Study	Participants	Tests	Outcomes summary
Amsellem-Ouazana 2005[74] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** April 2003 to April 2004 **Country:** France **Follow-up:** N	**Enrolled:** 42 **Analysed:** 42 **Consecutive:** Y **Age (years):** Mean 62.3, range 54 to 74 **PSA (ng/ml):** Mean 12.1, range 3.87 to 35 **Prostate size:** NR **Previous negative biopsies:** Mean 2, range 1 to 4 **Previous biopsy scheme:** 12-core TRUS **Inclusion criteria:** Persistently increasing PSA, at least one negative 12-core biopsy and normal DRE **Exclusion criteria:** NR	**Index test(s):** MRS Definition of positive test: CC/C ratio ≥0.75 **Comparator test(s):** T2, TRUS (part of reference standard only) **Definition of positive test:** **T2:** Judged as equivocal if homogenously low in signal with conservation of the prostate gland architecture and without mass syndrome. Judged as suspicious if there was a precise area of low signal associated with a mass syndrome **TRUS:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 42$) **Sensitivity:** MRS 93.3%, T2 60% **Specificity:** MRS 96.3%, T2 66.7% **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR
Babaian 2000[75] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** May 1997 to October 1998 **Country:** USA **Follow-up:** N	**Enrolled:** 277 **Analysed:** 277 **Consecutive:** NR **Age (years):** Mean 63.5, range 39 to 76 **PSA (ng/ml):** Mean 8.3, range 0.7 to 28.1 **Prostate size (cc):** Mean 57.9, range 18 to 177 **Previous negative biopsies:** 1–5 **Previous biopsy scheme:** 11-core TRUS **Inclusion criteria:** Persistently abnormal PSA or change in DRE and/or TRUS **Exclusion criteria:** NR	**Index test(s):** N/A **Definition of positive test:** N/A **Comparator test(s):** TRUS **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 277$) **Sensitivity:** TRUS 6-core 39.5%, TRUS 11-core 48.1%, TRUS 6-core with TRUS 11-core as reference standard 66.7 **Specificity:** TRUS 6-core 80.1%, TRUS 11-core 83.7% **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Beyersdorff 2002[57,135] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** NR **Country:** Germany **Follow-up:** N	**Enrolled:** 44 **Analysed:** 38 **Consecutive:** Y **Age (years):** Mean 64.6, range 46 to 76 **PSA (ng/ml):** Mean 13.9, range 4 to 53 **Prostate size:** NR **Previous negative biopsies:** 1 to 6 **Previous biopsy scheme:** 4- or 6-core (approach NR) **Inclusion criteria:** PSA > 4 ng/ml or free–total PSA ratio < 15%; prior negative TRUS quadrant or sextant biopsy **Exclusion criteria:** Contraindications to MRI or use of endorectal coil	**Index test(s):** N/A **Definition of positive test:** N/A **Comparator test(s):** T2, TRUS **Definition of positive test:** **T2:** Confluent hypointense areas were classified as suspicious; in homogeneously hypointense areas were classified as inconclusive **TRUS:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 38$) **Sensitivity:** T2 100%, TRUS 33.3% **Specificity:** T2 26.9%, TRUS 88.5% **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Bhatia 2007[76] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** January 2006 to October 2006 **Country:** Thailand **Follow-up:** N	**Enrolled:** 21 **Analysed:** 21 **Consecutive:** Y **Age (years):** Mean 61.4, range 50 to 77 **PSA (ng/ml):** Mean 13.1, range 4.3 to 46.6 **Prostate size:** NR **Previous negative biopsies:** 1–3 **Previous biopsy scheme:** Sextant TRUS **Inclusion criteria:** PSA persistently > 4 ng/ml and at least one prior sextant TRUS/Bx **Exclusion criteria:** Contraindications to MRI or use of endorectal coil	**Index test(s):** MRS **Definition of positive test:** Score obtained from spectral pattern and adjusted according to the CC/C ratio. Voxel scores of 1 and 2 classified as 'normal'. Voxel score of 3 was 'equivocal'. Voxel scores of 4 and 5 classified as 'suspicious'. 'Suspicious' scores were classed as positive for malignancy for the purposes of determining diagnostic accuracy **Comparator test(s):** T2, TRUS (part of reference standard only) **Definition of positive test:** **T2:** Area of discrete and homogeneously low signal intensity that did not correspond to the haemorrhagic areas with high signal intensity on T1W images classed as suspicious. Area of slightly heterogeneous low signal intensity classed as equivocal **TRUS:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 21$) **Sensitivity:** MRS 100%, T2 100%, MRS and T2 100% **Specificity:** MRS 73.7%, T2 78.9%, MRS and T2 84.2% **Unit of analysis:** Biopsy ($n = 290$) **Sensitivity:** MRS 78.6%, T2 64.3%, MRS and T2 64.3% **Specificity:** MRS 80.4%, T2 84.1%, MRS and T2 91.7% **Adverse effects:** Most men had transient haematuria after the TRUS biopsy but did not require treatment **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR
Calvo 2010[115] Abstract **Study type:** Cross-sectional diagnostic **Study start/end dates:** August 2008 to January 2010 **Country:** Spain **Follow-up:** N	**Enrolled:** 59 **Analysed:** 59 **Consecutive:** NR **Age (years):** NR **PSA (ng/ml):** NR **Prostate size:** NR **Previous negative biopsies:** 1–4 **Previous biopsy scheme:** NR **Inclusion criteria:** Suspicion of PC and previous negative biopsies **Exclusion criteria:** NR	**Index test(s):** MRS **Definition of positive test:** NR **Comparator test(s):** TRUS (part of reference standard only) **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 59$) **Sensitivity:** MRS 100% **Specificity:** MRS 74.4% **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Campodonico 2006[77] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** January 2003 to September 2005 **Country:** Italy **Follow-up:** Y (length NR)	**Enrolled:** 81 **Analysed:** 81 **Consecutive:** NR **Age (years):** <60, $n=20$ 60– 69, $n=37$ 70– 79, $n=24$ **PSA (ng/ml):** NR **Prostate size:** NR **Previous negative biopsies:** 1 **Previous biopsy scheme:** 10- or 12-core TRUS **Inclusion criteria:** Clinical suspicion of PC based on abnormal DRE, increased PSA or hypoechoic lesion at TRUS **Exclusion criteria:** NR	**Index test(s):** N/A **Definition of positive test:** N/A **Comparator test(s):** TRUS **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n=81$) **Sensitivity:** TRUS 88.9% **Specificity:** TRUS NR **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR
Cheikh 2009[78] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** November 2005 to March 2008 **Country:** France **Follow-up:** N	**Enrolled:** 93 **Analysed:** 93 **Consecutive:** NR **Age (years):** Mean 63.2, range 52 to 74 **PSA (ng/ml):** Mean 9.63, range 1.6 to 40 **Prostate size (cc):** Mean 49.8 **Previous negative biopsies:** 1–5 **Previous biopsy scheme:** NR (mean 12.6-cores for 129/173 previous negative biopsies) **Inclusion criteria:** Patients who had undergone MRI before repeat biopsy **Exclusion criteria:** NR	**Index test(s):** DCE **Definition of positive test:** All nodules showing early enhancement in the PZ or SV wall were considered malignant **Comparator test(s):** T2, TRUS (part of reference standard only) **Definition of positive test:** **T2:** All low-signal-intensity nodules in the PZ were considered malignant. In the central gland, only homogeneous low-signal-intensity areas with ill-defined margins and no visible capsule were interpreted as malignant. All central gland hypointense areas extending into the PZ were also considered malignant **TRUS:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n=93$) **Sensitivity:** DCE 82.6%, T2 47.8%, DCE or T2 82.6%, DCE and T2 47.8% **Specificity:** DCE 20%, T2 44.3%, DCE or T2 15.7%, DCE and T2 51.4% **Unit of analysis:** Sector ($n=670$) **Sensitivity:** DCE 52.3%, T2 31.8%, DCE or T2 52.3%, DCE and T2 31.8% **Specificity:** DCE 83.5%, T2 89.8%, DCE or T2 83.1%, DCE and T2 92.3% **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Chung 2010[116] Abstract **Study type:** Cross-sectional diagnostic **Study start/end dates:** July 2008 to December 2009 **Country:** Republic of Korea **Follow-up:** N	**Enrolled:** 57 **Analysed:** 57 **Consecutive:** NR **Age (years):** NR **PSA (ng/ml):** NR **Prostate size:** NR **Previous negative biopsies:** At least one **Previous biopsy scheme:** 12-core (approach NR) **Inclusion criteria:** Persistently increasing serum PSA, at least one previous negative 12-core prostate biopsy and normal DRE **Exclusion criteria:** NR	**Index test(s):** DW **Definition of positive test:** NR **Comparator test(s):** T2, TRUS (part of reference standard only) **Definition of positive test:** **T2:** NR **TRUS:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Core ($n = 971$) **Sensitivity:** DW or T2 82.8% **Specificity:** DW or T2 68.9% **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR
Cirillo 2008[79] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** July 2004 to February 2006 **Country:** Italy **Follow-up:** N	**Enrolled:** 54 **Analysed:** 54 **Consecutive:** Y **Age (years):** Mean 65.4 **PSA (ng/ml):** Mean 10.8 **Prostate size (cc):** Mean 76 ml, range 22 to 181 **Previous negative biopsies:** At least one **Previous biopsy scheme:** NR (median eight cores) **Inclusion criteria:** Persistently elevated PSA level (≥4 ng/ml) and at least one prior negative TRUS biopsy **Exclusion criteria:** Previous hormonal, surgical or irradiation therapy	**Index test(s):** MRS **Definition of positive test:** If one or more suspicious prostate voxels were identified. Voxels were classified as suspicious if the CC/C ratio was > 0.86 **Comparator test(s):** T2, TRUS (part of reference standard only) **Definition of positive test:** **T2:** If hypotense on T2-weighted images and isotense on T1-weighted images with a nodular or plaque-like morphology and if observed on at least two different planes. Combined MRS and T2 were classified as normal if both MRS and T2 were normal and suspicious in other cases. Using combined MRS and T2, PC was suspected if one or more suspicious prostate sites were identified **TRUS:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 54$) **Sensitivity:** MRS 88.2%, T2 100%, MRS or T2 100%, MRS and T2 88.2% **Specificity:** MRS 70.3%, T2 64.9%, MRS or T2 51.4%, MRS and T2 NR **Unit of analysis:** Site ($n = 540$) **Sensitivity:** MRS 81.8%, T2 77.3%, MRS or T2 86.4% **Specificity:** MRS 91.3%, T2 90.7%, MRS or T2 86.3% **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Comet-Batlle 2004[117] Abstract **Study type:** Prospective cohort diagnostic **Study start/end dates:** NR **Country:** Spain **Follow-up:** N	**Enrolled:** NR **Analysed:** 5 **Consecutive:** NR **Age (years):** NR **PSA (ng/ml):** NR **Prostate size:** NR **Previous negative biopsies:** At least one **Previous biopsy scheme:** NR **Inclusion criteria:** Elevated PSA level and repeated negative biopsies **Exclusion criteria:** NR	**Index test(s):** MRS **Definition of positive test:** NR **Comparator test(s):** T2, TRUS (part of reference standard only) **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 5$) **Sensitivity:** MRS or T2 NR **Specificity:** MRS or T2 NR (PPV = 100%) **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR
De la Rosette 2009[80] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** September 2004 to September 2007 **Country:** The Netherlands **Follow-up:** N	**Enrolled:** 139 **Analysed:** 139 **Consecutive:** NR **Age (years):** Mean 62.3 **PSA (ng/ml):** Median 5.5, range 1.1 to 34.1 **Prostate size (cc):** Median 60 ml, range 18 to 196 **Previous negative biopsies:** 1 **Previous biopsy scheme:** 8- or 12-core TRUS **Inclusion criteria:** Age-dependent increased serum PSA level, positive DRE or suspicious TRUS **Exclusion criteria:** Signs of prostatitis, UTI or acute urinary retention within the previous month; use of PSA level altering medication (5-alpha-reductase inhibitors) within the previous 6 months	**Index test(s):** N/A **Definition of positive test:** N/A **Comparator test(s):** TRUS **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 139$) **Sensitivity:** TRUS 10% **Specificity:** TRUS 73.9% **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Destefanis 2009[118] Abstract **Study type:** Cross-sectional diagnostic **Study start/end dates:** November 2005 to September 2008 **Country:** Italy **Follow-up:** N	**Enrolled:** 28 **Analysed:** 26 **Consecutive:** Y **Age (years):** NR **PSA (ng/ml):** NR **Prostate size:** NR **Previous negative biopsies:** At least one **Previous biopsy scheme:** TRUS-guided (no. of cores NR) **Inclusion criteria:** NR **Exclusion criteria:** NR	**Index test(s):** MRS **Definition of positive test:** CC/C > 0.86 **Comparator test(s):** T2, TRUS (part of reference standard only) **Definition of positive test:** **T2:** Low-intensity signal **TRUS:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 26$) **Sensitivity:** T2 or MRS 100% **Specificity:** T2 or MRS 11.8% **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR
Djavan 2001[81] Full text **Study type:** Cross-sectional diagnostic (screening study) **Study start/end dates:** January 1997 to March 1999 **Country:** Austria/Belgium/France/Poland **Follow-up:** Y (every 6 or 8 weeks)	**Enrolled:** 1051 **Analysed:** 821 **Consecutive:** Y **Age (years):** Mean 68, range 48 to 76 **PSA (ng/ml):** Mean 7.1, range 4 to 10.7 **Prostate size (cc):** Mean 42.5, range 16 to 119 **Previous negative biopsies:** 1 **Previous biopsy scheme:** 8-core TRUS (sextant + two TZ) **Inclusion criteria:** Referred for either early PC screening or lower urinary tract symptoms; PSA level of between 4 and 10 ng/ml **Exclusion criteria:** History of PC, acute or chronic prostatitis and histological evidence of PIN at any grade, urinary retention, indwelling urinary catheter or confirmed UTI	**Index test(s):** N/A **Definition of positive test:** N/A **Comparator test(s):** TRUS **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 820$) **Sensitivity:** TRUS 67.5% **Specificity:** TRUS NR **Adverse effects:** Minor or no discomfort 89% Mild haematuria 57% Recurrent mild haematuria 16.6% UTI 11.3% Delayed haematospermia 10.2% Persistent dysuria 6.8% Rectal bleeding 2.4% Delayed fever 2.3% Vasovagal episodes 1.4% Severe haematuria 0.5% Major rectal bleeding 0.1% **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Engelhard 2006[82] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** December 2003 to May 2005 **Country:** Germany **Follow-up:** N	**Enrolled:** 37 **Analysed:** 37 **Consecutive:** Y **Age (years):** Mean 66, range 46 to 75 **PSA (ng/ml):** Mean 10.8, range 4 to 48 **Prostate size:** NR **Previous negative biopsies:** 1–4 **Previous biopsy scheme:** Sextant TRUS **Inclusion criteria:** Elevated PSA level (≥4 ng/ml), negative or inconclusive TRUS or at least one negative TRUS/Bx **Exclusion criteria:** NR	**Index test(s):** N/A **Definition of positive test:** N/A **Comparator test(s):** T2 **Definition of positive test:** Visible signal changes; asymmetric hypointense lesions within the normally high-signal PZ were classed as profoundly suspect. Low-signal lesions in the front gland (TZ and CZ) were classed as moderately suspect **Reference standard:** Histopathological assessment of biopsied tissue obtained by T2-guided biopsy **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 37$) **Sensitivity:** T2 NR **Specificity:** T2 NR (PPV 37.8%) **Unit of analysis:** Biopsy ($n =$ NR) **Sensitivity:** T2 NR **Specificity:** T2 NR (PPV 