**Prostate Cancer CME Series: Treatment Across the Prostate Cancer Continuum for Primary Care Clinicians (RECORDING)**

**Disparities in Prostate Cancer in the Era of Precision Medicine**

**Stanford University School of Medicine**

**References**

Braveman, P., Arkin, E., Orleans, T., Proctor, D., Acker, J., & Plough, A. (2018). What is health equity?. Behavioral Science & Policy, 4(1), 1-14.

Center for Drug Evaluation, & Research. (2021, June 11). FDA approves olaparib for HRR gene- mutated metastatic castration-resis. U.S. Food and Drug Administration. https://www.fda.gov/drugs/resources-information-approved-drugs/fda-approves- olaparibhrr-gene-mutated-metastatic-castration-resistant-prostate-cancer

ClinicalTrials.gov [Internet]. 2018 Jun 1 - . Identifier NCT03040791, Nivolumab in Prostate Cancer With DNA Repair Defects (ImmunoProst Trial) (ImmunoProst). https://clinicaltrials.gov/ct2/show/NCT03040791

Ellis, C. T., Dusetzina, S. B., Sanoff, H., & Stitzenberg, K. B. (2017). Long-term Survival After Chemoradiotherapy Without Surgery for Rectal Adenocarcinoma. In JAMA Oncology (Vol. 3, Issue 1, p. 123). American Medical Association (AMA). https://doi.org/10.1001/jamaoncol.2016.3424

Ellis, L., Canchola, A. J., Spiegel, D., Ladabaum, U., Haile, R., & Gomez, S. L. (2018). Racial and Ethnic Disparities in Cancer Survival: The Contribution of Tumor, Sociodemographic, Institutional, and Neighborhood Characteristics. Journal of clinical Oncology : official journal of the American Society of Clinical Oncology, 36(1), 25–33. https://doi.org/10.1200/JCO.2017.74.2049

Kwon, D. H., Borno, H. T., Cheng, H. H., Zhou, A. Y., & Small, E. J. (2020). Ethnic disparities among men with prostate cancer undergoing germline testing. Urologic oncology, 38(3), 80.e1–80.e7. https://doi.org/10.1016/j.urolonc.2019.09.010

Lane, J. A., Donovan, J. L., Davis, M., Walsh, E., Dedman, D., Down, L., Turner, E. L., Mason, M. D., Metcalfe, C., Peters, T. J., Martin, R. M., Neal, D. E., Hamdy, F. C., & ProtecT study group (2014). Active monitoring, radical prostatectomy, or radiotherapy for localised prostate cancer: study design and diagnostic and baseline results of the ProtecT randomised phase 3 trial. The Lancet. Oncology, 15(10), 1109–1118. https://doi.org/10.1016/S1470-2045(14)70361-4

McClelland, S., III, & Mitin, T. (2018). The Danger of Applying the ProtecT Trial to Minority Populations. In JAMA Oncology (Vol. 4, Issue 3, p. 291). American Medical Association (AMA). https://doi.org/10.1001/jamaoncol.2017.5452

Pritchard, C. C., Mateo, J., Walsh, M. F., De Sarkar, N., Abida, W., Beltran, H., Garofalo, A., Gulati, R., Carreira, S., Eeles, R., Elemento, O., Rubin, M. A., Robinson, D., Lonigro, R., Hussain, M., Chinnaiyan, A., Vinson, J., Filipenko, J., Garraway, L., Taplin, M. E., … Nelson, P. S. (2016). Inherited DNA-Repair Gene Mutations in Men with Metastatic Prostate Cancer. The New England journal of medicine, 375(5), 443–453. https://doi.org/10.1056/NEJMoa1603144

Prostate Cancer Fast Facts. SEER.cancer.gov

Rose, P. G., Java, J., Whitney, C. W., Stehman, F. B., Lanciano, R., Thomas, G. M., & DiSilvestro, P. A. (2015). Nomograms predicting progression-free survival, overall survival, and pelvic recurrence in locally advanced cervical cancer developed from an analysis of identifiable prognostic factors in patients from NRG oncology/gynecologic oncology group randomized trials of chemoradiotherapy. Journal of Clinical Oncology, 33(19), 2136.

Spratt, D. E., & Osborne, J. R. (2015). Disparities in castration-resistant prostate cancer trials. Journal of Clinical Oncology, 33(10), 1101.

