

KEY QUESTION 3

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Is PET-CT sensitiever en/of specifieker voor de detectie van overige metastasen welke tot mogelijke wijziging in beleid leiden bij patiënten met potentieel lokaal te behandelen metastasen?

P	Patiënten met potentieel lokaal te behandelen metastasen
I	PET-CT
C	CT
O	diagnostische accuratesse voor de detectie van overige metastasen welke tot mogelijke wijziging in beleid leiden

2. SEARCH STRATEGY 3

Searches were run on November 6 2012 for systematic reviews (SRs) and observational studies. Pubmed Medline, OVID Embase and the Cochrane Database of Systematic Reviews (CDSR) were searched. Detailed search strings are given below.

3. SEARCH RESULTS 1A

SYSTEMATIC REVIEWS AND META-ANALYSES

The Medline search yielded 13 hits, while the Embase search yielded 36 hits. The search in the CDSR yielded no Cochrane reviews that were not already included in the Embase or Pubmed searches.

FULL-TEXT EVALUATION

After merging the 3 search files into 1 file and removal of the duplicates, 36 records were screened on title and abstract. Of these 18 were excluded, because of other P, I or research question.

Of the remaining 18 studies, the full-text will be retrieved. Table 1 provides an overview of the evaluation of these studies.

Table 1. Key question 3: overview of reviews

Reference	
1	Bipat S., van, L. M., Ijzermans J.N.M., Comans E.F.I., Planting A.S.Th., Bossuyt P.M.M., et al. (2007). Evidence-based guideline on management of colorectal liver metastases in the netherlands. <i>Netherlands Journal of Medicine</i> , 65(1), 5-14.
2	Brush J., Boyd K., Chappell F., Crawford F., Dozier M., Fenwick E., et al. (2011). The value of FDG positron emission tomography/computerised tomography (PET/CT) in pre-operative staging of colorectal cancer: A systematic review and economic evaluation. <i>Health Technology Assessment</i>, 15(35), i-142.
3	Carrera G., Garcia-Albeniz X., Ayuso J.R., Aparicio J., Castells A., Codony-Servat J., et al. (2011). Design and endpoints of clinical and translational trials in advanced colorectal cancer. A proposal from GROUP espanol multidisciplinar en cancer digestivo (GEMCAD). <i>Reviews on Recent Clinical Trials</i> , 6(2), 158-170.
4	Chan, K., Welch, S., Walker-Dilks, C., Raifu, A., & Ontario provincial Gastrointestinal Disease Site Group. (2012). Evidence-based guideline recommendations on the use of positron emission tomography imaging in colorectal cancer. <i>Clinical Oncology (Royal College of Radiologists (Great Britain))</i> , 24(4), 232-249.

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5	Facey F., Bradbury I., Laking G., & Payne E. (2007). Overview of the clinical effectiveness of positron emission tomography imaging in selected cancers. <i>Health Technology Assessment</i> , 11(44), iii-85.
