

SUPPLEMENTARY FILE: STUDIES EXCLUDED FROM THE SYSTEMATIC REVIEW OF CLINICAL EVIDENCE

Supplementary table 1 Studies excluded from the systematic review with reasons at full text stage

Study	Reason for exclusion
Abouassaly R, Klein EA, El-Shefai A, Stephenson A. Impact of using 29 MHz high-resolution micro-ultrasound in real-time targeting of transrectal prostate biopsies: initial experience. <i>World J Urol.</i> 2020;38(5):1201-6.	Wrong population (MicroUS is not standard practice)
Ahdoot M, Lebastchi AH, Long L, Wilbur AR, Gomella PT, Mehralivand S, et al. Using Prostate Imaging-Reporting and Data System (PI-RADS) scores to select an optimal prostate biopsy method: a secondary analysis of the trio study. <i>Eur Urol Oncol.</i> 2022;5(2):176-86.	SF vs SB, insufficient data for inclusion in indirect comparison (lack of separable data excluding prior positives)
Ahdoot M, Wilbur AR, Reese SE, Lebastchi AH, Mehralivand S, Gomella PT, et al. MRI-targeted, systematic, and combined biopsy for prostate cancer diagnosis. <i>N Engl J Med.</i> 2020;382(10):917-28.	SF vs SB, insufficient data for inclusion in indirect comparison.
Al Hussein Al Awamlh B, Marks LS, Sonn GA, Natarajan S, Fan RE, Gross MD, et al. Multicenter analysis of clinical and MRI characteristics associated with detecting clinically significant prostate cancer in PI-RADS (v2.0) category 3 lesions. <i>Urol Oncol.</i> 2020;38(7):637.e9-.e15.	Wrong study design
Alqahtani S, Zhang X, Wei C, Zhang Y, Szewczyk-Bieda M, Wilson J, et al. Predicting the performance of concurrent systematic random biopsies during image fusion targeted sampling of multi-parametric MRI detected prostate cancer. a prospective study (PRESET study). [published online ahead of print, Dec 21 2021]. <i>Cancers.</i> 2021;11.	Wrong intervention: out of scope SF
Altok M, Demirel C, Kang HC, Choi H, John D, Inguillo IA, et al. Impact of MRI/US fusion-guided prostate biopsy on biopsy-naive patients: a single urologist's experience. <i>BJUI Compass.</i> 2022;3(1):19-25.	Wrong study design
Andras I, Crisan D, Cata E, Tamas-Szora A, Caraiani C, Coman RT, et al. MRI-TRUS fusion guided prostate biopsy - initial experience and assessment of the role of contralateral lobe SB. <i>Med Ultrason.</i> 2019;21(1):37-44.	Wrong intervention: out of scope SF
Arsov C, Quentin M, Rabenalt R, Antoch G, Albers P, Blondin D. Repeat transrectal ultrasound biopsies with additional targeted cores according to results of functional prostate MRI detects high-risk prostate cancer in patients with previous negative biopsy and increased PSA - a pilot study. <i>Anticancer Res</i> 2012;32:1087-92.	Wrong outcome
Arsov C, Rabenalt R, Blondin D, Quentin M, Hiester A, Godehardt E, et al. Prospective randomized trial comparing magnetic resonance imaging (MRI)-guided in-bore biopsy to MRI-ultrasound fusion and transrectal ultrasound-guided prostate biopsy in patients with prior negative biopsies. <i>Eur Urol.</i> 2015;68(4):713-20.	Wrong population
Arsov C, Rabenalt R, Quentin M, Hiester A, Blondin D, Albers P, et al. Comparison of patient comfort between MR-guided in-bore and MRI/ultrasound fusion-guided prostate biopsies within a prospective randomized trial. <i>World J Urol</i> 2016;34:215-20.	Wrong comparator
Avolio PP, Lughezzani G, Paciotti M, Maffei D, Uleri A, Frego N, et al. The use of 29 MHz transrectal micro-ultrasound to stratify the prostate cancer risk in patients with PI-RADS III lesions at multiparametric MRI: A single institutional analysis. <i>Urol Oncol</i> 2021;39:832.e1-.e7.	Wrong comparator: MicroUS is not standard practice
Baco E, Rud E, Eri LM, Moen G, Vlatkovic L, Svindland A, et al. A randomized controlled trial to assess and compare the outcomes of two-core prostate biopsy guided by fused magnetic resonance and transrectal ultrasound images and traditional 12-core systematic biopsy. <i>Eur Urol</i> 2016;69:149-56.	Wrong outcome
Bae JH, Kim SH. Transrectal ultrasound-guided prostate biopsy versus combined magnetic resonance imaging-ultrasound fusion and SB for prostate cancer detection in routine clinical practice. <i>Ultrasonography.</i> 2020;39(2):137-43.	Wrong study design
Ball MW, Ross AE, Ghabili K, Kim C, Jun C, Petrisor D, et al. Safety and feasibility of direct magnetic resonance imaging-guided transperineal prostate biopsy using a novel magnetic resonance imaging-safe robotic device. <i>Urology.</i> 2017;109:216-21.	Wrong intervention
Bansal S, Gupta NP, Yadav R, Khara R, Ahlawat K, Gautam D, et al. Multiparametric magnetic resonance imaging-transrectal ultrasound fusion prostate biopsy: a prospective, single centre study. <i>Indian J Urol.</i> 2017;33(2):134-9.	SF vs SB, insufficient data for inclusion in indirect comparison.

Barrett T, Patterson AJ, Koo BC, Wadhwa K, Warren AY, Doble A, et al. Targeted transperineal biopsy of the prostate has limited additional benefit over background cores for larger MRI-identified tumors. <i>World J Urol.</i> 2016;34(4):501-8.	Wrong study design
Bass EJ, Donaldson IA, Freeman A, Jameson C, Punwani S, Moore C, et al. Magnetic resonance imaging targeted transperineal prostate biopsy: a local anaesthetic approach. <i>Prostate Cancer Prostatic Dis.</i> 2017;20(3):311-7.	Wrong study design
Belas O, Klap J, Cornud F, Beuvon F, Peyromaure M, Zerbib M, et al. [Prebiopsy multiparametric MRI of the prostate: the end of randomized biopsies?]. <i>Prog Urol.</i> 2012;22(10):583-9.	Wrong study design
Benelli A, Vaccaro C, Guzzo S, Nedbal C, Varca V, Gregori A. The role of MRI/TRUS fusion biopsy in the diagnosis of clinically significant prostate cancer. [published online ahead of print May 18 2020]. <i>Ther Adv Urol.</i> 2020;12.	Wrong study design
Ber Y, Segal N, Tamir S, Benjaminov O, Yakimov M, Sela S, et al. A noninferiority within-person study comparing the accuracy of transperineal to transrectal MRI-US fusion biopsy for prostate-cancer detection. <i>Prostate Cancer Prostatic Dis.</i> 2020;23(3):449-56.	Wrong intervention: out of scope SF
Berkenwald A, Stensland KD, Sebel LE, Moinzadeh A, Faust W. Initial transperineal prostate biopsy experience at a high-volume center. <i>Can J Urol.</i> 2021;28(3):10692-8.	Wrong study design
Bhambri K, Pandey AK, Jhobta A, Bhambri A, Sharma S, Singh B, et al. Role of TRUS and MRI in the detection of prostate cancer-a prospective study. <i>J Clin Diagn Res</i> 2020;14:TC10-4.	Wrong comparator
Bladou F, Fogaing C, Levental M, Aronson S, Alameldin M, Anidjar M. Transrectal ultrasound-guided biopsy for prostate cancer detection: systematic and/or magnetic-resonance imaging-targeted. <i>Can Urol Assoc J.</i> 2017;11(9):E330-7.	SF and CF combined, no separate data per fusion method
Boesen L, Noergaard N, Chabanova E, Logager V, Balslev I, Mikines K, et al. Early experience with multiparametric magnetic resonance imaging-targeted biopsies under visual transrectal ultrasound guidance in patients suspicious for prostate cancer undergoing repeated biopsy. <i>Scand J Urol</i> 2015;49:25-34.	Wrong outcome
Boesen L, Norgaard N, Logager V, Balslev I, Bisbjerg R, Thestrup KC, et al. Assessment of the diagnostic accuracy of biparametric magnetic resonance imaging for prostate cancer in biopsy-naive men: the Biparametric MRI for Detection of Prostate Cancer (BIDOC) study. <i>JAMA Netw Open</i> 2018;1:e180219.	Wrong outcome
Boesen L, Norgaard N, Logager V, Balslev I, Thomsen HS. A prospective comparison of selective multiparametric magnetic resonance imaging fusion-targeted and systematic transrectal ultrasound-guided biopsies for detecting prostate cancer in men undergoing repeated biopsies. <i>Urol Int.</i> 2017;99(4):384-91.	Wrong intervention: out of scope SF
Boesen L, Norgaard N, Logager V, Balslev I, Thomsen HS. Multiparametric MRI in men with clinical suspicion of prostate cancer undergoing repeat biopsy: a prospective comparison with clinical findings and histopathology. <i>Acta Radiol.</i> 2018;59(3):371-80.	SF and CF combined, no separate data per fusion method
Boesen L, Norgaard N, Logager V, Balslev I, Thomsen HS. Where do transrectal ultrasound- and magnetic resonance imaging-guided biopsies miss significant prostate cancer? <i>Urology.</i> 2017;110:154-60.	Wrong study design
Boesen L, Norgaard N, Logager V, Thomsen HS. Clinical outcome following low suspicion multiparametric prostate magnetic resonance imaging or benign magnetic resonance imaging guided biopsy to detect prostate cancer. <i>J Urol.</i> 2017;198(2):310-5.	SF and CF combined, no separate data per fusion method
Bonet X, Suarez-Novo JF, Castells M, Serrallach M, Beato S, Picola N, et al. [Targeted biopsies using magnetic resonance imaging/ultrasonography fusion compared with systematic biopsies prostate cancer detection. Initial experience]. <i>Arch Esp Urol.</i> 2020;73(3):192-201.	Wrong study design
Borghesi M, Bianchi L, Barbaresi U, Vagnoni V, Corcioni B, Gaudiano C, et al. Diagnostic performance of MRI/TRUS fusion-guided biopsies vs. systematic prostate biopsies in biopsy-naive, previous negative biopsy patients and men undergoing active surveillance. <i>Minerva Urol Nephrol.</i> 2021;73(3):357-66.	Wrong intervention: out of scope SF
Borkowetz A, Hadaschik B, Platzek I, Toma M, Torsev G, Renner T, et al. Prospective comparison of transperineal magnetic resonance imaging/ultrasonography fusion biopsy and transrectal SB in biopsy-naive patients. <i>BJU Int.</i> 2018;121(1):53-60.	SF vs SB, insufficient data for inclusion in indirect comparison.
Borkowetz A, Platzek I, Toma M, Laniado M, Baretton G, Froehner M, et al. Comparison of systematic transrectal biopsy to transperineal magnetic resonance imaging/ultrasound-fusion biopsy for the diagnosis of prostate cancer. <i>BJU Int.</i> 2015;116(6):873-9.	Wrong study design
Borkowetz A, Platzek I, Toma M, Renner T, Herout R, Baunacke M, et al. Evaluation of Prostate Imaging Reporting and Data System classification in the prediction of tumor aggressiveness in targeted magnetic resonance imaging/ultrasound-fusion biopsy. <i>Urol Int.</i> 2017;99(2):177-85.	Wrong study design
Borkowetz A, Renner T, Platzek I, Toma M, Herout R, Baunacke M, et al. Evaluation of transperineal magnetic resonance imaging/ultrasound-fusion biopsy compared to transrectal SB in the prediction of tumour aggressiveness in patients with previously negative biopsy. <i>Urol Int.</i> 2019;102(1):20-6.	Wrong study design