What is lynch syndrome? (2016, May 5). Dana-Farber Cancer Institute. https://blog.dana- farber.org/insight/2016/05/what-is-lynch-syndrome/

**Genetics/Genomics in Prostate Cancer**

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**References**

Ahmed, H. U., El-Shater Bosaily, A., Brown, L. C., Gabe, R., Kaplan, R., Parmar, M. K., Collaco-Moraes, Y., Ward, K., Hindley, R. G., Freeman, A., Kirkham, A. P., Oldroyd, R., Parker, C., Emberton, M., & PROMIS study group (2017). Diagnostic accuracy of multi-parametric MRI and TRUS biopsy in prostate cancer (PROMIS): a paired validating confirmatory study. Lancet (London, England), 389(10071), 815–822. https://doi.org/10.1016/S0140-6736(16)32401-1

Albala, D., Kemeter, M. J., Febbo, P. G., Lu, R., John, V., Stoy, D., ... & Dubeck, F. (2016). Health economic impact and prospective clinical utility of oncotype DX® genomic prostate score. Reviews in Urology, 18(3), 123.

Carter, H. B., Helfand, B., Mamawala, M., Wu, Y., Landis, P., Yu, H., Wiley, K., Na, R., Shi, Z., Petkewicz, J., Shah, S., Fantus, R. J., Novakovic, K., Brendler, C. B., Zheng, S. L., Isaacs, W. B., & Xu, J. (2019). Germline Mutations in ATM and BRCA1/2 Are Associated with Grade Reclassification in Men on Active Surveillance for Prostate Cancer. European urology, 75(5), 743–749. https://doi.org/10.1016/j.eururo.2018.09.021

Castro, E., Goh, C., Leongamornlert, D., Saunders, E., Tymrakiewicz, M., Dadaev, T., Govindasami, K., Guy, M., Ellis, S., Frost, D., Bancroft, E., Cole, T., Tischkowitz, M., Kennedy, M. J., Eason, J., Brewer, C., Evans, D. G., Davidson, R., Eccles, D., Porteous, M. E., … Eeles, R. (2015). Effect of BRCA Mutations on Metastatic Relapse and Cause- specific Survival After Radical Treatment for Localised Prostate Cancer. European urology, 68(2), 186–193. https://doi.org/10.1016/j.eururo.2014.10.022

Cooperberg, M. R., Broering, J. M., & Carroll, P. R. (2009). Risk assessment for prostate cancer metastasis and mortality at the time of diagnosis. JNCI: Journal of the National Cancer Institute, 101(12), 878-887.

Cooperberg, M. R., Davicioni, E., Crisan, A., Jenkins, R. B., Ghadessi, M., & Karnes, R. J. (2015). Combined value of validated clinical and genomic risk stratification tools for predicting prostate cancer mortality in a high-risk prostatectomy cohort. European urology, 67(2), 326-333.

Cooperberg, M. R., Erho, N., Chan, J. M., Feng, F. Y., Fishbane, N., Zhao, S. G., Simko, J. P., Cowan, J. E., Lehrer, J., Alshalalfa, M., Kolisnik, T., Chelliserry, J., Margrave, J., Aranes, M., Plessis, M. D., Buerki, C., Tenggara, I., Davicioni, E., & Carroll, P. R. (2018). The Diverse Genomic Landscape of Clinically Low-risk Prostate Cancer. European urology, 74(4), 444–452. https://doi.org/10.1016/j.eururo.2018.05.014

Cooperberg, M. R., Simko, J. P., Cowan, J. E., Reid, J. E., Djalilvand, A., Bhatnagar, S., ... & Carroll, P. R. (2013). Validation of a cell-cycle progression gene panel to improve risk stratification in a contemporary prostatectomy cohort. Journal of clinical oncology: official journal of the American Society of Clinical Oncology, 31(11), 1428-1434.

Cooperberg, M. R., Simko, J. P., Cowan, J. E., Reid, J. E., Djalilvand, A., Bhatnagar, S., Gutin, A., Lanchbury, J. S., Swanson, G. P., Stone, S., & Carroll, P. R. (2013). Validation of a cell-cycle progression gene panel to improve risk stratification in a contemporary prostatectomy cohort. Journal of clinical oncology : official journal of the American Society of Clinical Oncology, 31(11), 1428–1434. https://doi.org/10.1200/JCO.2012.46.4396