6	Floriani I., Torri V., Rulli E., Garavaglia D., Compagnoni A., Salvolini L., et al. (2010). Performance of imaging modalities in diagnosis of liver metastases from colorectal cancer: A systematic review and meta-analysis. <i>Journal of Magnetic Resonance Imaging</i> , 31(1), 19-31.
7	Georgiou P., Tan E., Chua S., Purkayasth S., Brown G., & Tekkis P. (2009). Diagnostic precision of positron emission tomography compared to conventional diagnostic investigation in diagnosing recurrent colorectal cancer. <i>European Journal of Surgical Oncology</i> , 35(11), 1211.
8	Hellman R.S., Krasnow A.Z., & Sudakoff G.S. (2006). Positron emission tomography for staging and assessment of tumor response of hepatic malignancies. <i>Seminars in Interventional Radiology</i> , 23(1), 21-32.
9	Mahnken A.H., Bruners P., & Temur Y. (2009). PET and PET-CT after treatment. <i>Cardiovascular and Interventional Radiology</i> , 32, 215.
10	Mahnken A.H., & Isfort P. (2010). What is the role of PET and PET-CT after treatment? <i>Cardiovascular and Interventional Radiology</i> , 33, 168.
11	Nagy V.M. (2008). Updating the management of rectal cancer. <i>Journal of Gastrointestinal and Liver Diseases</i> , 17(1), 69-74.
12	Niekel M.C., Bipat S., & Stoker J. (2010). Diagnostic imaging of colorectal liver metastases with CT, MR imaging, FDG PET, and/or FDG PET/CT: A meta-analysis of prospective studies including patients who have not previously undergone treatment. <i>Radiology</i> , 257(3), 674-684.
13	Niekel M.C., Bipat S., & Stoker J. (2010). Imaging for colorectal liver metastases - A metaanalysis. <i>Annals of Oncology</i> , 21, i32.
14	Patel, S., McCall, M., Ohinmaa, A., Bigam, D., & Dryden, D. M. (2011). Positron emission tomography/computed tomographic scans compared to computed tomographic scans for detecting colorectal liver metastases: A systematic review. <i>Annals of Surgery</i> , 253(4), 666-671.
15	Pelosi, E., & Deandreis, D. (2007). The role of 18F-fluoro-deoxy-glucose positron emission tomography (FDG-PET) in the management of patients with colorectal cancer. <i>European Journal of Surgical Oncology : The Journal of the European Society of Surgical Oncology and the British Association of Surgical Oncology</i> , 33(1), 1-6.
16	Van, K. C., Buckens C.F.M., Van Den, B. M., Van, L. M., Van, H. R., & Verkooijen H.M. (2012). Preoperative imaging of colorectal liver metastases after neoadjuvant chemotherapy: A meta-analysis. <i>Annals of Surgical Oncology</i> , 19(9), 2805-2813.
17	Vriens D., De Geus-Oei L.F., Van Der, G. W., & Oyen W.J.G. (2009). Tailoring therapy in colorectal cancer by PET-CT. <i>Quarterly Journal of Nuclear Medicine and Molecular Imaging</i> , 53(2), 224-244.
18	Wald C., Scheirey C.D., Tran T.M., & Erbay N. (2006). An update on imaging of colorectal cancer. <i>Surgical Clinics of North America</i> , 86(4), 819-847.

