VITUS
PRIVATE CLINIC

# VITUS
# PROSTATE CANCER SCREENING

Modern diagnostics
according to current scientific criteria

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# Dear reader, dear patient,

Prostate cancer is the most common cancer in men, comparable to breast cancer in women: one in five men is affected. While modern imaging methods have significantly improved the early detection of breast cancer, the diagnosis of prostate cancer has so far developed only slightly.

The digital rectal examination (DRE), the palpation of the prostate with the finger, is still the only screening examination accepted by the health insurance funds in Germany. A largely useless measure, as international experts repeatedly emphasise.

The PSA test and the punch biopsy performed when PSA levels are elevated also do more harm than good: Elevated PSA levels are not only found in prostate cancer, but also in benign changes. That is why the PSA test for prostate cancer screening is often no longer recommended. And in several countries, a ban on transrectal biopsy is being discussed due to the increasing death rates from severe infections.

These problems can be avoided by magnetic resonance imaging (MRI) of the prostate. As with female breast cancer, MRI has proven to be by far the best method for the early detection of prostate cancer:

Prostate MRI detects relevant cancer foci with over 90% accuracy. If the prostate MRI is unremarkable, prostate carcinoma can be excluded with almost 100% certainty.

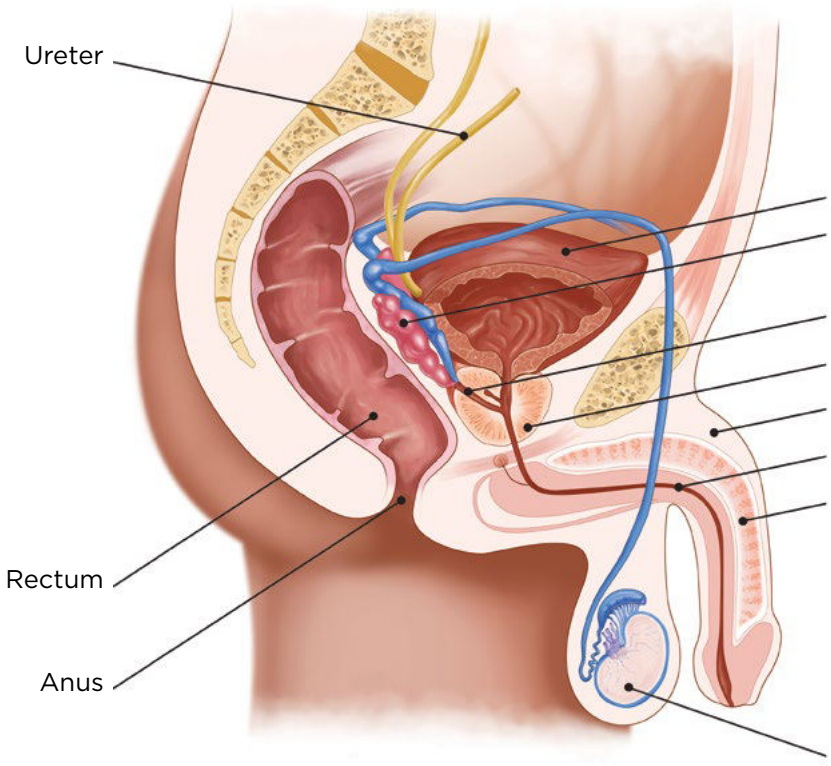
That is why we have developed the **VITUS** prostate cancer screening: An early detection programme for prostate cancer for men aged 45 and over, based on the latest science and surpassing established methods in terms of safety.

We believe it is now time for men to enjoy reliable cancer screening too.

This brochure gives you an overview of the VITUS prostate cancer screening programme.

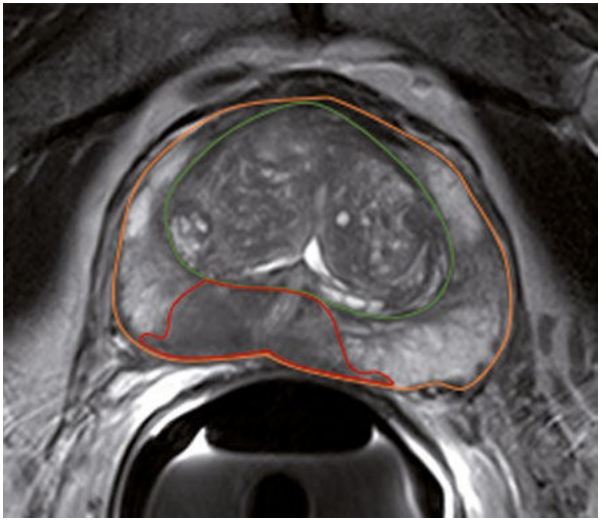
Yours sincerely,

Prof. Dr. mult. Michael K. Stehling




Sagittal cross-section through the male pelvis. The prostate is locates below the urinary bladder, just in front of the rectum.

MRI image of the prostate in cross-section. Due to its high soft tissue contrast, the MRI optimally depicts the internal, zonal anatomy of the prostate. Green border: Transitional zone (TZ) with intraprostatic urethra (white structure in the centre). The outer zone (OZ) is outlined in orange. Red border shows a typical prostate carcinoma in the OZ.



# The prostate - A small organ, but problematic

The prostate[1] also called the prostate gland, is a gland that secretes a milky or white fluid that makes up about 30% of semen and helps sperm survive. It is about the size of a chestnut.

The prostate is located deep in the small pelvis, below the urinary bladder. Directly below the prostate is the sphincter of the urinary bladder, which is responsible for urinary continence. Directly on top of the prostate lies the neurovascular bundle (NVB), a network of nerves and vessels that controls penile erection[2].

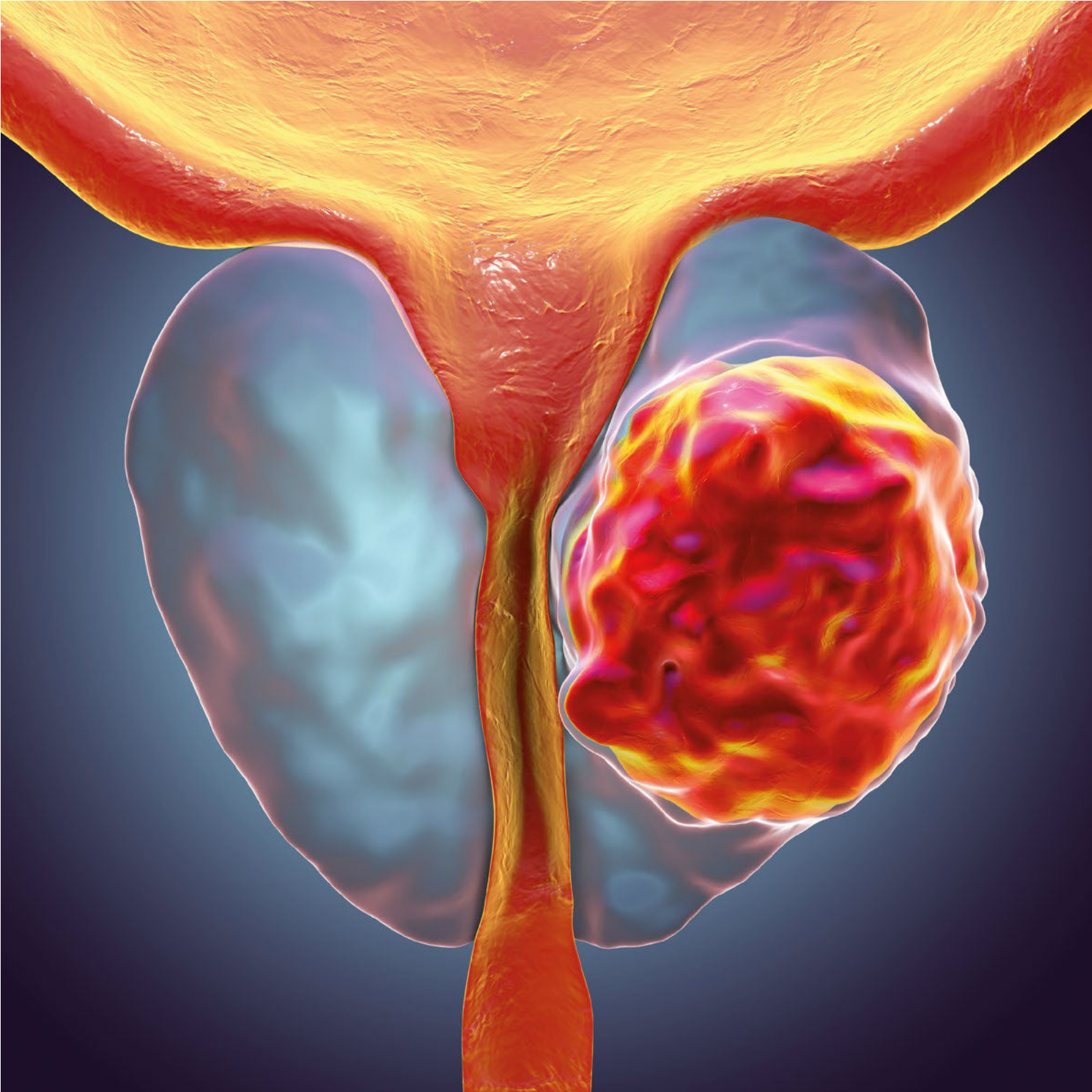
The sphincter and NVB are often damaged during surgical removal of the prostate, resulting in incontinence and erectile dysfunction. The prostate itself consists of several parts: The transitional zone (TZ), which is adjacent to the intraprostatic urethra, the external zone (EZ) and the less important central zone (CZ).

The majority of all prostate carcinomas (70 - 80%) develop in the EZ of the prostate adjacent to the rectum; only about 20 - 30% are localised in the TZ.

Prostate cancer does not cause any symptoms in most cases, at least in the earlier stages. The enlargement of the EZ with age, on the other hand, triggers benign (benign) prostatic hyperplasia (BPH), which can lead to problems with urination (obstructive uropathy).

[1] https://en.wikipedia.org/wiki/Prostate

[2] Costello AJ, Brooks M, Cole OJ. Anatomical studies of the neurovascular bundle and cavernosal nerves. BJU International. 2004;9(4):1071-1076.



# Prostate cancer:
# Facts every man should know

Every 5th man will develop a “clinically relevant” prostate cancer, a carcinoma that needs to be treated, in the course of his life. But only about one in 35 men die from prostate cancer. Insignificant prostate cancers that do not require treatment are present in almost 50% of all 50-year-old men, and in about 90% of all 80-year-olds[3]. These tumours have such a low aggressiveness and growth rate that invasive therapy is not necessary.

Most men therefore die with and not from their prostate cancer. This is because most men with prostate cancer die from other causes of death, such as a heart attack, many without ever having learned of their cancer[4].

Nevertheless, about 15,000 men die of prostate cancer in Germany every year[5]. In these patients, an aggressive carcinoma remained undetected for too long. Reason enough to detect and treat more aggressive tumours at an early stage through preventive examinations and thereby increase the chance of a permanent recovery.

Because not all prostate cancers are the same. The carcinomas differ greatly in their aggressiveness, which is usually expressed by the so-called Gleason score (determined by a pathologist through tissue samples): A Gleason score of 6 describes a low-grade, low-aggressive carcinoma, a Gleason score of 7 describes an intermediate-grade carcinoma and a Gleason score of 8 to 10 describes a high-grade, aggressive carcinoma.

While the chance of dying from a Gleason 6 carcinoma within 15 years is less than 1%, the chance of dying from Gleason 7 carcinomas increases to 15-20% in the same period, and up to 70% for high-grade carcinomas, depending on age group[6].

