

# The difficult art of implementation: barriers and enablers

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**Radboudumc**



No Disclosures

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ANDROS  
— CLINICS —

Radboudumc

# Implementation of prostate MRI

From a Dutch perspective

1. Idea
2. Standardization
3. Scientific Validation
4. Guidelines
5. General Implementation





1

Idea

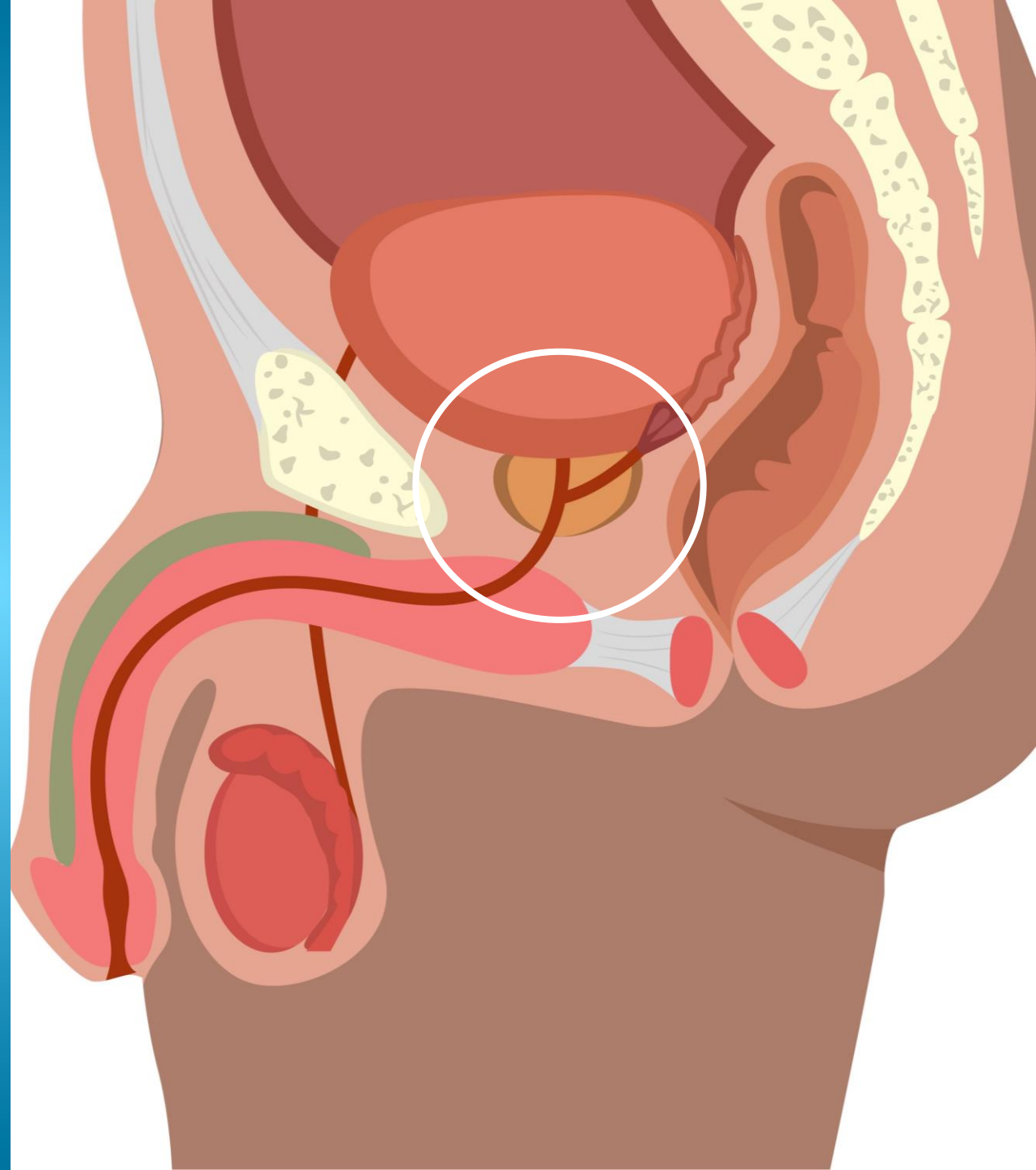




# Idea

## Prostate Cancer

- Most frequent male cancer
- Better diagnosis →  
Improved treatment
- Better diagnosis is possible







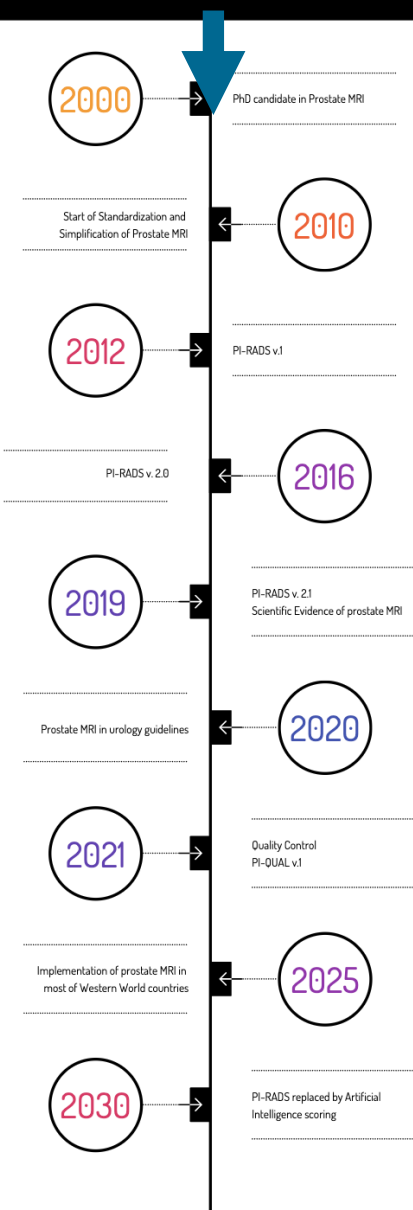
TRUS-Biopsy



MRI-guided Biopsy



# 2000 Prostate Cancer MRI



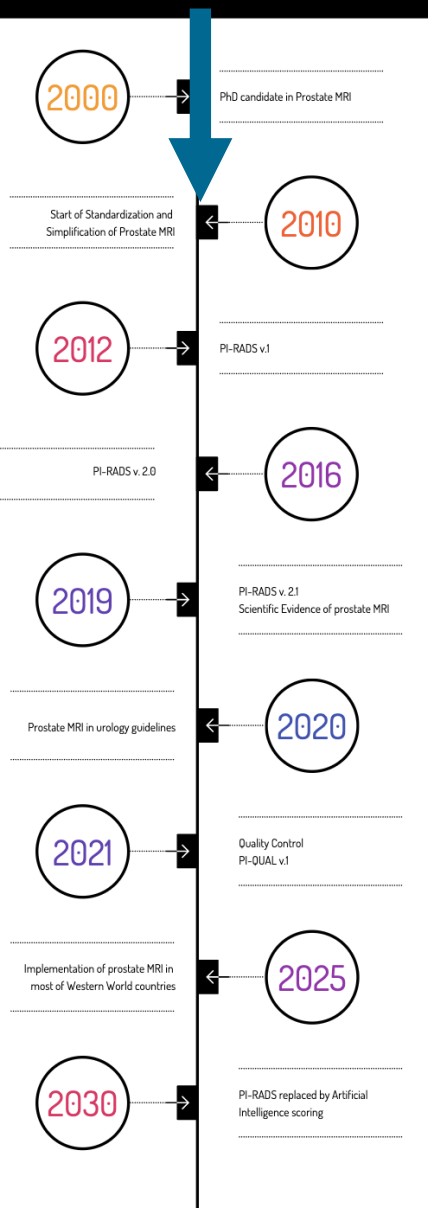
Gerrit J. Jager, MD  
Johan L. Severens, PhD  
John R. Thornbury, MD  
Jean J. M. C. H. de la  
Rosette, MD  
Sjef H. J. Ruijs, MD  
Jelle O. Barentsz, MD

## Prostate Cancer Staging: Should MR Imaging Be Used?— A Decision Analytic Approach<sup>1</sup>

# 1.5T Endorectal Coil Spectroscopy for Staging



# 2009 Expert consensus meeting



EUROPEAN UROLOGY 59 (2011) 477–494

available at [www.sciencedirect.com](http://www.sciencedirect.com)  
journal homepage: [www.europeanurology.com](http://www.europeanurology.com)



