PET Scans for Lymphoma – Re-Review

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PET Scans
HTCC Determination November 18, 2011

**HTCC Reimbursement Determination**

- **Limitations of Coverage**
  - Positron Emission Tomography (PET) scans for Lymphoma is a covered benefit when the following conditions are met:
    - One scan for initial treatment planning;
    - Additional scans for restaging with clinical suspicion of disease progression or treatment failure subject to agency approval;
    - No coverage for routine surveillance

- **Non-Covered Indicators**
  - N/A
PET Scans for Lymphoma Re-review

• This topic was last reviewed in 2011
• The decision for re-review was based on more recent literature evaluating the effectiveness of PET +/- CT across stages of treatment:
  – Initial staging
  – Interim treatment
  – Prognosis during and at the end of treatment
  – End of treatment status
  – End of treatment confirmed relapse
  – Surveillance: evaluation of asymptomatic patients in remission

Key Questions

In patients with histologically proven lymphoma undergoing PET/CT at any time after initial diagnosis:

1. What is the evidence of clinical effectiveness of $^{18}$FDG PET/CT results?
2. What is the evidence of the safety of $^{18}$FDG PET/CT imaging?
3. What is the evidence that $^{18}$FDG PET/CT imaging has differential efficacy or safety issues in subpopulations?
4. What is the evidence of cost-effectiveness of $^{18}$FDG PET/CT imaging?

Lymphoma Types

**Classic Hodgkin Lymphoma**

<table>
<thead>
<tr>
<th>Type</th>
<th>Histologic Features</th>
<th>Frequency</th>
<th>Prognosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nodular scleroses</td>
<td>Bacteria, inclusion</td>
<td>Most frequent type (60%)</td>
<td>Good, low stage I-II</td>
</tr>
<tr>
<td>Mixed cellularity</td>
<td>Compound of many different cells</td>
<td>Most frequent in older persons; second most frequent among NHLs</td>
<td>Poor, most are stage III-IV</td>
</tr>
<tr>
<td>Lymphocyte rich</td>
<td>Lymphocytes growing in Reed-Sternberg cells</td>
<td>Low-grade NHL</td>
<td>Good, low stage I-II</td>
</tr>
<tr>
<td>Lymphocyte depletion</td>
<td>None or rare Reed-Sternberg cells</td>
<td>High-grade NHL</td>
<td>Poor, most are stage III-IV</td>
</tr>
</tbody>
</table>

**Non-Hodgkin Lymphoma, Subtypes**


Abdulkarim Aldosari

Agency Medical Director Concerns

SAFETY = Medium
EFFICACY = High
COST = Medium

Diagnosis Codes - Lymphoma

<table>
<thead>
<tr>
<th>ICD-9/10</th>
<th>Diagnosis Code Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C81 - C88.9</td>
<td></td>
</tr>
<tr>
<td>C81</td>
<td>Hodgkin lymphoma</td>
</tr>
<tr>
<td>C82</td>
<td>Follicular lymphoma</td>
</tr>
<tr>
<td>C83</td>
<td>Non-follicular lymphoma</td>
</tr>
<tr>
<td>C84</td>
<td>Mature T/NK-cell lymphomas</td>
</tr>
<tr>
<td>C85</td>
<td>Other specified and unspecified types of non-Hodgkin lymphoma</td>
</tr>
<tr>
<td>C86</td>
<td>Other specified types of T/NK-cell lymphoma</td>
</tr>
<tr>
<td>C88</td>
<td>Malignant immunoproliferative diseases and certain other B-cell lymphomas</td>
</tr>
<tr>
<td>200.0-202.98</td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>Lymphosarcoma and reticulosarcoma and other specified malignant tumors of lymphatic tissue</td>
</tr>
<tr>
<td>201</td>
<td>Hodgkin's disease</td>
</tr>
<tr>
<td>202</td>
<td>Other malignant neoplasm of lymphoid and histiocytic tissue</td>
</tr>
</tbody>
</table>
### Procedure Codes

Analysis failed to identify claims w/CPT: 78812 or 78813

Procedure codes paired w/modifier PI or PS

<table>
<thead>
<tr>
<th>TYPE</th>
<th>CPT</th>
<th>Procedure Code Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PET/CT</td>
<td>78814</td>
<td>PET/CT with concurrently acquired computed tomography (CT) for attenuation correction and anatomical localization imaging; limited area (e.g., chest, head/neck)</td>
</tr>
<tr>
<td>PET/CT</td>
<td>78815</td>
<td>PET/CT with concurrently acquired computed tomography (CT) for attenuation correction and anatomical localization imaging; skull base to mid‐thigh</td>
</tr>
<tr>
<td>PET/CT</td>
<td>78816</td>
<td>PET/CT with concurrently acquired computed tomography (CT) for attenuation correction and anatomical localization imaging; whole body</td>
</tr>
<tr>
<td>PET</td>
<td>A9597</td>
<td>Positron emission tomography radiopharmaceutical, diagnostic, for tumor identification, not otherwise classified</td>
</tr>
</tbody>
</table>

