



Evaluation and Management of Patients with Peritoneal Surface Malignancy

Description of the Activity	<p>Surgical oncologists are expected to evaluate and manage patients who present with peritoneal surface malignancy (PSM). PSM may be identified incidentally on imaging or during abdominal surgery. Patients may also present with vague abdominal symptoms or more acutely with obstruction or other symptoms of carcinomatosis. Surgical oncologists must be able to accurately diagnose and direct the appropriate workup and management of these patients and participate in their multidisciplinary treatment.</p>
Functions	<ul style="list-style-type: none">❖ Nonoperative/Preoperative<ul style="list-style-type: none">➤ Synthesize essential information from a patient's records, history, physical examination, and initial diagnostic evaluations to develop a differential diagnosis.➤ Complete a cost-effective, evidence-based diagnostic or staging evaluation, including biochemical testing, review of pathology and molecular or genetic markers, imaging studies, and diagnostic/staging laparoscopy as indicated.➤ Communicate the diagnosis, prognosis, and potential role/benefit of treatment to patients/caregivers. Succinctly identify treatment goals (curative intent, life prolongation, palliation, end-of-life care). Communicate sympathetically in a culturally sensitive manner when de-escalation of care is appropriate because of poor prognosis or based on a patient/caregiver's goals of care. Use shared decision-making to develop a treatment plan consistent with a patient's goals and beliefs.➤ Use imaging to predict disease burden and the feasibility of successful cytoreductive surgery (CRS)/hyperthermic intraperitoneal chemotherapy (HIPEC).➤ Determine the presence of nodal and extraperitoneal metastatic sites and their impact on treatment options.➤ Determine whether diagnostic/staging laparoscopy is needed to assess the peritoneal cancer index (PCI) or obtain tissue for diagnosis and treatment planning.➤ Identify when a patient may benefit from a surgical approach based on an assessment of the patient's diagnosis, histology, clinical condition, nutritional and functional assessments, prior medical/surgical treatments, and other treatment options.➤ Refer patients for prehabilitation, nutritional optimization, and other resources to prepare for major surgery.➤ Describe consensus guidelines for the management of PSM based on histology.➤ Recognize and discuss the limitations of current evidence regarding CRS/HIPEC based on specific histology, disease burden, and prognosis.➤ Consider the risks and benefits of palliative cytoreduction when complete cytoreduction is not feasible.➤ Assess PSM and next steps when called by other surgical specialists (general surgery, gynecology/gynecologic oncology, urology) either preoperatively or intraoperatively, and determine whether CRS/HIPEC might be indicated.➤ Use current evidence-based literature to develop the correct sequencing of oncologic treatment, including surgery, neoadjuvant or adjuvant chemotherapy, radiation, and other treatments as necessary. Select a treatment approach based on disease presentation, comorbid conditions, and patient preferences. Manage multidisciplinary treatment of the disease.➤ Participate in a multidisciplinary conference or discussion regarding treatment plans.➤ Collaborate with other specialties to manage comorbidities that will affect treatment and limit side effects and complications, such as chronic anticoagulation, cardiac disease, renal disease, and immunosuppression.➤ Communicate with and prepare for other surgical or nonsurgical specialist involvement.



