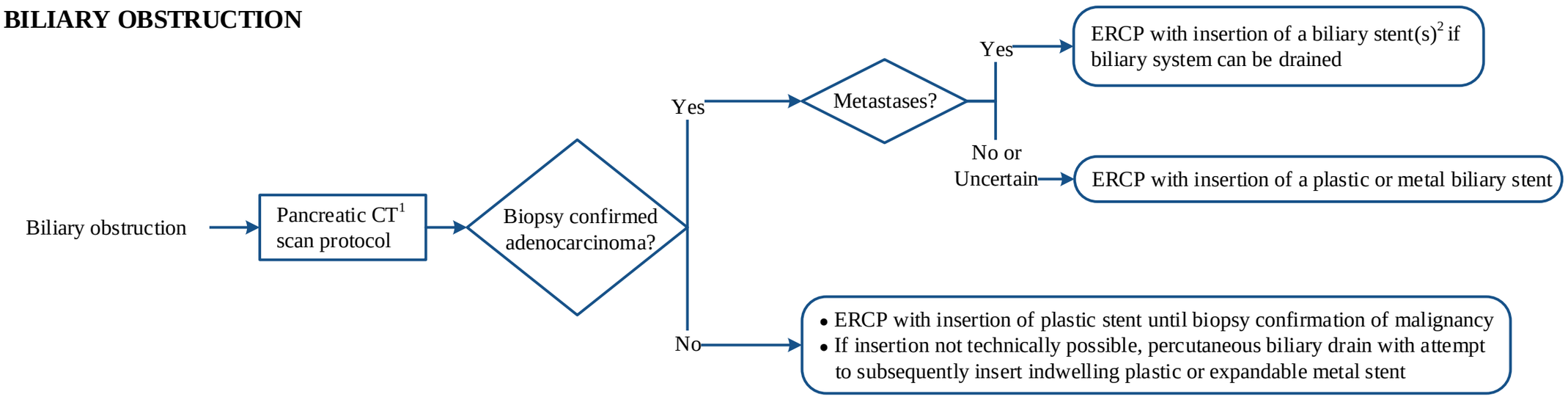
Physical Examination	Every 6 months for a total of 5 years, then annually for a total of 5 years
First 3 years: Perform every 6 months	• Surveillance (portal venous phase) CT[1,2] abdomen • Chest x-ray • CA 19-9
Years 4-5: Perform every 6 months	• Surveillance (portal venous phase) CT[1,2] abdomen • CT chest • CA 19-9
Years 6-10: Perform annually	• Surveillance (portal venous phase) CT[1,2] abdomen • CA 19-9

[1] Consider dedicated pancreatic CT protocol, MRI, PET and/or EUS if surveillance CT results are equivocal, *e.g.*, suspicion of recurrence within pancreatic remnant, extrapancreatic local recurrence, question of liver metastases, etc.
[2] For patients who cannot undergo contrast enhanced CT (allergy, renal issues, etc.) consider MRI as an alternative

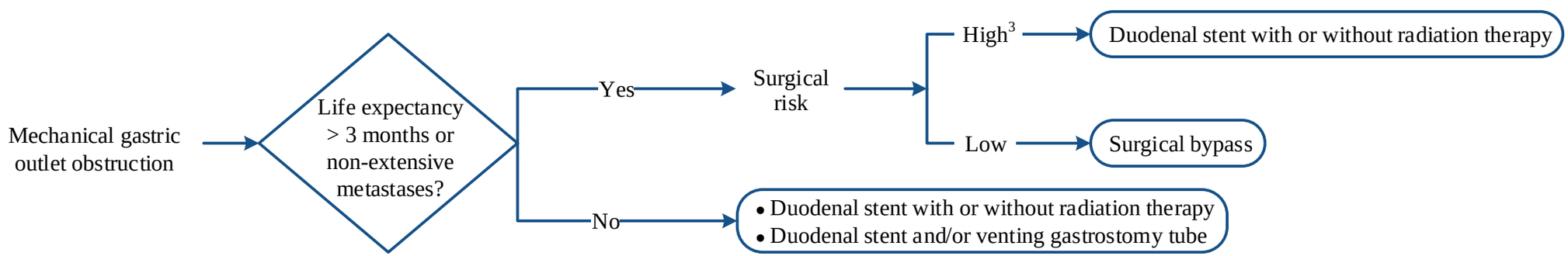
Pancreatic Adenocarcinoma

Note: Consider Clinical Trials as treatment options for eligible patients

BILIARY OBSTRUCTION



MECHANICAL GASTRIC OUTLET OBSTRUCTION



ERCP = endoscopic retrograde cholangiopancreatography

[1] For patients who cannot undergo contrast enhanced CT (allergy, renal issues, etc.) consider MRI as an alternative

[2] Biliary stent(s) may be metal or plastic

[3] Presence of comorbidities and malnutrition

Pancreatic Adenocarcinoma

APPENDIX A: Chemotherapy Regimens

Gemcitabine-based regimens[1,2,3]:

Gemcitabine[4]
- Gemcitabine 600-750 mg/m^2 IV on Days 1, 8, 15 (fixed dose infusion rate of 10 mg/m^2/minute preferred)
- **With or without** erlotinib 100 mg PO daily
- Repeat every 28 days

GemCis - gemcitabine and cisplatin
- Gemcitabine 600-750 mg/m^2 IV on Day 1 (fixed dose infusion rate of 10 mg/m^2/min preferred)
- Cisplatin 30 mg/m^2 IV over 60 minutes on Day 1
- Repeat every 14 days