57.7%) **Adverse effects:** There were no collateral effects or complications caused by the biopsy **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Eskicorapci 2007[83] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** March 2001 to December 2005 **Country:** Turkey **Follow-up:** N	**Enrolled:** 211 **Analysed:** 211 **Consecutive:** NR **Age (years): median (IQR)** Sextant group: 62 (56 to 69) 10-core group: 64 (55 to 70) **PSA (ng/ml): median (IQR)** Sextant group: 7.8 (5.9 to 12.3) 10-core group: 7.5 (5.9 to 11.7) **Prostate size (cc): median (IQR)** Sextant group: 50 cc (39.9 to 70) 10-core group: 54 cc (41.5 to 68) **Previous negative biopsies:** At least one **Previous biopsy scheme:** Sextant or 10-core TRUS **Inclusion criteria:** Serum PSA level > 4 ng/ml, increasing serum PSA level and/or abnormal DRE and/or presence of HGPIN **Exclusion criteria:** NR	**Index test(s):** N/A **Definition of positive test:** N/A **Comparator test(s):** TRUS **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 211$) **Sensitivity:** TRUS 18.5% **Specificity:** TRUS 78.3% **Adverse effects:** All patients tolerated the biopsy procedure well and none needed intravenous sedation or narcotic analgesics **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Franiel 2011[84] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** December 2008 to December 2009 **Country:** Germany **Follow-up:** N	**Enrolled:** 55 **Analysed:** 54 **Consecutive:** Y **Age (years):** Median 68, range 49 to 78 **PSA (ng/ml):** Median 12.1, range 3.3 to 65.2 **Prostate size:** NR **Previous negative biopsies:** 1–6 **Previous biopsy scheme:** Systematic TRUS (no. of cores NR) **Inclusion criteria:** At least one negative systematic TRUS/Bx and continued suspicion of PC, i.e. PSA level > 4 ng/ml, suspicious DRE, abnormal PSA velocity **Exclusion criteria:** Presence of a cardiac pacemaker or other electronic implant, reported claustrophobia, known allergy to gadolinium-based contrast agents and failure to give written informed consent	**Index test(s):** MRS, DCE, DW **Definition of positive test:** Diagnostic MR imaging examinations were classified as benign, inconclusive or suspicious on T2 images using published criteria and taking account of the corresponding T1 images for signal intensity changes caused by bleeding. All areas classed as inconclusive or suspicious on T2 images were evaluated further for the CC/C ratio at ^{1}H-MRS, the ADC from DW imaging and exchange constants K^{trans} and k_{ep} from pharmacokinetic parameter maps **Comparator test(s):** T2 **Definition of positive test:** Inconclusive: In the PZ, ill-defined area of diffuse and inhomogeneous mild hypointensity. In the TZ, areas with homogeneous low T2 signal intensity with preserved capsule Suspicious: In the PZ, mass-like region of confluent hypointense area; in the TZ, region of homogeneous low T2 signal intensity with lenticular shape or absence of a capsule and ill-defined margins **Reference standard:** Histopathological assessment of biopsied tissue obtained by T2-guided biopsy **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 54$) **Sensitivity:** T2 85.7%; T2 or MRS 95.2%; T2 or DW 100%; T2 or DCE 85.7%; T2 or MRS or DW 100%; T2 or MRS or DCE 95.2%; T2 or DW or DCE 100%; T2 or MRS or DW or DCE 100% **Specificity:** T2 33.3%; T2 or MRS 24.2%; T2 or DW 3%; T2 or DCE 9.1%; T2 or MRS or DW 3%; T2 or MRS or DCE 9.1%; T2 or DW or DCE 0%; T2 or MRS or DW or DCE 0% **Unit of analysis:** Region ($n = 178$) **Sensitivity:** T2 69.8%; T2 or MRS 81.1%; T2 or DW 84.9%; T2 or DCE 83%; T2 or MRS or DW 94.3%; T2 or MRS or DCE 90.6%; T2 or DW or DCE 94.3%; T2 or MRS or DW or DCE 100% **Specificity:** T2 58.4%; T2 or MRS 37.6%; T2 or DW 36.8%; T2 or DCE 33.6%; T2 or MRS or DW 19.2%; T2 or MRS or DCE 14.4%; T2 or DW or DCE 16%; T2 or MRS or DW or DCE 0% **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Ghafoori 2010[120] Abstract **Study type:** Cross-sectional diagnostic **Study start/end dates:** NR **Country:** NR **Follow-up:** N	**Enrolled:** 46 **Analysed:** 46 **Consecutive:** NR **Age (years):** Mean 68.1, range 53 to 88 **PSA (ng/ml):** Mean 14.1, range 4.5 to 36.8 **Prostate size:** NR **Previous negative biopsies:** At least one **Previous biopsy scheme:** NR **Inclusion criteria:** Elevated PSA level and previous negative systematic biopsy results **Exclusion criteria:** NR	**Index test(s):** MRS **Definition of positive test:** NR **Comparator test(s):** TRUS **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 46$) **Sensitivity:** MRS 88.9%, TRUS 66.7% **Specificity:** MRS 92.9%, TRUS NR **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR
Hambrock 2010[85,86,121–123] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** August 2006 to March 2007 **Country:** The Netherlands **Follow-up:** N	**Enrolled:** 71 **Analysed:** 68 **Consecutive:** Y **Age (years):** Mean 63, range 48 to 74 **PSA (ng/ml):** Median 13, range 4 to 243 **Prostate size:** NR **Previous negative biopsies:** 2 to 7 **Previous biopsy scheme:** At least 8- to 10-core TRUS, including TZ sampling **Inclusion criteria:** PSA level of > 4 ng/ml and two or more negative TRUS-guided biopsies **Exclusion criteria:** NR	**Index test(s):** DCE, DW **Definition of positive test:** NR **Comparator test(s):** T2 **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by T2-guided biopsy **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 68$) **Sensitivity:** T2 or DCE or DW NR **Specificity:** T2 or DCE or DW NR (PPV 100%) **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Hoeks 2012[87] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** March 2008 to February 2011 **Country:** The Netherlands **Follow-up:** Y (5 months)	**Enrolled:** 438 **Analysed:** 264 **Consecutive:** Y **Age (years):** Median 66 **PSA (ng/ml):** Median 11.4 **Prostate size (cc):** Median 67 **Previous negative biopsies:** At least one **Previous biopsy scheme:** TRUS (median nine cores in $n = 123$ participants) **Inclusion criteria:** Patients who underwent multiparametric MRI and/or MR-guided biopsy and had PSA level > 4 ng/ml and at least one previous negative biopsy **Exclusion criteria:** Existent PC, use of endorectal coil (in MRI) and MRI for indications other than cancer detection	**Index test(s):** DCE, DW **Definition of positive test:** **DCE:** After identification of TSRs on T2 images, the ADC maps and multiparametric pharmacokinetic colour maps and washout were analysed in a colour overlay mode on the T2 images **DW:** In addition to ADC maps, DWI-calculated b1400 images were used to determine CSRs. A lesion was defined as a CSR on DWI in cases of focal restriction on the ADC map combined with an iso- to hyper-signal intensity on the calculated b1400 image. Additionally, after the functional data from DW and DCE imaging were evaluated in relation to the TSS findings on the T2 images, the DW and DCE images were viewed separately and in combination to determine additional TRSs not evident on T2 images **Comparator test(s):** T2 **Definition of positive test:** The generally known tumour criteria were used to detect TSRs, including (1) low signal intensity areas in the PZ, (2) in the TZ, a homogeneous low T2 signal intensity area with ill-defined margins or a lenticular shape, and (3) in the CZ, areas of homogeneous low signal intensity with an ill-defined margin. All other imaging modalities were interpreted in relation to the T2 images **Reference standard:** Histopathological assessment of biopsied tissue obtained by T2-guided biopsy **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 264$) **Sensitivity:** T2 or DCE or DW NR **Specificity:** T2 or DCE or DW NR (PPV 40.9%) **Adverse