European Association of Urology



## Platinum Priority – Prostate Cancer

Editorial by Axel Heidenreich on pp. 495–497 of this issue

## Magnetic Resonance Imaging for the Detection, Localisation, and Characterisation of Prostate Cancer: Recommendations from a European Consensus Meeting

Louise Dickinson<sup>a,b,c,\*</sup>, Hashim U. Ahmed<sup>a,b</sup>, Clare Allen<sup>d</sup>, Jelle O. Barentsz<sup>e</sup>, Brendan Carey<sup>f</sup>, Jurgen J. Futterer<sup>e</sup>, Stijn W. Heijmink<sup>e</sup>, Peter J. Hoskin<sup>g</sup>, Alex Kirkham<sup>d</sup>, Anwar R. Padhani<sup>h</sup>, Raj Persad<sup>i</sup>, Philippe Puech<sup>j</sup>, Shonit Punwani<sup>d</sup>, Aslam S. Sohaib<sup>k</sup>, Bertrand Tombal<sup>l</sup>, Arnaud Villers<sup>m</sup>, Jan van der Meulen<sup>c,n</sup>, Mark Emberton<sup>a,b,c</sup>

# Simple 3T MRI for detection and localisation of csPCa

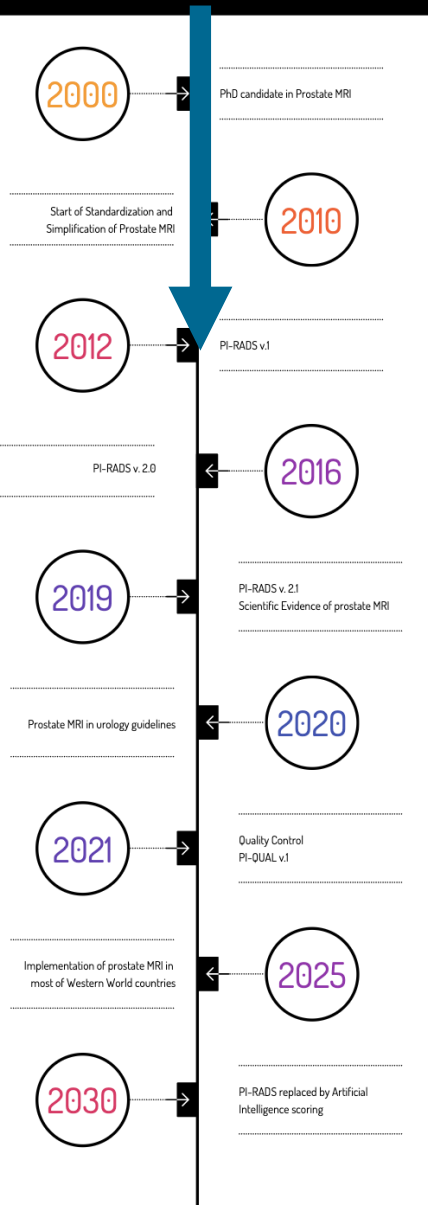
# 2



# Standardisation



# 2012 PI-RADS v.1



Eur Radiol

DOI 10.1007/s00330-011-2377-y

UROGENITAL

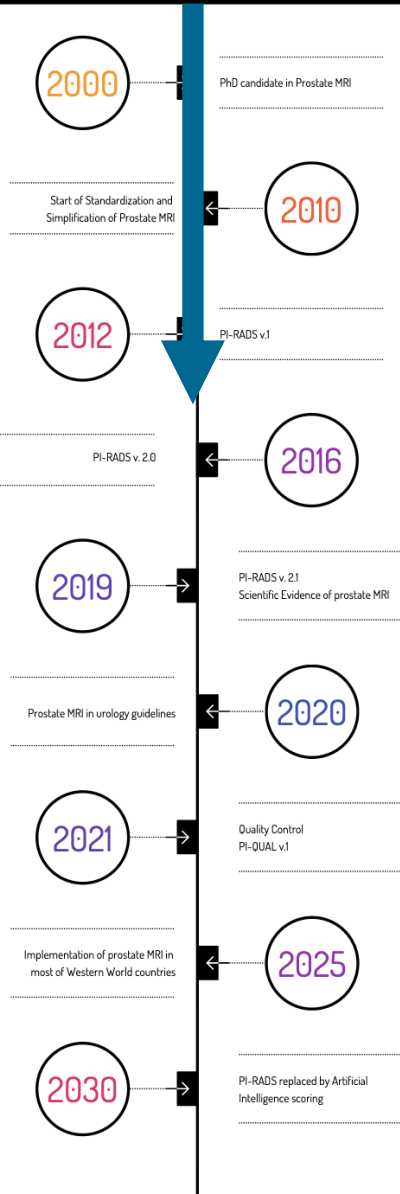


## ESUR prostate MR guidelines 2012

**Jelle O. Barentsz • Jonathan Richenberg •  
Richard Clements • Peter Choyke • Sadhna Verma •  
Geert Villeirs • Olivier Rouviere • Vibeke Logager •  
Jurgen J. Fütterer**