Cuzick, J., Swanson, G. P., Fisher, G., Brothman, A. R., Berney, D. M., Reid, J. E., Mesher, D., Speights, V. O., Stankiewicz, E., Foster, C. S., Møller, H., Scardino, P., Warren, J. D., Park, J., Younus, A., Flake, D. D., 2nd, Wagner, S., Gutin, A., Lanchbury, J. S., Stone, S., … Transatlantic Prostate Group (2011). Prognostic value of an RNA expression signature derived from cell cycle proliferation genes in patients with prostate cancer: a retrospective study. The Lancet. Oncology, 12(3), 245–255. https://doi.org/10.1016/S1470-2045(10)70295-3

Erho, N., Crisan, A., Vergara, I. A., Mitra, A. P., Ghadessi, M., Buerki, C., Bergstralh, E. J., Kollmeyer, T., Fink, S., Haddad, Z., Zimmermann, B., Sierocinski, T., Ballman, K. V., Triche, T. J., Black, P. C., Karnes, R. J., Klee, G., Davicioni, E., & Jenkins, R. B. (2013). Discovery and validation of a prostate cancer genomic classifier that predicts early metastasis following radical prostatectomy. PloS one, 8(6), e66855. https://doi.org/10.1371/journal.pone.0066855

Esserman, L., Shieh, Y., & Thompson, I. (2009). Rethinking screening for breast cancer and prostate cancer. JAMA, 302(15), 1685–1692. https://doi.org/10.1001/jama.2009.1498

Genetics/Genomics in Prostate Cancer

Jairath, N. K., Dal Pra, A., Vince, R., Jr, Dess, R. T., Jackson, W. C., Tosoian, J. J., McBride, S. M., Zhao, S. G., Berlin, A., Mahal, B. A., Kishan, A. U., Den, R. B., Freedland, S. J., Salami, S. S., Kaffenberger, S. D., Pollack, A., Tran, P., Mehra, R., Morgan, T. M., Weiner, A. B., … Spratt, D. E. (2021). A Systematic Review of the Evidence for the Decipher Genomic Classifier in Prostate Cancer. European urology, 79(3), 374–383. https://doi.org/10.1016/j.eururo.2020.11.021

Klein, E. A., Cooperberg, M. R., Magi-Galluzzi, C., Simko, J. P., Falzarano, S. M., Maddala, T., Chan, J. M., Li, J., Cowan, J. E., Tsiatis, A. C., Cherbavaz, D. B., Pelham, R. J., Tenggara-Hunter, I., Baehner, F. L., Knezevic, D., Febbo, P. G., Shak, S., Kattan, M. W., Lee, M., & Carroll, P. R. (2014). A 17-gene assay to predict prostate cancer aggressiveness in the context of Gleason grade heterogeneity, tumor multifocality, and biopsy undersampling. European urology, 66(3), 550–560. https://doi.org/10.1016/j.eururo.2014.05.004

McKiernan, J., Donovan, M. J., O'Neill, V., Bentink, S., Noerholm, M., Belzer, S., Skog, J., Kattan, M. W., Partin, A., Andriole, G., Brown, G., Wei, J. T., Thompson, I. M., Jr, & Carroll, P. (2016). A Novel Urine Exosome Gene Expression Assay to Predict High- grade Prostate Cancer at Initial Biopsy. JAMA oncology, 2(7), 882–889. https://doi.org/10.1001/jamaoncol.2016.0097

Nordström, T., Vickers, A., Assel, M., Lilja, H., Grönberg, H., & Eklund, M. (2015). Comparison Between the Four-kallikrein Panel and Prostate Health Index for Predicting Prostate Cancer. European urology, 68(1), 139–146. https://doi.org/10.1016/j.eururo.2014.08.010

Oh, W. K., Cheng, W. Y., Miao, R., Vekeman, F., Gauthier-Loiselle, M., Duh, M. S., Drea, E., & Szatrowski, T. P. (2018). Real-world outcomes in patients with metastatic castration- resistant prostate cancer receiving second-line chemotherapy versus an alternative androgen receptor-targeted agent (ARTA) following early progression on a first-line ARTA in a US community oncology setting. Urologic oncology, 36(11), 500.e1–500.e9. https://doi.org/10.1016/j.urolonc.2018.08.002

Preston, M. A., Gerke, T., Carlsson, S. V., Signorello, L., Sjoberg, D. D., Markt, S. C., Kibel, A. S., Trinh, Q. D., Steinwandel, M., Blot, W., Vickers, A. J., Lilja, H., Mucci, L. A., & Wilson, K. M. (2019). Baseline Prostate-specific Antigen Level in Midlife and Aggressive Prostate Cancer in Black Men. European urology, 75(3), 399–407. https://doi.org/10.1016/j.eururo.2018.08.032

Seibert, T. M., Fan, C. C., Wang, Y., Zuber, V., Karunamuni, R., Parsons, J. K., ... & PRACTICAL Consortium. (2018). Polygenic hazard score to guide screening for aggressive prostate cancer: development and validation in large scale cohorts. bmj, 360.