effects:** Sepsis with hospitalisation, $n = 1$; vasovagal reaction, $n = 4$ **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Keetch 1994[88] Full text **Study type:** Cross-sectional diagnostic (screening study) **Study start/end dates:** NR **Country:** USA **Follow-up:** Y (every 6 months)	**Enrolled:** 10,249 **Analysed:** 427 **Consecutive:** NR **Age (years):** NR **PSA (ng/ml): median (SD)** No cancer on biopsy: 5.4 (1.5) Cancer on biopsy: 6.4 (2.8) **Prostate size:** NR **Previous negative biopsies:** At least one **Previous biopsy scheme:** 4- to 6-core TRUS **Inclusion criteria:** PSA level > 4 ng/ml on two occasions 2 weeks apart **Exclusion criteria:** NR	**Index test(s):** N/A **Definition of positive test:** N/A **Comparator test(s):** TRUS **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 427$) **Sensitivity:** TRUS 78.8% **Specificity:** TRUS NR **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Labanaris 2010[89,124,125] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** 2004–8 **Country:** Germany **Follow-up:** N	**Enrolled:** 260 **Analysed:** 260 (group A, suspicious MRI, $n = 170$; group B, non-suspicious MRI, $n = 90$) **Consecutive:** Y **Age (years):** Median 67.2 (group A) Median 67.1 (group B) **PSA (ng/ml):** Median 8.3, range 1.3 to 45.3 (group A) Median 9.1, range 1.8 to 41.6 (group B) **Prostate size:** NR **Previous negative biopsies:** At least one **Previous biopsy scheme:** NR **Inclusion criteria:** Increased PSA level (> 4 ng/ml), suspicious DRE and at least one previous negative biopsy **Exclusion criteria:** Age > 75 years, cardiac pacemaker, history of pelvic surgery, inflammatory bowel disease (Crohn's disease or ulcerative colitis), external beam radiation to the pelvis, anal stricture or severe haemorrhoids interfering with endorectal receiver positioning	**Index test(s):** DCE, DW **Definition of positive test:** **DCE/DW:** Areas within the prostate exhibiting an early enhancement on DCE or DW were interpreted as cancer. Early enhancement within the SV or extension of the enhancement from the prostate to the SVs was presumed to be SVI **Comparator test(s):** T2, TRUS (part of reference standard only) **Definition of positive test:** **T2:** Areas within the prostate showing a low signal intensity and obliteration of the rectoprostatic angle were interpreted as cancer. Irregular bulging of the prostatic contour, contiguous tumour signal intensity within the periprostatic fat and vanishing of the NVB were presumed to be ECE. Diagnostic criteria for NVB involvement include their vanishing and/or asymmetry **TRUS:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 260$) **Sensitivity:** T2 and DCE and DW 88.1% **Specificity:** T2 and DCE and DW 62.4% **Adverse effects:** Macroscopic haematuria ($n = 190$), mean duration 4 days, range 1 to 18 Haematospermia ($n = 146$), mean duration 11 days, range 1 to 30 Minor rectal bleeding ($n = 96$), mean duration 1.3 days, range 0 to 15 Prostatic infection requiring hospitalisation ($n = 2$) **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Lattouf 2007[90] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** March 2003 to November 2005 **Country:** USA **Follow-up:** N	**Enrolled:** 26 **Analysed:** 26 **Consecutive:** Y **Age (years):** Median 62, range 32 to 76 **PSA (ng/ml):** Median 8.4, range 2.1 to 85.9 **Prostate size (cc):** Median 54.9, range 11.9 to 133 **Previous negative biopsies:** 1 to 12 **Previous biopsy scheme:** NR **Inclusion criteria:** At least one set of prostate biopsies that were negative for cancer **Exclusion criteria:** Previous positive biopsies	**Index test(s):** DCE **Definition of positive test:** Abnormally enhancing regions **Comparator test(s):** T2, TRUS (part of reference standard only) **Definition of positive test:** **T2:** Hypointense regions **TRUS:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 26$) **Sensitivity:** DCE 71.4%, T2 92.9% **Specificity:** DCE 33.3%, T2 16.7% **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Lee 2011[126] Abstract **Study type:** Cross-sectional diagnostic **Study start/end dates:** NR **Country:** Republic of Korea **Follow-up:** N	**Enrolled:** 87 **Analysed:** 87 **Consecutive:** NR **Age (years):** No cancer ($n = 41$): median 68, range 50 to 84 Cancer ($n = 46$): median 66, range 48 to 76 **PSA (ng/ml):** *Prebiopsy values* No cancer: median 7.9, mean 11.24 Cancer: median 9.48, mean 12.78 **Prostate size (cc):** No cancer: median 40.8, mean 33.9 Cancer: median 35.4, mean 33.1 **Previous negative biopsies:** 1–4 **Previous biopsy scheme:** 12-core **Inclusion criteria:** Persistently increasing serum PSA, at least one previous set of negative 12-core biopsies and normal DRE **Exclusion criteria:** NR	**Index test(s):** DW **Definition of positive test:** NR **Comparator test(s):** T2, TRUS (part of reference standard only) **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 87$) **Sensitivity:** T2 or DW 95.7% **Specificity:** T2 or DW 7.3% **Unit of analysis:** Biopsy ($n = 1421$) **Sensitivity:** T2 or DW NR **Specificity:** T2 or DW NR (PPV = 28.8%) **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR
Lin 2008[91] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** January 2000 to May 2005 **Country:** Taiwan, Province of China **Follow-up:** Y (18 months)	**Enrolled:** 366 **Analysed:** 366 **Consecutive:** Y **Age (years):** NR **PSA (ng/ml):** NR **Prostate size:** NR **Previous negative biopsies:** 1 **Previous biopsy scheme:** 6-core TRUS **Inclusion criteria:** PSA level > 4 ng/ml or abnormal DRE **Exclusion criteria:** NR	**Index test(s):** N/A **Definition of positive test:** N/A **Comparator test(s):** TRUS **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 366$) **Sensitivity:** TRUS 68.1% **Specificity:** TRUS NR **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Lopez-Corona 2003[92] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** August 1999 to September 2001 **Country:** USA **Follow-up:** Y (97 months)	**Enrolled:** 343 **Analysed:** 343 **Consecutive:** Y **Age (years):** Mean 62.1, range 38 to 81 **PSA (ng/ml):** Mean 8.4, range 0.28 to 123 **Prostate size:** NR **Previous negative biopsies:** 1 **Previous biopsy scheme:** NR **Inclusion criteria:** Patients undergoing prostate biopsy with at least one previous negative biopsy **Exclusion criteria:** Cancer diagnosed on initial biopsy	**Index test(s):** N/A **Definition of positive test:** N/A **Comparator test(s):** TRUS **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 343$) **Sensitivity:** TRUS 66.3% **Specificity:** TRUS NR **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Ozden 2005[93] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** NR **Country:** Turkey **Follow-up:** N	**Enrolled:** 60 **Analysed:** 60 **Consecutive:** Y **Age (years):** Mean 64, range 55 to 74 **PSA (ng/ml):** Mean 8.4, range 4.6 to 27 **Prostate size:** NR **Previous negative biopsies:** 1 **Previous biopsy scheme:** 12-core TRUS **Inclusion criteria:** One previous negative 12-core TRUS/Bx; persistently elevated PSA level (> 4 ng/ml) after the negative biopsy **Exclusion criteria:** More than 12 months since negative biopsy	**Index test(s):** N/A **Definition of positive test:** N/A **Comparator test(s):** TRUS **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 60$) **Sensitivity:** TRUS 43.8% **Specificity:** TRUS 81.8% **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR
Panebianco 2011[95,114,119] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** September 2009 to February 2010 **Country:** Italy **Follow-up:** N	**Enrolled:** 43 **Analysed:** 41 **Consecutive:** Y **Age (years):** Mean 60.3, range 48 to 69 **PSA (ng/ml):** Mean 6.37 **Prostate size:** NR **Previous negative biopsies:** 1 **Previous biopsy scheme:** NR **Inclusion criteria:** Prior TRUS/Bx negative for PC and HGPIN; persistent elevated PSA level (≥ 4 ng/ml and < 10 ng/ml); negative DRE **Exclusion criteria:** More than 12 months since negative biopsy	**Index test(s):** MRS, DCE **Definition of positive test:** NR **Comparator test(s):** TRUS (part of reference standard only) **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 41$) **Sensitivity:** MRS or DCE 92.9% **Specificity:** MRS or DCE 86.6% **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Park 2008[96] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** December 2006 to October 2007 **Country:** Republic of Korea **Follow-up:** N	**Enrolled:** 43 **Analysed:** 43 **Consecutive:** NR **Age (years):** Mean 62.6, range 40 to 80 **PSA (ng/ml):** Mean 12, range 2.6 to 66.4 **Prostate size (cc):** Range 22 to 129 ml (patients with positive cores) **Previous negative biopsies:** 1–5 **Previous biopsy scheme:** 10-core TRUS **Inclusion criteria:** At least one previous set of 10-core biopsy; negative DRE; persistently elevated PSA level 6–24 months after initial biopsy **Exclusion criteria:** NR	**Index test(s):** DW **Definition of positive test:** The most hyperintense area was localised qualitatively and superimposed on the ADC maps using MRIcro software, version 1.37.[182] On the ADC maps, the most hypointense lesion was defined as suspicious for tumour **Comparator test(s):** TRUS **Definition of positive test:** It was determined if any hypointense or hypoechoic lesion corresponded to a lesion that was considered a tumour on DW **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 43$) **Sensitivity:** DW 100%, TRUS 70.6% **Specificity:** DW NR, TRUS NR **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Pepe 2010[97] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** July 2001 to December 2009 **Country:** Italy **Follow-up:** Y (22 months)	**Enrolled:** 2358 **Analysed:** 423 **Consecutive:** NR **Age (years):** **Second biopsy:** median 62.8, range 45 to 74 **Third biopsy:** median 64, range 50 to 73 **PSA (ng/ml):** **Second biopsy:** median 12.8, range 2.7 to 56 **Third biopsy:** median 19.5, range 5.6 to 84 **Prostate size:** NR **Previous negative biopsies:** 1 **Previous biopsy scheme:** Median nine cores in the PZ of each lobe **Inclusion criteria:** Abnormal DRE; PSA level > 10 ng/ml and PSA level of between 4.1 and 10 ng/ml or 2.6 and 4 ng/ml with free–total PSA level ≤ 25 and 20%, respectively **Exclusion criteria:** NR	**Index test(s):** N/A **Definition of positive test:** N/A **Comparator test(s):** TRUS **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 423$) **Sensitivity:** TRUS 96.3% **Specificity:** TRUS NR **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Perotti 2002[127,128] Abstract **Study type:** Cross-sectional diagnostic **Study start/end dates:** NR **Country:** USA **Follow-up:** N	**Enrolled:** 82 **Analysed:** 74 **Consecutive:** Y **Age (years):** NR **PSA (ng/ml):** NR **Prostate size:** NR **Previous negative biopsies:** 1– 7 **Previous biopsy scheme:** NR **Inclusion criteria:** Elevated PSA level and at least one prior negative TRUS biopsies **Exclusion criteria:** NR	**Index test(s):** N/A **Definition of positive test:** N/A **Comparator test(s):** T2, TRUS (part of reference standard only) **Definition of positive test:** **T2:** endorectal MR images were interpreted as being of low, moderate or high suspicion for PC based upon T1 and T2 characteristics **TRUS:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 74$) **Sensitivity:** T2 94.1% **Specificity:** T2 70.2% **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR
Philip 2006[98] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** NR **Country:** UK **Follow-up:** Y (3 and 6 months)	**Enrolled:** 241 **Analysed:** 241 **Consecutive:** NR **Age (years):** Mean 63.4, range 43 to 84 **PSA (ng/ml):** NR **Prostate size:** NR **Previous negative biopsies:** 1 **Previous biopsy scheme:** NR **Inclusion criteria:** Persistently high age-specific PSA of 2.5–10 ng/ml and initial benign biopsy **Exclusion criteria:** NR	**Index test(s):** N/A **Definition of positive test:** N/A **Comparator test(s):** TRUS **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 241$) **Sensitivity:** TRUS 95.2% **Specificity:** TRUS NR **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Pinsky 2007[99] Full text **Study type:** Cross-sectional diagnostic (screening study) **Study start/end dates:** November 1993 to July 2001 **Country:** USA **Follow-up:** Y (every 12 months)	**Enrolled:** 38,350 **Analysed:** 2761 **Consecutive:** NR **Age (years):** Mean 65, range 55 to 79 **PSA (ng/ml):** > 4 ng/nl *n* = 1739 ≤ 4 ng/ml *n* = 1022 **Prostate size:** NR **Previous negative biopsies:** 1 **Previous biopsy scheme:** NR **Inclusion criteria:** PSA level of > 4 ng/ml or nodularity or induration on DRE **Exclusion criteria:** History of PC, surgical removal of entire prostate, taking finasteride (Proscar, Merck) in the previous 6 months and, from 1995, more than one PSA blood test in the previous 3 years	**Index test(s):** N/A **Definition of positive test:** N/A **Comparator test(s):** TRUS **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient (*n* = 2761) **Sensitivity:** TRUS 71.6% **Specificity:** TRUS NR **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Portalez 2010[100,129] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** November 2007 to July 2008 **Country:** France **Follow-up:** N	**Enrolled:** 68 **Analysed:** 68 **Consecutive:** Y **Age (years):** Mean 62.4, range 49 to 76 **PSA (ng/ml):** Mean 9.16, range 1.6 to 25 **Prostate size:** NR **Previous negative biopsies:** 1–4 **Previous biopsy scheme:** Mean 17 cores **Inclusion criteria:** Elevated PSA level and at least one prior negative TRUS biopsies **Exclusion criteria:** NR	**Index test(s):** MRS, DCE, DW **Definition of positive test:** **MRS:** A voxel was considered suspicious for malignant tissue when the CC/C ratio was > 0.86 **DCE:** Short time to peak, peak enhancement and washout were considered evocative of PC in the PZ. In the TZ, suspicion was based upon the combination of shorter time to peak, higher peak enhancement and more rapid washout than in the rest of the TZ **DW:** Mean values minus SD for ADC were used as the cut-off (≤1.24 for PZ and ≤1.11 in the TZ). Lower values were considered suspicious for PC **Comparator test(s):** T2, TRUS (part of reference standard only) **Definition of positive test:** **T2:** Hypointense ovoid mass-like or nodular subcapsular foci of reduced signal intensity in the PZ were considered suspicious for PC. In the TZ, homogeneous low T2 signal intensity with ill-defined margins and lack of capsule or invasion of the anterior fibromuscular stroma were considered significant **TRUS:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** PZ segment ($n = 408$) **Sensitivity:** MRS 29.3%, DCE 29.3%, DW 39%, T2 48.8% **Specificity:** MRS 90.2%, DCE 93.5%, DW 96%, T2 87% **Unit of analysis:** PZ and TZ segment ($n = 544$) **Sensitivity:** Overall MRI NR **Specificity:** Overall MRI NR (PPV 36.3) **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Prando 2005[101] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** July 2002 to October 2003 **Country:** Brazil **Follow-up:** N	**Enrolled:** 42 **Analysed:** 42 **Consecutive:** Y **Age (years):** Median 65, range 45 to 75 **PSA (ng/ml):** Mean 6.8, range 4.1 to 15.3 **Prostate size:** NR **Previous negative biopsies:** 2–6 **Previous biopsy scheme:** TRUS-guided, at least six cores **Inclusion criteria:** Elevated