Clinical Area:	**FDG PET for head and neck cancer: Restaging**
Keywords:	**FDG PET, recurrence, head and neck cancer**
Reference:	**Lapela M, Eigtved A, Jyrkkio S, Grenman R, Kurki T, Lindholm P. et al. Experience in qualitative and quantitative FDG PET in follow-up of patients with suspected recurrence from head and neck cancer. Eur J Cancer 2000; 36: 858-67.**

Study Type:	Comparison of diagnostic tests
Study Aim:	To evaluate FDG PET in the detection of recurrent head and neck cancer, and compare qualitative and quantitative interpretations of PET images.

Outcomes
- *Primary:* Sensitivity, specificity
- *Secondary:* Tracer uptake

Design
- *Number of subjects:* N=56
- *Description of study population:* 71% male; mean age=61 years, range 34-79; site of primary tumor: 39% oral cavity, 16% pharynx, 29% larynx, 11% salivary glands, 5% unknown primary: 86% squamous cell carcinoma.
- *Inclusion and exclusion criteria:* Inclusion: clinically suspected but not yet proven recurrence of head and neck carcinoma during follow-up after surgical and/or radiation therapy. Exclusion: Not discussed.
- *Procedure:* Patients received physical examinations, FDG PET scans, and CT scans (46 patients had CT scans). CT scans were done after the PET study (a median of 12 days later, range 0-75 days).

Validity
- *Independent blind comparison with a gold standard or follow-up of those not receiving the gold standard test?* Blinded interpretation of PET studies. Gold standard was histological or cytological evidence, a negative biopsy or more than 5 months with no evidence of emerging disease.
- *Was "normal" defined?* Different interpretations of "normal" PET study for qualitative and quantitative analysis.
- *Appropriate spectrum of disease?* Yes.
- *Consecutive patients?* Not specified.
- *Methods described in enough detail to enable you to replicate the test?* Yes.
- *Reproducible results?* Yes.

Conclusions regarding validity of methods:
Strengths include prospective study, moderate sample size, at least some comparison with another diagnostic test, CT, blinded analysis of PET scans. Weaknesses include inconsistent application and timing of CT scans and use of an inconsistent "gold standard". In addition, the authors did not specify whether patients were consecutive which could introduce selection bias.

Results
Comparison of FDG PET and CT for accuracy of detection of head and neck cancer[a]

Method	Grade 0 and 1 versus 2[b]		Grade 0 versus 1 and 2[b]	
	Sensitivity %	Specificity #	Sensitivity %	Specificity %
FDG PET	84	93	95	84
CT	59	100	91	78

[a]Where both PET and CT results were available, n=69 lesions, n=52 studies).
[b]Visual analysis (qualitative) of PET and CT scans: 2=clearly positive; 1=equivocal; 0=negative

The quantitative analysis of FDG PET was inferior to visual analysis.
Sensitivity=68%
Specificity=82%

Authors' Conclusions
"In the current study of 56 patients with suspected recurrence of head and neck cancer, FDG PET was found to be feasible for the detection of malignancy. Visual analysis of PET images indicated that FDG PET is better than CT in correct interpretation of findings. We did not find quantification of FDG uptake to add to the visual analysis in the differential diagnosis between post-treatment malignant and benign lesions."

Reviewer's Conclusions
In a comparison of FDG PET and CT in detecting head and neck cancer recurrence (categorized as negative or equivocal results vs. positive), PET had a higher sensitivity but a somewhat lower specificity. When results were categorized as positive or equivocal results vs. negative, the two tests performed similarly (PET had slightly higher sensitivity and specificity).