Shore, N., Concepcion, R., Saltzstein, D., Lucia, M. S., van Breda, A., Welbourn, W., Lewine, N., Gustavsen, G., Pothier, K., & Brawer, M. K. (2013). Clinical utility of a biopsy-based cell cycle gene expression assay in localized prostate cancer. In Current Medical Research and Opinion (Vol. 30, Issue 4, pp. 547–553). Informa Healthcare. https://doi.org/10.1185/03007995.2013.873398

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Van Neste, L., Hendriks, R. J., Dijkstra, S., Trooskens, G., Cornel, E. B., Jannink, S. A., de Jong, H., Hessels, D., Smit, F. P., Melchers, W. J., Leyten, G. H., de Reijke, T. M., Vergunst, H., Kil, P., Knipscheer, B. C., Hulsbergen-van de Kaa, C. A., Mulders, P. F., van Oort, I. M., Van Criekinge, W., & Schalken, J. A. (2016). Detection of High-grade Prostate Cancer Using a Urinary Molecular Biomarker-Based Risk Score. European urology, 70(5), 740–748. https://doi.org/10.1016/j.eururo.2016.04.012

Vickers, A. J., Cronin, A. M., Björk, T., Manjer, J., Nilsson, P. M., Dahlin, A., Bjartell, A., Scardino, P. T., Ulmert, D., & Lilja, H. (2010). Prostate specific antigen concentration at age 60 and death or metastasis from prostate cancer: case-control study. BMJ (Clinical research ed.), 341, c4521. https://doi.org/10.1136/bmj.c4521

Vickers, A. J., Ulmert, D., Sjoberg, D. D., Bennette, C. J., Bjork, T., Gerdtsson, A., Manjer, J., Nilsson, P. M., Dahlin, A., Bjartell, A., Scardino, P. T., & Lilja, H. (2013). Strategy for detection of prostate cancer based on relation between prostate specific antigen at age 40- 55 and long term risk of metastasis: case-control study. In BMJ (Vol. 346, Issue apr15 5, pp. f2023–f2023). BMJ. https://doi.org/10.1136/bmj.f2023

Vietri, M. T., D’Elia, G., Caliendo, G., Resse, M., Casamassimi, A., Passariello, L., Albanese, L., Cioffi, M., & Molinari, A. M. (2021). Hereditary Prostate Cancer: Genes Related, Target Therapy and Prevention. In International Journal of Molecular Sciences (Vol. 22, Issue 7, p. 3753). MDPI AG. https://doi.org/10.3390/ijms22073753

Wei, J. T., Feng, Z., Partin, A. W., Brown, E., Thompson, I., Sokoll, L., Chan, D. W., Lotan, Y., Kibel, A. S., Busby, J. E., Bidair, M., Lin, D. W., Taneja, S. S., Viterbo, R., Joon, A. Y., Dahlgren, J., Kagan, J., Srivastava, S., & Sanda, M. G. (2014). Can urinary PCA3 supplement PSA in the early detection of prostate cancer?. Journal of clinical oncology : official journal of the American Society of Clinical Oncology, 32(36), 4066–4072. https://doi.org/10.1200/JCO.2013.52.8505

Xu, J., & Isaacs, W. B. (2021). Incorporation of Polygenic Risk Score into Guidelines for Inherited Risk Assessment for Prostate Cancer. In European Urology (Vol. 80, Issue 2, pp. 139–141). Elsevier BV. https://doi.org/10.1016/j.eururo.2021.04.043

**Historical Landscape of Testing; Blood Based Diagnostic Biomarkers and Screening**

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**References**

Andriole, G. L., Crawford, E. D., Grubb, R. L., III, Buys, S. S., Chia, D., Church, T. R., Fouad, M. N., Gelmann, E. P., Kvale, P. A., Reding, D. J., Weissfeld, J. L., Yokochi, L. A., O’Brien, B., Clapp, J. D., Rathmell, J. M., Riley, T. L., Hayes, R. B., Kramer, B. S., Izmirlian, G., … Berg, C. D. (2009). Mortality Results from a Randomized Prostate-Cancer Screening Trial. In New England Journal of Medicine (Vol. 360, Issue 13, pp. 1310–1319). Massachusetts Medical Society. <https://doi.org/10.1056/nejmoa0810696>