Brock M, Loppenberg B, Roghmann F, Pelzer A, Dickmann M, Becker W, et al. Impact of real-time elastography on magnetic resonance imaging/ultrasound fusion guided biopsy in patients with prior negative prostate biopsies. <i>J Urol</i> . 2015;193(4):1191-7.	Wrong intervention: out of scope SF
Brock M, von Bodman C, Palisaar J, Becker W, Martin-Seidel P, Noldus J. Detecting prostate cancer. A prospective comparison of systematic prostate biopsy with targeted biopsy guided by fused MRI and transrectal ultrasound. <i>Dtsch Arztebl Int</i> . 2015;112(37):605-11.	Wrong intervention: out of scope SF
Brock M, von Bodman C, Palisaar J, Becker W, Martin-Seidel P, Noldus J. Detecting prostate cancer-a prospective comparison of systematic prostate biopsy with targeted biopsy guided by fused MRI and transrectal ultrasound. <i>Dtsch Arztebl Int</i> . 2015;112:605-11.	Wrong intervention: out of scope SF
Brown LC, Ahmed HU, Faria R, El-Shater Bosaily A, Gabe R, Kaplan RS, et al. Multiparametric MRI to improve detection of prostate cancer compared with transrectal ultrasound-guided prostate biopsy alone: the PROMIS study. <i>Health Technol Assess</i> . 2018;22(39):1-176.	Wrong intervention
Bryk DJ, Llukani E, Huang WC, Lepor H. Natural history of pathologically benign cancer suspicious regions on multiparametric magnetic resonance imaging following targeted biopsy. <i>J Urol</i> . 2015;194(5):1234-40.	Wrong study design
Bryk DJ, Llukani E, Taneja SS, Rosenkrantz AB, Huang WC, Lepor H. The role of ipsilateral and contralateral transrectal ultrasound-guided systematic prostate biopsy in men with unilateral magnetic resonance imaging lesion undergoing magnetic resonance imaging-ultrasound fusion-targeted prostate biopsy. <i>Urology</i> . 2017;102:178-82.	Wrong study design
Bukavina L, Tilburt JC, Konety B, Shah ND, Gross CP, Yu JB, et al. Perceptions of prostate MRI and fusion biopsy of radiation oncologists and urologists for patients diagnosed with prostate cancer: results from a national survey. <i>Eur Urol Focus</i> . 2020;6(2):273-9.	Wrong intervention
Califano A, Caputo A, D'Antonio A, Ciccone V, Fabiano M, Maiorino F, et al. The best prostate biopsy sampling system - fusion and SB: a single center experience [published online ahead of print December 29 2021]. <i>Urologia</i> . 2021.	Wrong intervention: out of scope SF
Campa R, Del Monte M, Barchetti G, Pecoraro M, Salvo V, Ceravolo I, et al. Improvement of prostate cancer detection combining a computer-aided diagnostic system with TRUS-MRI targeted biopsy. <i>Abdom Radiol (NY)</i> 2019;44:264-71.	Wrong comparator
Cash H, Maxeiner A, Stephan C, Fischer T, Durmus T, Holzmann J, et al. The detection of significant prostate cancer is correlated with the Prostate Imaging Reporting and Data System (PI-RADS) in MRI/transrectal ultrasound fusion biopsy [published online ahead of print 21 August 2015]. <i>World J Urol</i> . 2015.	Wrong intervention: out of scope SF
Castellucci R, Linares Quevedo AI, Sanchez Gomez FJ, Cogollos Acuna I, Salmeron Beliz I, Munoz Fernandez de Legaria M, et al. A non-randomized prospective study on the diagnostic performance of perineal prostatic biopsy, directed via diffusion nuclear resonance, in patients with suspected prostate cancer and previous negative transrectal prostate biopsy. <i>Urologia</i> 2021;88:69-76.	Wrong outcome
Castellucci R, Linares Quevedo AI, Sanchez Gomez FJ, Diez Rodriguez J, Cogorno L, Cogollos Acuna I, et al. Prospective nonrandomized study of diagnostic accuracy comparing prostate cancer detection by transrectal ultrasound-guided biopsy to magnetic resonance imaging with subsequent MRI-guided biopsy in biopsy-naive patients. <i>Minerva Urol Nefrol</i> . 2017;69(6):589-95.	CF vs SB, insufficient data for inclusion in indirect comparison.
Cata E, Andras I, Ferro M, Kadula P, Leucuta D, Musi G, et al. Systematic sampling during MRI-US fusion prostate biopsy can overcome errors of targeting-prospective single center experience after 300 cases in first biopsy setting. <i>Transl Androl Uro</i> . 2020;9(6):2510-8.	Wrong study design
Cattarino S, Forte V, Salciccia S, Drudi FM, Cantisani V, Sciarra A, et al. MRI ultrasound fusion biopsy in prostate cancer detection: are randomized clinical trials reproducible in everyday clinical practice? <i>Urologia</i> . 2019;86(1):9-16.	SF vs SB, insufficient data for inclusion in indirect comparison.
Cauni VM, Stanescu D, Tanase F, Mihai B, Persu C. Magnetic resonance/ultrasound fusion targeted biopsy of the prostate can be improved by adding SB. <i>Med Ultrason</i> . 2021;23(3):277-82.	Wrong study design
Celma A, Lopez R, Roche S, Planas J, Regis L, Placer J, et al. Are targeted prostate biopsies ready to replace systematic prostate biopsies? <i>Actas Urol Esp</i> . 2019;43(10):573-8.	Wrong study design
Chang AI, Park BK. New TRUS techniques and imaging features of PI-RADS 4 or 5: influence on tumor targeting. <i>Front Oncol</i> . 2021;11:608409.	CF vs SB, insufficient data for inclusion in indirect comparison
Chang CH, Chiu HC, Lin WC, Ho TL, Chang H, Chang YH, et al. The influence of serum prostate-specific antigen on the accuracy of magnetic resonance imaging targeted biopsy versus saturation biopsy in patients with previous negative biopsy. <i>Biomed Res Int</i> . 2017;2017:7617148.	Wrong study design
Checucci E, De Cillis S, Amparore D, Garrou D, Aimar R, Piana A, et al. Naive patients with suspicious prostate cancer and positive multiparametric magnetic resonance imaging (mp-MRI): is it time for fusion target biopsy alone? [published online ahead of print June 22, 2021]. <i>J Clin Urol</i> . 2021.	Wrong study design
Checucci E, Piramide F, Amparore D, De Cillis S, Granato S, Sica M, et al. Beyond the learning curve of prostate MRI/TRUS target fusion biopsy after more than 1000 procedures. <i>Urology</i> . 2021;155:39-45.	Wrong study design
Chen J, Lin Z, Chen J, Lin Q, Chen J, Yan Y. Magnetic resonance imaging-guided transperineal prostate biopsy. <i>J Cancer Res Ther</i> . 2019;15(2):394-7.	Wrong intervention
Chen J, Yi XL, Jiang LX, Wang R, Zhao JG, Li YH, et al. 3-Tesla magnetic resonance imaging improves the prostate cancer detection rate in transrectal ultrasound-guided biopsy. <i>Exp Ther Med</i> . 2015;9(1):207-12.	CF vs SB, insufficient data for inclusion in indirect comparison

Cheng Y, Qi F, Liang L, Zhang L, Cao D, Hua L, et al. Use of prostate systematic and targeted biopsy on the basis of bi-parametric magnetic resonance imaging in biopsy-naive patients. <i>J Invest Surg.</i> 2022;35(1):92-7.	Wrong study design
Chessa F, Schiavina R, Ercolino A, Gaudio C, Giusti D, Bianchi L, et al. Diagnostic accuracy of the Novel 29 MHz micro-ultrasound "ExactVu™" for the detection of clinically significant prostate cancer: a prospective single institutional study. A step forward in the diagnosis of prostate cancer. <i>Arch Ital Urol Androl.</i> 2021;93(2):132-8.	Wrong population
Claros OR, Tourinho-Barbosa RR, Fregeville A, Gallardo AC, Muttin F, Carneiro A, et al. Comparison of initial experience with transrectal magnetic resonance imaging cognitive guided micro-ultrasound biopsies versus established transperineal robotic ultrasound magnetic resonance imaging fusion biopsies for prostate cancer. <i>J Urol</i> 2020;203:918-25.	Wrong comparator: MicroUS is not standard practice
Connor MJ, Eldred-Evans D, van Son M, Hosking-Jervis F, Bertonecchi Tanaka M, Reddy D, et al. A multicenter study of the clinical utility of nontargeted systematic transperineal prostate biopsies in patients undergoing pre-biopsy multiparametric magnetic resonance imaging. <i>J Urol.</i> 2020;204(6):1195-201.	SF and CF combined, no separate data per fusion method
Cool DW, Romagnoli C, Izawa JI, Chin J, Gardi L, Tessier D, et al. Comparison of prostate MRI-3D transrectal ultrasound fusion biopsy for first-time and repeat biopsy patients with previous atypical small acinar proliferation. <i>Can Urol Assoc J.</i> 2016;10(9-10):342-8.	SF vs SB, insufficient data for inclusion in indirect comparison.
Cool DW, Zhang X, Romagnoli C, Izawa JI, Romano WM, Fenster A. Evaluation of MRI-TRUS fusion versus cognitive registration accuracy for MRI-targeted, TRUS-guided prostate biopsy. <i>AJR Am J Roentgenol.</i> 2015;204(1):83-91.	Wrong study design
Cornud F, Lefevre A, Camparo P, Barat M, Dumonceau O, Galiano M, et al. Post-MRI transrectal micro-ultrasonography of transition zone PI-RADS > 2 lesions for biopsy guidance [published online ahead of print April 22 2022]. <i>Eur Radiol.</i> 2022;22.	Wrong study design
Cornud F, Lefevre A, Flam T, Dumonceau O, Galiano M, Soyer P, et al. MRI-directed high-frequency (29Mhz) TRUS-guided biopsies: initial results of a single-center study. <i>Eur Radiol</i> 2020;30:4838-46.	Wrong comparator: MicroUS is not standard practice
Costa DN, Bloch BN, Yao DF, Sanda MG, Ngo L, Genega EM, et al. Diagnosis of relevant prostate cancer using supplementary cores from magnetic resonance imaging-prompted areas following multiple failed biopsies. <i>Magn Reson Imaging.</i> 2013;31(6):947-52.	Wrong study design
Cricco-Lizza E, Wilcox Vanden Berg RN, Laviana A, Pantuck M, Basourakos SP, Salami SS, et al. Comparative effectiveness and tolerability of transperineal MRI-targeted prostate biopsy under local versus sedation. <i>Urology.</i> 2021;155:33-8.	Wrong study design
D'Agostino D, Mineo Bianchi F, Romagnoli D, Giampaoli M, Corsi P, Del Rosso A, et al. MRI/TRUS FUSION guided biopsy as first approach in ambulatory setting: feasibility and performance of a new fusion device. <i>Arch Ital Urol Androl</i> 2020;91:211-7.	Wrong comparator
Dal Moro F, Zecchini G, Morlacco A, Gardiman MP, Lacognata CS, Lauro A, et al. Does 1.5 T mpMRI play a definite role in detection of clinically significant prostate cancer? Findings from a prospective study comparing blind 24-core saturation and targeted biopsies with a novel data remodeling model. <i>Aging Clin Exp Res.</i> 2019;31(1):115-23.	CF vs SB, insufficient data for inclusion in indirect comparison
de Gorski A, Roupert M, Peyronnet B, Le Cossec C, Granger B, Comperat E, et al. Accuracy of magnetic resonance imaging/ultrasound fusion targeted biopsies to diagnose clinically significant prostate cancer in enlarged compared to smaller prostates. <i>J Urol.</i> 2015;194(3):669-73.	SF vs SB, insufficient data for inclusion in indirect comparison.
Dekalo S, Matzkin H, Mabeesh NJ. High cancer detection rate using CF - targeted transperineal prostate biopsies. <i>Int Braz J Urol.</i> 2017;43(4):600-6.	Wrong study design
Del Monte M, Leonardo C, Salvo V, Grompone MD, Pecoraro M, Stanzione A, et al. MRI/US fusion-guided biopsy: performing exclusively targeted biopsies for the early detection of prostate cancer. <i>Radiol Med</i> 2018;123:227-34.	Wrong comparator
Delongchamps NB, Portalez D, Bruguere E, Rouviere O, Malavaud B, Mozer P, et al. Are magnetic resonance imaging-transrectal ultrasound guided targeted biopsies noninferior to transrectal ultrasound guided systematic biopsies for the detection of prostate cancer? <i>J Urol.</i> 2016;196(4):1069-75	SF vs SB, insufficient data for inclusion in indirect comparison.
Demirtas A, Sonmez G, Tombul ST, Demirtas T. Comparison of pain levels in fusion prostate biopsy and standard TRUS-guided biopsy. <i>Int Braz J Urol</i> 2020;46:557-62.	Wrong outcome
Demirtas T, Gur A, Golbasi A, Sonmez G, Tombul ST, Demirtas A. A prospective study and single-center experience: effectivity of fusion prostate biopsy in biopsy-naive patients. <i>Cureus.</i> 2021;13(10):e19002.	Wrong intervention: out of scope SF

Demirtas T, Sonmez G, Tombul ST, Demirtas A. A single-center experience: does MRI-guided target prostate biopsy meet expectations? <i>Cureus</i> 2019;11:e6160.	Wrong intervention: out of scope SF
Derigs F, Doryumu S, Tollens F, Norenberg D, Neuberger M, von Hardenberg J, et al. A prospective study on inter-operator variability in semi-robotic software-based MRI/TRUS-fusion targeted prostate biopsies. <i>World J Urol.</i> 2022;40(2):427-33.	SF vs SB, insufficient data for inclusion in indirect comparison.
Dianat SS, Carter HB, Schaeffer EM, Hamper UM, Epstein JI, Macura KJ. Association of quantitative magnetic resonance imaging parameters with histological findings from MRI/ultrasound fusion prostate biopsy. <i>Can J Urol.</i> 2015;22(5):7965-72.	Wrong study design
Ding XF, Luan Y, Zhu LY, Xiao Q, Chen J, Chen HP, et al. The application of intraoperative frozen section examination in multiparametric magnetic resonance imaging/transrectal ultrasound fusion prostate biopsy during a major pandemic. <i>Quant Imaging Med Surg.</i> 2022;12(4):2378-84.	Wrong population
Distler F, Radtke JP, Kesch C, Roethke M, Schlemmer HP, Roth W, et al. [Value of MRI/ultrasound fusion in primary biopsy for the diagnosis of prostate cancer]. <i>Urologe A.</i> 2016;55(2):146-55.	SF vs SB, insufficient data for inclusion in indirect comparison.
Distler FA, Radtke JP, Bonekamp D, Kesch C, Schlemmer HP, Wiczorek K, et al. The value of PSA density in combination with PI-RADS™ for the accuracy of prostate cancer prediction. <i>J Urol.</i> 2017;198(3):575-82.	SF vs SB, insufficient data for inclusion in indirect comparison.
Durmus T, Reichelt U, Huppertz A, Hamm B, Beyersdorff D, Franiel T. MRI-guided biopsy of the prostate: correlation between the cancer detection rate and the number of previous negative TRUS biopsies. <i>Diagn Interv Radiol</i> 2013;19:411-7.	Wrong outcome
Durmus T, Stephan C, Grigoryev M, Diederichs G, Saleh M, Slowinski T, et al. [Detection of prostate cancer by real-time MR/ultrasound fusion-guided biopsy: 3T MRI and state of the art sonography]. <i>Rofo</i> 2013;185:428-33.	Wrong comparator
Egbers N, Schwenke C, Maxeiner A, Teichgraber U, Franiel T. MRI-guided core needle biopsy of the prostate: acceptance and side effects. <i>Diagn Interv Radiol.</i> 2015;21(3):215-21.	Wrong intervention
Eklund M, Jaderling F, Discacciati A, Bergman M, Annerstedt M, Aly M, et al. MRI-targeted or standard biopsy in prostate cancer screening. <i>N Engl J Med.</i> 2021;385(10):908-20.	Wrong population
El-Achkar A, Abou Heidar N, Labban M, Al-Moussawy M, Moukaddem H, Nasr R, et al. MRI/US fusion transperineal versus transrectal biopsy of prostate cancer: outcomes and complication rates, a tertiary medical center experience in the Middle East. <i>Turk J Urol.</i> 2022;48(2):98-105.	Wrong study design
Eldred-Evans D, Burak P, Connor MJ, Day E, Evans M, Fiorentino F, et al. Population-based prostate cancer screening with magnetic resonance imaging or ultrasonography: the IP1-PROSTAGRAM Study. <i>JAMA Oncol.</i> 2021;7(3):395-402.	SF vs SB, insufficient data for inclusion in indirect comparison (lack of separable data on PCa and csPCa cancer detection rates by SF, SB and combined biopsy approaches).
Engelhaus DG, Engelhard K, Schwab SA, Uder M, Wach S, Wullich B, et al. Magnetic resonance image-guided biopsies with a high detection rate of prostate cancer. <i>ScientificWorldJournal.</i> 2012;2012:975971.	Wrong intervention
Engelhard K, Kuhn R, Osten A, Bogner K, Dworak A, Lubke L, et al. Impact of magnetic resonance imaging-guided prostate biopsy in the supine position on the detection of significant prostate cancer in an inhomogeneous patient cohort. <i>Scand J Urol.</i> 2016;50(2):110-5.	Wrong intervention
Febres-Aldana CA, Alghamdi S, Weppelmann TA, Lastarria E, Bhandari A, Omarzai Y, et al. Magnetic resonance imaging-ultrasound fusion-targeted biopsy combined with systematic 12-core ultrasound-guided biopsy improves the detection of clinically significant prostate cancer: are we ready to abandon the systematic approach? <i>Urol Ann.</i> 2020;12(4):366-72.	Wrong study design
Fiard G, Hohn N, Descotes JL, Rambeaud JJ, Troccaz J, Long JA. Targeted MRI-guided prostate biopsies for the detection of prostate cancer: initial clinical experience with real-time 3-dimensional transrectal ultrasound guidance and magnetic resonance/transrectal ultrasound image fusion. <i>Urology.</i> 2013;81(6):1372-8.	Wrong intervention: out of scope SF
Garcia Bennett J, Conejero Olesti A, Hurtado Salom C, Rebenaque E, Parada D, Serrano Alcala E, et al. Usefulness of cognitive targeting in multiparametric MRI-guided biopsy to diagnose the dominant lesion in prostate cancer. <i>Radiologia.</i> 2015;57(5):428-33.	Wrong study design