Evaluation and Management of Patients with Peritoneal Surface Malignancy

- Discuss options for fertility-preserving strategies for patients receiving pelvic surgery as a component of their care.
- Consider patients for enrollment in clinical trials.
- Obtain informed consent with cultural humility.
 - Describe the indications, risks, benefits, alternative therapies, and potential complications of the planned procedure, and incorporate a discussion of the goals of care.
 - Discuss the possibility of multivisceral resections, ostomy creation, and postoperative complications related to extensive and lengthy operations and perfusion of chemotherapy.
 - Discuss contingency plans when planned complete cytoreduction does not appear feasible.
 - Discuss expectations for recovery and the patient's postoperative course, depending on the extent of resections.
 - Ensure that the patient/caregiver(s) can ask questions, and address any expressed concerns, taking patient/caregiver preferences into account.
 - Discuss potential limitations in the patient's desire for resuscitation (eg, do-not-resuscitate order) and how this will be addressed in the perioperative period.
 - Document the consent discussion.
- ❖ Intraoperative
 - Manage the perioperative environment, including room setup, equipment check, preprocedural time-out, specimen processing, counts, wound classification, and debriefing functions.
 - Develop a safe anesthetic approach in collaboration with the anesthesiology team, with attention to the particular effects of HIPEC, including temperature control, electrolyte imbalances, renal perfusion and protection, and adequate management of fluids. Continue communication and monitoring throughout the operation.
 - Create and maintain an intraoperative environment that promotes safety and patient-centered care.
 - Confirm the accessibility of necessary equipment (perfusion machine, catheters/cannulas, thermometers). Coordinate with other members of the operating room team (including perfusionist) to use specialized equipment.
 - Ensure the equipment needed for thermal/ablative procedures is available.
 - Prepare adjuncts to the procedure as needed (ureteral stents, endoscopy).
 - Position the patient to expose the operative field, taking precautionary measures to prevent iatrogenic injury. Recognize the need for particular positioning (eg, lithotomy, access to thoracic cavity) for extensive pelvic or upper abdominal/chest intervention.
 - Ensure that the correct chemotherapeutic agents, dose, and perfusion parameters are administered based on the patient's disease.
 - Demonstrate safe handling and management of chemotherapy in the operating room and the safe disposal of drugs.
 - Evaluate the extent and burden of disease using the PCI, including determination of resectability and the likelihood of complete cytoreduction.
 - Perform the procedures required to manage a complete cytoreductive operation, including, but not limited to, solid and hollow viscus resection, peritonectomy, omentectomy, and ablation.
 - Describe the completeness of cytoreduction and residual disease using consensus tools and criteria.



Evaluation and Management of Patients with Peritoneal Surface Malignancy

	<ul style="list-style-type: none">➤ Adapt operative steps and the operative plan to new information discovered intraoperatively, calling consulting services as necessary.➤ If unable to achieve complete cytoreduction, determine if the patient will benefit from palliative resection or peritoneal perfusion.❖ Postoperative<ul style="list-style-type: none">➤ Manage common early and late complications related to cytoreduction and intraperitoneal chemotherapy procedures, including adverse effects of the chemotherapeutic agents in addition to extensive surgical intervention, such as:<ul style="list-style-type: none">▪ Acute and chronic kidney injury▪ Alteration in liver function tests▪ Anastomotic leak▪ Bleeding▪ Bone marrow suppression▪ Cardiac arrhythmias▪ Coagulopathy▪ Electrolyte imbalances▪ Ileus and malnutrition▪ Infection▪ Pleural effusions➤ Communicate a postoperative plan with a patient/caregiver(s) and other health care team members that considers intraoperative and pathologic findings, future treatment needs, postoperative needs, outcome expectations, and follow-up.➤ Recognize and mitigate patient-specific barriers to care.➤ Coordinate care with other specialties and ancillary care as needed (eg, physical therapy, rehabilitation, nutrition services).➤ Review intraoperative and pathologic findings in a multidisciplinary tumor board, including molecular markers, and modify the treatment plan if indicated.➤ Conduct a postoperative discussion of the goals of treatment with the patient/caregiver(s) regarding either consolidation therapy or palliative intent.➤ Develop a plan for surveillance after the initial treatment based on disease-specific guidelines and guided by the patient's primary cancer and treatment sequence.
Scope	<ul style="list-style-type: none">❖ In scope<ul style="list-style-type: none">➤ Diagnoses<ul style="list-style-type: none">▪ Appendix (low-grade appendiceal mucinous neoplasm, high-grade appendiceal mucinous neoplasm, goblet cell, mucocele, adenocarcinoma)▪ Colorectal cancer▪ Gastric cancer▪ Neuroendocrine cancer▪ Ovarian cancer



Evaluation and Management of Patients with Peritoneal Surface Malignancy

- Peritoneal mesothelioma (epithelioid, biphasic, sarcomatoid, well-differentiated, papillary mesothelioma, multicystic)
- Procedures
 - CRS, including, but not limited to, omentectomy, gastrectomy, small and large bowel resection, peritonectomy, and electrofulguration for liver capsule or serosal implants
 - HIPEC
 - Diagnostic laparoscopy for determination of PCI
- Populations
 - Adults
- ❖ Out of scope
 - Diagnoses
 - Adrenocortical cancer
 - Breast cancer
 - Gastrointestinal stromal tumor (see EPA: E&M of Patients with Gastrointestinal Stromal Tumor)
 - Hepatobiliary or pancreatic malignancy
 - Lung cancer
 - Melanoma
 - Pleural-based tumors
 - Sarcoma
 - Procedures
 - Adjuvant HIPEC
 - Bidirectional therapy/neoadjuvant intraperitoneal systemic chemotherapy
 - Pressurized intraperitoneal aerosolized chemotherapy
 - Prophylactic HIPEC
 - Thoracic cytoreductive procedures
 - Populations
 - Pediatric