OBSERVATIONAL STUDIES:

A search from 2006 onwards for observational was performed. Studies were selected if they were concerned with:

- Sufficient data to construct a 2 x 2 table or accuracy data reported
- Patient-based analysis
- No partial verification
- Ten or more patients included

FULL-TEXT EVALUATION

The Medline search yielded 213 hits, while the Embase search yielded 1065 hits. In total 1278 hits.

After merging the 2 search files into 1 file and removal of the duplicates, 1011 hits were screened on title and abstract. Of these, 863 were excluded. The most important reasons for exclusion were that studies were:

Other P

- patients in the follow-up
- metastases in lymphnodes
- metastases in other organs than lung or liver
- Other tumours
- search on animals

Other I

- Other, (not diagnostic) interventions with PET-CT, such as measurement of tumour response
- Other (diagnostic) interventions

Other C

- no control group
- Other PET method

Exclusion if:

- Other research question
- Other language than English

Of the remaining 148 studies the full text was retrieved.

Table 2. Key question 3: overview of observational studies.

Reference	
1	Adam, R., De Gramont, A., Figueras, J., Guthrie, A., Kokudo, N., Kunstlinger, F., et al. (2012). The oncosurgery approach to managing liver metastases from colorectal cancer: A multidisciplinary international consensus. <i>The Oncologist</i> , 17(10), 1225-1239.
2	Ainsworth A., Pless T., Petersen H., Svolgaard B., Hoeilund-Carlsen P.-F., & Nielsen H. (2010). Evaluation of PET/CT, eus and laparoscopic ultrasonography in the preoperative assessment of resectability in patients with liver tumors. <i>HPB</i> , 12, 85.
3	Akiyoshi T., Oya M., Fujimoto Y., Kuroyanagi H., Ueno M., Yamaguchi T., et al. (2009). Comparison of preoperative whole-body positron emission tomography with MDCT in patients with primary colorectal cancer. <i>Colorectal Disease</i> , 11(5), 464-469.
4	Amin, A., Reddy, A., Wilson, R., Jha, M., Miranda, S., & Amin, J. (2012). Unnecessary surgery can be avoided by judicious use of PET/CT scanning in colorectal cancer patients. <i>Journal of Gastrointestinal Cancer</i> ,
5	Amthauer H., Denecke T., Hildebrandt B., Ruhl R., Miersch A., Nicolaou A., et al. (2006). Evaluation of patients with liver metastases from colorectal cancer for locally ablative treatment with laser induced thermotherapy: Impact of PET with 18F-fluorodeoxyglucose on therapeutic decisions. <i>Nuklearmedizin</i> , 45(4), 177-184.
6	Au-Yeung, A. W., Luk, W. H., & Lo, A. X. (2012). Imaging features of colorectal liver metastasis in FDG PET-CT: A retrospective correlative analysis between CT attenuation and FDG uptake. <i>Nuclear Medicine Communications</i> , 33(4), 403-407.
7	Bajpai S., & Sahani D.V. (2009). Recent progress in imaging of colorectal cancer liver metastases. <i>Current Colorectal Cancer Reports</i> , 5(2), 99-107.
8	Bamba, Y., Itabashi, M., & Kameoka, S. (2011). Value of PET/CT imaging for diagnosing pulmonary metastasis of colorectal cancer. <i>Hepato-Gastroenterology</i> , 58(112), 1972-1974.
9	Bassi M.C., Turri L., Sacchetti G., Loi G., Cannillo B., La, M. P., et al. (2008). FDG-PET/CT imaging for staging and target volume delineation in preoperative conformal radiotherapy of rectal cancer. <i>International Journal of Radiation Oncology Biology Physics</i> , 70(5), 1423-1426.
10	Berger, A. K., von Gall, C., Abel, U., Delorme, S., Kloor, M., Ose, J., et al. (2012). A phase II study for metabolic in vivo response monitoring with sequential 18FDG-PET-CT during treatment with the EGFR-mono-clonal-antibody cetuximab in metastatic colorectal cancer: The heidelberg REMOTUX trial. <i>BMC Cancer</i> , 12, 108.
11	Berndorff D., Mueller A.M., Haegebarth A., Berndt M., Scholz A.S., Puehler F., et al. (2011). 18F-FLT,a potential biomarker for predicting the synergistic combination of PI3K inhibitor BAY 80-6946 * and MEK inhibitor BAY 86-9766. <i>Molecular Cancer Therapeutics</i> , 10(11)
12	Berri R.N., & Abdalla E.K. (2009). Curable metastatic colorectal cancer: Recommended paradigms. <i>Current Oncology Reports</i> , 11(3), 200-208.
13	Bhosale P., Szklaruk J., & Iyer R. (2010). Multimodality imaging of usual and unusual sites of metastasis which occur after definitive therapy for rectal cancer. <i>Clinical Imaging</i> , 34(2), 100-108.
14	Biasco G., Derenzini E., Grazi GL., Ercolani G., Ravaioli M., Pantaleo M.A., et al. (2006). Treatment of hepatic metastases from colorectal cancer: Many doubts, some certainties. <i>Cancer Treatment Reviews</i> , 32(3), 214-228.
15	Bipat S., van, L. M., Ijzermans J.N.M., Bossuyt P.M.M., Greve J.-W., & Stoker J. (2006). Imaging and treatment of patients with colorectal liver metastases in the netherlands: A survey. <i>Netherlands Journal of Medicine</i> , 64(5), 147-