Garcia Bennett J, Vilanova JC, Guma Padro J, Parada D, Conejero A. Evaluation of MR imaging-targeted biopsies of the prostate in biopsy-naive patients. A single centre study. <i>Diagn Interv Imaging</i> 2017;98:677-84.	Wrong outcome
Gayet MC, van der Aa AA, Beerlage HP, Schrier BP, Gielens M, Heesakkers R, et al. Cancer detection rates of systematic and targeted prostate biopsies after biparametric MRI. <i>Prostate Cancer</i> . 2020;2020:4626781.	Wrong intervention: out of scope SF
Gillis CJ, Southall TM, Wilson R, Anderson M, Young J, Hewitt R, et al. The value of magnetic resonance imaging-ultrasound fusion targeted biopsies for clinical decision making among patients with previously negative transrectal ultrasound biopsy and persistent prostate-specific antigen elevation. <i>Can Urol Assoc J</i> . 2022;16(6):E315-20.	Wrong study design
Giyasov SI, Kilov F, Mukhtarov S, Tukhtamishev MH, Inoyatov UN. [To the issue of improving early diagnosis of localized prostate cancer]. <i>Urologiia</i> 2020:66-72.	Irretrievable
Glybochko PV, Alyaev YG, Amosov AV, Enikeev DV, Chinenov DV, Krupinov GE, et al. [Multi-parametric MRI/US fusion guided biopsy for the diagnosis of prostate cancer. ur experience]. <i>Urologiia</i> 2018:98-104.	Irretrievable
Gomez Gomez E, Valero Rosa J, Carrasco Valiente J, Trivino Tarradas F, Anglada Curado F, Lopez Ruiz D, et al. New approach to guide target prostate biopsy: technique and initial experience. <i>Urology</i> . 2018;121:198-9.	Wrong study design
Gordetsky JB, Nix JW, Rais-Bahrami S. Perineural invasion in prostate cancer is more frequently detected by multiparametric MRI targeted biopsy compared with standard biopsy. <i>Am J Surg Pathol</i> . 2016;40(4):490-4.	Wrong study design
Gorin MA, Meyer AR, Zimmerman M, Harb R, Joice GA, Schwen ZR, et al. Transperineal prostate biopsy with cognitive magnetic resonance imaging/biplanar ultrasound fusion: description of technique and early results. <i>World J Urol</i> . 2020;38(8):1943-9.	Wrong study design
Gronberg H, Eklund M, Picker W, Aly M, Jaderling F, Adolfsson J, et al. Prostate cancer diagnostics using a combination of the Stockholm3 blood test and multiparametric magnetic resonance imaging. <i>Eur Urol</i> . 2018;74(6):722-8.	Wrong study design
Gunzel K, Cash H, Buckendahl J, Konigbauer M, Asbach P, Haas M, et al. The addition of a sagittal image fusion improves the prostate cancer detection in a sensor-based MRI /ultrasound fusion guided targeted biopsy. <i>BMC Urol</i> . 2017;17(1):7.	Wrong intervention: out of scope SF
Gunzel K, Magheli A, Baco E, Cash H, Heinrich S, Neubert H, et al. Infection rate and complications after 621 transperineal MRI-TRUS fusion biopsies in local anesthesia without standard antibiotic prophylaxis. <i>World J Urol</i> . 2021;39(10):3861-6.	Wrong study design
Hadaschik BA, Kuru TH, Tulea C, Rieker P, Popeneciu IV, Simpfendorfer T, et al. A novel stereotactic prostate biopsy system integrating pre-interventional magnetic resonance imaging and live ultrasound fusion. <i>J Urol</i> 2011;186:2214-20.	Wrong outcome
Haffner J, Lemaitre L, Puech P, Haber GP, Leroy X, Jones JS, et al. Role of magnetic resonance imaging before initial biopsy: comparison of magnetic resonance imaging-targeted and SB for significant prostate cancer detection. <i>BJU Int</i> . 2011;108(8 Pt 2):E171-8.	CF vs SB, insufficient data for inclusion in indirect comparison
Hakozaki Y, Matsushima H, Kumagai J, Murata T, Masuda T, Hirai Y, et al. A prospective study of magnetic resonance imaging and ultrasonography (MRI/US)-fusion targeted biopsy and concurrent systematic transperineal biopsy with the average of 18-cores to detect clinically significant prostate cancer. <i>BMC Urol</i> . 2017;17(1):117.	Wrong intervention: out of scope SF
Halstuch D, Baniel J, Lifshitz D, Sela S, Ber Y, Margel D. Characterizing the learning curve of MRI-US fusion prostate biopsies. <i>Prostate Cancer Prostatic Dis</i> 2019;22:546-51.	Wrong outcome
Hambrock T, Somford DM, Hoeks C, Bouwense SA, Huisman H, Yakar D, et al. Magnetic resonance imaging guided prostate biopsy in men with repeat negative biopsies and increased prostate specific antigen. <i>J Urol</i> . 2010;183(2):520-8.	Wrong study design
Hamid S, Donaldson IA, Hu Y, Rodell R, Villarini B, Bonmati E, et al. The SmartTarget biopsy trial: a prospective, within-person randomised, blinded trial comparing the accuracy of visual-registration and magnetic resonance imaging/ultrasound image-fusion targeted biopsies for prostate cancer risk stratification. <i>Eur Urol</i> . 2019;75(5):733-40.	Wrong intervention: SmartTarget SF device is out of scope in this appraisal
Hansen NL, Barrett T, Lloyd T, Warren A, Samel C, Bratt O, et al. Optimising the number of cores for magnetic resonance imaging-guided targeted and systematic transperineal prostate biopsy. <i>BJU Int</i> . 2020;125(2):260-9.	SF vs SB, insufficient data for inclusion in indirect comparison.
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Herlemann A, Overland MR, Washington SL, Cowan JE, Westphalen AC, Carroll PR, et al. How often does magnetic resonance imaging detect prostate cancer missed by transrectal ultrasound? <i>Eur Urol Focus</i> . 2021;7(6):1268-73.	SF vs SB, insufficient data for inclusion in indirect comparison.
Hofbauer SL, Luger F, Harland N, Plage H, Reimann M, Hollenbach M, et al. A non-inferiority comparative analysis of micro-ultrasonography and MRI-targeted biopsy in men at risk of prostate cancer. <i>BJU Int</i> 2022;129:648-54.	Wrong comparator: MicroUS is not standard practice
Hoffmann MA, Taymoorian K, Ruf C, Gerhards A, Leyendecker K, Stein T, et al. Diagnostic performance of multiparametric magnetic resonance imaging and fusion targeted biopsy to detect significant prostate cancer. <i>Anticancer Res</i> 2017;37:6871-7.	Wrong outcome
Hoffmann MA, Wieler HJ, Jakobs FM, Taymoorian K, Gerhards A, Miederer M, et al. [Diagnostic significance of multiparametric MRI combined with US-fusion guided biopsy of the prostate in patients with increased PSA levels and negative standard biopsy results to detect significant prostate cancer - correlation with the Gleason score]. <i>Nuklearmedizin</i> 2017;56:147-55.	Wrong outcome
Hsieh PF, Chang TY, Lin WC, Chang H, Chang CH, Huang CP, et al. A comparative study of transperineal software-assisted magnetic resonance/ultrasound fusion biopsy and transrectal CF biopsy of the prostate. <i>BMC Urol</i> . 2022;22(1):72.	Wrong study design
Hwang SI, Ahn H, Lee HJ, Hong SK, Byun SS, Lee S, et al. Comparison of accuracies between real-time nonrigid and rigid registration in the MRI-US fusion biopsy of the prostate. <i>Diagnostics (Basel)</i> . 2021;11(8):1481.	Wrong intervention: out of scope SF
Hwang SI, Lee HJ, Lee SE, Hong SK, Byun SS, Lee SC, et al. Value of MR-US fusion in guidance of repeated prostate biopsy in men with PSA<10ng/mL. <i>Clin Imaging</i> . 2019;53:1-5.	Wrong study design
Immerzeel J, Israel B, Bomers J, Schoots IG, van Basten JP, Kurth KH, et al. Multiparametric Magnetic Resonance Imaging for the Detection of Clinically Significant Prostate Cancer: What Urologists Need to Know. Part 4: Transperineal Magnetic Resonance-Ultrasound Fusion Guided Biopsy Using Local Anesthesia. <i>Eur Urol</i> 2022;81:110-7.	Wrong outcome
Jacewicz M, Rud E, Galtung KF, Noor D, Baco E. Cancer detection rates in targeted transperineal MRI-TRUS elastic fusion-guided prostate biopsies performed under local anesthesia. <i>Anticancer Res</i> 2021;41:4395-400.	Wrong outcome
Jambor I, Bostrom PJ, Taimen P, Syvanen K, Kahkonen E, Kallajoki M, et al. Novel biparametric MRI and targeted biopsy improves risk stratification in men with a clinical suspicion of prostate cancer (IMPROD Trial). <i>J Magn Reson Imaging</i> 2017;46:1089-95.	Wrong outcome
Jelidi A, Ohana M, Labani A, Alemann G, Lang H, Roy C. Prostate cancer diagnosis: efficacy of a simple electromagnetic MRI-TRUS fusion method to target biopsies. <i>Eur J Radiol</i> . 2017;86:127-34.	Wrong intervention: out of scope SF
Junker D, Schafer G, Heidegger I, Bektic J, Ladurner M, Jaschke W, et al. Multiparametric magnetic resonance imaging/transrectal ultrasound fusion targeted biopsy of the prostate: preliminary results of a prospective single-centre study. <i>Urol Int</i> . 2015;94(3):313-8.	Wrong intervention: out of scope SF
Kadoury S, Yan PK, Xu S, Glossop N, Choyke P, Turkbey B, et al. Realtime TRUS/SF targeted-biopsy for prostate cancer: a clinical demonstration of increased positive biopsy rates. <i>Proceedings of the International Workshop on Prostate Cancer Imaging</i> , September 2010; Sep 24; Beijing, China. bib checked 14102022: Springer-Verlag Berlin; 2010. p. 52-62.	Wrong intervention: out of scope SF
Kam J, Yuminaga Y, Kim R, Aluwihare K, Macneil F, Ouyang R, et al. Does magnetic resonance imaging-guided biopsy improve prostate cancer detection? A comparison of systematic, CF and ultrasound fusion prostate biopsy. <i>Prostate Int</i> . 2018;6(3):88-93.	Wrong study design: retrospective, prospective evidence identified for SF technology
Kasisvisvanathan V, Dufour R, Moore CM, Ahmed HU, Abd-Alazeez M, Charman SC, et al. Transperineal magnetic resonance image targeted prostate biopsy versus transperineal template prostate biopsy in the detection of clinically significant prostate cancer. <i>J Urol</i> . 2013;189(3):860-6.	Wrong study design
Kasisvisvanathan V, Rannikko AS, Borghi M, Panebianco V, Mynderse LA, Vaarala MH, et al. MRI-targeted or standard biopsy for prostate-cancer diagnosis. <i>N Engl J Med</i> . 2018;378(19):1767-77.	SF and CF combined, no separate data per fusion method
Kaufmann B, Saba K, Schmidli TS, Stutz S, Bissig L, Britschgi AJ, et al. Prostate cancer detection rate in men undergoing transperineal template-guided saturation and targeted prostate biopsy. <i>Prostate</i> 2022;82:388-96.	Wrong outcome
Kaufmann S, Kruck S, Kramer U, Gatidis S, Stenzl A, Roethke M, et al. Direct comparison of targeted MRI-guided biopsy with systematic transrectal ultrasound-guided biopsy in patients with previous negative prostate biopsies. <i>Urol Int</i> . 2015;94(3):319-25.	Wrong study design