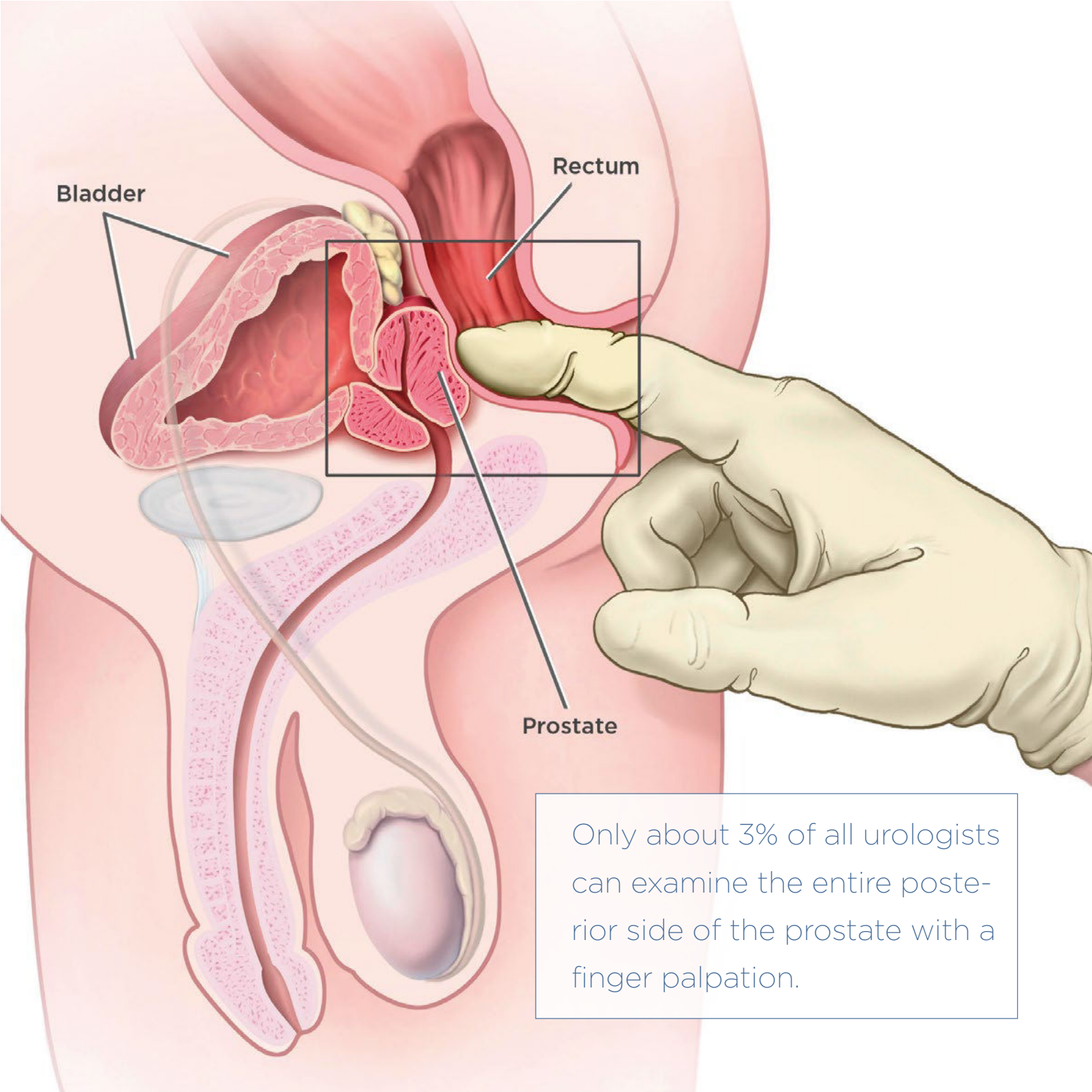
Prostate MRI (magnetic resonance imaging of the prostate), provides earlier and more reliable detection than other methods, and can distinguish aggressive, dangerous carcinomas that need treatment from relatively benign, harmless carcinomas. And it does so without interfering with the body.

[3] Jahn JL, Giovannucci EL, Stampfer MJ. The High Prevalence of Undiagnosed Prostate Cancer at Autopsy: Implications for Epidemiology and Treatment of Prostate Cancer in the Prostate-Specific Antigen-Era. Int J Cancer. 2015; 137(12): 2795–2802.

[4] https://seer.cancer.gov/statfacts/html/prost.htmlhttps://seer.cancer.gov/statfacts/html/prost.html

[5] https://www.krebsdaten.de/Krebs/DE/Content/Krebsarten/Prostatakrebs/prostatakrebs_node.html

[6] Parker C, Muston D, Melia, et al. A model of the natural history of screen-detected prostate cancer, and the effect of radical treatment on overall survival. BJC. 2006; 94(10):1361-1368.




Only about 3% of all urologists can examine the entire posterior side of the prostate with a finger palpation.

# Prostate cancer screening at public expense: The nonsense of the palpation examination

Due to the frequency of prostate cancer, screening examinations are undoubtedly sensible, because carcinomas detected at an early stage offer a much better chance of cure.

Nevertheless, the only screening examination recommended in Germany and paid for by health insurance companies for men over 45 years of age is the palpation of the prostate with a finger through the rectum: Digital Rectal Examination (DRE).

Professor Patric Walsh of Johns Hopkins University, USA, one of the world's leading urologists, says: "We do not recommend digital rectal examination as part of prostate cancer screening, either as a stand-alone examination or in combination with PSA screening. … there are no controlled studies showing that detection of prostate cancer by DRE reduces morbidity or mortality in affected men, regardless of age." [7]

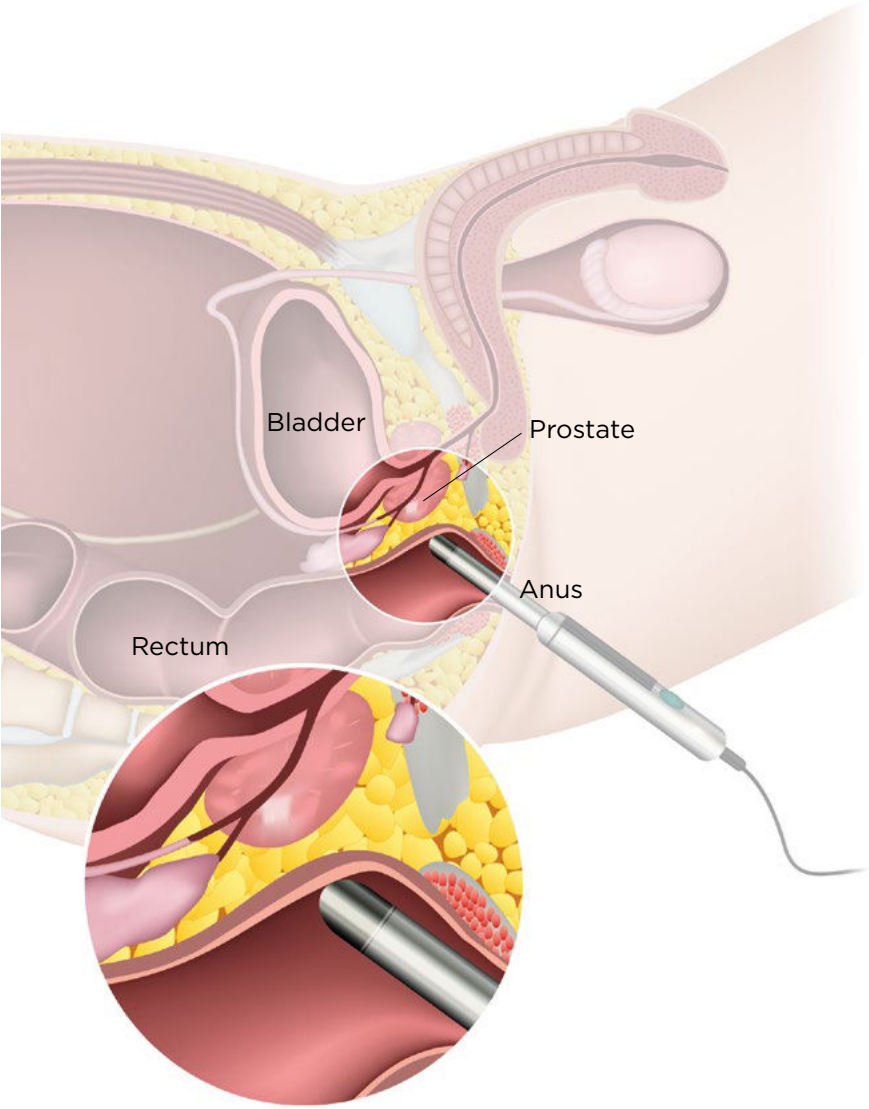
And the reason for this? The fingers of most urologists are simply too short to palpate the entire posterior side of the prostate. While the lower part of the prostate is still reached by 93.7% of all urologists, only about 1/4 of the urologists can palpate the lower 2/3 of the prostate, and only 3.2% could examine the entire posterior side of the prostate with their finger [8].