and: Claire Allan, Michel Claudon, Francois Cornud, Ferdinand Frauscher, Nicolas Grenier, Alex Kirkham, Frederic Lefevre, Gareth Lewis, Ulrich Muller-Lisse, Anwar Padhani, Valeria Panebianco, Pietro Pavlica, Phillipe Puech, Jarle Rorvik, Andrea Rockall, Catherine Roy, Tom Scheenen, Harriet Thoeny, Baris Turkbey, Ahmet Turgut.

# 2015 PI-RADS v.2



available at [www.sciencedirect.com](http://www.sciencedirect.com)  
journal homepage: [www.europeanurology.com](http://www.europeanurology.com)



European Association of Urology

**Platinum Priority – Prostate Cancer**  
Editorial by XXX on pp. x–y of this issue

## PI-RADS Prostate Imaging – Reporting and Data System: 2015, Version 2

Jeffrey C. Weinreb<sup>a,†,\*</sup>, Jelle O. Barentsz<sup>b,†</sup>, Peter L. Choyke<sup>c</sup>, Francois Cornud<sup>d</sup>,  
Masoom A. Haider<sup>e</sup>, Katarzyna J. Macura<sup>f</sup>, Daniel Margolis<sup>g</sup>, Mitchell D. Schnall<sup>h</sup>,  
Faina Shtern<sup>i</sup>, Clare M. Tempany<sup>j</sup>, Harriet C. Thoeny<sup>k</sup>, Sadna Verma<sup>l</sup>





# PI-RADS v.1 and v.2

JOURNAL **OPEN ACCESS PDF**

## ESUR prostate MR guidelines 2012

Barentsz J. O., Richenberg J. [...] Fütterer J. J.

*European Radiology* (2012), 10.1007/s00330-011-2377-y
[View in library](#) [View PDF](#) [Related](#)
1,609  
Citations864  
ReadersJOURNAL **OPEN ACCESS**

## PI-RADS Prostate Imaging - Reporting and Data System: 2015, Version 2

Weinreb J. C., Barentsz J. O. [...] Verma S.

*European Urology* (2016), 10.1016/j.eururo.2015.08.052
[View in library](#) [Get full text](#) [Related](#)
1,387  
Citations865  
Readers

# Highly Cited

2000

PhD candidate in Prostate MRI

Start of Standardization and Simplification of Prostate MRI

2010

2012

PI-RADS v.1

PI-RADS v. 2.0

2016

2019

PI-RADS v. 2.1  
Scientific Evidence of prostate MRI

Prostate MRI in urology guidelines

2020

2021

Quality Control  
PI-QUAL v1

Implementation of prostate MRI in most of Western World countries

2025

2030

PI-RADS replaced by Artificial Intelligence scoring



3

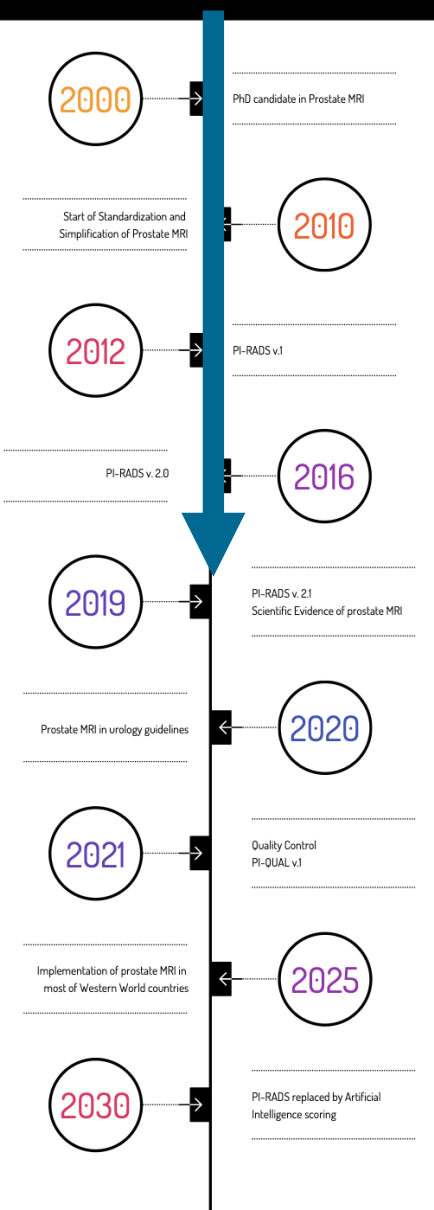


Scientific Evidence



# 2018 Four level 1A Papers





# Prostate cancer: early detection

## In a biopsy-naïve population with self-referral

- MRI ↓ **biopsy** (with 33%-57%)
- MRI ↓ **overtreatment**: ↓ insign-PCa: RD 0.61
- MRI ↔ **detection** of **csPCa** (25%)



## Guidelines

Back

- > Individual Guidelines
  - > Oncology Guidelines
  - > Non-Oncology Guidelines
- > Rapid Reaction Recommendations: EAU COVID-19
- > Discontinued Topics
- > General Topics
- > Compilations of all Guidelines
- > Ordering the EAU Guidelines

Home > Prostate Cancer

## Prostate Cancer

Full Text Guidelines	Summary of Changes	Scientific Publications & Appendices	Pocket Guidelines	Archive	Panel
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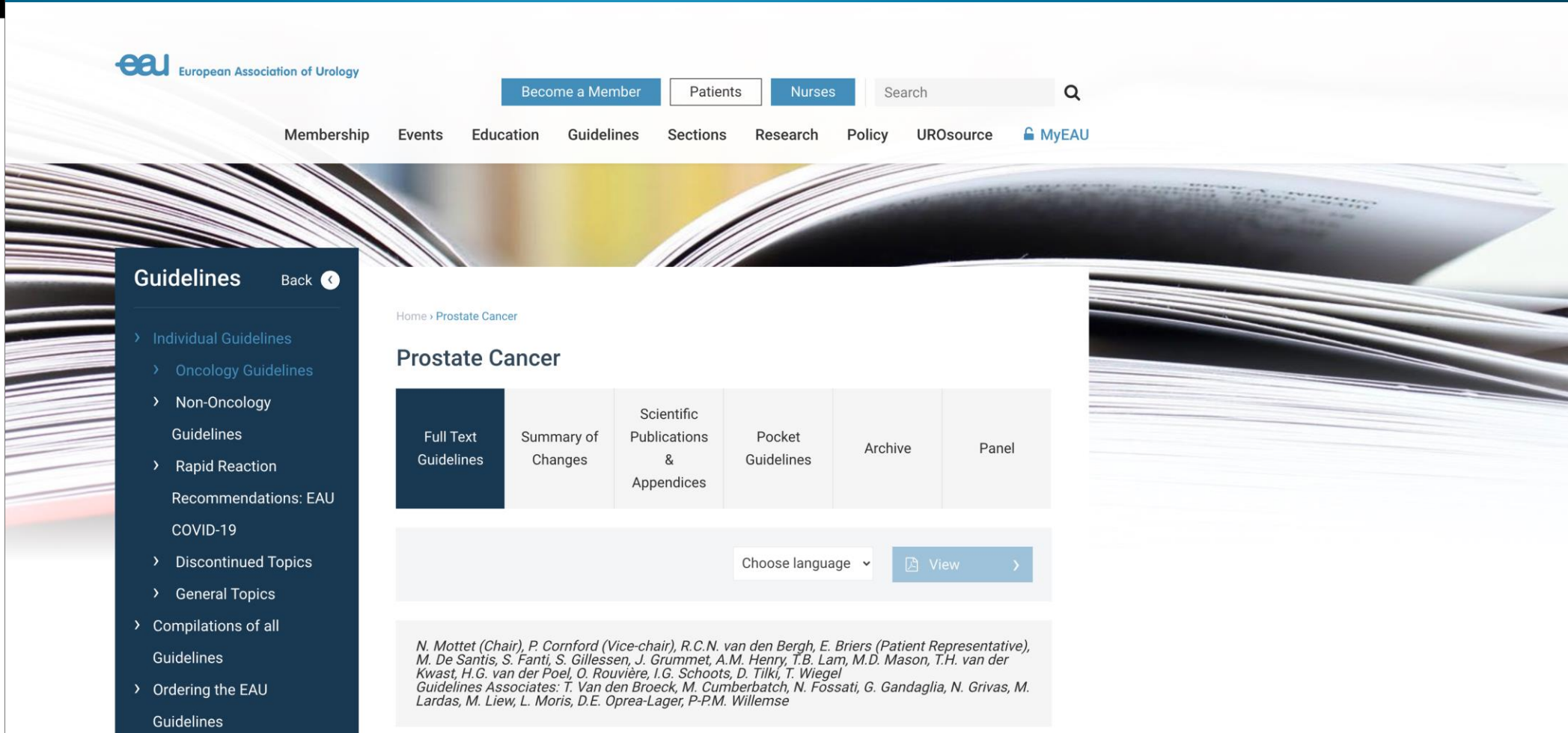
Choose language

View

*N. Mottet (Chair), P. Cornford (Vice-chair), R.C.N. van den Bergh, E. Briers (Patient Representative), M. De Santis, S. Fanti, S. Gillessen, J. Grummet, A.M. Henry, T.B. Lam, M.D. Mason, T.H. van der Kwast, H.G. van der Poel, O. Rouvière, I.G. Schoots, D. Tilki, T. Wiegel*  
*Guidelines Associates: T. Van den Broeck, M. Cumberbatch, N. Fossati, G. Gandaglia, N. Grivas, M. Lardas, M. Liew, L. Moris, D.E. Oprea-Lager, P.-P.M. Willemse*

# Guidelines

# EAU guidelines 2019



The screenshot shows the EAU (European Association of Urology) website. The top navigation bar includes links for 'Become a Member', 'Patients', 'Nurses', and a search bar. Below this is a secondary navigation bar with links for 'Membership', 'Events', 'Education', 'Guidelines', 'Sections', 'Research', 'Policy', 'UROsource', and 'MyEAU'. The main content area is titled 'Prostate Cancer' and features a table of options: 'Full Text Guidelines' (selected), 'Summary of Changes', 'Scientific Publications & Appendices', 'Pocket Guidelines', 'Archive', and 'Panel'. Below the table is a language selection dropdown and a 'View' button. At the bottom, a list of guideline associates is provided, including N. Mottet (Chair), P. Cornford (Vice-chair), and others.

“Perform prostate MRI before biopsy”