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	151.
16	Bipat, S., Niekel, M. C., Comans, E. F., Nio, C. Y., Bemelman, W. A., Verhoef, C., et al. (2012). Imaging modalities for the staging of patients with colorectal cancer. <i>The Netherlands Journal of Medicine</i> , 70(1), 26-34.
17	Blodgett T.M., Meltzer C.C., & Townsend D.W. (2007). PET/CT: Form and function. <i>Radiology</i> , 242(2), 360-385.
18	Bonanni L., De'Liguori, C. N., Deshpande R., Sherlock D., Ammori B., Carlei F., et al. (2012). Colorectal liver metastases imaging study (climax). <i>HPB</i> , 14, 146.
19	Bonfill T., Dotor E., Darnell A., Casalots A., Bombardo J., Saigi E., et al. (2009). Synchronous isolated adrenal metastasis from rectum adenocarcinoma. <i>Clinical & Translational Oncology : Official Publication of the Federation of Spanish Oncology Societies and of the National Cancer Institute of Mexico</i> , 11(4), 257-258.
20	Borrego, D. I., Vazquez, A. R., Ortiz, G. M., Fernandez, F. M., Gomez, C. M., Fernandez, L. R., et al. (2011). Role of 18-FDG-PET-CT in the initial staging and the evaluation of response to neo-adjuvant chemo-radiotherapy in locally advanced colorectal cancer. <i>European Journal of Nuclear Medicine and Molecular Imaging</i> , 38, S116.
21	Boswell W., Wieshmann H., White D., & Smethurst A. (2011). PET CT in the pre-operative assessment of colorectal liver metastases. <i>Nuclear Medicine Communications</i> , 32(5), 436-437.
22	Bozkurt, M., Okutur, K., Aydin, K., Namal, E., Ozturk, A., Balci, C., et al. (2012). Locally metastatic mucinous rectal adenocarcinoma: Imaging diagnosis with DW-MRI in comparison with PET-CT. <i>Oncology Letters</i> , 3(6), 1311-1313.
23	Braendengen M., Hansson K., Radu C., Siegbahn A., Jacobsson H., & Glimelius B. (2011). Delineation of gross tumor volume (GTV) for radiation treatment planning of locally advanced rectal cancer using information from MRI or FDG-PET/CT: A prospective study. <i>International Journal of Radiation Oncology Biology Physics</i> , 81(4), e439-e445.
24	Brandi G., Nannini M., Pantaleo M.A., Fanello S., Farsad M., Fanti S., et al. (2008). Molecular imaging suggests efficacy of bevacizumab beyond the second line in advanced colorectal cancer patients. <i>Chemotherapy</i> , 54(6), 421-424.
25	Briggs, R. H., Chowdhury, F. U., Lodge, J. P., & Scarsbrook, A. F. (2011). Clinical impact of FDG PET-CT in patients with potentially operable metastatic colorectal cancer. <i>Clinical Radiology</i>, 66(12), 1167-1174.
26	Brown G. (2007). Imaging of liver metastases (CT scan, MRI, PET scan). <i>European Journal of Cancer, Supplement</i> , 5(5), 297-300.
27	Buchbender, C., Heusner, T. A., Lauenstein, T. C., Bockisch, A., & Antoch, G. (2012). Oncologic PET/MRI, part 1: Tumors of the brain, head and neck, chest, abdomen, and pelvis. <i>Journal of Nuclear Medicine : Official Publication, Society of Nuclear Medicine</i> , 53(6), 928-938.
28	Buvat, I., Necib, H., Garcia, C., Wagner, A., Vanderlinden, B., Emonts, P., et al. (2012). Lesion-based detection of early chemosensitivity using serial static FDG PET/CT in metastatic colorectal cancer. <i>European Journal of Nuclear Medicine and Molecular Imaging</i> , 39(10), 1628-1634.
29	Bystrom P., Berglund A., Garske U., Jacobsson H., Sundin A., Nygren P., et al. (2009). Early prediction of response to first-line chemotherapy by sequential 18F]-2-fluoro-2-deoxy-D-glucose positron emission tomography in patients with advanced colorectal cancer. <i>Annals of Oncology</i> , 20(6), 1057-1061.
30	Bystrom P., & Glimelius B. (2009). Reply to FDG-PET: For early prediction of response to the first-line chemotherapy in metastatic colorectal cancer? <i>Annals of Oncology</i> , 20(6), 1150.
31	Carnaghi C., Tronconi M.C., Rimassa L., Tondulli L., Zuradelli M., Rodari M., et al. (2007). Utility of 18F-FDG PET and contrast-enhanced CT scan in the assessment of residual liver metastasis from colorectal cancer following adjuvant chemotherapy. <i>Nuclear Medicine Review. Central & Eastern Europe : Journal of Bulgarian, Czech, Macedonian, Polish, Romanian, Russian, Slovak, Yugoslav Societies of Nuclear Medicine and Ukrainian Society of Radiology</i> , 10(1), 12-15.
32	Castaldi P., Biondi A., Rausei S., Persiani R., Mirk P., & Rufini V. (2010). An unusual case of adrenal metastasis from colorectal cancer: Computed tomography and fluorine 18-fluoro-deoxy-glucose positron emission tomography-computed tomography features and literature review. <i>Case Reports in Oncology</i> , 3(3), 416-422.
33	Chan, V. O., Das, J. P., Gerstenmaier, J. F., Geoghegan, J., Gibney, R. G., Collins, C. D., et al. (2012). Diagnostic performance of MDCT, PET/CT and gadoteric acid (primovist((R)))-enhanced MRI in patients with colorectal liver metastases being considered for hepatic resection: Initial experience in a single centre. <i>Irish Journal of Medical Science</i> , 181(4), 499-509.
34	Chang C.-Y., Peng Y.-J., Shen D.H.W., Huang W.-S., & Cherng S.-C. (2008). Detection of multiple myeloma by PET/CT in a patient with colon cancer. <i>Clinical Nuclear Medicine</i> , 33(5), 367-370.
35	Charnsangavej C. (2011). Imaging evaluation in colorectal cancer liver metastases. <i>Current Colorectal Cancer Reports</i> , 7(2), 175-179.

