Table C-2. Included systematic reviews: results

| **Study** | **Number of Articles** | **Number of Patients** | **Study Quality** | **Reference Standard** | **Publication Bias** | **Primary Results** | **Author's Conclusion** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Gall et al. 201384 | 10 ERUS total; 5 colon only, 5 mixed colorectal | 642 total; 210 colon only. | All studies had 8 or more of the 14 QUADAS items; 60% had 10 of the 14 items. | Histopathology | Not assessed | T1: sensitivity 91%, specificity 98%;  T2: sensitivity 78%, specificity 94%;  T3/T4: sensitivity 97%, specificity 90%; N: sensitivity 63%, specificity 82%. | Mini-probe ERUS is effective in staging colorectal cancer. |
| Lu et al.  201287 | 8 PET,  2 PET/CT | 83 PET/CT,  326 PET | On the Cochrane Diagnostic Tests tool, the mean quality score was 59.2%, Range: 33% to 83% | Histopathology | Not assessed | The sensitivity of PET for detecting involved lymph nodes was 42.9% (95% CI, 36.0% to 50.0%), the specificity was 87.9% (95% CI, 82.6% to 92.0%) | There is no solid evidence to support the routine clinical application of PET (PET/CT) in the pretherapeutic evaluation of lymph node status in patients with colorectal cancer. |

| Table C-2. Included systematic reviews: results (continued) | | | | | | | |
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| **Study** | **Number of Articles** | **Number of Patients** | **Study Quality** | **Reference Standard** | **Publication Bias** | **Primary Results** | **Author's Conclusion** |
| Al-Sukhni et al. 201286 | 19 studies for T stage, 12 studies for N stage, 10 studies for CRM | 1,986 patients for T stage, 1,249 patients for N stage,  986 patients for CRM | 62% of the studies had 10 or more of the 13 modified QUADAS items | Histopathology | Not assessed | MRI for N: sensitivity 77% (95% CI, 69% to 84%), specificity 71% (95% CI, 59% to 81%)  MRI for T: sensitivity 87% (95% CI, 81% to 92%), specificity 75% (95% CI, 68% to 80%)  MRI for CRM: sensitivity 77% (95% CI, 57% to 90%), specificity 94% [95% CI, 8% to 97%]) | MRI has good accuracy for both CRM and T category and should be considered for preoperative rectal cancer staging. In contrast, lymph node assessment is poor on MRI. |
| van Kessel et al. 2012198 | 5 studies of CT, 3 studies of MRI,  2 studies of PET/CT (some studies evaluated more than one modality) | 221 CI  54 MRI  137 PET/CT | QUADAS was used to exclude 7 studies prior to data extraction | Intraoperative ultrasound, histopathology of resected lesions, and patient followup (8.8% were confirmed only by patient followup) | Funnel plots did not show any evidence of gross publication bias | There was heterogeneity in the sensitivity of MRI and PET/CT but not for CT.  CT sensitivity: 54.5% (95% CI 46.7 to 62.1%)  MRI sensitivity: 69.9% (95% CI 65.6 to 73.9%)  PET/CT sensitivity:  51.7% (95% CI 37.8 to 65.4%) | MRI appears to be the most appropriate imaging modality for interim restaging of colorectal cancer liver metastases. If MRI is unavailable, CT should be used. PET/CT is strongly affected by neoadjuvant chemotherapy. |
| Niekel et al. 201015 | 25 CT,  18 MRI, 5 PET/CT | Total 3,391 | 65% of the studies had 6 or more of the 10 modified QUADAS items | A mixture of histopathology and clinical followup | There was no evidence of publication bias on funnel plots | Sensitivity of CT for liver mets: 83.6%  Sensitivity of MRI for liver mets: 88.2%  Sensitivity of PET/CT for liver mets: data were too limited | MRI imaging is the preferred first-line modality for evaluating colorectal liver metastases in patients who have not previously undergone therapy. |
| Dighe et al. 201016 | 19 total; 17 reported on T stage,  15 on N stage | 907 total,  784 T stage,  674 N stage | 53% of studies scored 12 or higher on the QUADAS items | Histopathology | There was some evidence of publication bias, with smaller studies reporting a higher diagnostic odds ratio for nodal detection | CT T1/T2 differentiate from T3/T4 sensitivity 86% (95% CI, 78 to 92%), specificity 78% (95% CI, 71 to 84%)  CT T3 from T4 sensitivity 92% (95% CI, 87 to 95%), specificity 81% (70 to 89%)  CT N stage sensitivity 70% (95% CI, 59 to 80%), specificity 78% (95% CI, 66 to 0.86%) | Preoperative staging CT accurately distinguishes between tumors confined to the bowel wall and those invading beyond the MP; however, it is significantly poorer at identifying nodal status. MDCT provides the best results |
| Puli et al. 200985 | 35 | 2,732 | All of the studies fulfilled 4 to 5 out of the 14 QUADAS items | Histopathology | There was no evidence of publication bias on funnel plots | ERUS for N staging: sensitivity of 73.2% (95% CI, 70.6 to 75.6); specificity 75.8% (95% CI, 73.5 to 78.0) likelihood ratios + 2.84 (95% CI, 2.16 to 3.72), -0.42 (95% CI, 0.33 to 0.52) | ERUS is an important and accurate diagnostic tool for evaluating nodal metastasis of rectal cancers. This meta-analysis shows that the sensitivity and specificity of ERUS is moderate. |
| Puli et al. 200914 | 42 | 5,039 | All of the studies fulfilled 4 to 5 out of the 14 QUADAS items | Histopathology | There was no evidence of publication bias on funnel plots | ERUS for T1: sensitivity 87.8% (95% CI, 85.3 to 90.0), specificity 98.3% (95% CI; 97.8 to 98.7), +LR 44.0 (22.7 to 85.5), -LR 0.16 (0.13 to 0.23)  ERUS for T2: sensitivity 80.5% (77.9 to 82.9), specificity 95.6 (94.9 to 96.3), +LR 17.3 (11.9 to 24.9), -LR 0.22 (0.17 to 0.29)  ERUS for T3: sensitivity 96.4% (95.4 to 97.2), specificity 90.6 (89.5 to 91.7), +LR 8.9 (6.8 to 11.8), -LR 0.06 (0.04 to 0.09)  ERUS for T4: sensitivity 95.4 (92.4 to 97.5), specificity 98.3 (97.8 to 98.7), +LR 37.6 (19.9 to 71.0), -LR 0.14 (0.09 to 0.23) | As a result of the demonstrated sensitivity and specificity, ERUS should be the investigation of choice to T stage rectal cancers. The sensitivity of ERUS is higher for advanced disease than for early disease, ERUS should be strongly considered for T staging of rectal cancers. |

95% CI=95% confidence interval; CRM=circumferential resection margin; CT=confidence interval; ERUS=endorectal ultrasound; MDCT=multiphase detector computed tomography; MRI=magnetic resonance imaging; N stage=nodal stage; PET=positron emission tomography; PET/CT=positron emission tomography/computed tomography; QUADAS=quality assessment tool for diagnostic accuracy studies; T stage=tumor stage