Study	Design	Analysis	Results	Validity Concerns/Conclusions
Tateishi-et al, 2010. **Study type:** Meta-analysis. **Objective:** To assess the diagnostic performance of ^{18}F-Fluoride PET or PET/CT compared to bone scintigraphy (BS) planar or BS planar and single photon emission CT (SPECT) in evaluating patients with bone metastases. **Primary outcome:** Sensitivity, specificity, and overall diagnostic accuracy per patient and per lesion, ROC curve and likelihood ratios. **Literature search date:** From 1996 to November 2009.	**Inclusion criteria:** Studies published in any language that compared the use of 18F-Fluoride PET or PET/CT to bone scintigraphy (BS) planar or BS planar and single photon emission CT (SPECT) in evaluating patients with bone metastases. **Exclusion criteria:** Studies with verification bias including patients with non-solid tumors e.g. hematologic malignancies; studies using ^{18}F-Fluoride PET or PET/CT or BS for evaluating status after therapy including recurrence; studies that included patients whose diagnosis lacked reference or who had concomitant disease. **Evaluation of study quality:** Not discussed. **Evaluation of publication Bias:** Yes. **N of studies meeting inclusion criteria:** 11 studies with 425 patients.	**Data extracted by 2 or more reviewers?** Yes. **Tested for homogeneity:** Yes. **Analysis method:** The authors combined sensitivities and specificities across studies to estimate the weighted mean values using the inverse of variance of sensitivity and specificity from each study as a weight. **Sensitivity analysis:** No.	• 2 of the 11 studies included in the meta-analysis used only ^{18}F-Fluoride PET or PET/CT without comparison with BS planar or BA and SPECT. • The primary cancer was prostate in 2 studies, lung in 2, breast, prostate or hepatocellular in one, and not reported in the rest. • 5 studies were prospective and 6 were retrospective. • Evaluation of study results was qualitative in all but one study. • Reference standards included CT, MRI, $^{and 18}$ F-FGD PET, biopsy and clinical follow-up. • Population sizes ranged from 7 to 103 patients. *Sensitivity specificity, accuracy and likelihood ratios on patient basis* TABLE BELOW	The studies included in the meta-analysis were heterogeneous and the authors combined the results of the prospective and retrospective studies irrespective of the site of primary lesion comparison group, or reference standard, which included MRI in only 7 of the 11 studies. Biopsy was performed in only 2 of these 7 studies. Interpretation of the test was made subjectively and according tot he authors, it was unclear if that was performed blindly. In addition, the authors did not perform a sensitivity analysis or a subgroup analysis based on primary lesion which may affect the accuracy of the test. The results of the analysis indicate that on the patient or lesion basis the ^{18}F-Fluoride PET with or without CT has similar specificity but higher sensitivity compared to BS with SPECT. The latter combination had the highest positive likelihood ratio and ^{18}F-Fluoride PET/CT the best negative likelihood ratio.

Sensitivity specificity, accuracy and likelihood ratios on patient basis

	BS planar	BS planar and SPECT	^{18}F-Fluoride PET	^{18}F-Fluoride PET/CT
N of studies	5	3	7	3
Sensitivity*	0.47 (0.40-0.54)	0.82 (0.71-0.92)	0.95 (0.91-0.99)	0.98 (0.94-1.00)
Specificity*	0.88 (0.83-0.94)	0.99 (0.98-1.00)	0.99 (0.97-1.00)	0.99 (0.91-1.00)
Accuracy*	0.64 (0.59-0.70)	0.95 (0.92-0.98)	0.97 (0.95-0.99)	0.96 (0.93-1.00)
LR+(95% CI)†	4.00 (2.33-9.40)	81.4 (26.15-NA)	73.0 (32.57-NA)	23.8 (9.87-NA)
LR- (95% CI)‡	0.60 (0.49-0.73)	0.19 (0.08-0.30)	0.05 (0.01-0.09)	0.02 (0.00-0.07)

*(95% CI)
† Positive likelihood ratio
‡ Negative likelihood ratio

Sensitivity specificity, accuracy and likelihood ratios on lesion basis

	BS planar	BS planar and SPECT	^{18}F-Fluoride PET	^{18}F-Fluoride PET/CT
N of studies	4	1	7	4
Sensitivity*	0.58 (0.53-0.63)	0.36 (0.20-052)	0.96 (0.94-0.98)	0.98 (0.96-0.99)
Specificity*	0.95 (092-0.98)	0.96 (0.92-1.00)	0.98 (0.97-1.00)	0.98 (0.97-0.99)
Accuracy*	0.71 (0.67-0.75)	0.78 (0.73-0.87)	0.97 (0.96-0.98)	0.96 (0.97-0.99)
LR+ (95% CI)	12.6 (6.92-39.5)	9.15 (2.51-NA)	56.4 (30.4-243.5)	44.5 (28.4-99.1)
LR- (95% CI)	0.44 (0.37-0.51)	0.67 (0.48-0.87)	0.04 (0.03-0.06)	0.02 (0.10-0.04)

*(95% CI)
† Positive likelihood ratio
‡ Negative likelihood ratio