Andriole, G. L., Crawford, E. D., Grubb, R. L., 3rd, Buys, S. S., Chia, D., Church, T. R., Fouad, M. N., Isaacs, C., Kvale, P. A., Reding, D. J., Weissfeld, J. L., Yokochi, L. A., O’Brien, B., Ragard, L. R., Clapp, J. D., Rathmell, J. M., Riley, T. L., Hsing, A. W., Izmirlian, G., … PLCO Project Team. (2012). Prostate cancer screening in the randomized Prostate, Lung, Colorectal, and Ovarian Cancer Screening Trial: mortality results after 13 years of follow-up. *Journal of the National Cancer Institute*, *104*(2), 125–132. <https://doi.org/10.1093/jnci/djr500>

Bagshaw, M. A., Kaplan, I. D., & Cox, R. C. (1993). Prostate cancer. Radiation therapy for localized disease. *Cancer*, *71*(3 Suppl), 939–952. [https://doi.org/10.1002/1097-0142(19930201)71:3+<939::aid-cncr2820711409>3.0.co;2-0](https://doi.org/10.1002/1097-0142(19930201)71:3+%3c939::aid-cncr2820711409%3e3.0.co;2-0)

Bill-Axelson, A., Holmberg, L., Filén, F., Ruutu, M., Garmo, H., Busch, C., Nordling, S., Häggman, M., Andersson, S. O., Bratell, S., Spångberg, A., Palmgren, J., Adami, H. O., Johansson, J. E., & Scandinavian Prostate Cancer Group Study Number 4 (2008). Radical prostatectomy versus watchful waiting in localized prostate cancer: the Scandinavian prostate cancer group-4 randomized trial. *Journal of the National Cancer Institute*, *100*(16), 1144–1154. <https://doi.org/10.1093/jnci/djn255>

Bill-Axelson, A., Holmberg, L., Garmo, H., Rider, J. R., Taari, K., Busch, C., Nordling, S., Häggman, M., Andersson, S.-O., Spångberg, A., Andrén, O., Palmgren, J., Steineck, G., Adami, H.-O., & Johansson, J.-E. (2014). Radical Prostatectomy or Watchful Waiting in Early Prostate Cancer. In New England Journal of Medicine (Vol. 370, Issue 10, pp. 932–942). Massachusetts Medical Society. <https://doi.org/10.1056/nejmoa1311593>

Bill-Axelson, A., Holmberg, L., Garmo, H., Taari, K., Busch, C., Nordling, S., Häggman, M., Andersson, S.-O., Andrén, O., Steineck, G., Adami, H.-O., & Johansson, J.-E. (2018). Radical Prostatectomy or Watchful Waiting in Prostate Cancer — 29-Year Follow-up. In New England Journal of Medicine (Vol. 379, Issue 24, pp. 2319–2329). Massachusetts Medical Society. <https://doi.org/10.1056/nejmoa1807801>

Bill-Axelson, A., Holmberg, L., Ruutu, M., Garmo, H., Stark, J. R., Busch, C., Nordling, S., Häggman, M., Andersson, S.-O., Bratell, S., Spångberg, A., Palmgren, J., Steineck, G., Adami, H.-O., & Johansson, J.-E. (2011). Radical Prostatectomy versus Watchful Waiting in Early Prostate Cancer. In New England Journal of Medicine (Vol. 364, Issue 18, pp. 1708–1717). Massachusetts Medical Society. <https://doi.org/10.1056/nejmoa1011967>

Bill-Axelson, A., Holmberg, L., Ruutu, M., Häggman, M., Andersson, S.-O., Bratell, S., Spångberg, A., Busch, C., Nordling, S., Garmo, H., Palmgren, J., Adami, H.-O., Norlén, B. J., & Johansson, J.-E. (2005). Radical Prostatectomy versus Watchful Waiting in Early Prostate Cancer. In New England Journal of Medicine (Vol. 352, Issue 19, pp. 1977–1984). Massachusetts Medical Society. <https://doi.org/10.1056/nejmoa043739>