Kaufmann S, Mischinger J, Amend B, Rausch S, Adam M, Scharpf M, et al. First report of robot-assisted transperineal fusion versus off-target biopsy in patients undergoing repeat prostate biopsy. <i>World J Urol.</i> 2017;35(7):1023-9.	SF vs SB, insufficient data for inclusion in indirect comparison.
Kaushal R, Das CJ, Singh P, Dogra PN, Kumar R. Multiparametric magnetic resonance imaging-transrectal ultrasound fusion biopsies increase the rate of cancer detection in populations with a low incidence of prostate cancer. <i>Investig Clin Urol.</i> 2019;60(3):156-61.	SF vs SB, insufficient data for inclusion in indirect comparison.
Khoo CC, Eldred-Evans D, Peters M, van Son M, van Rossum PSN, Connor MJ, et al. A comparison of prostate cancer detection between visual estimation (cognitive registration) and image fusion (software registration) targeted transperineal prostate biopsy. <i>J Urol.</i> 2021;205(4):1075-81.	Wrong study design: retrospective, and prospective evidence identified for SF technology
Kim YJ, Huh JS, Park KK. Effectiveness of bi-parametric MR/US fusion biopsy for detecting clinically significant prostate cancer in prostate biopsy naive men. <i>Yonsei Med J.</i> 2019;60(4):346-51.	Wrong study design
Klotz L, Chin J, Black PC, Finelli A, Anidjar M, Bladou F, et al. Comparison of multiparametric magnetic resonance imaging-targeted biopsy with systematic transrectal ultrasonography biopsy for biopsy-naive men at risk for prostate cancer: a phase 3 randomized clinical trial. <i>JAMA Oncol.</i> 2021;7(4):534-42.	SF vs SB, insufficient data for inclusion in indirect comparison; MircoUS is not standard practice.
Klotz L, Chin J, Black PC, Finelli A, Anidjar M, Bladou F, et al. Correction to: Comparison of multiparametric magnetic resonance imaging-targeted biopsy with systematic transrectal ultrasonography biopsy for biopsy-naive men at risk for prostate cancer: a phase 3 randomized clinical trial (vol 7, pg 534, 2021). <i>JAMA Oncol.</i> 2021;7(4):639.	Wrong study design
Klotz LH, Haider MS, Chin JI. Correction to: Comparison of multiparametric magnetic resonance imaging-targeted biopsy with systematic transrectal ultrasonography biopsy for biopsy-naive men at risk for prostate cancer: a phase 3 randomized clinical trial (vol 7, pg 534, 2021). <i>JAMA Oncol.</i> 2021;7(7):1074.	Wrong study design
Koelis. Clinical evaluation report. TRINITY & Accessories. ID: 3701-02-07-02-02-V1.0. Lyon: Cadeucum; 2021.	Wrong outcome
Kroenig M, Schaal K, Benndorf M, Soschynski M, Lenz P, Krauss T, et al. Diagnostic accuracy of robot-guided, software based transperineal MRI/TRUS fusion biopsy of the prostate in a high risk population of previously biopsy negative men. <i>Biomed Res Int.</i> 2016;2016:2384894.	Wrong study design
Kuru TH, Roethke MC, Seidenader J, Simpfendorfer T, Boxler S, Alammari K, et al. Critical evaluation of magnetic resonance imaging targeted, transrectal ultrasound guided transperineal fusion biopsy for detection of prostate cancer. <i>J Urol.</i> 2013;190(4):1380-6.	SF vs SB, insufficient data for inclusion in indirect comparison.
Lacetera V, Cervelli B, Cicetti A, Gabrielloni G, Montesi M, Morcellini R, et al. MRI/US fusion prostate biopsy: our initial experience. <i>Arch Ital Urol Androl.</i> 2016;88(4):296-9.	SF vs SB, insufficient data for inclusion in indirect comparison.
Lantz A, Haug ES, Picker W, Crippa A, Jaderling F, Mortezaei A, et al. Effect of information on prostate biopsy history on biopsy outcomes in the era of MRI-targeted biopsies. <i>World J Urol.</i> 2021;39(4):1153-9.	SF vs SB, insufficient data for inclusion in indirect comparison.
Lashey A, Sehri SY, Meibodi AA, Ghafari M, Gholivandan J, Solymani M, et al. Level of prostate cancer diagnosis using MRI-TRUS fusion biopsy in patients with a negative history of trus biopsy. <i>Nephrourol Mon</i> 2019;11:e93596.	Wrong comparator
Lee AY, Chen K, Law YM, Ho HS, Cheng CW, Yuen JS, et al. Robot-assisted magnetic resonance imaging-ultrasound fusion transperineal targeted biopsy. <i>Urology.</i> 2021;155:46.	Wrong study design
Lee DH, Nam JK, Park SW, Lee SS, Han JY, Lee SD, et al. Visually estimated MRI targeted prostate biopsy could improve the detection of significant prostate cancer in patients with a PSA level <10 ng/mL. <i>Yonsei Med J.</i> 2016;57(3):565-71.	CF vs SB, insufficient data for inclusion in indirect comparison
Lee DJ, Recabal P, Sjoberg DD, Thong A, Lee JK, Eastham JA, et al. Comparative effectiveness of targeted prostate biopsy using magnetic resonance imaging ultrasound fusion software and visual targeting: a prospective study. <i>J Urol.</i> 2016;196(3):697-702.	Wrong population: majority of patients (65%) were on active surveillance
Lee SH, Chung MS, Kim JH, Oh YT, Rha KH, Chung BH. Magnetic resonance imaging targeted biopsy in men with previously negative prostate biopsy results. <i>J Endourol.</i> 2012;26(7):787-91.	CF vs SB, insufficient data for inclusion in indirect comparison
Lian H, Zhuang J, Wang W, Zhang B, Shi J, Li D, et al. Assessment of free-hand transperineal targeted prostate biopsy using multiparametric magnetic resonance imaging-transrectal ultrasound fusion in Chinese men with prior negative biopsy and elevated prostate-specific antigen. <i>BMC Urol.</i> 2017;17(1):52.	Wrong intervention: out of scope SF
Lim LY, Tan GH, Zainuddin ZM, Fam XI, Goh EH, Syaris OS, et al. Prospective evaluation of using multiparametric magnetic resonance imaging in CF prostate biopsy compared to the standard systematic 12-core biopsy in the detection of prostate cancer. <i>Urol Ann.</i> 2020;12(3):276-82.	Wrong population
Liu H, Ruan M, Wang H, Wang H, Li X, Song G. Can fewer transperineal SB cores have the same prostate cancer detection rate as of magnetic resonance imaging/ultrasound fusion biopsy? <i>Prostate Cancer Prostatic Dis.</i> 2020;23(4):589-95.	SF and CF combined, no separate data per fusion method