GemCape - gemcitabine and capecitabine[4]
- Gemcitabine 600-750 mg/m^2 IV on Days 1 and 8 (fixed dose infusion rate of 10 mg/m^2/minute preferred)
- Capecitabine 1,500-1,800 mg/m^2/day PO divided twice daily on Days 1-14
- Repeat every 21 days

GemCape - gemcitabine and capecitabine[4]
(dosing from ESPAC 4 in the adjuvant setting)
- Gemcitabine 1,000 mg/m^2 IV over 30 minutes weekly on Days 1, 8, and 15[5] (fixed dose infusion rate of 10 mg/m^2/minute preferred)
- Capecitabine 1,660 mg/m^2/day PO in divided doses on Days 1-21
- Repeat every 28 days

Gemcitabine plus paclitaxel protein bound (Abraxane®)[6]
Good performance status:
- Paclitaxel protein-bound 100-125 mg/m^2 IV on Days 1, 8, 15
- Gemcitabine 600-750 mg/m^2 IV on Days 1, 8, 15 (fixed dose infusion rate of 10 mg/m^2/min preferred)
- Repeat every 28 days

Average performance status:
- Paclitaxel protein-bound 125-175 mg/m^2 IV on Day 1
- Gemcitabine 600-750 mg/m^2 IV on Day 1 (fixed dose infusion rate of 10 mg/m^2/min preferred)
- Repeat every 14 days

GTX
- Gemcitabine 300-400 mg/m^2 IV on Days 4 and 11 (fixed dose infusion rate of 10 mg/m^2/minute preferred)
- Docetaxel 30-40 mg/m^2 IV on Days 4 and 11
- Capecitabine 1,000 mg/m^2/day PO divided twice daily on Days 1-14
- Repeat every 21 days

GemOx - gemcitabine and oxaliplatin
- Gemcitabine 600-750 mg/m^2 IV on Day 1 (fixed dose infusion rate of 10 mg/m^2/minute preferred)
- Oxaliplatin 85 mg/m^2 IV over 2 hours on Day 1
- Repeat every 14 days

Fluoropyrimidine-based regimens[1,2]:

mFOLFOX 6
- Oxaliplatin 85 mg/m^2 IV over 2 hours on Day 1
- Leucovorin 400 mg/m^2 IV over 2 hours on Day 1[7]
- Fluorouracil 400 mg/m^2 IV bolus on Day 1[7], then fluorouracil 2,400 mg/m^2 IV continuous infusion over 46 hours
- Repeat every 14 days

XELOX or CapeOx
- Capecitabine 1,500-1,800 mg/m^2 PO divided twice daily on Days 1-14, then
- Oxaliplatin 85-100 mg/m^2 IV over 2 hours on Day 1
- Repeat every 21 days

FOLFIRINOX[4,6]
- Oxaliplatin 75-85 mg/m^2 IV over 2 hours on Day 1
- Irinotecan 125-180 mg/m^2 IV over 90 minutes on Day 1
- Leucovorin 400 mg/m^2 IV over 2 hours on Day 1[7] Fluorouracil 400 mg/m^2 IV bolus on Day 1[7], then fluorouracil 2,400 mg/m^2 IV continuous infusion over 46 hours
- Repeat every 14 days

Liposomal irinotecan (Onivyde®) plus 5-fluorouracil[8]
- Liposomal irinotecan 70 mg/m^2 IV over 90 minutes on Day 1
- Leucovorin 400 mg/m^2 IV over 2 hours on Day 1[7]
- Fluorouracil 400 mg/m^2 IV bolus on Day 1[7], then
- Fluorouracil 2,400 mg/m^2 IV continuous infusion over 46 hours
- Repeat every 14 days

[1] For gemcitabine-based and fluorouracil-based regimen, combination chemotherapy is preferred over monotherapy in the preoperative setting
[2] Dosing should be started at the lower level and modified as patient tolerates
[3] If fixed dose infusion rate not utilized, administer gemcitabine 1,000 mg/m^2 over 30 minutes
[4] Typical post-operative adjuvant regimens: FOLFIRINOX or GemCape or single-agent gemcitabine (depending on response and recovery)
[5] Many MD Anderson GI Oncologists omit Day 15
[6] Typical pre-operative neoadjuvant regimens: gemcitabine plus paclitaxel or FOLFIRINOX
[7] Many MD Anderson GI Oncologists omit the bolus of fluorouracil/leucovorin
[8] FDA approved for the treatment of metastatic adenocarcinoma of the pancreas in combination with fluorouracil and leucovorin

APPENDIX B: Chemoradiation and Stereotactic Body Radiation Therapy (SBRT)

Chemoradiation Regimens
Long course chemoradiation • Total dose 50 Gy in 25 fractions **or** 50.4 Gy in 28 fractions • Concurrent capecitabine[1] 1,650 mg/m^2 PO in two divided doses on each day of radiation **or** • Concurrent gemcitabine 300-400 mg/m^2 IV given at fixed dose infusion once weekly[2]
Short course chemoradiation • Total dose 30 Gy in 10 fractions • Concurrent capecitabine[1] 1,650 mg/m^2 PO in two divided doses on each day of radiation **or** • Concurrent gemcitabine 300-400 mg/m^2 IV given at fixed rate dose infusion once weekly[2]
Hypofractionated chemoradiation • Total dose 60-67.5 Gy in 15 fractions • Concurrent capecitabine[1] 1,650 mg/m^2 PO in two divided doses on each day of radiation • Requires image guidance
SBRT
• Total dose 33 – 40 Gy in five fractions • Usually requires fiducials • Requires daily image guidance

[1] Infusional fluorouracil may be used instead
[2] If fixed dose infusion rate of 10 mg/m^2/minute not utilized, administer gemcitabine over 30 minutes

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Continued on next page

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DEVELOPMENT CREDITS

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