### Modifier Code Description

<table>
<thead>
<tr>
<th>Modifier</th>
<th>Modifier Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI</td>
<td>PI</td>
<td>PET or Pet/CT to inform the initial treatment strategy of tumors that are biopsy proven or strongly suspected of being cancerous based on other diagnostic testing.</td>
</tr>
<tr>
<td>PS</td>
<td>PS</td>
<td>PET or Pet/CT to inform the subsequent treatment strategy of cancerous tumors when the beneficiary’s treating physician determines that the PET study is needed to inform subsequent antitumor strategy.</td>
</tr>
</tbody>
</table>

### Aggregate Utilization 2015 – 2017

PET Scans for Lymphoma

Initial Treatment Planning and Subsequent Treatment Strategy Scans

<table>
<thead>
<tr>
<th>Year</th>
<th>Unique Patients</th>
<th>SCANS*</th>
<th>Total Paid Amount – Technical and Professional</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>46</td>
<td>49</td>
<td>$39,237</td>
</tr>
<tr>
<td>2016</td>
<td>227</td>
<td>273</td>
<td>$232,448</td>
</tr>
<tr>
<td>2017</td>
<td>224</td>
<td>255</td>
<td>$205,509</td>
</tr>
</tbody>
</table>

* Range of scans/patients: 1 – 6.

Some participating agencies incurred less than the minimum allowable utilization required for public reporting, therefore all utilization is displayed in aggregate.
Current State Agency Policy

- PEBB (Regence) – Covered
- Medicaid FFS/Managed Care – Covered
- Labor and Industries – Covered

Other Payers

**Covered:**
- **CMS NCD:** allows initial staging, 3 during treatment, none for surveillance
- **Regence:** use AIM Specialty Health criteria which allows 1-5 by lymphoma type
- **Aetna:** coverage diagnosis*, staging, restaging
- **Cigna:** covers 2-3, more for Hodgkin lymphoma, not surveillance
Findings: Early Hodgkin Lymphoma

Accuracy:
- Initial staging outperforms CT
- Interim: no new studies since 2011
- End of treatment: many false positives
- Prognostic accuracy during, (interim) treatment: NPV 93%
- Prognostic accuracy after 1st treatment: neither sensitive nor specific
- Inter-rater reliability in adults: moderate to substantial

Pediatric:
- Insufficient information

Findings: Early Hodgkin Lymphoma

Prognostic influence:
- Use in initial staging to inform prognosis: insufficient evidence but need a baseline for comparison
- Use to upstage or downstage: mixed results, actual changes in therapy were few. No patient oriented outcomes
- Use to inform treatment escalation,(PET-adapted) when PET+
  - Improved 5 year survival, progression free and overall
  - NNH = 25 for grade 3 or 4 toxicity with escalation
- Use to inform treatment de-escalation, (PET-adapted) PET –
  - Little difference in survival when radiation therapy omitted in OS, suggested difference in PFS
  - Insufficient information about toxicity difference
  - Follow up not long enough to look at secondary malignancies
Findings: Advanced Hodgkin Lymphoma

**Advanced Hodgkin lymphoma, aHL:**
- Interim and end of treatment PET/CT to assess for treatment escalation PET+, NS difference in survival or toxicity
- Interim and end of treatment PET/CT to assess for treatment de-escalation PET-, omission of radiation therapy did not worsen survival time and toxicity less

**Relapsed, recurrent HL or NHL:**
- Insufficient evidence

Findings: Aggressive Non-Hodgkin Lymphoma

**Accuracy diffuse large B cell lymphoma, (DLBCL):**
- Diagnosis: mixed findings
- Staging: no new studies, low specificity from 2011
- Interim and end of treatment testing: wide ranging false positive rate
- Surveillance: low positive predictive value

**Prognostic value:**
- Interim: wide range of sensitivity and specificity
- End of treatment: PET+ associated with lower PFS, OS
Findings: Aggressive Non-Hodgkin Lymphoma

Prognostic influence

- Initial: PET/CT diffuse large B cell lymphoma, (DLBCL): 10% of patients were upstaged; studies observational
- Interim PET-adapted therapy for PET+: no difference in overall survival w/o radiation when used in early stage non-bulky DLBCL so may be helpful in avoiding radiation

Relapse surveillance:

- Improved detection when use directed by clinical symptoms

Key Questions 3 and 4

- No studies to inform difference of impacts on sub-groups
  - Insufficient information to direct use in children

- Cost effectiveness studies either of poor quality or evaluated limited use cases from which conclusions can not be made
Summary

• There are multiple lymphoma types
• Evidence supports the use of 18FDG-PET/CT for the accurate diagnosis and staging of some lymphomas
• Evidence supports 18FDG-PET/CT use at interim and end of treatment periods to help determine intensity of treatment and inform prognosis for certain types of lymphoma
• Evidence does not support 18FDG-PET/CT use for routine surveillance to assess recurrence in asymptomatic persons
• Implementing coverage to match evidence levels across all the lymphoma types would be extraordinarily burdensome to providers and the agencies

Agency Medical Director Recommendations
PET Scans for Lymphoma

Covered with conditions:
• Up to 4 scans per active occurrence of lymphoma. (This number is the same as allowed by the NDC.)
  – Scans should be done no sooner than 3 weeks after chemotherapy and 8-12 weeks after radiation or combined chemo and radiation therapy.

Relapse*: Covered when relapse is suspected in the presence of clinical symptoms

Surveillance: Not covered

* Relapse is not covered in the NDC
Questions?

More Information: