Clinical Area: **FDG PET for colorectal cancer: Recurrence/restaging**
Keywords: **FDG PET, colorectal, cancer, recurrent**
Reference: **Huebner RH, Park KC, Shephard JE, Schwimmer J, Czernin J, Phelps ME, Gambhir SS. A meta-analysis of the literature for whole-body FDG PET detection of recurrent colorectal cancer. J Nucl Med 2000; 41: 1177-1189.**

Study Type: Meta-analysis
Study Aim: To estimate the sensitivity and specificity of whole-body FDG PET for recurrent colorectal cancer.

Outcomes
- *Primary:* sensitivity, specificity
- *Secondary:* change in patient management

Design
- *Focused on a discrete clinical question:* Yes.
- *Explicit description of literature search:* Yes.
- *State methodological standards used to select studies for inclusion in meta-analysis:* Yes, stated criteria but related to content of articles rather than methodological quality.
- *Description of study populations:* Patient with colorectal cancer (CRC) being monitored for recurrence after their primary CRC surgical resection. No demographic information given.

Validity
- *Is the study type appropriate for the question(s) being asked?* Yes.
- *Data tested for homogeneity and analyzed appropriately?* Not tested for homogeneity, except change in management data.
- *How did the authors address possible publication bias?* Believed that finding unpublished articles that met their selection criteria was unlikely due to the small number of research teams reporting on FDG PET results with CRC patients.

Conclusions regarding validity of methods:
Authors did not restrict meta-analysis to studies with strong methodology or evaluate validity so validity of study results is unknown. The authors did not describe other information available to investigators when analyzing PET results; in some studies the findings from clinical exams and/or other diagnostic tests were available. This may overestimate the sensitivity and specificity of PET.

Results

Meta-analysis of sensitivity and specificity data (number of patients)

Type	n	TP	FP	TN	FN	Combined sensitivity (95% CI)	Combined specificity (95% CI)
Whole body[1]							
Pooled data	281	229	11	34	7	97.0 (94.9-99.2)	75.6 (63.0-88.1)
Weighted average						97.1	77.1
Hepatic Involvement[1]							
Pooled data	393	182	2	202	7	96.3 (93.6-99.0)	99.0 (97.7-100)
Weighted average						96.0	97.1
Local/pelvic[1]							
Pooled data	366	137	5	214	8	94.5 (90.8-98.2)	97.7 (95.7-99.7)
Weighted average						94.7	97.3

TP=true positive; FP=false positive; TN=true negative; FN=false negative

[1]Based on data from 5 studies (different group of studies for the three outcomes)

Percentage change in management decisions made by FDG PET that were ultimately correct (based on data from 7 studies)

	No. of patients	Change in management
Pooled management change (95% CI)	349	29% (25%-24%)

Authors' Conclusions

"Our review suggests that improvements can be made to more effectively report the results of these FDG PET studies. The overall values determined through the meta-analysis indicate the potential benefit of using FDG PET as a diagnostic or management tool."

Reviewer's Conclusions

This meta-analysis has some methodological weakness but may be the best available estimated of the sensitivity and specificity of FDG PET for detecting recurrent colorectal cancer. A major limitation of the data is that we do not know from this study whether individuals who interpreted the FDG PET scans had access to clinical and/or other diagnostic information. Weighted average is a more appropriate outcome; confidence intervals for this outcome are not given.