Intrapleural Catheter (IPC) Management

Disclaimer: This algorithm has been developed for MD Anderson using a multidisciplinary approach considering circumstances particular to MD Anderson’s specific patient population, services and structure, and clinical information. This is not intended to replace the independent medical or professional judgment of physicians or other health care providers in the context of individual clinical circumstances to determine a patient’s care.

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IPC = intrapleural catheter
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**INITIAL ASSESSMENT**

Follow-up schedule:
- 2 week follow-up for suture removal, clinical evaluation, chest x-ray, and ultrasound of affected hemithorax
- Then every month, as long as IPC is in place: clinical evaluation, chest x-ray, ultrasound of affected hemithorax

Usual care:
- Drain fluid daily or as clinically indicated
- Remove as much fluid as possible until one of the following occurs:
  - Drainage stops spontaneously
  - Pain develops
  - Persistent cough
- Document amount of fluid with each drainage plus the total daily drainage

**EVALUATION AND MANAGEMENT**

Drainage ≤ 150 mL for 3 consecutive days with a steady decline in the amount of fluid drained
- Drain PF every other day

Drainage ≤ 150 mL for 3 consecutive occurrences
- Suspect IPC malfunction (see Page 3)

Drainage > 150 mL at any time
- Return to daily drainage and usual IPC care
- Monitor as clinically indicated

Suspect IPC malfunction (see Page 3)

Drainage ≤ 150 mL for 3 consecutive occurrences with a steady decline in the amount of fluid drained
- Stop drainage
- Notify appropriate provider
- Chest x-ray (PA/lateral) and ultrasound of affected hemithorax within 3 days

Pleurodesis achieved?
- Yes
- IPC removal
- Follow-up as clinically indicated
- No
- Suspect IPC malfunction (see Page 3)

**INITIAL ASSESSMENT EVALUATION AND MANAGEMENT**

IPC = intrapleural catheter
PF = pleural fluid

Footnote 1: Refer to Intrapleural Catheter Post Procedure Education: Pulmonary Medicine Patient
### INITIAL ASSESSMENT

Suspected IPC Malfunction

- Stop drainage
- Notify appropriate provider
- Clinical evaluation
- Review daily fluid output
- Attempt to drain IPC

### EVALUATION AND MANAGEMENT

#### Lung re-expansion ≥ 80%

- IPC removal if pleurodesis has occurred
- Follow-up as clinically indicated

#### Lung re-expansion < 80%

- **CT chest without contrast**
  - Absent or small amount of PF
    - IPC removal if pleurodesis has occurred
    - Follow-up as clinically indicated
  - Moderate or large amount of PF with or without loculation
    - See Page 4

#### Chest x-ray (PA/lateral) and ultrasound of affected hemithorax

- IPC removal if pleurodesis has occurred
- Follow-up as clinically indicated

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ASSESSMENT

Moderate or large amount of PF with or without loculation

Worsening symptoms\(^1\) related to pleural effusion?

Yes

No

TREATMENT

Drainage \(\leq 150 \text{ mL}\)

Drainage \(> 150 \text{ mL}\)

\(\text{IPC} = \text{intrapleural catheter}\)

\(\text{PF} = \text{pleural fluid}\)

\(\text{rtPA} = \text{recombinant tissue plasminogen activators}\)

1 Symptoms may include dyspnea, chest pain/discomfort, or cough

2 Goal Concordant Care (GCC) should be initiated by the Primary Oncologist. If Primary Oncologist is unavailable, Primary Team/Attending Physician to initiate GCC discussion and notify Primary Oncologist. Patients, or if clinically indicated, the Patient Representative should be informed of therapeutic and/or palliative options. GCC discussion should be consistent, timely, and re-evaluated as clinically indicated. The Advance Care Planning (ACP) note should be used to document GCC discussion. Refer to GCC home page (for internal use only).