Luger F, Gusenleitner A, Kaar J, Mayr C, Loidl W. Does 29Mhz micro-ultrasound provide uniform diagnostic accuracy within and beyond the peripheral zone? <i>Annals of Urology and Nephrology</i> 2019;1.	Wrong comparator: MicroUS is not standard practice
Lughezzani G, Maffei D, Paciotti M, Pereirae JG, Sanchez A, Staerman F, et al. Comparison of micro-ultrasound and multiparametric MRI imaging for prostate cancer: A Multicentre prospective analysis. <i>J Urol</i> 2020;203(Supplement 4):e806-e7.	Wrong comparator: MicroUS is not standard practice
Ma Q, Yang DR, Xue BX, Wang C, Chen HB, Dong Y, et al. Transrectal real-time tissue elastography targeted biopsy coupled with peak strain index improves the detection of clinically important prostate cancer. <i>Oncol Lett.</i> 2017;14(1):210-6.	Wrong intervention
Mannaerts CK, Engelbrecht MRW, Postema AW, van Kollenburg RAA, Hoeks CMA, Savci-Heijink CD, et al. Detection of clinically significant prostate cancer in biopsy-naive men: direct comparison of SB, multiparametric MRI- and contrast-ultrasound-dispersion imaging-targeted biopsy. <i>BJU Int.</i> 2020;126(4):481-93.	SF vs SB, insufficient data for inclusion in indirect comparison.
Mannaerts CK, Kajtazovic A, Lodeizen OAP, Gayet M, Engelbrecht MRW, Jager GJ, et al. The added value of SB in men with suspicion of prostate cancer undergoing multiparametric MRI-targeted biopsy. <i>Urol Oncol.</i> 2019;37(5):298.e1-e9.	Wrong study design
Mariotti GC, Falsarella PM, Garcia RG, Queiroz MRG, Lemos GC, Baroni RH. Incremental diagnostic value of targeted biopsy using mpMRI-TRUS fusion versus 14-fragments prostatic biopsy: a prospective controlled study. <i>Eur Radiol.</i> 2018;28(1):11-6.	Wrong intervention: out of scope SF
Marra G, Zhuang J, Beltrami M, Callaris G, Zhao X, Marquis A, et al. Transperineal freehand multiparametric SF targeted biopsies under local anaesthesia for prostate cancer diagnosis: a multicentre prospective study of 1014 cases. <i>BJU Int.</i> 2021;127(1):122-30.	Wrong intervention: out of scope SF
Marra G, Zhuang J, Marquis A, Zhao X, Callaris G, Kan Y, et al. Pain in men undergoing transperineal free-hand multiparametric magnetic resonance imaging fusion targeted biopsies under local anaesthesia: outcomes and predictors from a multicenter study of 1,008 patients. <i>J Urol</i> 2020;204:1209-15.	Wrong outcome
Martel P, Rakauskas A, Dagher J, La Rosa S, Meuwly JY, Roth B, et al. WITHDRAWN: The benefit of adopting Microultrasound in the prostate cancer imaging pathway: a lesion-by-lesion analysis [published online ahead of print March 12 2022]. <i>Prog Urol.</i> 2022	Wrong study design
Maxeiner A, Nest AM, Stephan C, Cash H, Baur ADJ, Fischer T, et al. Additive value of transrectal systematic ventral biopsies in combination with magnet resonance imaging/ultrasound fusion-guided biopsy in patients with 3 or more negative prostate biopsies. <i>Urol Int.</i> 2020;104(3-4):205-13.	Wrong intervention: out of scope SF
Maxeiner A, Stephan C, Fischer T, Durmus T, Kilic E, Asbach P, et al. [Real-time MRI/US fusion-guided biopsy in biopsy-naive and pre-biopsied patients with suspicion for prostate cancer]. <i>Aktuelle Urol.</i> 2015;46(1):34-8.	Wrong intervention: out of scope SF
Mehmood S, Alothman KI, Alwehaibi A, Alhashim SM. Diagnostic efficacy and safety of transperineal prostate targeted and SB: the preliminary experience of first 100 cases. <i>Arch Ital Urol Androl.</i> 2021;93(2):127-31.	SF vs SB, insufficient data for inclusion in indirect comparison.
Mertan FV, Greer MD, Shih JH, George AK, Kongnyuy M, Muthigi A, et al. Prospective evaluation of the Prostate Imaging Reporting and Data System Version 2 for prostate cancer detection. <i>J Urol.</i> 2016;196(3):690-6.	SF vs SB, insufficient data for inclusion in indirect comparison.
Miah S, Hosking-Jervis F, Connor MJ, Eldred-Evans D, Shah TT, Arya M, et al. A Multicentre Analysis of the Detection of Clinically Significant Prostate Cancer Following Transperineal Image-fusion Targeted and Nontargeted Systematic Prostate Biopsy in Men at Risk. <i>Eur Urol Oncol.</i> 2020;3(3):262-9.	Wrong study design
Miah S, Servian P, Patel A, Lovegrove C, Skelton L, Shah TT, et al. A prospective analysis of robotic targeted MRI-US fusion prostate biopsy using the centroid targeting approach. <i>J Robot Surg</i> 2020;14:69-74.	Wrong outcome
Mischinger J, Kaufmann S, Russo GI, Harland N, Rausch S, Amend B, et al. Targeted vs systematic robot-assisted transperineal magnetic resonance imaging-transrectal ultrasonography fusion prostate biopsy. <i>BJU Int.</i> 2018;121(5):791-8.	Wrong study design
Mozer P, Roupret M, Le Cossec C, Granger B, Comperat E, de Gorski A, et al. First round of targeted biopsies using magnetic resonance imaging/ultrasonography fusion compared with conventional transrectal ultrasonography-guided biopsies for the diagnosis of localised prostate cancer. <i>BJU Int.</i> 2015;115(1):50-7.	Wrong study design
Nakanishi Y, Ito M, Fukushima H, Yokoyama M, Kataoka M, Ikuta S, et al. Who can avoid SB without missing clinically significant prostate cancer in men who undergo magnetic resonance imaging-targeted biopsy? <i>Clin Genitourin Cancer.</i> 2019;17(3):e664-71.	SF and CF combined, no separate data per fusion method
Natarajan S, Marks LS, Margolis DJ, Huang J, Macairan ML, Lieu P, et al. Clinical application of a 3D ultrasound-guided prostate biopsy system. <i>Urol Oncol</i> 2011;29:334-42.	Wrong outcome
Novaes MAS, Mota A, Athanazio DA. Real life data of MRI-targeted biopsy - experience from a single nonacademic centre using CF and 1.5 tesla scanning. <i>Scand J Urol.</i> 2020;54(5):387-92.	Wrong study design

Oderda M, Faletti R, Battisti G, Dalmaso E, Falcone M, Marra G, et al. Prostate cancer detection rate with Koelis fusion biopsies versus cognitive biopsies: a comparative study. <i>Urol Int.</i> 2016;97(2):230-7.	Wrong study design: retrospective, and prospective evidence identified for SF technology
Peltier A, Aoun F, Lemort M, Kwizera F, Paesmans M, Van Velthoven R. MRI-targeted biopsies versus systematic transrectal ultrasound guided biopsies for the diagnosis of localized prostate cancer in biopsy naive men. <i>Biomed Res Int.</i> 2015;2015:571708.	Wrong population
Pepe P, Garufi A, Priolo G, Pennisi M. Transperineal versus transrectal MRI/TRUS fusion targeted biopsy: detection rate of clinically significant prostate cancer. <i>Clin Genitourin Cancer.</i> 2017;15(1):e33-6.	Wrong intervention: out of scope SF
Pepe P, Garufi A, Priolo GD, Pennisi M. Multiparametric MRI/TRUS fusion prostate biopsy: advantages of a transperineal approach. <i>Anticancer Res.</i> 2017;37(6):3291-4.	Wrong intervention: out of scope SF
Pinto PA, Chung PH, Rastinehad AR, Baccala AA, Kruecker J, Benjamin CJ, et al. Magnetic resonance imaging/ultrasound fusion guided prostate biopsy improves cancer detection following transrectal ultrasound biopsy and correlates with multiparametric magnetic resonance imaging. <i>J Urol.</i> 2011;186(4):1281-5.	Wrong intervention: out of scope SF
Ploussard G, Aronson S, Pelsser V, Levental M, Anidjar M, Bladou F. Impact of the type of ultrasound probe on prostate cancer detection rate and characterization in patients undergoing MRI-targeted prostate biopsies using CF. <i>World J Urol.</i> 2014;32(4):977-83.	Wrong study design
Pokorny MR, de Rooij M, Duncan E, Schroder FH, Parkinson R, Barentsz JO, et al. Prospective study of diagnostic accuracy comparing prostate cancer detection by transrectal ultrasound-guided biopsy versus magnetic resonance (MR) imaging with subsequent MR-guided biopsy in men without previous prostate biopsies. <i>Eur Urol.</i> 2014;66(1):22-9.	CF vs SB, insufficient data for inclusion in indirect comparison
Porreca A, Del Giudice F, Giampaoli M, D'Agostino D, Romagnoli D, Corsi P, et al. Adding SB to magnetic resonance ultrasound fusion targeted biopsy of the prostate in men with previous negative biopsy or enrolled in active surveillance programs: a prospective single center, randomized study. <i>Medicine.</i> 2020;99(37):e22059.	SF vs SB, insufficient data for inclusion in indirect comparison.
Postema AW, Scheltema MJ, Mannaerts CK, Van Sloun RJ, Idzenga T, Mischi M, et al. The prostate cancer detection rates of CEUS-targeted versus MRI-targeted versus systematic TRUS-guided biopsies in biopsy-naive men: a prospective, comparative clinical trial using the same patients. <i>BMC Urol.</i> 2017;17(1):27.	Wrong study design
Puech P, Rouviere O, Renard-Penna R, Villers A, Devos P, Colombel M, et al. Prostate cancer diagnosis: multiparametric MR-targeted biopsy with cognitive and transrectal US-MR fusion guidance versus SB-prospective multicenter study. <i>Radiology.</i> 2013;268(2):461-9.	Wrong intervention: out of scope SF
Qu HW, Liu H, Cui ZL, Jin XB, Zhao Y, Wang MW, et al. [Focusing on MRI-suspected lesions in targeted transrectal prostate biopsy guided by MRI-TRUS fusion imaging for the diagnosis of prostate cancer]. <i>Zhong Hua Nan Ke Xue.</i> 2016;22(9):782-6.	Wrong intervention
Radtke JP, Boxler S, Kuru TH, Wolf MB, Alt CD, Popeneciu IV, et al. Improved detection of anterior fibromuscular stroma and transition zone prostate cancer using biparametric and multiparametric MRI with MRI-targeted biopsy and MRI-US fusion guidance. <i>Prostate Cancer Prostatic Dis.</i> 2015;18(3):288-96.	Wrong study design
Radtke JP, Kuru TH, Boxler S, Alt CD, Popeneciu IV, Huettenbrink C, et al. Comparative analysis of transperineal template saturation prostate biopsy versus magnetic resonance imaging targeted biopsy with magnetic resonance imaging-ultrasound fusion guidance. <i>J Urol.</i> 2015;193(1):87-94.	SF vs SB, insufficient data for inclusion in indirect comparison.
Rastinehad AR, Abboud SF, George AK, Frye TP, Ho R, Chelluri R, et al. Reproducibility of multiparametric magnetic resonance imaging and fusion guided prostate biopsy: multi-institutional external validation by a propensity score matched cohort. <i>J Urol.</i> 2016;195(6):1737-43.	Wrong study design
Rastinehad AR, Turkbey B, Salami SS, Yaskiv O, George AK, Fakhoury M, et al. Improving detection of clinically significant prostate cancer: magnetic resonance imaging/transrectal ultrasound fusion guided prostate biopsy. <i>J Urol.</i> 2014;191(6):1749-54.	SF vs SB, insufficient data for inclusion in indirect comparison.
Rodriguez Socarras ME, Gomez Rivas J, Cuadros Rivera V, Reinoso Elbers J, Llanes Gonzalez L, Michel Mercado I, et al. Prostate mapping for cancer diagnosis: the Madrid protocol. transperineal prostate biopsies using multiparametric magnetic resonance imaging fusion and micro-ultrasound guided biopsies. <i>J Urol</i> 2020;204:726-33.	Wrong comparator: MicroUS is not standard practice
Rouviere O, Puech P, Renard-Penna R, Claudon M, Roy C, Mege-Lechevallier F, et al. Use of prostate systematic and targeted biopsy on the basis of multiparametric MRI in biopsy-naive patients (MRI-FIRST): a prospective, multicentre, paired diagnostic study. <i>Lancet Oncol.</i> 2019;20(1):100-9.	SF and CF combined, no separate data per fusion method
Salami SS, Ben-Levi E, Yaskiv O, Ryniker L, Turkbey B, Kavoussi LR, et al. In patients with a previous negative prostate biopsy and a suspicious lesion on magnetic resonance imaging, is a 12-core biopsy still necessary in addition to a targeted biopsy? <i>BJU Int.</i> 2015;115(4):562-70.	SF vs SB, insufficient data for inclusion in indirect comparison.