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36	Chen L.-B., Tong J.-L., Song H.-Z., Zhu H., & Wang Y.-C. (2007). 18F-DG PET/CT in detection of recurrence and metastasis of colorectal cancer. <i>World Journal of Gastroenterology</i> , 13(37), 5025-5029.
37	Chen, T. Y., Hung, G. U., Hung, C. C., Chiu, J. S., & Kao, C. H. (2012). Asymptomatic metastasis to the larynx detected by FDG PET/CT in a patient with recurrent rectal adenocarcinoma. <i>Clinical Nuclear Medicine</i> , 37(7), e178-80.
38	Chiappa A., Makuuchi M., Lygidakis N.J., Zbar A.P., Chong G., Bertani E., et al. (2009). The management of colorectal liver metastases: Expanding the role of hepatic resection in the age of multimodal therapy. <i>Critical Reviews in oncology/hematology</i> , 72(1), 65-75.
39	Chili A. (2010). Overview of the clinical use of PET-CT in radiotherapy treatment planning. <i>Radiotherapy and Oncology</i> , 96, S162.
40	Cho Y.B., Chun H.K., Kim M.J., Choi J.Y., Park C.M., Kim B.T., et al. (2009). Accuracy of MRI and 18F-FDG PET/CT for restaging after preoperative concurrent chemoradiotherapy for rectal cancer. <i>World Journal of Surgery</i> , 33(12), 2688-2694.
41	Choi E.K., Yoo I.R., Park H.L., Choi H.S., Han E.J., Kim S.H., et al. (2012). Value of surveillance 18F-FDG PET/CT in colorectal cancer: Comparison with conventional imaging studies. <i>Nuclear Medicine and Molecular Imaging</i> , 46(3), 189-195.
42	Chua S., Yu S., Drake B., Patel U., Tait D., Cook G., et al. (2011). A prospective multicentre study to evaluate the diagnostic ability of multimodality imaging (FDG PET/CT, MRI and DW-MRI) in detecting early rectal tumour regrowth in cases of deferral of rectal surgery following continued response to preoperative chemoradiotherapy(CRT). <i>European Journal of Nuclear Medicine and Molecular Imaging</i> , 38, S157.
43	Chua T.C., Marshall J.L., Marshall M.B., & Esquivel J. (2010). Multi-modality therapy for metastatic colorectal cancer - ready for prime time? <i>American Surgeon</i> , 76(7), 777-778.
44	Coha B., Radmilovic K., Gardasanic J., Dakovic M., Stefanic M., Latic A., et al. (2009). Comparison of 18F-fdg positron emission tomography and computed tomography in patients with colorectal carcinoma and lymphoma: Our initial clinical experience. <i>Acta Clinica Croatica</i> , 48(1), 35-39.
45	Culverwell, A. D., Chowdhury, F. U., & Scarsbrook, A. F. (2012). Optimizing the role of FDG PET-CT for potentially operable metastatic colorectal cancer. <i>Abdominal Imaging</i> ,
46	Dash S., & Thakral P. (2011). Incremental value of 18F FDG PET-CT over CECT in the surveillance of large bowel malignancies. <i>European Journal of Nuclear Medicine and Molecular Imaging</i> , 38, S276.
47	de Geus-Oei L.F., Ruers T.J., Punt C.J., Leer J.W., Corstens F.H., & Oyen W.J. (2006). FDG-PET in colorectal cancer. <i>Cancer Imaging : The Official Publication of the International Cancer Imaging Society</i> , 6, S71-81.
48	de Jong, G. M., Hendriks, T., Bleichrodt, R. P., Dekker, H. M., Mus, R. D., Gotthardt, M., et al. (2012). 18F-2-deoxy-2-fluoro-D-glucose positron emission tomography, computed tomography, and magnetic resonance imaging for the detection of experimental colorectal liver metastases. <i>Molecular Imaging</i> , 11(2), 148-154.
49	De, J. G., Hendriks T., Gotthardt M., Visser E., Oyen W.J.G., & Boerman O.C. (2011). PET, CT and MRI for the detection of experimental colorectal liver metastases: An exploratory study. <i>European Journal of Nuclear Medicine and Molecular Imaging</i> , 38, S212.
50	Deleau, C., Buecher, B., Rousseau, C., Kraeber-Bodere, F., Flamant, M., des Varannes, S. B., et al. (2011). Clinical impact of fluorodeoxyglucose-positron emission tomography scan/computed tomography in comparison with computed tomography on the detection of colorectal cancer recurrence. <i>European Journal of Gastroenterology & Hepatology</i> , 23(3), 275-281.
51	Dewhurst, C., Rosen, M. P., Blake, M. A., Baker, M. E., Cash, B. D., Fidler, J. L., et al. (2012). ACR appropriateness criteria((R)) pretreatment staging of colorectal cancer. <i>Journal of the American College of Radiology : JACR</i> , 9(11), 775-781.
52	Dirisamer A., Halpern B.S., Flory D., Wolf F., Beheshti M., Mayerhoefer M.E., et al. (2010). Performance of integrated FDG-PET/contrast-enhanced CT in the staging and restaging of colorectal cancer: Comparison with PET and enhanced CT. <i>European Journal of Radiology</i> , 73(2), 324-328.
53	D'Souza M.M., Sharma R., Mondal A., Jaimini A., Tripathi M., Saw S.K., et al. (2009). Prospective evaluation of CECT and 18F-FDG-PET/CT in detection of hepatic metastases. <i>Nuclear Medicine Communications</i> , 30(2), 117-125.
54	Engelen S.M.E., Beets G.L., & Beets-Tan R.G.H. (2007). Role of preoperative local and distant staging in rectal cancer. <i>Onkologie</i> , 30(3), 141-145.
55	Engledow A.H., Skipworth J.R., Blackman G., Groves A., Bomanji J., Warren S.J., et al. (2011). The role of 1fluoro-deoxy glucose combined position emission and computed tomography in the clinical management of anal squamous cell carcinoma. <i>Colorectal Disease : The Official Journal of the Association of Coloproctology of Great Britain and</i>