Conclusion: Because of too short fingers, DRE is not suitable for reliable cancer screening. Furthermore, DRE usually finds prostate cancer too late: the majority of carcinomas detected by DRE are clinically and pathologically advanced and cannot be treated successfully in most cases [9].

[7] Epstein JI: Pathology of prostatic neoplasia. In: Campbell's Urology, 8th ed, Walsh PC (Ed), Saunders, Philadelphia 2002.

[8] Koulikov D, Mamber A, Fridmans A, et al. Why I Cannot Find the Prostate? Behind the Subjectivity of Rectal Exam. ISRN Urol. 2012; 2012: 456821.

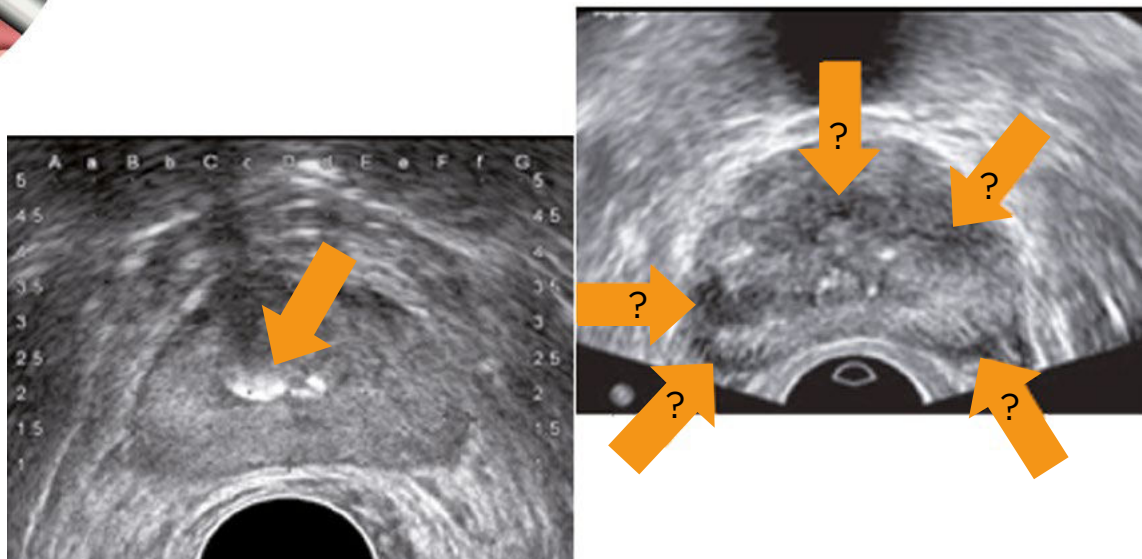
[9] Krahn MD, Mahoney JE, Eckman MH, et al. Screening for prostate cancer. A decision analytic view. JAMA. 1994;272(10):773-780.




## Transrectal ultrasound

Fig. left: Schematic drawing of a transrectal ultrasound examination of the prostate, in which the ultrasound wand is inserted through the anus into the rectum (rectal cavity) to sonographically visualise the prostate, which is directly in front of the rectum.

Fig. below: Ultrasound images of the prostate in transverse section, showing typical calcifications in the left image (arrow), and several hypoechogenic foci ("nodules") in the right image, which were misinterpreted as cancerous foci and turned out to be benign changes in prostatitis after biopsy. An MRI of the prostate could have avoided the biopsy.



# Prostate cancer detection through ultrasound

The most commonly performed examination of the prostate is sonography, or ultrasound (US). It is suitable for determining the size of the prostate, assessing the effects of benign prostatic hyperplasia (BPH) on the floor of the bladder, or detecting calcifications.

Ultrasound is also useful for guiding interventions on the prostate, such as biopsies. However, ultrasound is not suitable for detecting prostate cancer. The sensitivity and specificity of standard greyscale ultrasound (US) for diagnosing prostate cancer is only 40-50%[10].

As a result, US examination of the prostate will find "nodules" in the prostate in 200 out of 1000 men. Of these, 10 are cancerous, 190 are benign changes. Of the 10 actual cancerous foci, 4 - 5 of the cancerous foci are detected by ultrasound (true positive), but 5 - 6 of the cancerous foci are incorrectly assessed as benign (false negative, due to low sensitivity) and thus overlooked.

On the other hand, of the 190 benign nodules, 95 - 114 are incorrectly assessed as cancerous foci (false positive, due to low specificity). This Pseudo-cancerous lesions are then unnecessarily further clarified by biopsies.

As duplex sonography, US can also detect blood flow in prostate nodules. This is increased in some cancer foci. However, many prostate cancer sites do not show increased blood flow and therefore remain undetected.

The best results are obtained with contrast-enhanced ultrasound and elastography. They have sensitivities and specificities around 70%. However, both methods are highly user-dependent and elastography in particular is not reliable in the central and transitional zones and in the anterior (anterior, distal to the rectum and transducer) sections of the prostate.

Conclusion: Ultrasound is not suitable for reliable early prostate cancer detection, at best it is useful as a supplementary diagnostic measure.

[10] Chen FK, de Castro Abreu AL, Palmer SL. Utility of Ultrasound in the Diagnosis, Treatment, and Follow-up of Prostate Cancer: State of the Art. J Nucl Med. 2016; 57(3):13-18


PSA - Test

# The PSA test:
# Dangerous on its own, useful together with MRI

The PSA test detects the amount of prostate-specific membrane antigen in the blood, a protein that is produced by prostate carcinomas, but also by the normal prostate.

The advantage of the PSA test: it is cheap and easy to perform. The big disadvantage: it is non-specific. This means that an elevated PSA value can also be caused by other factors than prostate carcinoma. For example, benign prostatic hyperplasia (BPH), prostatitis, palpation (DRE), cycling, sex, and even diet.

Performed as a screening test, the PSA test finds an elevated value in many men. For PSA values above 4 ng/ml, further clarification is recommended in Germany - by taking tissue samples from the prostate.