Catalona, W. J., Smith, D. S., Ratliff, T. L., Dodds, K. M., Coplen, D. E., Yuan, J. J. J., Petros, J. A., & Andriole, G. L. (1991). Measurement of Prostate-Specific Antigen in Serum as a Screening Test for Prostate Cancer. In New England Journal of Medicine (Vol. 324, Issue 17, pp. 1156–1161). Massachusetts Medical Society. <https://doi.org/10.1056/nejm199104253241702>

Donovan, J. L., Hamdy, F. C., Lane, J. A., Mason, M., Metcalfe, C., Walsh, E., Blazeby, J. M., Peters, T. J., Holding, P., Bonnington, S., Lennon, T., Bradshaw, L., Cooper, D., Herbert, P., Howson, J., Jones, A., Lyons, N., Salter, E., Thompson, P., … Neal, D. E. (2016). Patient-Reported Outcomes after Monitoring, Surgery, or Radiotherapy for Prostate Cancer. In New England Journal of Medicine (Vol. 375, Issue 15, pp. 1425–1437). Massachusetts Medical Society. <https://doi.org/10.1056/nejmoa1606221>

Eckersberger, E., Finkelstein, J., Sadri, H., Margreiter, M., Taneja, S. S., Lepor, H., & Djavan, B. (2009). Screening for Prostate Cancer: A Review of the ERSPC and PLCO Trials. *Reviews in urology*, *11*(3), 127–133.

Gleason, D. F., & Mellinger, G. T. (1974). Prediction of prognosis for prostatic adenocarcinoma by combined histological grading and clinical staging. *The Journal of urology*, *111*(1), 58–64. <https://doi.org/10.1016/s0022-5347(17)59889-4>

Greicius, T. (2017, April 21). *The Day the Earth smiled*. NASA. Retrieved April 3, 2022, from <https://www.nasa.gov/mission_pages/cassini/multimedia/pia17171.html>

Grossman, D. C., Curry, S. J., Owens, D. K., Bibbins-Domingo, K., Caughey, A. B., Davidson, K. W., Doubeni, C. A., Ebell, M., Epling, J. W., Jr, Kemper, A. R., Krist, A. H., Kubik, M., Landefeld, C. S., Mangione, C. M., Silverstein, M., Simon, M. A., Siu, A. L., & Tseng, C.-W. (2018). Screening for Prostate Cancer. In JAMA (Vol. 319, Issue 18, p. 1901). American Medical Association (AMA). <https://doi.org/10.1001/jama.2018.3710>

Hamdy, F. C., Donovan, J. L., Lane, J. A., Mason, M., Metcalfe, C., Holding, P., Davis, M., Peters, T. J., Turner, E. L., Martin, R. M., Oxley, J., Robinson, M., Staffurth, J., Walsh, E., Bollina, P., Catto, J., Doble, A., Doherty, A., Gillatt, D., … Neal, D. E. (2016). 10-Year Outcomes after Monitoring, Surgery, or Radiotherapy for Localized Prostate Cancer. In New England Journal of Medicine (Vol. 375, Issue 15, pp. 1415–1424). Massachusetts Medical Society. <https://doi.org/10.1056/nejmoa1606220>

Holmberg, L., Bill-Axelson, A., Helgesen, F., Salo, J. O., Folmerz, P., Häggman, M., Andersson, S.-O., Spångberg, A., Busch, C., Nordling, S., Palmgren, J., Adami, H.-O., Johansson, J.-E., & Norlén, B. J. (2002). A Randomized Trial Comparing Radical Prostatectomy with Watchful Waiting in Early Prostate Cancer. In New England Journal of Medicine (Vol. 347, Issue 11, pp. 781–789). Massachusetts Medical Society. <https://doi.org/10.1056/nejmoa012794>

Huggins, C. (n.d.). *The nobel prize in physiology or medicine 1966*. NobelPrize.org. Retrieved April 3, 2022, from <https://www.nobelprize.org/prizes/medicine/1966/huggins/facts/>

Hu, J. C., Nguyen, P., Mao, J., Halpern, J., Shoag, J., Wright, J. D., & Sedrakyan, A. (2017). Increase in Prostate Cancer Distant Metastases at Diagnosis in the United States. In JAMA Oncology (Vol. 3, Issue 5, p. 705). American Medical Association (AMA). <https://doi.org/10.1001/jamaoncol.2016.5465>

Moyer, V. A., & U.S. Preventive Services Task Force (2012). Screening for prostate cancer: U.S. Preventive Services Task Force recommendation statement. *Annals of internal medicine*, *157*(2), 120–134. <https://doi.org/10.7326/0003-4819-157-2-201207170-00459>