PSA level and prior negative biopsy findings **Exclusion criteria:** NR	**Index test(s):** MRS **Definition of positive test:** Primary scores of 1–5 were assigned to voxels on the basis of the mean healthy ratio of the CC/C ratio. Scores were then adjusted on the basis of choline–creatine ratio, the loss of polyamines on the basis of increased resolvability of choline and creatine, and spectral signal–noise ratio. Scores of 4 and 5 were considered abnormal **Comparator test(s):** T2, TRUS (part of reference standard only) **Definition of positive test:** **T2:** Hypointense areas **TRUS:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 42$) **Sensitivity:** MRS (voxel score of 4 and/or 5) 100%, MRS (voxel score of 5) 70.6% **Specificity:** MRS (voxel score of 4 and/or 5) 44%, MRS (voxel score of 5) 84% **Unit of analysis:** Sextant ($n = 348$) **Sensitivity:** MRS 84.6% **Specificity:** MRS 89% **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Quinlan 2009[102] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** 2001–5 **Country:** Ireland **Follow-up:** Y (mean 50 months)	**Enrolled:** 111 **Analysed:** 111 **Consecutive:** NR **Age (years):** First repeat biopsy ($n = 16$) mean age 68.7, range 57 to 78 Second repeat biopsy ($n = 4$) mean age 69.5, range 54 to 80 Third repeat biopsy ($n = 4$) mean age 69.8, range 64 to 78 Fourth repeat biopsy ($n = 3$) mean age 66, range 60 to 74 **PSA (ng/ml):** First repeat biopsy ($n = 16$) median PSA 9.8, range 5.6 to 18.95 Second repeat biopsy ($n = 4$) median PSA 39.15, range 10.6 to 103 Third repeat biopsy ($n = 4$) median PSA 19.5, range 14.2 to 57 Fourth repeat biopsy ($n = 3$) median PSA 15, range 13 to 26.7 **Prostate size:** NR **Previous negative biopsies:** At least one **Previous biopsy scheme:** NR **Inclusion criteria:** NR **Exclusion criteria:** NR	**Index test(s):** N/A **Definition of positive test:** N/A **Comparator test(s):** TRUS **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Biopsy ($n = 175$) **Sensitivity:** TRUS 59.3% **Specificity:** TRUS NR **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Rahman 2003[130] Abstract **Study type:** Cross-sectional diagnostic **Study start/end dates:** NR **Country:** USA **Follow-up:** N	**Enrolled:** 56 **Analysed:** 56 **Consecutive:** NR **Age (years):** NR **PSA (ng/ml):** NR **Prostate size:** NR **Previous negative biopsies:** At least two **Previous biopsy scheme:** NR **Inclusion criteria:** Elevated PSA level and at least two previous negative biopsies **Exclusion criteria:** NR	**Index test(s):** MRS **Definition of positive test:** NR **Comparator test(s):** T2, TRUS (part of reference standard only) **Definition of positive test:** **T2:** NR **TRUS:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 56$) **Sensitivity:** MRS or T2 95.5% **Specificity:** MRS or T2 17.6% **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Roehl 2002[103] Full text **Study type:** Cross-sectional diagnostic (screening study) **Study start/end dates:** May 1991 to July 2000 **Country:** USA **Follow-up:** Y (every 6 months)	**Enrolled:** 24,902 **Analysed:** 634 **Consecutive:** NR **Age (years):** NR **PSA (ng/ml):** NR **Prostate size:** NR **Previous negative biopsies:** 1 **Previous biopsy scheme:** 4- or 6-core **Inclusion criteria:** **In screening study:** ≥50 years and no history of PC or ≥40 years if family history of PC and/or African American descent **To be biopsied:** Until May 1995: serum PSA level > 4 ng/ml or suspicious DRE. After May 1995: serum PSA level > 2.5 ng/ml or suspicious DRE **Exclusion criteria:** NR	**Index test(s):** N/A **Definition of positive test:** N/A **Comparator test(s):** TRUS **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 634$) **Sensitivity:** TRUS 60.6% **Specificity:** TRUS NR **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR
Roethke 2012[104] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** May 2005 to December 2009 **Country:** Germany **Follow-up:** N	**Enrolled:** 100 **Analysed:** 100 **Consecutive:** Y **Age (years):** Median 66, range 48 to 81 **PSA (ng/ml):** Median 8.7, range 3.9 to 65 **Prostate size (cc):** Median 41, range 13 to 183 **Previous negative biopsies:** 1–9 **Previous biopsy scheme:** NR **Inclusion criteria:** At least one prior negative TRUS/Bx, persistently elevated or rising PSA level and at least one lesion suspicious for PC in previous endorectal coil MRI **Exclusion criteria:** History of radiation therapy of the prostate or current hormone deprivation therapy	**Index test(s):** MRS, DCE, DW **Definition of positive test:** MRS: NR DCE: NR DW: NR **Comparator test(s):** T2 **Definition of positive test:** **T2:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by T2-guided biopsy **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 56$) **Sensitivity:** MRS or DCE or DW or MRS NR **Specificity:** MRS or DCE or DW or MRS NR (PPV 52%) **Adverse effects:** All procedures were well tolerated by patients **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Sciarra 2010[94,105,131,132] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** January 2007 to January 2009 **Country:** Italy **Follow-up:** N	**Enrolled:** 180 (group A: $n = 90$, group B: $n = 90$) **Analysed:** 140 **Consecutive:** Y **Age (years):** Overall ($n = 180$) Mean 63.5, range 48 to 74 **PSA (ng/ml):** Group A: median 6, range 4 to 9 Group B: median 6.22, range 4 to 9.3 **Prostate size (cc):** Group A: median 45, range 30 to 60 Group B: median 45.5, range 30 to 63 **Previous negative biopsies:** 1 **Previous biopsy scheme:** 10-core laterally directed random TRUS-guided biopsies **Inclusion criteria:** First negative biopsy, persistent total PSA level ≥4 ng/ml and < 10 ng/ml and negative DRE **Exclusion criteria:** Previous hormonal, surgical or radiation therapies for prostate diseases and cases in which a MRI with complete MRS and DCE was not possible	**Index test(s):** MRS, DCE **Definition of positive test:** **MRS:** Voxels were classed as suspicious if the CC/C ratio was > 0.8. PC was suspected if one or more suspicious voxels were identified **DCE:** Regions of PC within the PZ were identified based on decreased signal intensity on T2 and higher enhancing values on subtracted DCE images. When multiple enhancing regions were identified, the SI-T of the most enhancing region was considered significant for subsequent analysis. Functional dynamic imaging parameters were estimated via the SI-T curves modelled with three main enhancement records: onset time of signal enhancement, time to peak and peak enhancement **Comparator test(s):** TRUS (part of reference standard only) **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 90$), one previous biopsy (group B) **Sensitivity:** MRS 88.6%, DCE 79.5%, MRS and DCE 75%, MRS or DCE 93.2% **Specificity:** MRS 93.5%, DCE 91.3%, MRS and DCE 93.5%, MRS or DCE 91.3% **Unit of analysis:** Patient ($n = 50$), two previous biopsies (group A) **Sensitivity:** MRS 92.3%, DCE 84.6%, MRS and DCE 80.8%, MRS or DCE 96.2% **Specificity:** MRS 79.2%, DCE 91.7%, MRS and DCE 91.7%, MRS or DCE 79.2% **Unit of analysis:** Voxel ($n =$ NR), one previous biopsy (group B) **Sensitivity:** MRS NR, DCE NR, MRS and DCE NR, MRS or DCE NR **Specificity:** MRS NR, DCE NR, MRS and DCE NR, MRS or DCE NR (PPV: MRS 94.4, DCE 91.6, MRS and DCE 94.7, MRS or DCE 91.6) **Unit of analysis:** Biopsy ($n =$ NR), one previous biopsy (group B) **Sensitivity:** MRS 83.3%, DCE 75.6%, MRS and DCE 89.7%, MRS or DCE NR **Specificity:** MRS 72.7%, DCE 76.7%, MRS and DCE 80.4%, MRS or DCE NR **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Testa 2010[106] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** February 