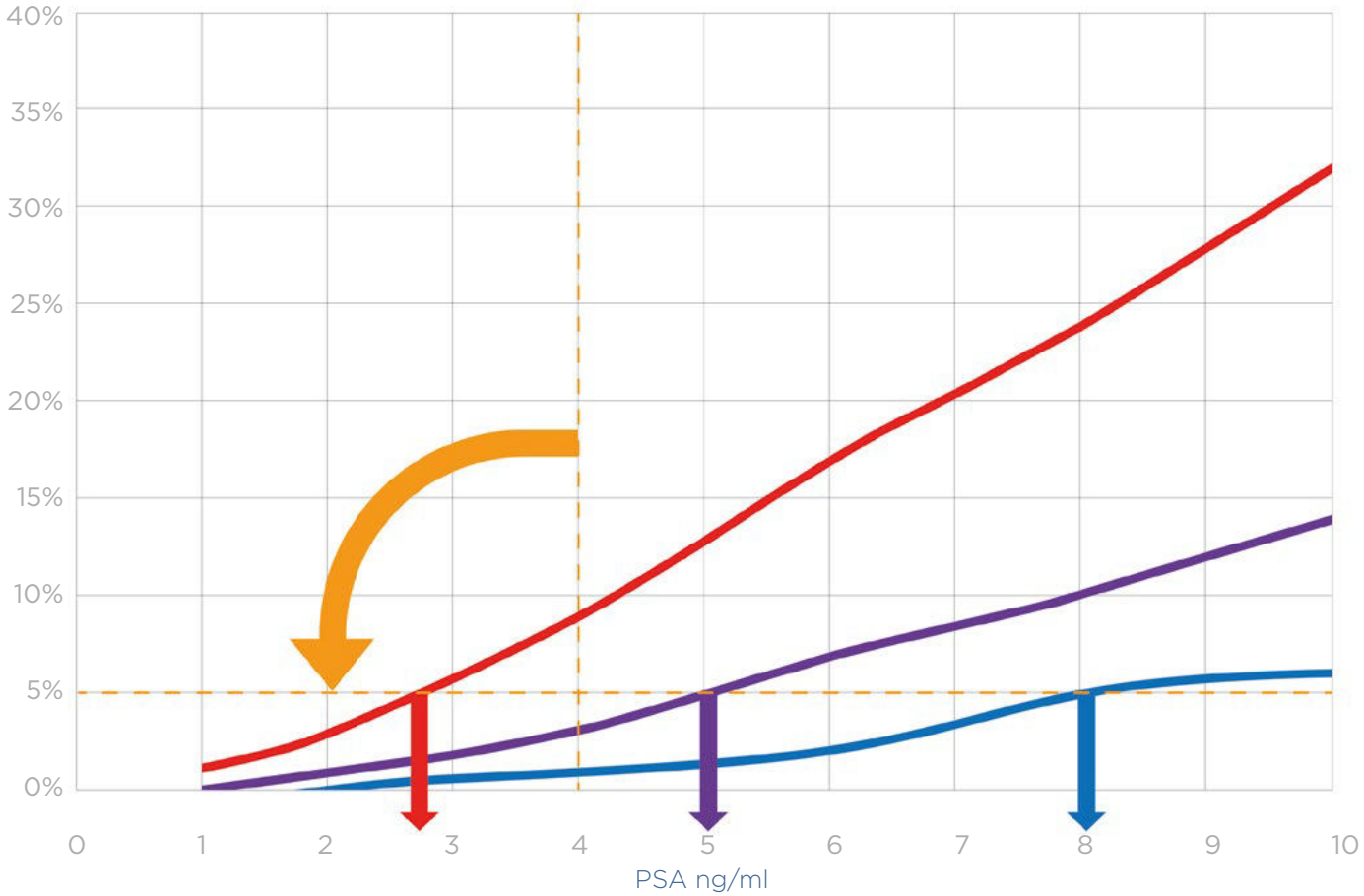
And therein lies the problem: biopsies are invasive. The standard biopsy (transrectal punch biopsy) is done through the rectum, with intestinal contents entering the prostate. Out of every 1000 biopsied men develop 20-30 severe infections of the prostate (prostatitis), about 1-2 men die from them, and the trend is rising[11]. In many countries, a ban on transrectal biopsy is therefore being discussed, not yet in Germany.

Another disadvantage of the punch biopsy: it finds many completely insignificant carcinoma foci, because with increasing age, harmless prostate cancer foci are almost normal.

But the PSA test can also miss carcinomas: Particularly aggressive carcinomas often produce little PSA. For example, a Gleason 8 carcinoma with a PSA value of 1.5 ng/ml may have already triggered metastases - the threshold value for a positive PSA test in Germany is 4!

[11] Brewster DH, Fischbacher CM, Nolan J, et al. Risk of hospitalization and death following prostate biopsy in Scotland. Public Health. 2017; 142: 102–110.

## Probability of significant prostate cancer without risk factors




Small 25 ml prostate volume
Medium 40 ml prostate volume
Large 60 ml prostate volume

Correlation between prostate size (red curve: small prostate with 25 ml; purple curve: medium prostate with 40 ml, blue curve: large prostate with 60 ml volume), PSA level and probability of the presence of a prostate carcinoma. With a threshold value of 4 ng/ml, as used in Germany, the probability of prostate carcinoma in a small prostate is almost 10%, in a large prostate only about 1%. If one wants to design the screening in such a way that the PSA test is positive from a 5% probability of prostate carcinoma, different threshold values of approx. 2.7, 5 and 8.1 ng/ml are needed depending on the size of the prostate.

According to the European prostate cancer screening study ERSPC[12], in which 182,000 men participated, between 570 and 781 men have to undergo a PSA test to find and treat carcinoma in 18 to 27 men in order to save a man's death from prostate cancer. Conversely, between 569 and 780 biopsies and 17 to 26 treatments only bring side effects, but no survival benefit!

However, the punch biopsy is also very inaccurate: it finds only 30 to 35 % of all carcinomas.

The PSA test becomes useful when a magnetic resonance imaging (MRI) of the prostate is carried out instead of a biopsy if the values are elevated. The prostate MRI can detect or exclude the presence of a prostate carcinoma with almost twice the certainty of the transrectal biopsy.

[12] Hugosson J, Roobol MJ, Månsson M, et al. A 16-yr Follow-up of the European Randomized study of Screening for Prostate Cancer. Eur Urol. 2019; 76(1):43-51.

**CONCLUSION**

PSA tests provide useful information if they are interpreted correctly.

Most of the time, the PSA level is elevated without the presence of prostate cancer, e.g. due to benign prostate enlargement and inflammation.

The presence of prostate cancer can be detected or ruled out by prostate MRI.

Biopsies should only be performed if the prostate MRI reveals sites suspicious of carcinoma.

**And: a low PSA level does not rule out prostate cancer with absolute certainty!**


We
take time for
a detailed
consultation.

# The **VITUS** prostate cancer screening: Safety through prostate MRI

We believe it is time for men to enjoy reliable cancer screening too.

That is why we have developed VITUS Prostate Cancer Screening, a screening programme for prostate cancer in men aged 45 and older that is based on the latest science and surpasses established methods in terms of safety.

The VITUS Prostate Cancer Screening combines our decades of experience with magnetic resonance imaging (MRI) and the diagnosis and treatment of prostate cancer. Together with the leading medical technology manufacturer, Siemens Healthineers, our doctors and physicists have developed an early detection programme optimised in all aspects.