Pinsky, P. F., Prorok, P. C., Yu, K., Kramer, B. S., Black, A., Gohagan, J. K., Crawford, E. D., Grubb, R. L., & Andriole, G. L. (2017). Extended mortality results for prostate cancer screening in the PLCO trial with median follow‐up of 15 years: Extended Mortality Results. *Cancer*, *123*(4), 592–599. <https://doi.org/10.1002/cncr.30474>

Reiner, W. G., & Walsh, P. C. (1979). An anatomical approach to the surgical management of the dorsal vein and Santorini's plexus during radical retropubic surgery. *The Journal of urology*, *121*(2), 198–200. <https://doi.org/10.1016/s0022-5347(17)56718-x>

Schröder, F. H., Hugosson, J., Roobol, M. J., Tammela, T. L. J., Zappa, M., Nelen, V., Kwiatkowski, M., Lujan, M., Määttänen, L., Lilja, H., Denis, L. J., Recker, F., Paez, A., Bangma, C. H., Carlsson, S., Puliti, D., Villers, A., Rebillard, X., Hakama, M., … Auvinen, A. (2014). Screening and prostate cancer mortality: results of the European Randomised Study of Screening for Prostate Cancer (ERSPC) at 13 years of follow-up. In The Lancet (Vol. 384, Issue 9959, pp. 2027–2035). Elsevier BV. <https://doi.org/10.1016/s0140-6736(14)60525-0>

Siegel, R., Miller, K., Fuchs, H., & Jemal, A. (2022, January 12). *Cancer statistics, 2022* . CA: A Cancer Journal for Clinicians . Retrieved April 3, 2022, from <https://acsjournals.onlinelibrary.wiley.com/doi/10.3322/caac.21708>

Stamey, T. A., Yang, N., Hay, A. R., McNeal, J. E., Freiha, F. S., & Redwine, E. (1987). Prostate-Specific Antigen as a Serum Marker for Adenocarcinoma of the Prostate. In New England Journal of Medicine (Vol. 317, Issue 15, pp. 909–916). Massachusetts Medical Society. <https://doi.org/10.1056/nejm198710083171501>

Thompson, H. (1861). The Diseases of the Prostate, Their Pathology and Treatment: Comprising the Jacksonian Prize Essay for the Year 1860. Churchill.

van den Bergh, R. C. N., Valerio, M., Tilki, D., Gandaglia, G., & EAU-YAU Prostate Cancer Working Party. (2020). Re: Timothy J. wilt, Tien N. vo, Lisa langsetmo, et al. Radical prostatectomy or observation for clinically localized prostate cancer: Extended follow-up of the prostate cancer intervention versus observation trial (PIVOT). Eur urol. In press. Https://doi.Org/10.1016/j.Eururo.2020.02.009. European Urology, 78(2), e67–e68. <https://doi.org/10.1016/j.eururo.2020.03.046>

Walsh, P. C., & Donker, P. J. (2017). Impotence Following Radical Prostatectomy: Insight into Etiology and Prevention. *The Journal of urology*, *197*(2S), S165–S170. <https://doi.org/10.1016/j.juro.2016.10.105>

Welch, H. G., & Black, W. C. (2010). Overdiagnosis in cancer. Journal of the National Cancer Institute, 102(9), 605–613. <https://doi.org/10.1093/jnci/djq099>

Welch, H. G., Gorski, D. H., & Albertsen, P. C. (2015). Trends in Metastatic Breast and Prostate Cancer — Lessons in Cancer Dynamics. In New England Journal of Medicine (Vol. 373, Issue 18, pp. 1685–1687). Massachusetts Medical Society. <https://doi.org/10.1056/nejmp1510443>

Wilt, T. J., Brawer, M. K., Jones, K. M., Barry, M. J., Aronson, W. J., Fox, S., Gingrich, J. R., Wei, J. T., Gilhooly, P., Grob, B. M., Nsouli, I., Iyer, P., Cartagena, R., Snider, G., Roehrborn, C., Sharifi, R., Blank, W., Pandya, P., Andriole, G. L., … Wheeler, T. (2012). Radical Prostatectomy versus Observation for Localized Prostate Cancer. In New England Journal of Medicine (Vol. 367, Issue 3, pp. 203–213). Massachusetts Medical Society. <https://doi.org/10.1056/nejmoa1113162>

