

## **APPENDIX P – IMAGING GUIDELINES FOR MESOTHELIOMA OF THE PLEURA**

### **DIAGNOSIS**

A provisional diagnosis of pleural mesothelioma is usually made on the basis of clinical history and chest radiograph findings. Where possible, CT scanning should be performed prior to pleural fluid aspiration or biopsy as the results may inform the procedure.

### **STAGING**

<b>Modality</b>	CT
<b>Body Area</b>	Thorax (including supraclavicular region) Abdomen (to include lower poles of kidneys)
<b>Oral contrast medium</b>	Optional
<b>IV contrast medium</b>	Yes – thorax during arterial phase Liver in portal venous phase

### **Notes**

The field of view chosen for general image reconstruction should maximise the size of the lung parenchyma whilst including most soft tissues of the thorax.

## REPORTING OF STAGING CT

- The **TNM staging** is the most commonly used staging system in the Greater Manchester and Cheshire area. This system considers variables of tumour in mass, lymph node involvement, and metastasis.
- The oldest staging system is the **Butchart System** based mainly on the extent of primary tumour mass and divides mesothelioma stages.
- The **Brigham System** is the latest and stages mesothelioma according to resectability (the ability to surgically remove node involvement).

### **TNM System** – variables of T (tumour), N (lymph nodes), M (metastasis)

- **Stage I:** Mesothelioma involves right or left pleura and may also have spread to the lung, pericardium, or diaphragm on the same side. Lymph nodes are not involved.
- **Stage II:** Mesothelioma has spread from the pleura on one side to nearby lymph nodes next to the lung on the same side. It may also have spread into the lung, pericardium, or diaphragm on the same side.
- **Stage III:** Mesothelioma is now in the chest wall, muscle, ribs, heart, oesophagus, or other organs in the chest on the same side with or without spread to lymph nodes on the same side as the primary tumour.
- **Stage IV:** Mesothelioma has spread into the lymph nodes in the chest on the side opposite the primary tumour, or extends to the pleura or lung on the opposite side, or directly extends into organs in the abdominal cavity or neck. Any distant metastases is included in this stage.

### **Butchart System** – extent of primary tumour mass

- **Stage I:** Mesothelioma is present in the right or left pleura and may also involve the diaphragm on the same side.
- **Stage II:** Mesothelioma invades the chest wall or involves the oesophagus, heart, or pleura on both sides. Lymph nodes in the chest may also be involved.
- **Stage III:** Mesothelioma has penetrated through the diaphragm into the lining of the abdominal cavity or peritoneum. Lymph nodes beyond those in the chest may also be involved.
- **Stage IV:** There is evidence of metastasis or spread through the bloodstream to other organs.

### **Brigham System** - (variables of tumour resectability and nodal status)

- **Stage I:** Resectable mesothelioma and no lymph node involvement
- **Stage II:** Resectable mesothelioma but with lymph node involvement
- **Stage III:** Unresectable mesothelioma extending into chest wall, heart, or through diaphragm, peritoneum; with or without extra thoracic lymph node involvement
- **Stage IV:** Distant metastatic disease

### **Other significant findings**

Including emphysema, pulmonary fibrosis, cardiovascular disease etc.

**State** level of certainty of mesothelioma diagnosis – may need to add proviso about histological confirmation being required.  
Final TNM stage  
Whether appropriate to perform percutaneous biopsy

### **OTHER INVESTIGATIONS**

PET is not indicated preoperatively in mesothelioma although worldwide literature on the use of PET in mesothelioma management is currently under review.

MR scanning is not recommended for the routine assessment of mesothelioma.

### **FOLLOW UP**

Routine follow up after surgery is of unproven benefit.

Repeat CT may be required for monitoring of disease response to chemotherapy.

### **IMAGING OF RECURRENCE**

CT is generally indicated when recurrence is suspected from symptoms, signs or other radiological investigations. This may include assessment of suitability for further treatment.