HEALTH PLANS
UNIVERSITY OF UTAH

Medical Policy

Single Photon Emission Computed Tomography with Computed Tomography (SPECT/CT)

Policy MP-034

Origination Date: 05/28/2025

Reviewed/Revised Date: 06/25/2025

Next Review Date: 06/25/2026

Current Effective Date: 08/25/2025

Disclaimer:

1. Policies are subject to change in accordance with State and Federal notice requirements.
2. Policies outline coverage determinations for U of U Health Plans Commercial, CHIP and Healthy U (Medicaid) plans. Refer to the "Policy" section for more information.
3. Services requiring prior-authorization may not be covered, if prior-authorization is not obtained.
4. This Medical Policy does not guarantee coverage or payment of the service. The service must be a benefit in the member's plan and the member must be eligible for coverage at the time of service. Additional payment guidelines may be applied that are not included in this policy.

Description:

Single Photon Emission Computed Tomography with Computed Tomography (SPECT/CT) fusion is an imaging technique that combines functional data from SPECT with anatomical details from CT into a single set of images. This fusion can be achieved either through software that overlays the two digital images or by using combined SPECT/CT scanners. This method is believed to enhance diagnostic accuracy, leading to better outcomes and treatment.

SPECT/CT greatly improves the localization of parathyroid adenomas if it has been equivocal on ultrasound, CT, MRI or SPECT studies. According to the American College of Radiology, SPECT/CT provides superior contrast resolution and precise anatomical localization, with high sensitivity (approximately 83%) and specificity (around 96%). Kesim et al found that SPECT/CT had the highest sensitivity (90.9%) for preoperative identification of parathyroid lesions, outperforming planar scintigraphy and pinhole imaging.

Policy Statement and Criteria

1. Commercial Plans/CHIP

U of U Health Plans considers SPECT-CT fusion medically necessary for parathyroid imaging, when all other testing has been inconclusive or non-diagnostic, in persons who meet the following criteria:

A. An enlarged parathyroid gland or parathyroid hyperplasia or suspected parathyroid adenoma or carcinoma; and

B. Laboratory evidence of hyperparathyroidism (parathyroid hormone greater than 55 pg/ml and serum calcium greater than 10.2 mg/dL).

C. All other testing is inconclusive or nondiagnostic (ultrasound, CT, MRI or SPECT)

U of U Health Plans considers SPECT-CT imaging experimental/investigational for all other indications, including SPECT-CT for abdomen, heart, and musculoskeletal.

2. **Medicaid Plans**

Coverage is determined by the State of Utah Medicaid program; if Utah State Medicaid has no published coverage position and InterQual criteria are not available, the U of U Health Plans Commercial criteria will apply. For the most up-to-date Medicaid policies and coverage, please visit their website at: https://medicaid.utah.gov/utah-medicaid-official-publications/ or the Utah Medicaid code Look-Up tool

CPT/HCPCS codes covered by Utah State Medicaid may still require further evaluation to determine medical necessity for coverage.

Clinical Rationale

In 2007, Lavely et al studied 98 participants with primary hyperparathyroidism and a single adenoma. They compared planar imaging, SPECT scanning, and SPECT/CT fusion imaging for accuracy in localizing parathyroid adenomas. For all the modalities, overall sensitivity for localization was 60%, specificity 99%, positive predictive value (PPV) 80%, negative predictive value (NPV) 97%, and area under the curve (AUC) 80%. Dual-phase SPECT/CT showed higher sensitivity, AUC, and PPV compared to dual-phase planar imaging and SPECT scanning. Early SPECT/CT combined with delayed imaging was the most effective method.

Prommegger et al (2009) studied 116 participants with single parathyroid gland disease and primary hyperparathyroidism. They found that SPECT/CT fusion imaging had higher sensitivity (80%) and specificity (99%) compared to CT (70% sensitivity, 94% specificity) and SPECT (59% sensitivity, 95% specificity). SPECT/CT was superior for preoperative localization of parathyroid glands.

The Parathyroid Task Group of the European Association of Nuclear Medicine (Hindié et al, 2009) discussed imaging protocols for primary hyperparathyroidism, emphasizing the importance of accurate imaging for successful targeted surgery. They noted that SPECT/CT is useful for anatomical details but its routine use before surgery is still investigational.

Wong et al (2015) performed a meta-analysis of 24 articles, finding that SPECT/CT had higher sensitivity (0.86) compared to SPECT (0.74) and planar imaging (0.70) for localizing parathyroid adenomas.

Treglia et al (2016) reviewed 23 articles and reported an 88% detection rate for SPECT/CT in preoperative planning for primary hyperparathyroidism.

Touska et al (2019) evaluated SPECT/CT-guided ultrasound in 146 patients with hyperparathyroidism. They found that this method had sensitivity of 83% and specificity of 96%, with higher sensitivity for single gland disease (87%) compared to multigland disease (70%). The addition of ultrasound significantly increased sensitivity.

Applicable Coding

CPT Codes

Possibly Covered CPT Codes

78072 Parathyroid planar imaging (including subtraction, when performed); with tomographic (SPECT), and concurrently acquired computed tomography (CT) for anatomical localization

78830 Radiopharmaceutical localization of tumor, inflammatory process or distribution of radiopharmaceutical agent(s) (includes vascular flow and blood pool imaging, when performed); tomographic (SPECT) with concurrently acquired computed tomography (CT) transmission scan for anatomical review, localization and determination/detection of pathology, single area (eg, head, neck, chest, pelvis) or acquisition, single day imaging

78832 Radiopharmaceutical localization of tumor, inflammatory process or distribution of radiopharmaceutical agent(s) (includes vascular flow and blood pool imaging, when performed); tomographic (SPECT) with concurrently acquired computed tomography (CT) transmission scan for anatomical review, localization and determination/detection of pathology, minimum 2 areas (eg, pelvis and knees, chest and abdomen) or separate acquisitions (eg, lung ventilation and perfusion), single day imaging, or single area or acquisition over 2 or more days

78835 Radiopharmaceutical quantification measurement(s) single area (List separately in addition to code for primary procedure)

HCPCS Codes

Possibly Covered HCPCS Codes

A4641 Radiopharmaceutical, diagnostic, not otherwise classified

A9500 Technetium Tc-99m sestamibi, diagnostic, per study dose

ICD-10 Codes

E21.0 Primary hyperparathyroidism

E21.1 Secondary hyperparathyroidism, not elsewhere classified

E21.2 Other hyperparathyroidism

E21.3 Hyperparathyroidism, unspecified

E21.4 Other specified disorders of parathyroid gland

E21.5 Disorder of parathyroid gland, unspecified

E89.2 Postprocedural hypoparathyroidism

C75.0 Malignant neoplasm of parathyroid gland

C79.89 Secondary malignant neoplasm of other specified sites

D35.1 Benign neoplasm of parathyroid gland

D44.2 Neoplasm of uncertain behavior of parathyroid gland

D49.7 Neoplasm of unspecified behavior of endocrine glands and other parts of nervous system

Q89.2 Congenital malformations of other endocrine glands

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