Wilt, T. J., Jones, K. M., Barry, M. J., Andriole, G. L., Culkin, D., Wheeler, T., Aronson, W. J., & Brawer, M. K. (2017). Follow-up of Prostatectomy versus Observation for Early Prostate Cancer. In New England Journal of Medicine (Vol. 377, Issue 2, pp. 132–142). Massachusetts Medical Society. <https://doi.org/10.1056/nejmoa1615869>

Young, H. H. (2002). The Early Diagnosis and Radical Cure of Carcinoma of the Prostate.: Being a Study of 40 Cases and Presentation of a Radical Operation which was Carried Out in Four Cases. In Journal of Urology (Vol. 168, Issue 3, pp. 914–921). Ovid Technologies (Wolters Kluwer Health). <https://doi.org/10.1016/s0022-5347(05)64542-9>

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**References**

Ahmed, H. U., Bosaily, A. E. S., Brown, L. C., Gabe, R., Kaplan, R., Parmar, M. K., ... & PROMIS Study Group. (2017). Diagnostic accuracy of multi-parametric MRI and TRUS biopsy in prostate cancer (PROMIS): a paired validating confirmatory study. The Lancet, 389(10071), 815-822.

Barocas, D. A., Alvarez, J., Resnick, M. J., Koyama, T., Hoffman, K. E., Tyson, M. D., Conwill, R., McCollum, D., Cooperberg, M. R., Goodman, M., Greenfield, S., Hamilton, A. S., Hashibe, M., Kaplan, S. H., Paddock, L. E., Stroup, A. M., Wu, X. C., & Penson, D. F. (2017). Association Between Radiation Therapy, Surgery, or Observation for Localized Prostate Cancer and Patient-Reported Outcomes After 3 Years. JAMA, 317(11), 1126–1140. https://doi.org/10.1001/jama.2017.1704

Gaffney, C. D., Cai, P., Li, D., Margolis, D., Sedrakyan, A., Hu, J. C., & Shoag, J. (2021). Increasing Utilization of MRI Before Prostate Biopsy in Black and Non-Black Men: An Analysis of the SEER-Medicare Cohort. AJR. American journal of roentgenology, 217(2), 389–394. https://doi.org/10.2214/AJR.20.23462

Guillaumier, S., Peters, M., Arya, M., Afzal, N., Charman, S., Dudderidge, T., ... & Ahmed, H. U. (2018). A multicentre study of 5-year outcomes following focal therapy in treating clinically significant nonmetastatic prostate cancer. European urology, 74(4), 422-429.

Kasivisvanathan, V., Rannikko, A. S., Borghi, M., Panebianco, V., Mynderse, L. A., Vaarala, M. H., Briganti, A., Budäus, L., Hellawell, G., Hindley, R. G., Roobol, M. J., Eggener, S., Ghei, M., Villers, A., Bladou, F., Villeirs, G. M., Virdi, J., Boxler, S., Robert, G., … Moore, C. M. (2018). MRI-Targeted or Standard Biopsy for Prostate-Cancer Diagnosis. In New England Journal of Medicine (Vol. 378, Issue 19, pp. 1767–1777). Massachusetts Medical Society. https://doi.org/10.1056/nejmoa1801993

National Cancer Institute. transrectal biopsy. https://www.cancer.gov/publications/dictionaries/cancer-terms/def/transrectal-biopsy

Pienta, K. J., Gorin, M. A., Rowe, S. P., Carroll, P. R., Pouliot, F., Probst, S., Saperstein, L., Preston, M. A., Alva, A. S., Patnaik, A., Durack, J. C., Stambler, N., Lin, T., Jensen, J., Wong, V., Siegel, B. A., & Morris, M. J. (2021). A Phase 2/3 Prospective Multicenter Study of the Diagnostic Accuracy of Prostate Specific Membrane Antigen PET/CT with 18F-DCFPyL in Prostate Cancer Patients (OSPREY). The Journal of urology, 206(1), 52–61. https://doi.org/10.1097/JU.0000000000001698

Rosenkrantz, A. B., Hemingway, J., Hughes, D. R., Duszak, R., Allen, B., & Weinreb, J. C. (2018). Evolving Use of Prebiopsy Prostate Magnetic Resonance Imaging in the Medicare Population. In Journal of Urology (Vol. 200, Issue 1, pp. 89–94). Ovid Technologies (Wolters Kluwer Health). https://doi.org/10.1016/j.juro.2018.01.071