Sarkar D, Nandi D, Gangoli S, Hicks J, Carter P. The decision of targeted, systematic or combined biopsy in a biopsy naive patient for the diagnosis of prostate cancer, can be made on the basis of multiparametric magnetic resonance imaging. <i>J Clin Urol.</i> 2020;13(3):198-204.	CF vs SB, insufficient data for inclusion in indirect comparison
Sathianathen NJ, Warlick CA, Weight CJ, Ordonez MA, Spilseth B, Metzger GJ, et al. A clinical prediction tool to determine the need for concurrent systematic sampling at the time of magnetic resonance imaging-guided biopsy. <i>BJU Int.</i> 2019;123(4):612-7.	Wrong study design
Schlenker B, Apfelbeck M, Armbruster M, Chaloupka M, Stief CG, Clevert DA. Comparison of PIRADS 3 lesions with histopathological findings after MRI-fusion targeted biopsy of the prostate in a real world-setting. <i>Clin Hemorheol Microcirc.</i> 2019;71(2):165-70.	Wrong study design
Schlenker B, Apfelbeck M, Buchner A, Stief C, Clevert DA. MRI-TRUS fusion biopsy of the prostate: quality of image fusion in a clinical setting. <i>Clin Hemorheol Microcirc</i> 2018;70:433-40.	Wrong outcome
Shoji S, Hiraiwa S, Endo J, Hashida K, Tomonaga T, Nakano M, et al. Manually controlled targeted prostate biopsy with real-time fusion imaging of multiparametric magnetic resonance imaging and transrectal ultrasound: an early experience. <i>Int J Urol.</i> 2015;22(2):173-8.	SF vs SB, insufficient data for inclusion in indirect comparison.
Shoji S, Hiraiwa S, Ogawa T, Kawakami M, Nakano M, Hashida K, et al. Accuracy of real-time magnetic resonance imaging-transrectal ultrasound fusion image-guided transperineal target biopsy with needle tracking with a mechanical position-encoded stepper in detecting significant prostate cancer in biopsy-naive men. <i>Int J Urol.</i> 2017;24(4):288-94.	SF vs SB, insufficient data for inclusion in indirect comparison.
Siddiqui MM, George AK, Rubin R, Rais-Bahrami S, Parnes HL, Merino MJ, et al. Efficiency of prostate cancer diagnosis by MR/ultrasound fusion-guided biopsy vs standard extended-sextant biopsy for MR-visible lesions. <i>J Natl Cancer Inst.</i> 2016;108(9):djw039.	SF vs SB, insufficient data for inclusion in indirect comparison.
Siddiqui MM, Rais-Bahrami S, Truong H, Stamatakis L, Vourganti S, Nix J, et al. Magnetic resonance imaging/ultrasound-fusion biopsy significantly upgrades prostate cancer versus systematic 12-core transrectal ultrasound biopsy. <i>Eur Urol.</i> 2013;64(5):713-9.	SF vs SB, insufficient data for inclusion in indirect comparison.
Siddiqui MM, Rais-Bahrami S, Turkbey B, George AK, Rothwax J, Shakir N, et al. Comparison of MR/ultrasound fusion-guided biopsy with ultrasound-guided biopsy for the diagnosis of prostate cancer. <i>JAMA.</i> 2015;313(4):390-7.	SF vs SB, insufficient data for inclusion in indirect comparison.
Simmons LAM, Kanthabalan A, Arya M, Briggs T, Barratt D, Charman SC, et al. Accuracy of transperineal targeted prostate biopsies, visual estimation and image fusion in men needing repeat biopsy in the PICTURE trial. <i>J Urol.</i> 2018;200(6):1227-34.	Wrong intervention: SmartTarget SF device is out of scope in this appraisal
Socarras MER, Rivas JG, Cuadros V, Elbers JR, Llanes L, Mercado IM, et al. Prostate mapping for cancer diagnosis: the Madrid protocol. Transperineal prostate biopsies combining micro-ultrasound and MPMRI fusion biopsy. <i>J Urol</i> 2020;203:e999-.	Wrong comparator: MicroUS is not standard practice
Song G, Ruan M, Wang H, Fan Y, He Q, Lin Z, et al. How many targeted biopsy cores are needed for clinically significant prostate cancer detection during transperineal magnetic resonance imaging ultrasound fusion biopsy? <i>J Urol</i> 2020;204:1202-8.	Wrong outcome
Sonmez G, Demirtas T, Tombul ST, Akgun H, Demirtas A. Diagnostic efficiency of systemic immune-inflammation index in fusion prostate biopsy. <i>Actas Urol Esp</i> 2021;45:359-65.	Wrong outcome
Sonmez G, Tombul ST, Imamoglu H, Akgun H, Demirtas A, Tatlisen A. Multiparametric SF-guided prostate biopsy in biopsy naive patients: preliminary results from 80 patients. <i>Turk J Urol.</i> 2019;45(3):196-201.	Wrong intervention: out of scope SF
Sonn GA, Chang E, Natarajan S, Margolis DJ, Macairan M, Lieu P, et al. Value of targeted prostate biopsy using magnetic resonance-ultrasound fusion in men with prior negative biopsy and elevated prostate-specific antigen. <i>Eur Urol.</i> 2014;65(4):809-15.	SF vs SB, insufficient data for inclusion in indirect comparison.
Tae JH, Shim JS, Jin HJ, Yoon SG, No TI, Kim JY, et al. Initial experience of magnetic resonance imaging/ultrasonography fusion transperineal biopsy: biopsy techniques and results for 75 patients. <i>Investig Clin Urol.</i> 2018;59(6):363-70.	SF vs SB, insufficient data for inclusion in indirect comparison.
Tomaskovic I, Pezelj I, Bolanca Culo K, Novosel L, Nikles S, Tomic M, et al. Diagnostic value of cognitive-registration multiparametric magnetic resonance guided biopsy for the detection of prostate cancer after initial negative biopsy. <i>Acta Clin Croat</i> 2018;57:40-5.	Wrong outcome
Tonttila PP, Lantto J, Paakko E, Piippo U, Kauppila S, Lammentausta E, et al. Prebiopsy multiparametric magnetic resonance imaging for prostate cancer diagnosis in biopsy-naive men with suspected prostate cancer based on elevated prostate-specific antigen values: results from a randomized prospective blinded controlled trial. <i>Eur Urol.</i> 2016;69(3):419-25.	CF vs SB, insufficient data for inclusion in indirect comparison
Turkay R, Inci E, Yildiz O, Ozgur E, Tasci AI. Cognitive versus magnetic resonance-ultrasound fusion prostate biopsy: which one is worthier to perform? <i>Ultrasound Q.</i> 2020;36(4):345-9.	Wrong intervention: out of scope SF
Valerio M, McCartan N, Freeman A, Punwani S, Emberton M, Ahmed HU. Visually directed vs. software-based targeted biopsy compared to transperineal template mapping biopsy in the detection of clinically significant prostate cancer. <i>Urol Oncol.</i> 2015;33(10):424.e9-16.	Wrong population: only 20% of population are eligible (biopsy naïve or prior negative biopsy). No separable data.