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	Ireland, 13(5), 532-537.
56	Engledow, A. H., Skipworth, J. R., Pakzad, F., Imber, C., Ell, P. J., & Groves, A. M. (2012). The role of 18FDG PET/CT in the management of colorectal liver metastases. <i>HPB : The Official Journal of the International Hepato Pancreato Biliary Association</i> , 14(1), 20-25.
57	Even-Sapir E., Keidar Z., & Bar-Shalom R. (2009). Hybrid imaging (SPECT/CT and PET/CT)-improving the diagnostic accuracy of Functional/Metabolic and anatomic imaging. <i>Seminars in Nuclear Medicine</i> , 39(4), 264-275.
58	Falcone A., Fornaro L., Loupakis F., Masi G., & Vasile E. (2008). Optimal approach to potentially resectable liver metastases from colorectal cancer. <i>Expert Review of Anticancer Therapy</i> , 8(10), 1533-1539.
59	Fernandes H., Novruzov F., Manli J., Kostakoglu L., & Machac J. (2011). Whole body PET/MRI. the next step in gastrointestinal cancer assessment? (A retrospective comparison between 18F-FDG PET/CT and MRI in hepatic metastases assessment). <i>European Journal of Nuclear Medicine and Molecular Imaging</i> , 38, S239.
60	Frankel, T. L., Gian, R. K., & Jarnagin, W. R. (2012). Preoperative imaging for hepatic resection of colorectal cancer metastasis. <i>Journal of Gastrointestinal Oncology</i> , 3(1), 11-18.
61	Fugazzola C., & Iosca S. (2007). Imaging of colorectal cancer: Introduction. <i>Surgical Oncology</i> , 16, 47-48.
62	Funaioli C., Pinto C., Di, F. F., Santini D., Ceccarelli C., De, R. E., et al. (2007). 18FDG-PET evaluation correlates better than CT with pathological response in a metastatic colon cancer patient treated with bevacizumab-based therapy. <i>Tumori</i> , 93(6), 611-615.
63	Furukawa H., Ikuma H., Seki A., Yokoe K., Yuen S., Aramaki T., et al. (2006). Positron emission tomography scanning is not superior to whole body multidetector helical computed tomography in the preoperative staging of colorectal cancer. <i>Gut</i> , 55(7), 1007-1011.
64	Gazelle G.S., Kessler L., Lee D.W., McGinn T., Menzin J., Neumann P.J., et al. (2011). A framework for assessing the value of diagnostic imaging in the era of comparative effectiveness research. <i>Radiology</i> , 261(3), 692-698.
65	Gearhart S.L., Frassica D., Rosen R., Choti M., Schulick R., & Wahl R. (2006). Improved staging with pretreatment positron emission tomography/computed tomography in low rectal cancer. <i>Annals of Surgical Oncology</i> , 13(3), 397-404.
66	Georgakopoulos A., Pianou N., Kelekis N., & Chatziioannou S. (2011). Impact of (18)F-FDG PET/CT on therapeutic decisions in patients with colorectal cancer and liver metastases. <i>European Journal of Nuclear Medicine and Molecular Imaging</i> , 38, S240.
67	Gillams A. (2010). Incidence, staging and recommended imaging strategy. <i>Cardiovascular and Interventional Radiology</i> , 33, 73-74.
68	Grammaticos P., Zerva C., Asteriadis I., Trontzos C., & Hatzioannou K. (2007). Is hybridic positron emission tomography/computerized tomography the only option? the future of nuclear medicine and molecular imaging. <i>Hellenic Journal of Nuclear Medicine</i> , 10(2), 74-76.
69	Grand D.J., Beland M., Noto R.B., & Mayo-Smith W. (2010). Optimum imaging of colorectal metastases. <i>Journal of Surgical Oncology</i> , 102(8), 909-913.
70	Grassetto G., Fornasiero A., Bonciarelli G., Banti E., Rampin L., Marzola M.C., et al. (2010). Additional value of FDG-PET/CT in management of "solitary" liver metastases: Preliminary results of a prospective multicenter study. <i>Molecular Imaging and Biology</i> , 12(2), 139-144.
71	Hebert J.C. (2010). Positron emission tomography for colorectal cancer liver metastases: Where's the value? <i>Archives of Surgery</i> , 145(4), 345.
72	Herbertson R.A., Lee S.T., Tebbutt N., & Scott A.M. (2007). The expanding role of PET technology in the management of patients with colorectal cancer. <i>Annals of Oncology</i> , 18(11), 1774-1781.
73	Hicks R.J., Ware R.E., & Lau E.W. (2006). PET/CT: Will it change the way that we use CT in cancer imaging? <i>Cancer Imaging : The Official Publication of the International Cancer Imaging Society</i> , 6, S52-62.
74	Hompes R., & Cunningham C. (2011). Colorectal cancer: Management. <i>Medicine</i> , 39(5), 254-258.
75	Hu Y., Kwok A.C., Jiang W., Taback N., Lipsitz S.R., Ting G.V., et al. (2011). Use of high-cost imaging in elderly patients with metastatic cancer. <i>Journal of Clinical Oncology</i> , 29(15)
76	Hustinx R., Torigian D.A., & Namur G. (2008). Complementary assessment of abdominopelvic disorders with PET/CT and MRI. <i>PET Clinics</i> , 3(3), 435-449.
77	Itabashi M., Tada Y., Bamba Y., Takemoto K., Yoshimura Y., Kimura M., et al. (2009). Case of peritoneal dissemination of colon cancer in which PET/CT was useful in determining the indicated surgical procedure. <i>International Surgery</i> , 94(1), 80-83.
78	Jonas E., Nilsson H., Larsson J., & Freedman J. (2011). Detection of colorectal cancer liver metastases - an

