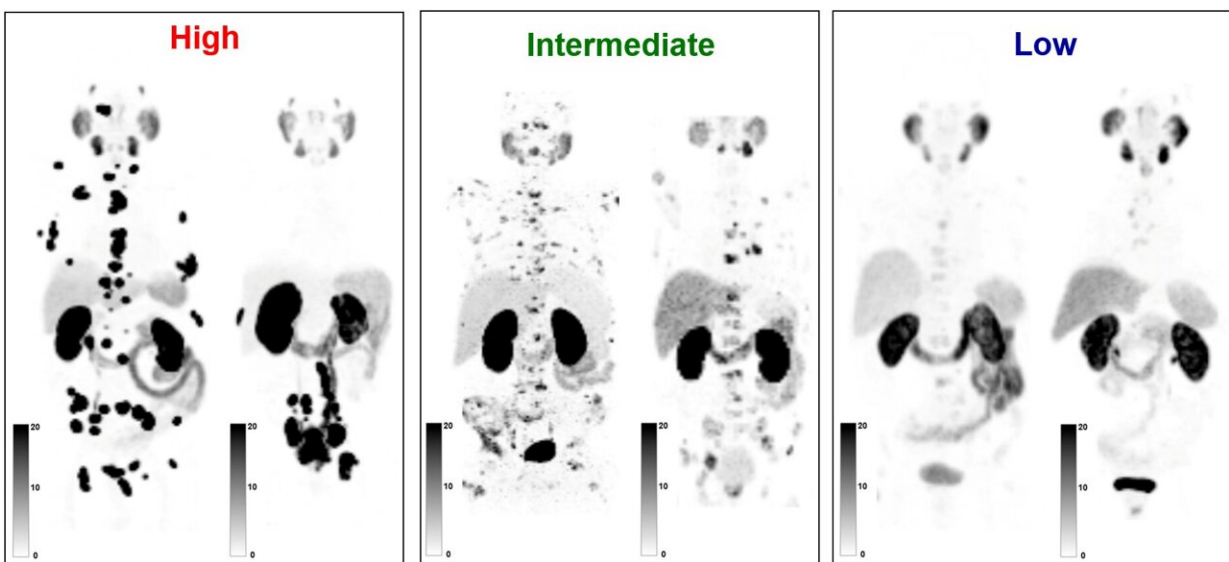


# Newly developed PSG score improves patient selection for PSMA radiopharmaceutical therapy

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Representative PET images of 6 patients classified as having high, intermediate, and low visual PSG scores. Credit: Society of Nuclear Medicine and Molecular Imaging

A newly established PSMA PET scoring system can successfully predict whether metastatic castration-resistant prostate cancer (mCRPC) patients will respond to treatment with  $^{177}\text{Lu}$ -PSMA therapy. International, multicenter testing demonstrated the effectiveness of the tumor-to-salivary gland ratio (PSG score), which can easily be applied

clinically with substantial reproducibility. This research was published online by the *Journal of Nuclear Medicine*.

The recently FDA-approved radiopharmaceutical therapy  $^{177}\text{Lu}$ -PSMA has been shown to reduce the risk of death by 38 percent and the risk of progression by 60 percent in mCRPC patients. "Patients do not respond uniformly to this treatment, however," said Masatoshi Hotta, MD, Ph.D., an associate project scientist at the Ahmanson Translational Theranostics Division at University of California in Los Angeles. "Identification of patients who will likely benefit from PSMA-targeted radiopharmaceutical therapy remains an unmet clinical need."

"When imaging mCRPC patients with  $^{68}\text{Ga}$ -PSMA-11 PET, the uptake of the radiopharmaceutical in the salivary glands is two to three times higher than that of the liver, which is typically used as a reference organ," said Andrei Gafita, MD, a postdoctoral scholar at the Ahmanson Translational Theranostics Division. "In this study, we hypothesized that using the salivary glands as a reference organ instead of the liver would enable better patient stratification."

$^{68}\text{Ga}$ -PSMA-11 PET scans of 237 men with mCRPC were included in the retrospective study. The ratio of whole-body to [salivary gland](#) tumor burden was calculated, creating a quantitative PSG (qPSG) score that can be categorized as high, intermediate or low. Next, 10 nuclear medicine physicians interpreted the scans to assign a visual PSG score (vPSG), also categorized as high, intermediate or low. The scores were then measured against clinical outcomes, including PSA progression-free survival and overall survival.

A decline in PSA of more than 50 percent was observed with a high PSG score, and both qPSG and vPSG were independent predictors of this decline. Patients in groups with a high qPSG or vPSG score also had the longest PSA progression-free survival and the longest overall survival.

Agreement between qPSG and vPSG scores was moderate, with complete agreement in 68 percent of the patients.

"The PSG score can enable better stratification of patients based on the response to  $^{177}\text{Lu}$ -PSMA therapy and will assist individual clinical decision-making. These findings will be valuable in advancing precision medicine in the theranostics field," noted Jeremie Calais, MD, MSc, associate professor and director of the Clinical Research Program of the Ahmanson Translational Theranostics Division.

**More information:** Masatoshi Hotta et al, PSMA PET Tumor-to-Salivary Gland Ratio to Predict Response to [ $^{177}\text{Lu}$ ]PSMA Radioligand Therapy: An International Multicenter Retrospective Study, *Journal of Nuclear Medicine* (2023). [DOI: 10.2967/jnumed.122.265242](https://doi.org/10.2967/jnumed.122.265242)

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