The lead in this was Prof. Dr. mult. Michael K. Stehling, who since the 1980s, together with the Nobel Prize winner Sir Peter Mansfield, has been significantly involved in the development of modern magnetic resonance imaging examination procedures, among others at Harvard Medical School and Boston University in the USA as well as at Ludwig Maximilian University in Munich.

In combination with an approx. 20-minute MRI examination of the prostate and a PSA test, we can detect or exclude clinically relevant prostate carcinomas with over 90% certainty.

# Take advantage of the possibilities of modern and efficient prostate diagnostics.

# Prostate MRI:
# The new quality standard in prostate diagnostics

As in the case of female breast cancer, magnetic resonance imaging (MRI) of the prostate has become by far the best method for detecting and/or excluding prostate cancer in recent years. This has since been proven in several scientific studies.

As early as 2017, the PROMIS multicentre study from England 13 was able to show in 576 men that MRI of the prostate, with 93%, has almost twice as high a detection sensitivity for clinically relevant prostate carcinomas as prostate biopsy (TRUS) with only 48%.

These data were confirmed by the results of a large, interdisciplinary multicentre study in the USA, which included a total of 1500 patients over several years[14].

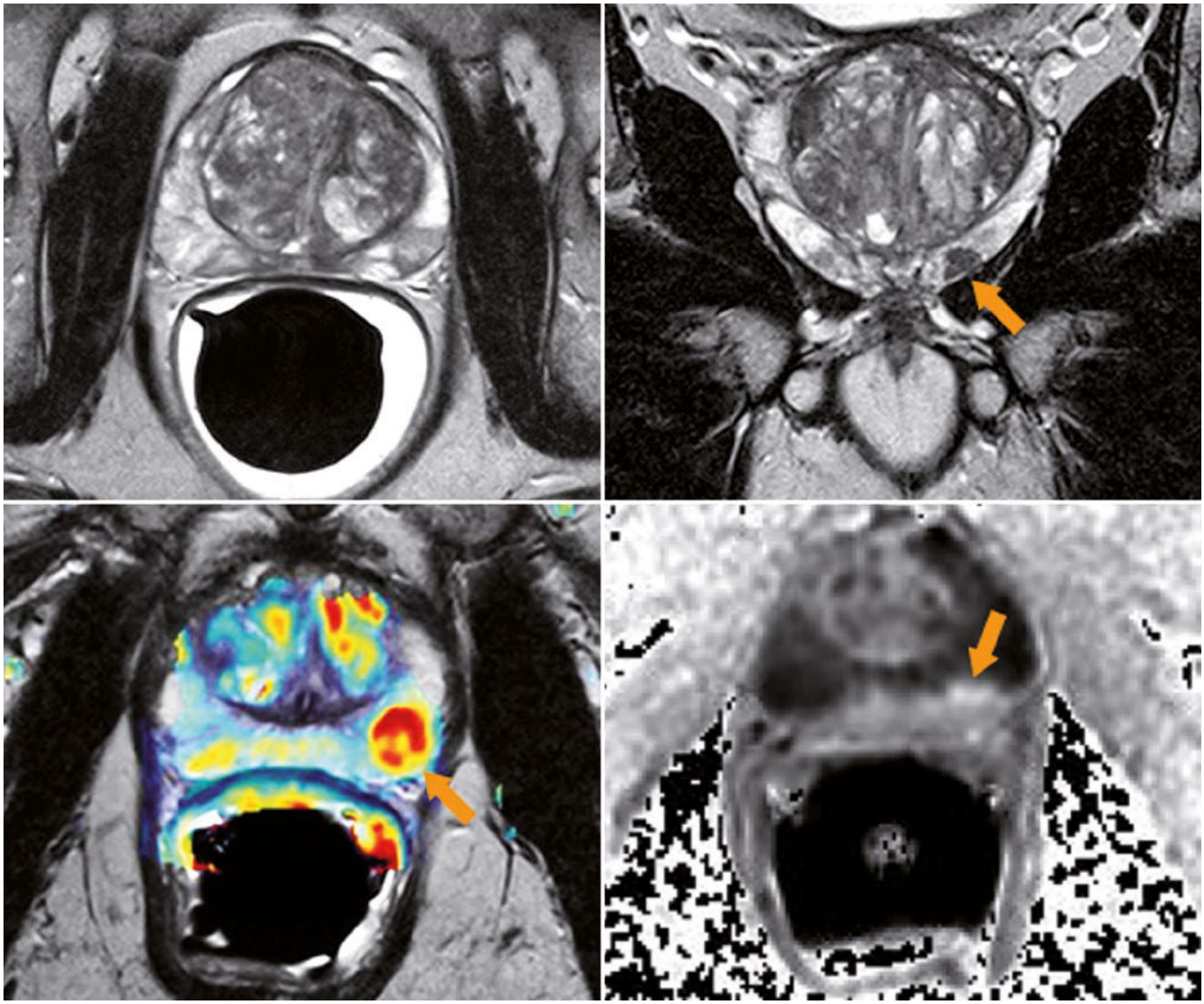
The scientists were able to show that multiparametric MRI (mpMRI) of the prostate has a sensitivity for prostate cancer of 94 - 95%.

It was noteworthy that MRI could exclude clinically relevant carcinomas (Gleason Score ≥ 7) with a certainty of 93 - 97%. If the difficult to detect, almost benign Gleason 6 carcinomas were also taken into account, the negative predictive value was still 87% and thus considerably better than with the punch biopsy.

The size and extent of carcinomas in the prostate are also better detected by mpMRI than by punch biopsy, with a sensitivity of 84%. Infiltration of the seminal vesicles and growth of the tumour beyond the prostate can be detected with a specificity of 97-98% (Gleason Score ≥ 7).

[13] Ahmed HU, El-Shater Bosaily A, Brown LC, et al. Diagnostic accuracy of multi-parametric MRI and TRUS biopsy in prostate cancer (PROMIS): a paired validating confirmatory study. Lancet. 2017;389(10071):815-822.

[14] Gaunay G, Patel V, Shah P, et al. Role of multi-parametric MRI of the prostate for screening and staging: Experience with over 1500 cases. Asian Journal of Urology. 2017;4:68-74.



Examples of multiparametric prostate MRI (different patients). Top row: T2-weighted MRI images, left axial, right coronary, showing the zonal anatomy of the prostate in high detail. Dark in the outer zone (arrow) a small prostate carcinoma about 0.5 cm in diameter. Bottom left: Parametric representation of enhanced contrast uptake in a carcinoma focus (arrow). Bottom right: Diffusion-weighted MRI images (b-value 1500 s/mm ), which make it possible to distinguish a small prostate carcinoma of approx. 0.5 cm diameter from benign tissue with high signal intensity (arrow).