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	assessment of four imaging modalities. <i>HPB</i> , 13, 24.
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INCLUDED STUDIES

Five systematic reviews, one randomized clinical trial and one observational study were included for quality appraisal and data extraction.

Data for 2 x 2 tables were extracted according to:

		Reference standard	
		+	-
Index test	+	True positives	False positives
	-	False negatives	True negatives

Calculations were made as follows:

- Sensitivity: true positives / (true positives + false negatives)
- Specificity: true negatives / (true negatives + false positives)
- Negative predictive value: true negatives / (true negatives + false negatives)
- Positive predictive value: true positives / (true positives + false positives)

When a 2 x 2 table could not be extracted but accuracy data were given, these were extracted in to the evidence table.

SEARCH STRINGS

4. MEDLINE, MEDLINE IN PROGRESS (VIA PUBMED)

Limited to English and published from 2006 onwards:

((deoxyglucose OR desoxyglucose OR deoxy-glucose OR desoxy-glucose OR deoxy-d-glucose OR desoxy-d-glucose OR 2deoxyglucose OR 2deoxy-d-glucose OR fluorodeoxyglucose OR fluorodesoxyglucose OR fludeoxyglucose OR fluordeoxyglucose OR fluordesoxyglucose OR 18fluorodeoxyglucose OR 18fluorodesoxyglucose OR 18fluorodeoxyglucose OR fdg* OR 18fdg* OR 18f-dg* OR fluorodeoxyglucose) OR ((fluor OR 2fluor* OR fluoro OR fluorodeoxy OR fludeoxy OR fluorine OR 18f OR 18flu*) AND glucose) AND (*emission AND *tomograph*)) OR *pet\$CT* OR (pet AND ct) OR (pet AND cts) OR (*emission AND computed*) OR "Positron-Emission Tomography and Computed Tomography"[Majr]

AND

"Colorectal Neoplasms/diagnosis"[Mesh] OR "Colorectal Neoplasms/radionuclide imaging"[Mesh] OR ((colorectal OR colon OR colonic OR rectal OR rectum OR rectosigmoid) AND (cancer* OR carcinoma* OR adenocarcinoma* OR malignan* OR tumor* OR tumour* OR neoplasm*))

AND

("Neoplasm Metastasis/diagnosis"[Mesh] OR "Neoplasm Metastasis/radionuclide imaging"[Mesh] OR metastases OR metastasis OR metastatic OR ((dissemination OR spread OR secondary OR migration) AND (cancer* OR carcinoma* OR adenocarcinoma* OR malignan* OR tumor* OR tumour* OR neoplasm*))

Run with (13 citations) and without (547 citations) systematic review filter:

("meta-analysis" [pt] OR "meta-anal*" [tw] OR "metaanal*" [tw] OR ("quantitativ* review*" [tw] OR "quantitative* overview*" [tw]) OR ("systematic* review*" [tw] OR "systematic* overview*" [tw]) OR ("methodologic* review*" [tw] OR "methodologic* overview*" [tw]) OR ("review" [pt] AND "medline" [tw])

5. EMBASE (VIA OVID)

With the SR filter:

- 1 colorectal cancer/di [Diagnosis] (10972)
- 2 (colorectal or colon or colonic or rectal or rectum or rectosigmoid).tw. (325370)
- 3 (cancer* or carcinoma* or adenocarcinoma* or malignan* or tumor* or tumour* or neoplasm*).tw. (2513593)
- 4 2 and 3 (197545)
- 5 1 or 4 (199664)
- 6 animals/ not humans/ (1353739)
- 7 5 not 6 (198030)
- 8 deoxyglucose/ or deoxyglucose.tw. or desoxyglucose.tw. or deoxy-glucose.tw. or desoxy-glucose.tw. or deoxy-d-glucose.tw. or desoxy-d-glucose.tw. or 2deoxyglucose.tw. or 2deoxy-d-glucose.tw. or fluorodeoxyglucose.tw. or fluorodesoxyglucose.tw. or fludeoxyglucose.tw. or fluorodeoxyglucose.tw. or fluorodesoxyglucose.tw. or 18fluorodeoxyglucose.tw. or 18fluorodesoxyglucose.tw. or 18fluorodeoxyglucose.tw. or fdg*.tw. or 18fdg*.tw. or 18fdg*.tw. or Fluorodeoxyglucose F18/ (50039)
- 9 (fluor or 2fluor* or fluoro or fluorodeoxy or fludeoxy or fluorine or 18f or 18flu*).tw. (46303)
- 10 glucose.tw. (375377)
- 11 9 and 10 (7733)
- 12 8 or 11 (50569)
- 13 (pet or petscan* or pet-ct or pet\$ct).tw. or tomography, emission-computed/ (74901)
- 14 emission.tw. (117756)
- 15 (tomograph or tomographs or tomographic* or tomography or tomographies).tw. (264951)
- 16 14 and 15 (54183)

