Supplementary Table 1. QUADAS-2								
Author, Year	ROB				AC			Notes
	Patient Selection	Index Test	Reference Standard	Flow and Timing	Patient Selection	Index Test	Reference Standard	
Al-Ibraheem 2011 (13)	Low	Low	Low	Low	Low	Low	Low	Careful analysis of physiological uptake patterns with quantitative assessment
Johnbeck 2017 (28)	Low	Low	Low	Low	Low	Low	Low	Well-designed prospective head-to-head comparison study with adeqaute follow-up
Lapa 2015 (30)	High	Low	Low	Low	Low	Low	Low	High risk of bias for patient selection due to small sample size
Putzer 2009 (41)	Low	Low	Low	Low	Low	Low	Low	Comprehensive evaluation using multiple imaging modalities
Ceccato 2020 (2020)	High	Low	Low	Low	High	Low	Low	Small sample size and ambigous recruitment strategy rendering potential high-risk and applicability concerns in patient selection domains
Gossili 2024 (24)	Low	Low	Low	Low	Low	Low	Low	A retrospective review of consecutive male patients presented with prostate incidentalomas on ^{68}Ga-DOTATOC PET/CT. Appropriate patient selection and follow-up described. Reference standard included urological evaluation and biopsy when indicated.
Umana 2022 (51)	Unclear	Low	Low	Low	Unclear	Low	Low	Uncertain bias risk and applicability concern in patient selection domain mainly stems from retrospective recruitment
Jacobsson 2012 (27)	Unclear	Low	Low	Low	Unclear	Low	Low	Uncertain bias risk and applicability concern in patient selection domain mainly stems from retrospective recruitment
Binse 2016 (17)	High	Low	Low	Low	High	Low	Low	Small sample size and retrospective recruitment strategy rendering potential high-risk and applicability concerns in patient selection domains
Gabriel 2007 (4)	Low	Low	Low	Low	Low	Low	Low	Large prospective study comparing 68Ga-DOTATOC PET/CT to somatostatin receptor scintigraphy and CT in neuroendocrine tumors. Appropriate patient selection, index tests, and reference standards described.
Gauthe 2018 (22)	Low	Low	Low	Low	Low	Low	Low	Well-designed retrospective study examining vertebral lesions on ^{68}Ga-DOTATOC PET/CT. Large sample size with clear criteria for patient selection, index test, and reference standard. Readers blinded to clinical information.
Paquet 2018 (38)	High	Low	Low	Low	High	Unclear	Low	1. Small sample size and retrospective recruitment strategy rendering potential high-risk and applicability concerns in patient selection domains 2. unclear blinding of readers to clinical information primarily affects the Risk of Bias assessment in the Index Test domain
Boughdad 2021 (19)	High	Low	Low	Low	High	Low	Unclear	1. Small sample size and retrospective recruitment strategy rendering potential high-risk and applicability concerns in patient selection domains 2. Index test well-described, but reference standard unclear for some patients.
Scharting er 2013 (45)	Low	Low	Low	Low	Unclear	Low	Low	Prospective clinical trial evaluating ^{68}Ga-DOTATOC PET/CT in HNSCC patients. Clear description of patient selection, imaging protocols, and reference standards. Small sample size (n=15) may limit generalizability.
Luboldt 2010 (36)	Low	Low	Low	Low	Low	Low	Low	Well-designed diagnsotic test accuracy study examining ^{68}Ga-DOTATOC PET/CT in prostate cancer patients. Clear patient selection criteria and index test protocols described. Reference standard included bone scintigraphy.

^{68}Ga: Gallium-68, PET/CT: Positron emission tomography/computed tomography

Supplementary Table 2. Adapted CARE Criteria

Primary Author, Year	CARE Items														
	Title	Keywords	Abstract	Introduction	Patient Information	Clinical Findings	Timeline	Diagnostic Assessment	Therapeutic Intervention	Follow-up and Outcome	Discussion	Patient Perspective	Informed Consent	Numerical Score	Quality Score
Al-Ibraheem 2022 (16)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	12	High
Al-Ibraheem 2016 (14)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	11	High
Bashir 2020 (8)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	11	High
Höög 2018 (26)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	11	High
Khalaf 2020 (29)	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	-	-	10	High
Richard 2023 (42)	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	-	-	10	High
Werner 2016 (53)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	11	High
Bollano 2022 (18)	✓	✓	✓	-	✓	✓	✓	✓	-	✓	✓	-	✓	10	High
Trevisi 2022 (50)	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	-	✓	11	High
Vandekerckhove 2021 (52)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	11	High
Lococo 2017 (33)	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	-	-	10	High
Lococo 2021 (34)	✓	✓	✓	✓	✓	✓	-	✓	✓	-	✓	-	-	9	Intermediate
Pinot 2021 (40)	✓	✓	✓	✓	✓	✓	-	✓	-	-	✓	-	-	8	Intermediate
Treglia 2014 (49)	✓	-	✓	✓	✓	✓	-	✓	-	-	✓	-	-	7	Intermediate
Ryoo 2020 (43)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	11	High
Gilardi 2017 (23)	✓	-	-	✓	✓	✓	-	✓	-	-	✓	-	-	6	Intermediate
Peter 2014 (39)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	11	High
Lorusso 2021 (35)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	11	High
Fabritius 2021 (21)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	11	High
Schmidt 2019 (46)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	12	High
Takesh 2011 (48)	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	-	-	10	High
Guglielmo 2022 (25)	✓	✓	✓	-	✓	✓	✓	✓	-	-	✓	-	-	8	Intermediate
Sharma 2013 (47)	✓	✓	✓	✓	-	✓	-	✓	✓	✓	✓	-	-	9	Intermediate
Mahajan 2019 (37)	✓	✓	✓	✓	✓	✓	-	✓	-	✓	✓	-	-	9	Intermediate
Saeed 2022 (44)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	11	High
Laurens 2018 (31)	✓	✓	✓	✓	✓	✓	-	✓	-	✓	✓	-	-	9	Intermediate
Liberini 2019 (32)	✓	✓	✓	✓	✓	✓	-	✓	-	✓	✓	-	-	9	Intermediate