Vezelis A, Platkevicius G, Kincius M, Gumbys L, Naruseviciute I, Briediene R, et al. Systematic and MRI-cognitive targeted transperineal prostate biopsy accuracy in detecting clinically significant prostate cancer after previous negative biopsy and persisting suspicion of malignancy. <i>Medicina</i> 2021;57:57.	Wrong outcome
Westhoff N, Haumann H, Kriegmair MC, von Hardenberg J, Budjan J, Porubsky S, et al. Association of training level and outcome of software-based image fusion-guided targeted prostate biopsies. <i>World J Urol.</i> 2019;37(10):2119-27.	Wrong study design
Wetterauer C, Trotsenko P, Matthias MO, Breit C, Keller N, Meyer A, et al. Diagnostic accuracy and clinical implications of robotic assisted MRI-US fusion guided target saturation biopsy of the prostate. <i>Sci Rep</i> 2021;11:20250.	Wrong comparator
Wiemer L, Hollenbach M, Heckmann R, Kittner B, Plage H, Reimann M, et al. Evolution of targeted prostate biopsy by adding micro-ultrasound to the magnetic resonance imaging pathway. <i>Eur Urol Focus</i> 2021;7:1292-9.	Wrong comparator: MicroUS is not standard practice
Winoker JS, Wajswol E, Falagario U, Maritini A, Moshier E, Voutsinas N, et al. Transperineal versus transrectal targeted biopsy with use of electromagnetically-tracked MR/US fusion guidance platform for the detection of clinically significant prostate cancer. <i>Urology.</i> 2020;146:278-86.	SF vs SB, insufficient data for inclusion in indirect comparison.
Winther MD, Balslev I, Boesen L, Logager V, Noergaard N, Thestrup KD, et al. Magnetic resonance imaging-guided biopsies may improve diagnosis in biopsy-naive men with suspicion of prostate cancer. <i>Dan Med J.</i> 2017;64(5):A5355.	Wrong intervention: out of scope SF
Yamada Y, Shiraiishi T, Ueno A, Ueda T, Fujihara A, Naitoh Y, et al. Magnetic resonance imaging-guided targeted prostate biopsy: comparison between computer-software-based fusion versus CF technique in biopsy-naive patients. <i>Int J Urol.</i> 2020;27(1):67-71.	Wrong study design: retrospective, and prospective evidence identified for SF technology
Zalesky M, Stejskal J, Minarik I, Adamcova V, Babjuk M, Zchoval R. Cancer detection rates and inter-examiner variability of MRI/TRUS fusion targeted biopsy and systematic transrectal biopsy. <i>Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub.</i> 2020;164(3):314-9.	Wrong intervention: out of scope SF
Zhang J, Zhu A, Sun D, Guo S, Zhang H, Liu S, et al. Is targeted magnetic resonance imaging/transrectal ultrasound fusion prostate biopsy enough for the detection of prostate cancer in patients with PI-RADS ≥ 3 : results of a prospective, randomized clinical trial. <i>J Cancer Res Ther.</i> 2020;16(7):1698-702.	Wrong intervention: out of scope SF
Zhang Q, Wang W, Yang R, Zhang G, Zhang B, Li W, et al. Free-hand transperineal targeted prostate biopsy with real-time fusion imaging of multiparametric magnetic resonance imaging and transrectal ultrasound: single-center experience in China. <i>Int Urol Nephrol.</i> 2015;47(5):727-33.	Wrong intervention: out of scope SF
Zhang Q, Wang W, Zhang B, Shi J, Fu Y, Li D, et al. Comparison of free-hand transperineal mpMRI/TRUS fusion-guided biopsy with transperineal 12-core SB for the diagnosis of prostate cancer: a single-center prospective study in China. <i>Int Urol Nephrol.</i> 2017;49(3):439-48.	Wrong intervention: out of scope SF
Zhou Y, Zhou Z, Li Q, Xu Y, Sun H, Xiao Y, et al. Diagnostic accuracy of magnetic resonance-guided prostate biopsy and template-guided transperineal saturation biopsy. <i>Medicine.</i> 2018;97(38):e12495.	SF and CF combined, no separate data per fusion method
Zhu G, Wang Q. Comparisons between magnetic resonance/ultrasound fusion-guided biopsy and standard biopsy in the diagnosis of prostate cancer. A prospective cohort study. <i>Medicine</i> 2018;97:e11962.	Wrong outcome
Zogal P, Sakas G, Rosch W, Baltas D. BiopSee - transperineal stereotactic navigated prostate biopsy. <i>J Contemp Brachytherapy</i> 2011;3:91-5.	Wrong outcome

SF: software fusion; CF: cognitive fusion; SB: systematic biopsy; MicroUS: Micro ultrasound

Supplementary table 2 Summary of key studies of FusionVu, Fusion Bx 2.0 and bkFusion excluded from the systematic review of clinical effectiveness

Study	Country	Design	Population	N	MRI Fusion device	Comparator	Findings summary
Cash (2022) ¹⁶⁴	Germany, Austria, N'lands and USA	Retrospective	NR	NR	FusionVu (Exact Imaging)	N/A	<p>13 practitioners conducted over 1190 micro-ultrasound biopsy procedures during a four-stage training programme. The csPCa detection rate improved from 40% at the start of the training programme to 57% at the end of the training programme (where <50 biopsies were performed before analysis) [p < 0.01].</p> <p>The final stage of the training programme was independently associated with a higher csPCa detection rate after correcting for overall risk factors (OR 1.95; P = 0.03).</p>
Cornud (2020) ¹⁷⁰	France	Prospective	BN, RB, AS Elevated or rising PSA	118	FusionVu (Exact Imaging) Systematic biopsy conducted at physicians' discretion	N/A	<p>Fusion biopsy was only used for MRI+/microUS- lesions (n = 13).</p> <p>There were no cases of csPCa, but two cases (15%) of non-significant PCa (Gleason 3+3 and cancer core length ≤ 3mm).</p>
Klotz (2020) ¹⁷¹	Canada, Italy, Spain, France, German, Austria, USA	Prospective	Prior mpMRI Elevated PSA and/or abnormal DRE	62 (of 1140)	Biojet, Uronav, FusionVu, Hitachi Cognitive fusion Systematic biopsy	N/A	<p>Individuals who had prior mpMRI underwent ExactVu micro-ultrasound-guided biopsy. Biopsies were taken from both mpMRI targets (PI-RADS >3) and micro-ultrasound targets (PRIMUS >3), using either cognitive fusion or software fusion systems. 4/11 centres used software fusion devices, and 62 patients were biopsied using FusionVu.</p> <p>Overall, PCa (Gleason 3+3) was identified in 61% of patients, Gleason ≥ 3+4 was detected in 39% of patients and Gleason ≥ 4+3 was detected in 19% of patients.</p>
Wiemer (2020) ¹⁷²	Germany	Prospective	BN, RB Included men at 'clinical risk of prostate cancer'	159	FusionVu (Exact Imaging) Systematic biopsy	MircoUS-guided biopsy Systematic biopsy	<p>MicroUS positive lesions blinded to the mpMRI results and targeted independently of the mpMRI lesions.</p> <p>The lesion-level positive predictive value for csPCa was 41% for microUS-targeted biopsies and 30% for MRI-targeted biopsies (p = 0.02). MRI targets upgraded the gleason grade compared to systematic biopsy in 34 patients (21%). Micro-US targeting led to an upgrade in</p>

Study	Country	Design	Population	N	MRI Fusion device	Comparator	Findings summary
							gleason grade in 9.4% more patients than MRI targeting (95% CI 2.2–16.5%, p = 0.005). Limited data comparing FusionVu and systematic biopsy (no cross tabulation and different number of patients).
Hofbauer (2021) ¹⁷³	Germany	Prospective	BN, RB Included men at 'clinical risk of prostate cancer'	203	FusionVu (Exact Imaging) Systematic biopsy	MircoUS-guided biopsy Systematic biopsy	The PCa and csPCa detection rate was 63% (127/203 patients) and 39% (79/203). MicroUS-targeted biopsies detected csPCa in 58/79 (73%) patients, compared to MRI-guided biopsies which detected 60/79 (76%). MicroUS was non-inferior compared to mpMRI and detected 97% of csPCa detected by MRI-guided biopsy. (95% CI 80-116%, p = 0.023). MRI-guided biopsy detected 7/79 (9%) csPCa alone, compared to 5/79 (6%) in microUS-guided biopsy. Systematic biopsy alone detected 4/79 (4%) csPCa cases.
Perlis (2020) ¹⁷⁴	Canada	Retrospective	Biopsy experience not reported PI-RADS ≥ 3 , rising or abnormal PSA	51	Fusion Bx 2.0 (Focal Healthcare). Systematic biopsy conducted at physicians' discretion		Early experience study. The PCa (Gleason 3+3) detection rate for PI-RADS 3/4/5 lesions was 22%/61%/83% respectively. For csPCa (Gleason $\geq 3+4$) detection rate for PI-RADS 3/4/5 lesions was 6%/47%/75%, respectively. No major complications
Miah (2020) ¹⁷⁵	UK	Retrospective	BN, RB Elevated PSA or abnormal DRE	640	bkFusion (BK Medical and MIM) MIM Symphony-DX	Systematic Biopsy	In the total population (n=640), csPCa (Gleason $\geq 4+3$ or any grade ≥ 6 mm) was detected in 41.1% of cases. 357 men who underwent both software fusion and systematic biopsies. The csPCa detection rate by software fusion was 41.1%. csPCa was detected by systematic biopsy alone in three (0.8%) patients.
Immerzeel (2021) ¹⁷⁶	N'lans	Prospective	BN PSA >3ng/mL and/or abnormal DRE, PI-RADS ≥ 3	1097	BK-Flex Focus 800, BK-3000 (in combination with systematic biopsy)	Perilesional Biopsy	Grade ≥ 2 (Clavien-Dindo) adverse events were reported in 0.73% patients (8/1097). PCa (Gleason 3+3) and csPCa (Gleason $\geq 3+4$) detected in 84% and 66% of patients respectively. Additional perilesional biopsies were performed in 958/1097 patients, which resulted in the histopathological upgrading in 5.7% of men.

NR, not reported; BN, Biopsy naïve; RB, repeat biopsy; PCa, prostate cancer; csPCa, clinically significant prostate cancer; PI-RADS Prostate Imaging Reporting & Data System; US, ultrasound; DRE, digital rectal examination; PSA, prostate specific antigen; AS, active surveillance.