## **VITUS** PROSTATE MRI: HIGH-END DIAGNOSTICS OF THE PROSTATE

If there is a clinically relevant carcinoma that requires treatment, this is detected by the prostate MRI with a detection sensitivity of 94 - 95 %.

If the prostate MRI shows no suspicious findings, a clinically relevant carcinoma can be ruled out with a certainty of 93 - 97%.

Prostate MRI detects the size and extent of carcinomas in the prostate with 84% accuracy, and cross-capsular growth with 97 - 98% certainty.

Prostate MRI can avoid unnecessary biopsies when PSA levels are elevated or increase the accuracy of biopsies when they are necessary.

It has been suspected for years that magnetic resonance imaging (MRI) can avoid unnecessary biopsies of the prostate. In 2018, a study by the University of Mainz also provided scientific evidence of this in Germany[15]. It was able to show that in 651 men in the study, almost 40% of biopsies could have been avoided by an MRI without missing relevant cancer foci.

In summary, it can now be said that the informative value of prostate MRI is so superior to other procedures that a prostate MRI should be performed whenever prostate cancer is suspected.

[15] Mehralivand S, Shih JH, Rais-Bahrami S, et al. A Magnetic Resonance Imaging–Based Prediction Model for Prostate Biopsy Risk Stratification. JAMA Oncol. 2018;4(5):678-685.

# AI heralds a new age of diagnostics

# We use the possibilities of AI for your health

Artificial intelligence (AI) comprises forward-looking technologies in which powerful computers can perceive, understand, learn and interpret images themselves.

AI is particularly well suited when it comes to recognising recurring patterns. This is the case in medical diagnostics. For example, although prostate carcinomas differ from patient to patient, they have similarities. This can be learned by AI systems and then applied to support the doctor.

At the VITUS Prostate Centre, we are already evaluating the possibilities of AI today, enabling our doctors to make diagnoses not only faster but also more accurately.

But AI systems must first be “trained”. They have to learn the patterns they will later recognise. To do this, algorithms such as “deep learning” are used, which use artificial neuronal networks that are modelled on the structure of the human brain. This is because the human brain is good at recognising patterns due to its parallel structure. But computers can remember large amounts of data better and ultimately calculate them faster.

Based on our many years of experience in the field of early detection, diagnosis and treatment of prostate cancer, we at the VITUS Prostate Centre have a unique multimodal database of MRI, PSMA-PET/CT and 3D biopsy data, which enables us to make an important contribution to the development of diagnostic AI systems.

In this way, we increase the chance of detecting and curing diseases earlier.

# Prostate cancer is as individual as you are. It depends on the genes.

Because no two prostate cancers are the same, we believe that each cancer should be assessed as individually as you are. That is why we offer our patients to determine this individuality precisely. From A to Z. Genetic determination to detect hereditary gene variants, analyses of the blood and urine for early cancer detection, genetic determinations of the tumour tissue, to better assess aggressiveness, up to complex analysis to tailor modern therapies to your tumour.

# Liquid biopsy, a revolution in the diagnosis and treatment of prostate cancer

In order to diagnose or exclude prostate cancer, tissue samples (biopsies) are usually taken and examined microscopically.

In recent years, a new analysis method has caused a stir: the liquid biopsy - a urine- or blood-based DNA analysis for the detection of tumour cells or tumour DNA in blood or urine. This is because tumour cells also release genetic information into the blood/urine, which can be analysed for genetic changes.

With the latest methods, it is possible to detect even the smallest amounts and thus also the earliest stage of the disease in time. The liquid biopsy procedure is increasingly being used in oncology for various purposes, e.g. for screening and early detection of cancer or for estimating the risk of metastasis. An important field of application is also the identification of therapeutic targets and tumour resistance mechanisms.

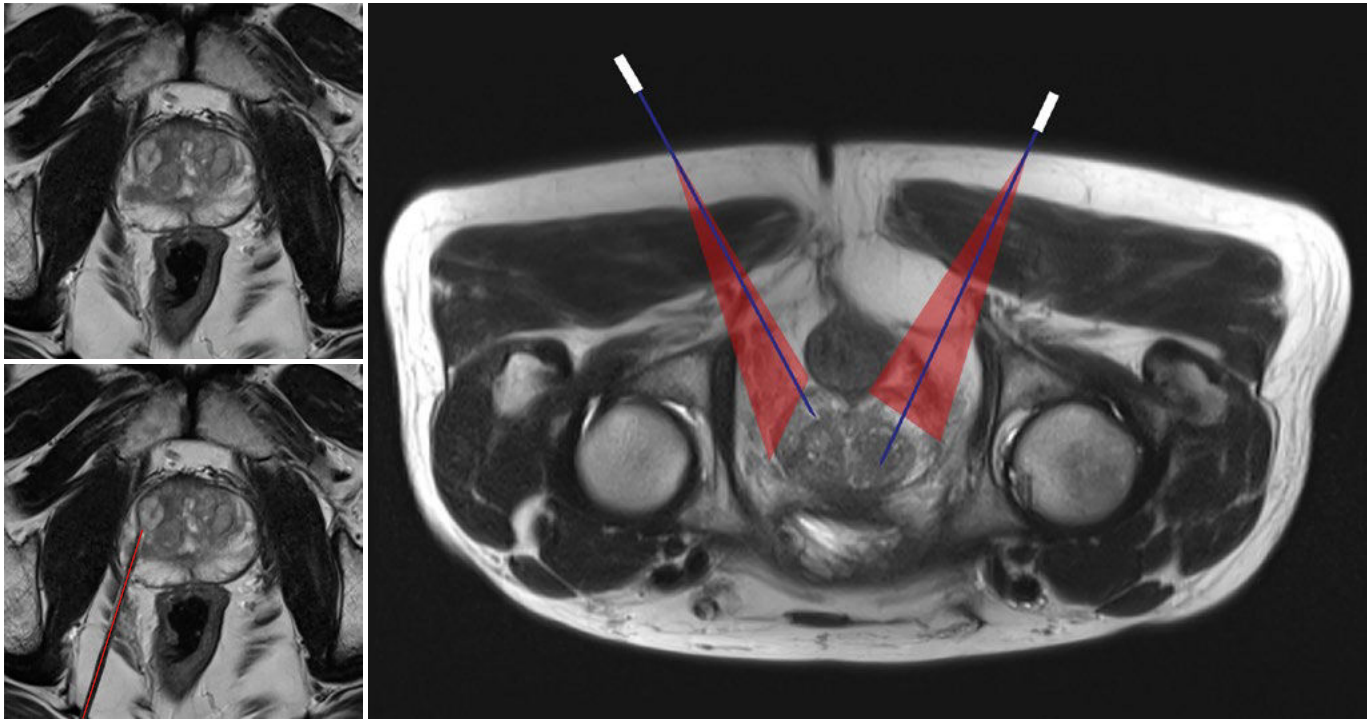
To be able offering this revolutionary technology already now, we at the VITUS Prostate Center are the first institution in Germany to use the scientifically proven blood-based SM-3 Liquid Biopsy Test developed at the Karolinska Institute in Sweden together with a special, high-resolution prostate MRI examination. Large studies[16] have shown that the SM-3 test finds significantly more aggressive carcinomas compared to previously used methods of prostate cancer diagnosis and also makes it possible to reduce unnecessary prostate biopsies by half.

