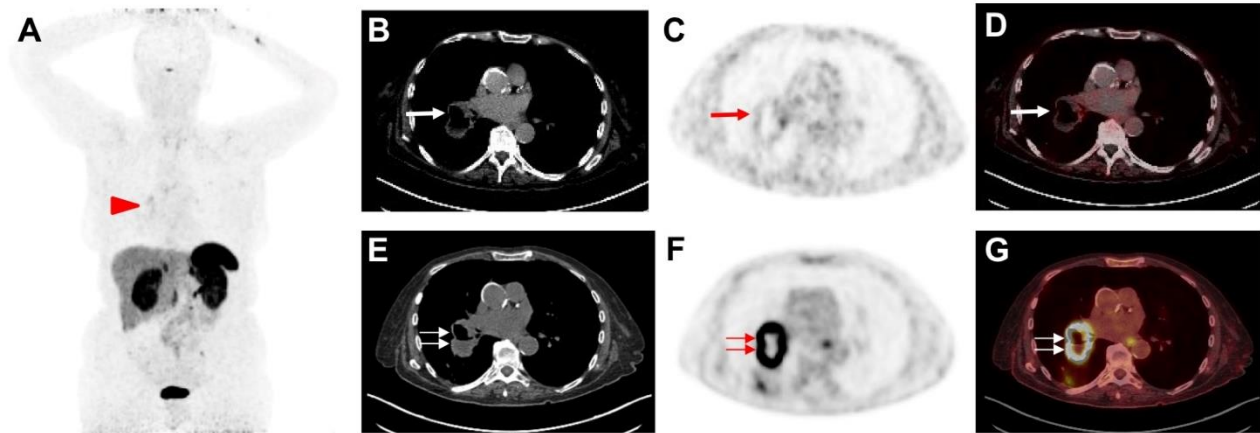**Supplemental Figure 1. Example for an Overall Assessment using somatostatin receptor (SSTR)-Reporting and Data System (SSTR-RADS) Version 1.0 (*22*), with an Overall SSTR-RADS Score of 5 (Supplemental Table 1).**

53 year old male with history of proven gastroenteropancreatic NET who underwent 68Ga-DOTATOC PET/CT for restaging. (A) Whole body maximum intensity projection image demonstrates suspicious radiotracer uptake (arrowheads). On (B) axial CT, (C) axial PET, and (D) axial PET/CT, intense radiotracer uptake in the left *musculus vastus lateralis* is seen (double thin arrows). This has been classified as SSTR-RADS-3C by an experienced reader and further workup was recommended. On (E) axial CT, (F) axial PET, and (G) axial PET/CT, intense radiotracer uptake is visualized in a retroperitoneal lymph node (arrow). As this site of radiotracer uptake shows corresponding findings on (E) axial CT, this finding was classified as SSTR-RADS-5 and therefore, the overall SSTR-RADS score was 5 (Supplemental Table 1).

Supplemental Figure 2. Example for an Overall Assessment using somatostatin receptor (SSTR)-Reporting and Data System (SSTR-RADS) Version 1.0 (*22*), with target lesion evaluated as SSTR-RADS-3D (Supplemental Table 1).

68 year old female with history of proven lung neuroendocrine tumor who underwent 68Ga-DOTATOC PET/CT for restaging (A-D). (A) Whole body maximum intensity projection image demonstrates only moderate radiotracer uptake (arrowhead). On (B) axial CT, (C) axial PET, and (D) axial PET/CT, only modest radiotracer uptake is seen on the medial wall portion of the primary in the lung (red arrow). This has been classified as SSTR-RADS-3D by an experienced reader and further workup was recommended (Supplemental Table 1). Panels (E-G) display the succeeding 18F-FDG scan two weeks later. On (E) axial CT, (F) axial PET, and (G) axial PET/CT, intense radiotracer uptake is visualized in the lesion (double thin red arrows), which had shown almost no uptake on 68Ga-DOTATOC PET (flip-flop phenomenon).

MI-RADS classification		PSMA- and SSTR-RADS (*19,22*)	Certainty of Malignancy	Workup	Uptake Level[#]	PRRT/ RLT?
1	1A	✓ Benign lesion, characterized by biopsy or anatomic imaging *without* abnormal uptake	Definitively benign	n/a	1	N
	1B	✓ Benign lesion, characterized by biopsy or anatomic imaging *with a*bnormal uptake		n/a	2-3	N
2		✓ Focal (low-level) uptake in a *soft tissue* site or *bone* lesion *atypical* for metastatic PCa or NEN	Likely benign	n/a	1	N
3	3A	✓ Equivocal uptake in *soft tissue lesion typical* of PCa or NEN	Equivocal	B, F/U	1-2	N
	3B	✓ Equivocal uptake in *bone lesion not atypical* of PCa or NEN		B, F/U	1-2	N
	3C	✓ Intense uptake in site *highly atypical* of all but advanced stages of PCa or NEN (i.e., high likelihood of nonprostatic/non-NET malignancy or other benign tumor)		B	3	N
	3D	✓ Lesion *suggestive of malignancy* on anatomic imaging but *lacking uptake.* For SSTR-RADS, an 18F-FDG PET/CT is recommended to rule out potential dedifferentiation of a single lesion.		B, F/U	not available	N[§]
4		✓ Intense uptake in site typical of PCa or NEN but *lacking* definitive findings on conventional imaging	Highly likely for PCa/NEN	n/a	3	Y
5		✓ Intense uptake in site typical of PCa or NEN and *with* definitive findings on conventional imaging	Definitively PCa/NEN	n/a	3	Y

Supplemental Table 1. Head-to-head comparison of both reporting and data systems (RADS) in molecular imaging (MI-RADS), which are Prostate-membrane specific antigen (PSMA)-RADS for evaluation of prostate cancer (PCa) and Somatostatin receptor (SSTR)-RADS for neuroendocrine neoplasias (NEN). PRRT = peptide receptor radionuclide therapy. RLT = radioligand therapy. N = No

(endoradiotherapy not recommended). NEN = neuroendocrine neoplasias. B = Biopsy, F/U = follow-up imaging (3-6 months, e.g. depending on Ki67 in NEN). Y = Yes (endoradiotherapy recommended). # = applies only to SSTR-RADS. § = combined treatment may be applicable (e.g. in a G2 NEN patient with entirely all lesions demonstrating SSTR expression, but a single dedifferentiated lesion, a combined treatment of PRRT together with a locoregional procedure can be considered). Modified from *Werner et al., (23).*