2007 to July 2007 **Country:** Italy **Follow-up:** N	**Enrolled:** 58 **Analysed:** 54 **Consecutive:** Y **Age (years):** Mean 63.9, range 52 to 76 **PSA (ng/ml):** Mean 11.4, range 3 to 42 **Prostate size (cc):** Mean 59.3, range 30 to 150 **Previous negative biopsies:** 1–4 **Previous biopsy scheme:** Extended TRUS biopsy (mean no. of cores 16, range 12 to 22) **Inclusion criteria:** Persistently elevated PSA level (> 4 ng/ml) and/or positive DRE; one extended negative TRUS biopsy between 6 and 12 months earlier or two or more negative TRUS biopsies with the last one within the previous 6–24 months **Exclusion criteria:** Previous diagnosis of PC; treatment with 5-alpha-reductase inhibitors or anti-androgen therapy	**Index test(s):** MRS **Definition of positive test:** Regions of PC were metabolically identified based on the CC/C peak area ratios. In the PZ, a score of 0 was assigned to voxels when CC/C was ≤3 SD above the mean healthy value (0.22 ± 0.13); a score of 1 was assigned when CC/C was between 3 and 4 SD above the mean healthy value or when both CC/C was between 2 and 3 SD above the mean healthy value and the CC/C ratio ≥1. A score of 2 was assigned to voxels where CC/C was 4 SD above the mean healthy value. Scores 1 and 2 were regarded as malignant. In the TZ, the same three-point scale was used but voxels were regarded as malignant only when CC/C was at least 4 SD above the mean healthy value **Comparator test(s):** T2, TRUS (part of reference standard only) **Definition of positive test:** **T2:** In the PZ, regions presenting T2 hypointensities and regions with nodular T2 hypointensities were considered test positive. In the TZ, imaging features considered indicative of cancer were the presence of homogeneous low T2 signal intensity, an absent capsule and ill-defined margins **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 54$) **Sensitivity:** MRS 90.9%, T2 72.7%, MRS and T2 72.7%, MRS or T2 90.9% **Specificity:** MRS 43.8%, T2 62.5%, MRS and T2 71.9%, MRS or T2 34.4% **Unit of analysis:** Region ($n = 648$) **Sensitivity:** MRS ($n = 630$) 67.3%, T2 38.2%, MRS and T2 34.5%, MRS or T2 70.9% **Specificity:** MRS ($n = 630$) 87%, T2 96.3%, MRS and T2 98.8%, MRS or T2 84.7% **Unit of analysis:** Region: PZ only ($n = 540$) **Sensitivity:** MRS ($n = 522$) 64.9%, T2 27%, MRS and T2 21.6%, MRS or T2 70.3% **Specificity:** MRS ($n = 522$) 85.8%, T2 95.8%, MRS and T2 98.6%, MRS or T2 83.3% **Unit of analysis:** Region: TZ only ($n = 108$) **Sensitivity:** MRS 72.2%, T2 61.1%, MRS and T2 61.1%, MRS or T2 72.2% **Specificity:** MRS 93.3%, T2 98.9%, MRS and T2 100%, MRS or T2 92.2% **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Ukimura 1997[107] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** December 1987 to February 1996 **Country:** USA **Follow-up:** Y (length NR)	**Enrolled:** 193 **Analysed:** 193 **Consecutive:** NR **Age (years):** Mean 66.5, range 42 to 83 **PSA (ng/ml):** NR **Prostate size:** NR **Previous negative biopsies:** 1 **Previous biopsy scheme:** NR **Inclusion criteria:** Initial negative biopsy and re-biopsied during study period **Exclusion criteria:** Diagnosis of PIN at initial biopsy	**Index test(s):** N/A **Definition of positive test:** NR **Comparator test(s):** TRUS **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 1993$) **Sensitivity:** TRUS 64.7% **Specificity:** TRUS NR **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR
Valentini 2010[133] Abstract **Study type:** Cross-sectional diagnostic **Study start/end dates:** NR **Country:** Italy **Follow-up:** N	**Enrolled:** 11 **Analysed:** 11 **Consecutive:** Y **Age (years):** NR **PSA (ng/ml):** NR **Prostate size:** NR **Previous negative biopsies:** At least one **Previous biopsy scheme:** TRUS-guided (no. of cores NR) **Inclusion criteria:** Persistent elevation of PSA level (> 4 ng/ml) and previous negative TRUS-guided biopsies **Exclusion criteria:** NR	**Index test(s):** DCE, DW **Definition of positive test:** DCE: NR DW: NR **Comparator test(s):** TRUS (part of reference standard only) **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transperineal approach	**Unit of analysis:** Biopsy ($n = NR$) **Sensitivity:** DCE 80%, DW 60%, DCE or DW NR **Specificity:** DCE NR, DW NR, DCE and DW NR (PPV: DCE and DW 17.2) **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Wefer 2000[134] Abstract **Study type:** Cross-sectional diagnostic **Study start/end dates:** NR **Country:** USA **Follow-up:** N	**Enrolled:** 24 **Analysed:** 24 **Consecutive:** NR **Age (years):** NR **PSA (ng/ml):** NR **Prostate size:** NR **Previous negative biopsies:** At least one **Previous biopsy scheme:** NR **Inclusion criteria:** Clinical suspicion of PC and elevated PSA level **Exclusion criteria:** NR	**Index test(s):** MRS **Definition of positive test:** NR **Comparator test(s):** T2, TRUS (part of reference standard only) **Definition of positive test:** **T2:** Based on low signal intensity on T2-weighted images **TRUS:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 24$) **Sensitivity:** T2 70%, MRS and T2 50% **Specificity:** T2 85.7%, MRS and T2 85.7% **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR
Wetter 2005[108] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** June 2003 to January 2004 **Country:** Germany **Follow-up:** N	**Enrolled:** 103 **Analysed:** 6 **Consecutive:** Y **Age (years):** Median 64.5, range 50 to 73 **PSA (ng/ml):** Median 8.2, range 6 to 20 **Prostate size:** NR **Previous negative biopsies:** 1 **Previous biopsy scheme:** Sextant biopsy ($n = 4$); NR ($n = 2$) **Inclusion criteria:** Elevated PSA level (> 3.5 ng/ml) and previous negative biopsy(ies) or no previous biopsy **Exclusion criteria:** Previous hormonal, surgical or irradiation therapies; prostate biopsy within 4 weeks before MRI/MRS	**Index test(s):** MRS **Definition of positive test:** CC/C ratio > 0.6 **Comparator test(s):** T2 **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by T2-guided biopsy **Biopsies taken by:** Transgluteal approach	**Unit of analysis:** Patient: any suspicion classed as positive ($n = 6$) **Sensitivity:** MRS 100%, T2 100%, MRS and T2 50%, MRS or T2 100% **Specificity:** MRS 75%, T2 0%, MRS and T2 75%, MRS or T2 50% **Unit of analysis:** Patient: only highest level of suspicion classed as positive ($n = 6$) **Sensitivity:** MRS 50%, T2 50%, MRS and T2 50%, MRS or T2 50% **Specificity:** MRS 75%, T2 50%, MRS and T2 75%, MRS or T2 50% **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Yakar 2011[109] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** September 2009 to March 2010 **Country:** The Netherlands **Follow-up:** N	**Enrolled:** 12 **Analysed:** 9 **Consecutive:** NR **Age (years):** Median 69, range 59 to 72 **PSA (ng/ml):** Median 19.5, range 10 to 26 **Prostate size:** NR **Previous negative biopsies:** 1–4 **Previous biopsy scheme:** Transverse US guided **Inclusion criteria:** PSA ≥4 ng/ml and at least one negative biopsy **Exclusion criteria:** Contraindications to MR imaging, e.g. cardiac pacemakers, intracranial clips	**Index test(s):** DCE, DW **Definition of positive test: DCE:** A focally enhancing region on the DCE volume transfer constant map and/or washout map **DW:** A focally low-signal-intensity region in combination with a high-signal-intensity region on the image obtained with a *b*-value of 800 s/mm^2 on the ADC map **Comparator test(s):** T2 **Definition of positive test:** A relatively low-signal-intensity region **Reference standard:** Histopathological assessment of biopsied tissue obtained by T2-guided biopsy **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 9$) **Sensitivity:** DCE or DW or T2 NR **Specificity:** DCE