Supplementary Table 3. Resoluts for Etiology-based analysis			
Non-oncologic (n=110; 50.2%)			
Etiology	**Finding**	**Number**	**Overall Percentage**
Not specified (n=77; 70%)	**Pancreatic uncinate process**	**52**	**23.70%**
	Prostatic uptake	**25**	**11.40%**
Myocardial insult (n=17; 15.5%)	**Subacute myocardial infarction**	**6**	**2.60%**
	Immunotherapy-induced myocarditis	**5**	**2.20%**
	Acute myocarditis	**3**	**1.30%**
	Cardiac Sarcoidosis	**2**	**0.90%**
	Myocarditis post COVID-19 1 vaccination	**1**	**0.50%**
Inflammatory (n=8; 7.3%)	**Mesenteric lymphadenitis**	**2**	**0.90%**
	Chronic pancreatitis	**1**	**0.50%**
	Mediastinal Lymphadenitis	**1**	**0.50%**
	Acute pericarditis	**1**	**0.50%**
	Acute Gastritis	**1**	**0.50%**
	Post-surgical Chest wall inflammation	**1**	**0.50%**
	Periarticular vertebral inflammation	**1**	**0.50%**
Splenosis (n=6; 5.4%)	**Abdominal splenule**	**6**	**2.60%**
Degenerative (n=1; 0.9%)	**Vertebral osteophyte**	**1**	**0.50%**
Technical (n=1; 0.9%)	**Radiotracer embolus**	**1**	**0.50%**
Benign oncologic (n=60; 27.4%)			
Etiology	**Finding**	**Number**	**Overall Percentage**
Vascular tumors (n=38; 63.3%)	**Vertebral hemangioma**	**35**	**15.90%**
	Spinal hemangioblastoma	**1**	**0.50%**
	Intracranial hemangioblastoma	**1**	**0.50%**
	Capillary angioma	**1**	**0.50%**
Mesenchymal tumors (n=13; 21.7%)	**Solitary fibrous tumor**	**7**	**3.10%**
	Tumor-induced osteomalacia	**6**	**2.60%**
Neuromas (n=3; 5%)	**Vestibular schwannoma**	**3**	**1.30%**
Parotid adenomas (n=2; 3.3%)	**Pleomorphic adenoma**	**1**	**0.50%**
	Basal cell adenoma	**1**	**0.50%**
Bone Tumors (n=2; 3.3%)	**Tibial enchondroma**	**1**	**0.50%**
	Non-ossifying fibroma	**1**	**0.50%**
Pituitary tumor (n=1; 1.7%)	**Pituitary adenoma**	**1**	**0.50%**
Mesenteric fibromatosis (n=1; 1.7%)	**Desmoid tumor**	**1**	**0.50%**
Malignant oncologic (n=49; 22.4%)			
Etiology	**Finding**	**Number**	**Overall Percentage**
Head and neck cancers (n=31; 63.4%)	**Head and neck squamous cell carcinoma**	**31**	**14.10%**
Prostate malignancies (n=7; 14.3%)	**Primary advanced prostate cancer**	**7**	**3.20%**
Thyroid carcinoma (n=5; 10.2%)	**Poorly differentiated thyroid cancer**	**4**	**1.80%**
	Papillary thyroid cancer	**1**	**0.50%**
Renal cell carcinoma (n=3; 6.1%)	**Primary left renal cell carcinoma**	**1**	**0.50%**
	Metastatic renal cell carcinoma	**2**	**0.90%**
Breast cancer (n=1; 2%)	**Intracranial metastasis**	**1**	**0.50%**
Hematologic malignancies (n=1; 2%)	**CNS 2 lymphoma**	**1**	**0.50%**
Soft tissue neoplasms (n=1; 2%)	**Abdominal leiomyosarcoma**	**1**	**0.50%**

COVID-19: COVID-19: Coronavirus disease 2019, CNS: CNS: Central nervous system