- 17 13 or 16 (99788)
- 18 12 or 17 (119739)
- 19 Positron-Emission Tomography/ (71235)
- 20 18 or 19 (138529)
- 21 animals/ not humans/ (1353739)
- 22 20 not 21 (134342)
- 23 metastasis/di [Diagnosis] (12298)
- 24 (metastasis or metastases or metastasic or metastatic or dissemination or spread or secondary or migration).tw. (1097790)
- 25 23 or 24 (1100863)
- 26 animals/ not humans/ (1353739)
- 27 25 not 26 (1064363)
- 28 exp Meta Analysis/ (66972)
- 29 ((meta adj analy\$) or metaanalys\$).tw. (62030)
- 30 (systematic adj (review\$1 or overview\$1)).tw. (47947)
- 31 or/28-30 (123426)
- 32 cancerlit.ab. (664)
- 33 cochrane.ab. (28402)
- 34 embase.ab. (25238)
- 35 (psychlit or psyclit).ab. (957)
- 36 (psychinfo or psycinfo).ab. (6273)
- 37 (cinahl or cinhal).ab. (8640)
- 38 science citation index.ab. (1893)
- 39 bids.ab. (422)
- 40 or/32-39 (43207)
- 41 reference lists.ab. (8561)
- 42 bibliograph\$.ab. (13799)
- 43 hand-search\$.ab. (3946)
- 44 manual search\$.ab. (2262)
- 45 relevant journals.ab. (722)
- 46 or/41-45 (26436)

- 47 data extraction.ab. (10540)
- 48 selection criteria.ab. (19316)
- 49 47 or 48 (28500)
- 50 review.pt. (1908548)
- 51 49 and 50 (17044)
- 52 letter.pt. (804422)
- 53 editorial.pt. (419609)
- 54 animal/ (1808580)
- 55 human/ (13873115)
- 56 54 not (54 and 55) (1353739)
- 57 or/52-53,56 (2564152)
- 58 31 or 40 or 46 or 51 (154334)
- 59 58 not 57 (148528)
- 60 7 and 22 and 27 and 59 (46)
- 61 limit 60 to (english language and yr="2006 -Current") (36)

Without the SR filter:

- 1 colorectal cancer/di [Diagnosis] (10972)
- 2 (colorectal or colon or colonic or rectal or rectum or rectosigmoid).tw. (325370)
- 3 (cancer* or carcinoma* or adenocarcinoma* or malignan* or tumor* or tumour* or neoplasm*).tw. (2513593)
- 4 2 and 3 (197545)
- 5 1 or 4 (199664)
- 6 animals/ not humans/ (1353739)
- 7 5 not 6 (198030)
- 8 deoxyglucose/ or deoxyglucose.tw. or desoxyglucose.tw. or deoxy-glucose.tw. or desoxy-glucose.tw. or deoxy-d-glucose.tw. or desoxy-d-glucose.tw. or 2deoxyglucose.tw. or 2deoxy-d-glucose.tw. or fluorodeoxyglucose.tw. or fluorodesoxyglucose.tw. or fludeoxyglucose.tw. or fluordeoxyglucose.tw. or fluordesoxyglucose.tw. or 18fluorodeoxyglucose.tw. or 18fluordesoxyglucose.tw. or 18fluordeoxyglucose.tw. or fdg*.tw. or 18fdg*.tw. or 18fdg*.tw. or Fluorodeoxyglucose F18/ (50039)
- 9 (fluor or 2fluor* or fluoro or fluorodeoxy or fludeoxy or fluorine or 18f or 18flu*).tw. (46303)
- 10 glucose.tw. (375377)
- 11 9 and 10 (7733)
- 12 8 or 11 (50569)

- 13 (pet or petscan* or pet-ct or pet\$ct).tw. or tomography, emission-computed/ (74901)
- 14 emission.tw. (117756)
- 15 (tomograph or tomographs or tomographic* or tomography or tomographies).tw. (264951)
- 16 14 and 15 (54183)
- 17 13 or 16 (99788)
- 18 12 or 17 (119739)
- 19 Positron-Emission Tomography/ (71235)
- 20 18 or 19 (138529)
- 21 animals/ not humans/ (1353739)
- 22 20 not 21 (134342)
- 23 metastasis/di [Diagnosis] (12298)
- 24 (metastasis or metastases or metastasic or metastatic or dissemination or spread or secondary or migration).tw. (1097790)
- 25 23 or 24 (1100863)
- 26 animals/ not humans/ (1353739)
- 27 25 not 26 (1064363)
- 28 7 and 22 and 27 (1657)
- 29 limit 28 to (english language and yr="2006 -Current") (1065)

6. CDSR (VIA THE COCHRANE LIBRARY)

The Cochrane Database of Systematic Reviews was browsed by topic:

- a. cancer ->

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