Bone Scan for prostate cancer patients

Phenotype Algorithm Pseudo Code

**1. Overview**

Described in this document are the algorithms for extracting radionuclide bone scan (hereafter bone scan) information from electronic health records (EHR) of prostate cancer patients. Bone scan utilization is a quality metric and is considered by the Center of Medicare and Medicaid Services for potential to payment penalties. In accordance with guidelines, bone scans are identified after diagnosis and before treatment.

**2. Algorithm Descriptions**

This algorithm identifies documentation of a bone scan from the Electronic Medical Records (EMR) in structured and unstructured form. The algorithm requires the following types of information:

* Procedure codes (CPT/ICD-9)
* Diagnosis and Procedure dates
* Radiology text reports
* Radiology dates
* Encounter dates
* Clinical notes

*2.1 Case and Control Selection Algorithm Logic*

The cohort is defined with the following:

1. EHR of all male patients of 35 years of age or more, AND
2. For which there is an ICD-9-CM / ICD-10-CM diagnosis of prostate cancer, AND
3. For which there are at least two encounters before first treatment, AND
4. For which there is at least one clinical notes before first treatment, AND
5. For which there is at least one surgical procedure before the first treatment as identified by CPT codes, radiology reports or clinical notes

A control is defined with the following:

1. A patient where there is no bone scan documentation before the first treatment as identified by CPT codes, radiology reports or clinical notes
2. Procedure codes for treatment include:
3. Prostatectomy

* CPT: 55801-55845, 55866
* ICD-9-CM: 60.0-60.6
* ICD-10-PCS: 60.61-60.69

1. Radiation therapy

* CPT: 77261-77499, 77750-77799
* ICD-10-PCS: DV00-DV006, DV10-DV10BYZ, DV20-DV20JZ, DVY0-DVY0KZZ

1. Chemotherapy

* CPT: 96400-96425
* ICD-9-CM: 99.25
* ICD-10-PCS: 3E03305, 3E04305, XW03351, XW04351

1. Hormonal therapy

* CPT: 4164F

A case is defined with the following:

1. Provider text notes on whether performing a bone scan
2. CPT codes for bone scan:
   1. 78300
   2. 78305
   3. 78306
   4. 78315
   5. 8320
3. Description for radiology reports for bone scan should include:
   1. NUC BONE SCAN
   2. NM BONE WHOLE BODY
   3. NM BONE SCAN

**3. Flow Diagram**