Evaluation & Management of Patients with a Peritoneal Surface Malignancy

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<p>1</p> <p>Limited Participation</p> <p>Demonstrates understanding of information and has very basic skills.</p> <p>Framework: Performs at the general surgery resident level, lower than expected for a typical residency graduate. Has some experience with simple cases but has been an observer of complex cases.</p>	<ul style="list-style-type: none">• Synthesizes essential information from a patient's records, H&P, family history, and initial diagnostic evaluations to develop a differential; needs assistance in determining the need for additional diagnostic studies• Demonstrates basic understanding of PSM; needs prompting to identify existing guidelines/consensus for management of PSM• Recognizes CRS/HIPEC as an option but needs prompting to identify a patient who may benefit from a surgical approach• Needs significant prompting to identify the key components of the health care system required to care for patients with PSM• Respectfully communicates basic facts about the condition to a patient/caregiver(s); needs assistance with nuances of treatment decisions and potential outcomes• Records information in a patient's record but may omit some important information or include some extraneous information; requires correction or augmentation of documentation of services; may need prompting for timeliness	<ul style="list-style-type: none">• Demonstrates awareness of the use of chemotherapy agents for HIPEC but needs prompting to list specific medications or dosing• Lists potential intraop findings but needs prompting to articulate how they would change the surgical plan• Recognizes the need for determination of disease burden but needs guidance when calculating the PCI• Needs prompting to obtain a biopsy when called by another surgical specialty for an intraop consultation• Performs a common general surgical resection in a case of low-burden disease but needs assistance to manage a complex or multivisceral resection• Demonstrates basic knowledge of tumor-specific biology and how it affects intraop decision-making• Demonstrates knowledge of how to report patient safety events• Demonstrates understanding of basic OR setup, patient positioning, perfusion setup, and preparation; needs prompting to recognize the necessary equipment and need for coordination and safety	<ul style="list-style-type: none">• Demonstrates knowledge of and manages routine postop care following cytoreduction but needs prompting to recognize more complex or chemotherapy-specific complications• Needs assistance in synthesizing operative and pathologic findings to formulate a postop plan of care based on tumor factors• Demonstrates knowledge of how to report patient safety events• Needs prompting to appreciate the need to coordinate care with other specialties and ancillary services (PT, rehabilitation, nutrition services, palliative care, enterostomal therapist) within a complex health care system to manage length of stay, discharge, and transition of care; needs assistance with managing patient-specific and system-level barriers to care• Discusses intraop findings with a patient/caregiver(s) but needs prompting to discuss the implications of findings on the prognosis• Documents postop care but may omit nuances of progress or minor complications; may choose an inappropriate means of communication



Evaluation & Management of Patients with a Peritoneal Surface Malignancy

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		with other members of the team (anesthesia, perfusionist, pharmacy) <ul style="list-style-type: none"> Creates a basic operative note but omits some important information; may need prompting for timeliness 	(eg, paging for minor details or email for urgent issues)
<p style="text-align: center; font-weight: bold;">2</p> <p><u>Direct Supervision</u></p> <p>Manages cases at the level of a newly graduated general surgery resident. Manages less complicated cases independently but needs active guidance for complex cases.</p> <p><u>Framework:</u> The learner can manage simple or straightforward cases.</p> <p>The learner may require guidance in managing multidisciplinary care (eg, planning neoadjuvant treatment or postoperative chemotherapy).</p>	<ul style="list-style-type: none"> Uses imaging to predict disease burden; needs prompting to consider the need for additional diagnostic studies, particularly diagnostic laparoscopy to determine the PCI Describes common scenarios in which PSM occurs and existing guidelines for CRS/HIPEC; needs assistance to apply them to specific patient and clinical scenarios With assistance, identifies a patient who may benefit from a surgical approach based on diagnosis, histology, clinical condition, nutritional and functional assessments, prior medical/surgical treatments, and other treatment options Recognizes the role of evaluation for CRS/HIPEC when called by another surgical specialty but needs assistance to direct next steps Identifies key components of the health care system required to care for patients with PSM in straightforward cases Respectfully communicates the surgical plan to a patient/caregiver(s) but needs 	<ul style="list-style-type: none"> Lists potential chemotherapy agents for HIPEC but needs assistance for specific indications/histology and doses Identifies intraop findings but requires redirection when encountering unanticipated intraop findings Calculates the PCI in low-burden disease; needs guidance to determine the next steps of proceeding with cytoreduction with or without chemoperfusion Obtains a biopsy when called by another surgical specialty for an intraop consultation; needs assistance to determine the next steps of oncologic care Performs a common general surgical resection in advanced disease; performs a complex resection with assistance Demonstrates advanced knowledge of tumor-specific biology and how it affects intraop decision-making Reports a patient safety event through an institutional reporting system 	<ul style="list-style-type: none"> Performs routine postop care, including management of common postop complications; needs assistance in recognizing and managing complex postop complications, including unique adverse effects of chemotherapeutic agents With assistance, formulates a postop plan of care based on operative and pathologic findings and tumor factors Reports a patient safety event through an institutional reporting system Accesses basic ancillary services (PT, rehabilitation, nutrition services, enterostomal therapist) within a complex health care system to coordinate discharge and transition of care; needs assistance to manage patient-specific and system-level barriers to care Communicates operative findings and pathologic findings to a patient/caregiver(s); needs assistance in discussing short- and long-term goals of care



Evaluation & Management of Patients with a Peritoneal Surface Malignancy

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<p>During surgery, the attending gives active help throughout the case to maintain forward progression.</p>	<p>prompting to adopt a shared decision-making approach that considers the patient's condition and goals of care</p> <ul style="list-style-type: none"> Demonstrates organized diagnostic and therapeutic reasoning through notes in the patient record; demonstrates timely and efficient use of the EHR to communicate with the health care team 	<ul style="list-style-type: none"> Prepares OR setup, patient positioning, management of chemotherapy agents, and equipment in straightforward cases; needs assistance to coordinate with other members of the team (anesthesia, perfusionist, pharmacy) With prompting, discusses the factors of a safe perioperative/anesthetic plan, including temperature control, electrolyte imbalances, renal perfusion and protection, and adequate management of fluids Works with other services to ensure safe periop care of a straightforward case; needs assistance with particular details of HIPEC in a complex case Creates an operative note with a complete description of the procedure 	<ul style="list-style-type: none"> Thoroughly documents postop progression and the presence of any complications
<p>3</p> <p><u>Indirect Supervision</u></p> <p>Can do a basic operation but will not recognize abnormalities and does not understand the nuances of an advanced case.</p>	<ul style="list-style-type: none"> Uses imaging to predict disease burden and decide when laparoscopy is indicated to assess the PCI and feasibility of CRS/HIPEC Recognizes CRS/HIPEC as a therapeutic option in complex cases; independently applies consensus guidelines based on histology Assesses a patient for candidacy for CRS/HIPEC based on patient and tumor factors 	<ul style="list-style-type: none"> With assistance, refines the surgical plan based on new information discovered intraoperatively Calculates the PCI and the likelihood of complete cytoreduction, taking histology into consideration in complex cases; determines the next steps of proceeding with cytoreduction with or without chemoperfusion in common cases Independently obtains a biopsy when called by another surgical specialty for an 	<ul style="list-style-type: none"> Independently manages complicated postop care, including complex postop complications (immediate and late) and unique adverse effects of chemotherapeutic agents Formulates a postop plan of care based on operative and pathologic findings and tumor factors; may require assistance in a rarer histology or recurrent disease



Evaluation & Management of Patients with a Peritoneal Surface Malignancy

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<p>Manages multidisciplinary care of straightforward cases. Seeks assistance in managing complex cases.</p> <p><u>Framework:</u> The learner can perform the operation in straightforward circumstances. The attending gives passive help. This help may be given while scrubbed for more complex cases or during check-in for more routine cases.</p>	<ul style="list-style-type: none"> Works as a member of a multidisciplinary team in the context of a complex health system, coordinating care for a patient with PSM Discusses a patient’s prognosis and potential outcomes of CRS/HIPEC based on histology and disease burden in a compassionate manner Integrates all relevant data from outside systems and prior encounters and reports diagnostic and therapeutic reasoning in the patient’s record 	<p>intraop consultation; needs assistance with determining the next steps of oncologic care in a more complex case</p> <ul style="list-style-type: none"> Performs a common general surgical resection in advanced disease and performs a complex resection with limited assistance, including selecting the correct chemotherapeutic agents and dose; requires assistance to manage perfusion equipment and parameters Demonstrates advanced knowledge of tumor-specific biology and incorporates this information into intraop decision-making in a straightforward case Independently prepares OR setup, patient positioning, management of chemotherapy agents, and equipment in complex cases; coordinates with other members of the team (anesthesia, perfusionist, pharmacy) Participates in the disclosure of a patient safety event to a patient/caregiver(s) Creates an operative note with a complete description of the procedure, including key intraop findings; documents anatomic or disease variants in a thorough and understandable way 	<ul style="list-style-type: none"> Participates in the disclosure of a patient safety event to a patient/caregiver(s) Accesses ancillary services (PT, rehabilitation, nutrition services, enterostomal therapist) within a complex health care system to coordinate discharge and transition of care; needs assistance when coordinating care with another specialty in a complex case to address patient-specific and system-level barriers to care Communicates operative and pathologic findings and immediate next steps to a patient/caregiver(s); may need assistance in discussing long-term goals of care or in a case with an uncertain prognosis Selects direct (telephone, in-person) and indirect (progress notes, secure text messages) forms of communication based on context and urgency
<p>4</p> <p><u>Practice Ready</u></p>	<ul style="list-style-type: none"> Uses, interprets, and understands the limitations of imaging and laparoscopy to 	<ul style="list-style-type: none"> Independently refines the surgical plan based on new information discovered intraoperatively 	<ul style="list-style-type: none"> Anticipates and provides early intervention for postop complications (immediate and late), including the



Evaluation & Management of Patients with a Peritoneal Surface Malignancy

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<p>Manages complex disease presentations and performs complex operations independently. Guides a multidisciplinary approach to complex cases. Performs as an expert consultant in surgical oncology.</p> <p><u>Framework:</u> The learner can treat all common variations of the disease and has a strong understanding of surgical and medical options for different presentations.</p> <p>The attending is available at the request of the learner but is not routinely needed for common presentations, though input may be needed for more complex or unusual presentations.</p>	<p>predict disease burden and the feasibility of successful CRS/HIPEC</p> <ul style="list-style-type: none"> Recognizes CRS/HIPEC as a therapeutic option in uncommon cases, including recurrent disease; identifies when alterations from guidelines are needed to personalize care for a unique patient Considers patient factors and goals of care as part of a shared decision-making process when planning potential CRS/HIPEC Discusses the risks and benefits of palliative cytoreduction in a multidisciplinary setting Refers to fertility specialists, taking into consideration patient factors, tumor biology, and anticipated surgical planning Identifies and counsels a patient eligible for enrollment in clinical trials Independently discusses limitations of current evidence regarding CRS/HIPEC based on specific histology, disease burden, and prognosis Independently coordinates multidisciplinary care and patient navigation in the context of a complex health care system Communicates diagnostic and therapeutic reasoning, including anticipatory guidance, that is clear, concise, prompt, and in 	<ul style="list-style-type: none"> Independently calculates the PCI and the likelihood of complete cytoreduction as well as the next steps of proceeding with cytoreduction with or without chemoperfusion in complex cases (eg, recurrent disease) Independently obtains a biopsy when called by another surgical specialty for an intraop consultation and to discuss the role of CRS/HIPEC Performs the procedures required for a complete cytoreductive operation; selects the correct chemotherapeutic agents, dose, and perfusion parameters based on the patient’s disease and adapts operative steps to new intraop findings Demonstrates advanced knowledge of tumor-specific biology and incorporates it into intraop decision-making in common and complex cases Independently discloses a patient safety event to a patient/caregiver(s) Takes a leadership role in managing a multidisciplinary team (anesthesia, perfusion, pharmacy) and demonstrates safe handling of chemotherapy agents and ancillary equipment 	<p>unique adverse effects of chemotherapeutic agents; engages consultative services in the management of postop complications when needed</p> <ul style="list-style-type: none"> Independently synthesizes operative and pathologic findings in straightforward and complex cases to formulate a postop care plan, including surveillance Independently discloses a patient safety event to a patient/caregiver(s) Proactively directs ancillary services (PT, rehabilitation, nutrition services, palliative care, pain management, wound care, enterostomal therapist) within a complex health care system to coordinate discharge and transition of care in straightforward and complex cases, including coordinating care with other specialties in a more complex case to address patient-specific and system-level barriers to care Compassionately communicates a patient’s prognosis, treatment plan, and goals of care with a patient/caregiver after CRS/HIPEC Communicates clearly, concisely, promptly, and in an organized written form, including anticipatory guidance so



Evaluation & Management of Patients with a Peritoneal Surface Malignancy

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	organized written form; written or verbal communication (patient notes, email) serves as an example for others to follow	<ul style="list-style-type: none">Creates an operative note with a complete description of the procedure, a rationale for modifications of the operative plan, and documentation of anatomic or disease variants	the postop plan of care is clear to other members of the care team