3 Refer to Intrapleural Catheter Post Procedure Education: Pulmonary Medicine Patient

EVALUATION AND MANAGEMENT

Drainage \(\leq 150 \text{ mL}\)

Drainage \(> 150 \text{ mL}\)

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3 Refer to Intrapleural Catheter Post Procedure Education: Pulmonary Medicine Patient

- Consider repeat administration of alteplase 4 mg in sodium chloride 0.9\% 20 mL solution into pleural space using IPC
- IPC drainage after at least one hour of dwelling time

- Administer alteplase 4 mg in sodium chloride 0.9\% 20 mL solution into pleural space using IPC
- IPC after one hour of dwelling time

- Drainage \(\leq 150 \text{ mL}\)

Drainage \(> 150 \text{ mL}\)

- Chest x-ray (PA/lateral) and ultrasound of affected hemithorax to confirm evacuation of fluid
- Continue daily drainage and usual IPC care

- Consider alternative palliative modalities (see Management of Malignant Pleural Effusion - Adult algorithm)
- Discuss GCC with patient or if clinically indicated, with Patient Representative

- No palliative benefit of IPC
- Discuss GCC with patient or if clinically indicated, with Patient Representative

- Remove IPC

- IPC drainage after at least one hour of dwelling time

- Consider repeat administration of alteplase 4 mg in sodium chloride 0.9\% 20 mL solution into pleural space using IPC
- IPC after one hour of dwelling time

- Drainage \(\leq 150 \text{ mL}\)

- Drainage \(> 150 \text{ mL}\)
**INITIAL ASSESSMENT**

Patient suspected of having IPC-related infection

- History and physical exam
- Chest x-ray (PA/lateral) and ultrasound of affected hemithorax
- Consider thoracentesis
- Examine IPC tunnel and exit site
- Gram stain and culture of any exudate
- Sample obtained using IPC is adequate only if PF is definitively purulent
- Consider consult to Pulmonary Medicine

**EVALUATION AND MANAGEMENT**

Is this a pleural space infection?**

Yes

- Remove IPC after drainage of PF
- Empiric antibiotics orally for 10 days (MRSA coverage)
- Adjust antibiotic therapy based on culture and sensitivity results
- Consider options to palliate symptomatic residual PF (see Management of Malignant Pleural Effusion - Adult algorithm)
- Follow-up in one week or sooner, as clinically indicated

No

- Drain pleural space using IPC
- CT chest with contrast
- Thoracic Surgery and/or Pulmonary Medicine consult
- Infectious Diseases consult

See Page 6 for evaluation and management of pleural space infection

**Tunnel Infection**

**Exit Site Infection**

**IPC** = intrapleural catheter

**PF** = pleural fluid

**MRSA** = methicillin-resistant *staphylococcus aureus*

1 Purulent PF present or bacteria found on gram stain or cultures

2 Erythema, tenderness and induration overlying tunnel tract, extending > 2 cm from exit site

3 Erythema, tenderness and induration only at the IPC exit site

4 Refer to Intrapleural Catheter Post Procedure Education: Pulmonary Medicine Patient Tunnel Infection

Intrapleural Catheter (IPC) Management Page 5 of 8

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**EVALUATION**

- IPC to continuous wall suction while waiting for new chest tube placement
- Place image guided chest tube(s) and remove IPC

**MANAGEMENT AND FOLLOW-UP**

- Start empiric IV antibiotic with MRSA coverage and adjust antibiotic therapy based on cultures and sensitivity results
- For patients with ongoing signs of infection, consider alternatives to drain loculated PF (VATS, additional chest tubes, ultrasound guided thoracentesis, alteplase plus dornase alfa)

**PF reaccumulation seen on diagnostic images?**

**Yes**

- For patients with ongoing signs of infection, consider alternatives to drain loculated PF (VATS, additional chest tubes, ultrasound guided thoracentesis, alteplase plus dornase alfa)

**No**

- Continue antibiotic as long as clinically indicated or per the recommendation of the clinical service
- Follow-up within 1 month of discharge or sooner, as clinically indicated

**Pleural Space Infection**

- No Residual PF → Remove IPC

- Residual PF
  - IPC to continuous wall suction while waiting for new chest tube placement
  - Place image guided chest tube(s) and remove IPC

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IPC = intrapleural catheter  
PF = pleural fluid  
MRSA = methicillin-resistant *staphylococcus aureus*  
VATS = video-assisted thoracoscopic surgery
SUGGESTED READINGS


MD Anderson Institutional Policy #CLN1202 - Advance Care Planning Policy

Advance Care Planning (ACP) Conversation Workflow (ATT1925)


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