The SelectMDx[17] test is another urine-based genetic test that offers significant advantages over the non-specific PSA test. Given the high diagnostic and predictive values of the SelectMDx test, the test can not only detect prostate carcinomas with a high degree of certainty, but also predict their biological characteristics and aggressiveness.

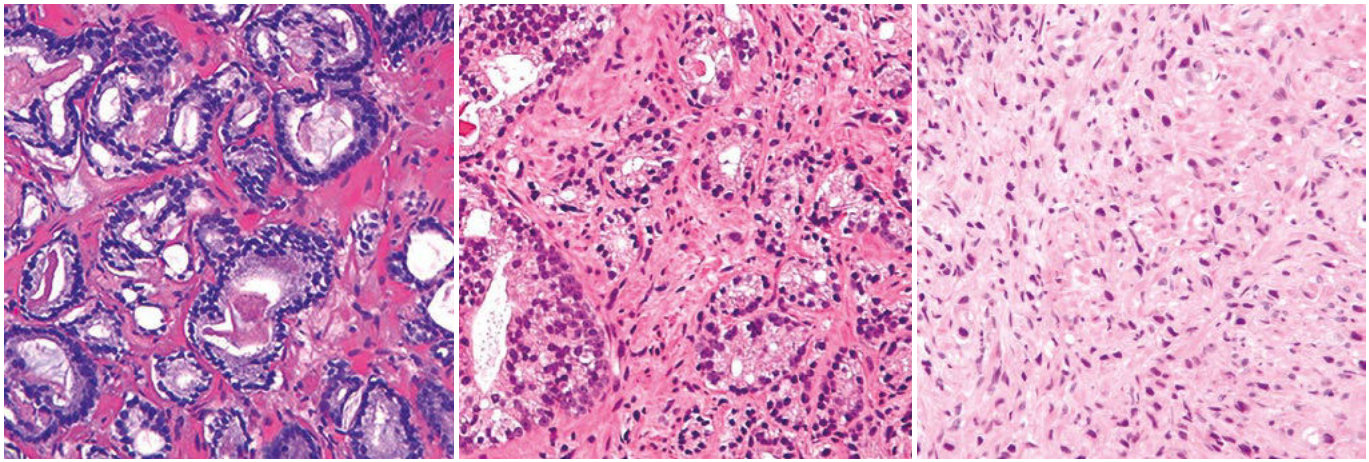
With the combination of liquid biopsy, genetic test and top-end MRI diagnostics, you can use the prostate cancer diagnostics of the future for yourself at the **VITUS** Private Clinic today!

[16] Elund M, Nordström T, Aly M, et al. The Stockholm-3 Model can Improve Prostate Cancer Diagnostics in Men aged 50-69 yr Compared with Current Prostate Cancer Testing. Eur Urol Focus. 2018;4(5):707-710.

[17] Haese A, Trooskens G, Steyaert S, et al. Multicenter Optimization and Validation of a 2-Gene mRNA Urine Test for Detection of Clinically Significant Prostate Cancer before Initial Prostate Biopsy J. Urol. 2019;202:256-263.



MRT-transgluteal biopsy



Gleason Grade 3 | Gleason Grade 4 | Gleason Grade 5

# VITUS
## MagPro precision biopsy

As a top international prostate cancer clinic, we at VITUS believe in one thing - precision and accuracy in imaging and biopsy!

The standard prostate biopsy, the transrectal ultrasound-guided (TRUS) punch biopsy, detects prostate cancer in only 30-35% of men who are suffering from it. This is not accurate enough for us.

That is why we at VITUS have introduced the MagPro precision biopsy, for the reliable histopathological diagnosis of suspected prostate cancer.

The MagPro precision biopsy uses the high detection sensitivity of the prostate MRI to localise areas in the prostate that are suspicious for carcinoma. These are then targeted within the MRI scanner under direct MRI visual control and a limited number of tissue samples are taken directly from the tumour-suspicious areas of the prostate.

With an accuracy of 60-100%, depending on the initial findings, the MRI-guided biopsy is twice as accurate as the conventional TRUS biopsy.

Our high-precision procedure not only allows us to hit the tumour with certainty, but also to identify the most aggressive areas within the tumour and to biopsy them specifically. Because with conventional biopsies, the aggressiveness of the prostate cancer is underestimated in almost 50% of all cases!

Knowing for sure whether a less aggressive Gleason 6 tumour is present or a highly aggressive Gleason 8 carcinoma is of great importance for further diagnosis and treatment as well as for the prognosis.

By optimising the technique, the MagPro precision biopsy can be performed quickly, minimally invasively and without risk of infection. In addition to the histopathological diagnosis, the MagPro precision biopsy also enables the genetic analysis of the biopsied prostate carcinoma. The genetic analysis allows important conclusions to be drawn about the aggressiveness of the tumour, its tendency to metastasise and its response to systemic treatments.

And another piece of good news: if the prostate MRI does not show any tumour-suspicious findings, biopsies can usually be avoided.

Let the experts at the **VITUS** Private Clinic advise you. We will tell you which biopsy is best for you.

In addition to prostate examinations, you can also have other MRI examinations optimised for the respective applications carried out in the VITUS diagnostic centres; in co-operation with the **VITUS** partner practices and clinics, you can also have qualitatively optimised nuclear medicine procedures such as PSMA-PET with gallium 68. In addition to diagnostics, we also provide you with extensive advice on the subject of prostate cancer treatments in the VITUS prostate centres, either in person or via telemedicine.

## FURTHER SERVICES

- Whole body staging with whole body DWI-MRI and PSMA-PET with Gallium68
- 3D-Mapping Biopsy
- Prostate cancer therapy without impotence and incontinence with Irreversible Electroporation IRE (NanoKnifeTM)
- Electrochemotherapy (ECT), IR-ECT
- Focal therapy with High Energy Focussed Ultrasound (HiFU)
- MRI-guided Transurethral Ultrasound Ablation (TULSA)
- Robot-assisted radical prostatectomy (RARP)
- Transperineal RARP
- Proton therapy
- Cyberknife therapy
- Brachytherapy
- Focal therapy of lymph nodes and bone metastases
- Radioligand therapy with lutetium177
- Immunotherapy
- Treatment of benign prostatic hyperplasia (BPH) with preservation of the urethra and ejaculation
- Rezum Plus
- Photodynamic Therapy

## Prof. Dr. mult. Michael K. Stehling

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