or DW or T2 NR (PPV 55.6) **Unit of analysis:** CSR ($n = 13$) **Sensitivity:** DCE or DW or T2 NR **Specificity:** DCE or DW or T2 NR (PPV 46.2) **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Yanke 2006[110] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** January 1993 to June 2003 **Country:** USA **Follow-up:** Y (mean 30 months)	**Enrolled:** 416 **Analysed:** 416 **Consecutive:** NR **Age (years):** Black men, mean (SD): 67.3 (6.8) White men, mean (SD): 67.5 (6.9) **PSA (ng/ml):** Black men, mean (SD): 13.1 (12.9) White men, mean (SD): 10.1 (7.3) **Prostate size (cc):** Black men, mean (SD): 49.8cc (32) White men, mean (SD): 49.7cc (28.3) **Previous negative biopsies:** 1 **Previous biopsy scheme:** 6- or 12-core **Inclusion criteria:** Persistently increased PSA level, PSA velocity > 0.75 ng/ml yearly, ASAP or HGPIN, abnormal DRE or patient preference **Exclusion criteria:** NR	**Index test(s):** N/A **Definition of positive test:** NR **Comparator test(s):** TRUS **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Unclear if patient or biopsy-level analysis **Sensitivity:** TRUS 67.4% **Specificity:** TRUS NR **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR
Yao 2009[136] Abstract **Study type:** Cross-sectional diagnostic **Study start/end dates:** January 2003 to January 2008 **Country:** USA **Follow-up:** N	**Enrolled:** 1053 **Analysed:** 41 **Consecutive:** NR **Age (years):** Mean 66, range 48 to 79 **PSA (ng/ml):** Mean 16, range 2 to 104 **Prostate size:** NR **Previous negative biopsies:** 2–8 **Previous biopsy scheme:** Mean cores 15, range 6 to 24 **Inclusion criteria:** At least two negative biopsies and persistent abnormal PSA **Exclusion criteria:** NR	**Index test(s):** N/A **Definition of positive test:** NR **Comparator test(s):** T2, TRUS (part of reference standard only) **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 41$) **Sensitivity:** T2 (and TRUS) 93.3%; targeted T2 80% **Specificity:** T2 (and TRUS) 61.5%, Targeted T2 NR **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Younes 2001[137] Abstract **Study type:** Cross-sectional diagnostic **Study start/end dates:** NR **Country:** France **Follow-up:** N	**Enrolled:** 27 **Analysed:** 27 **Consecutive:** NR **Age (years):** Mean 62, range 48 to 73 **PSA (ng/ml):** NR **Prostate size:** NR **Previous negative biopsies:** At least one **Previous biopsy scheme:** Sextant **Inclusion criteria:** Previous negative biopsies and increasing PSA level **Exclusion criteria:** NR	**Index test(s):** N/A **Definition of positive test:** NR **Comparator test(s):** T2, TRUS (part of reference standard only) **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 27$) **Sensitivity:** T2 100% **Specificity:** T2 53.9% **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Yuen 2004[111] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** February 2000 to April 2001 **Country:** Singapore **Follow-up:** N	**Enrolled:** 57 **Analysed:** 57 **Consecutive:** Y **Age (years):** Biopsy 2 ($n = 45$): mean 65, range 53 to 80 Biopsy 3 ($n = 12$): mean 66, range 58 to 75 **PSA (ng/ml):** Biopsy 2: mean 11.9, range 1 to 34.8 Biopsy 3: mean 29.6, range 7.1 to 131 **Prostate size (cc):** Biopsy 2: mean 41.7, range 11 to 90 Biopsy 3: mean 49.5, range 20 to 96 **Previous negative biopsies:** 1 or 2 **Previous biopsy scheme:** First negative biopsy ($n = 45$): sextant TRUS ($n = 39$), 10-core TRUS ($n = 6$) Second negative biopsy ($n = 12$): 10-core TRUS **Inclusion criteria:** PSA level > 4 ng/ml and/or abnormal DRE **Exclusion criteria:** NR	**Index test(s):** N/A **Definition of positive test:** NR **Comparator test(s):** TRUS **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 57$) **Sensitivity:** TRUS 13.3% **Specificity:** TRUS 92.9% **Adverse effects:** Haematuria ($n = 3$), fever ($n = 5$), urinary retention ($n = 5$), rectal bleeding ($n = 1$) **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Yuen 2004[112] Full text **Study type:** Cross-sectional diagnostic **Study start/end dates:** July 2002 to December 2002 **Country:** Singapore **Follow-up:** N	**Enrolled:** 24 **Analysed:** 24 **Consecutive:** Y **Age (years):** Mean 64.5, range 58 to 69 **PSA (ng/ml):** **Negative biopsy:** mean 8.17, range 6.1 to 16.4 **Positive biopsy:** mean 20.36, range 7.1 to 31.8 **Prostate size:** NR **Previous negative biopsies:** **Negative:** 1–2 **Positive:** 1–3 **Previous biopsy scheme:** NR **Inclusion criteria:** At least one prior negative TRUS biopsy, PSA level persistently increased between 4 and 40 ng/ml and/or abnormal DRE **Exclusion criteria:** > 70 years of age; contraindications for MRI	**Index test(s):** MRS **Definition of positive test:** **Equivocal spectra:** Height of combined choline + creatinine peak was lower than citrate peak **Abnormal spectra:** Height of combined choline + creatinine peak was higher than citrate peak **Comparator test(s):** T2, TRUS (part of reference standard only) **Definition of positive test:** **T2:** An abnormal area was judged suspicious if it was discrete and homogeneously low in signal and if it did not correspond to haemorrhagic areas with a high signal on T1-weighted scans **TRUS:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient: equivocal classed as normal ($n = 24$) **Sensitivity:** MRS 57.1%, T2 57.1%, MRS and T2 14.3%, MRS or T2 100% **Specificity:** MRS 82.4%, T2 88.2%, MRS and T2 100%, MRS or T2 70.6% **Unit of analysis:** Patient: equivocal classed as suspicious ($n = 24$) **Sensitivity:** MRS 71.4%, T2 57.1%, MRS and T2 28.6%, MRS or T2 100% **Specificity:** MRS 52.9%, T2 76.5%, MRS and T2 76.5%, MRS or T2 52.9% **Unit of analysis:** Core ($n = 296$) **Sensitivity:** MRS 40%, T2 40% **Specificity:** MRS 94.7%, T2 97.9% **Adverse effects:** Most patients had transient haematuria and haemospermia, which were self-resolving. There were no cases of sepsis or severe bleeding that required inpatient treatment **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

Study	Participants	Tests	Outcomes summary
Zackrisson 2004[113] Full text **Study type:** Cross-sectional diagnostic (screening study) **Study start/end dates:** 1995, until men reached 70 years of age **Country:** Sweden **Follow-up:** Y (every 2 years)	**Enrolled:** 9839 **Analysed:** 706 **Consecutive:** NR **Age (years):** NR **PSA (ng/ml):** NR **Prostate size:** NR **Previous negative biopsies:** 1 **Previous biopsy scheme:** Sextant **Inclusion criteria:** **In screening study:** All men born from 1 January 1930 to 31 December 1944 and living in Göteborg, Sweden **Men randomised to screening group:** Invited to undergo further examination if tPSA level > 3 ng/ml **Exclusion criteria:** NR	**Index test(s):** N/A **Definition of positive test:** N/A **Comparator test(s):** TRUS **Definition of positive test:** NR **Reference standard:** Histopathological assessment of biopsied tissue obtained by TRUS/Bx **Biopsies taken by:** Transrectal approach	**Unit of analysis:** Patient ($n = 706$) **Sensitivity:** TRUS 73.4% **Specificity:** NR **Adverse effects:** NR **Altered treatment as a result of tests:** NR **Interpretability/readability of tests:** NR **Acceptability of tests:** NR **Effects of testing on QoL:** NR

[1]H-MRS, proton magnetic resonance spectroscopy; CSR, cancer-suspicious region; DCE, dynamic contrast-enhanced magnetic resonance imaging; DW, diffusion-weighted magnetic resonance imaging; ECE, extracapsular extension; IQR, interquartile range; N, no; NR, not reported; NVB, neurovascular bundle; SI-T, signal intensity time; SV, seminal vesicle; SVI, seminal vesicle invasion; T2, T2-weighted magnetic resonance imaging; tPSA, total PSA; TSR, tumour suspicious region; Y, yes.