2000

PhD candidate in Prostate MRI

2010

Start of Standardization and Simplification of Prostate MRI

2012

PI-RADS v.1

2016

PI-RADS v. 2.0

2019

PI-RADS v. 2.1  
Scientific Evidence of prostate MRI

2020

Prostate MRI in urology guidelines

2021

Quality Control  
PI-QUAL v.1

2025

Implementation of prostate MRI in most of Western World countries

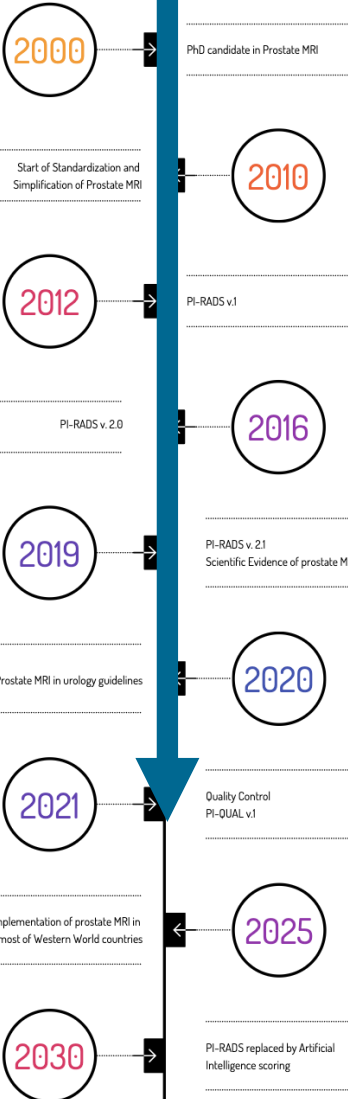
2030

PI-RADS replaced by Artificial Intelligence scoring



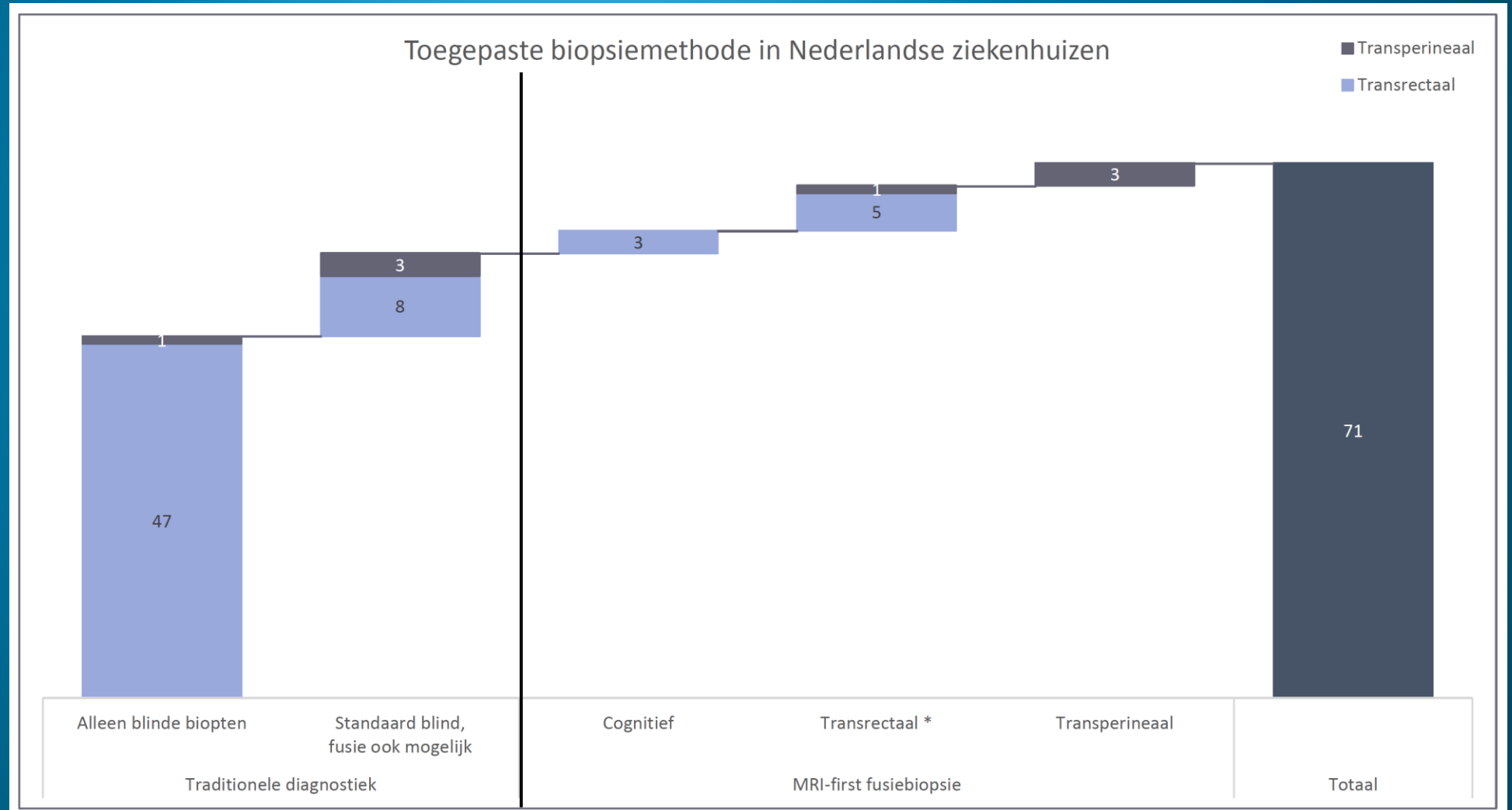


# Implementation




# Limited Implementation 83% TRUSBx

## Analysis public websites NL-hospitals (Feb. 21)





A black and white photograph showing a road that is completely blocked by a large, fallen tree trunk. The tree trunk is positioned horizontally across the road, with its rough, textured bark clearly visible. The road has a white dashed line down the center. In the background, the road continues into a wooded area with many trees. The word "Barriers" is written in white text in the lower-left corner of the image.

# Barriers

# Barriers

- Non-believers of new ideas

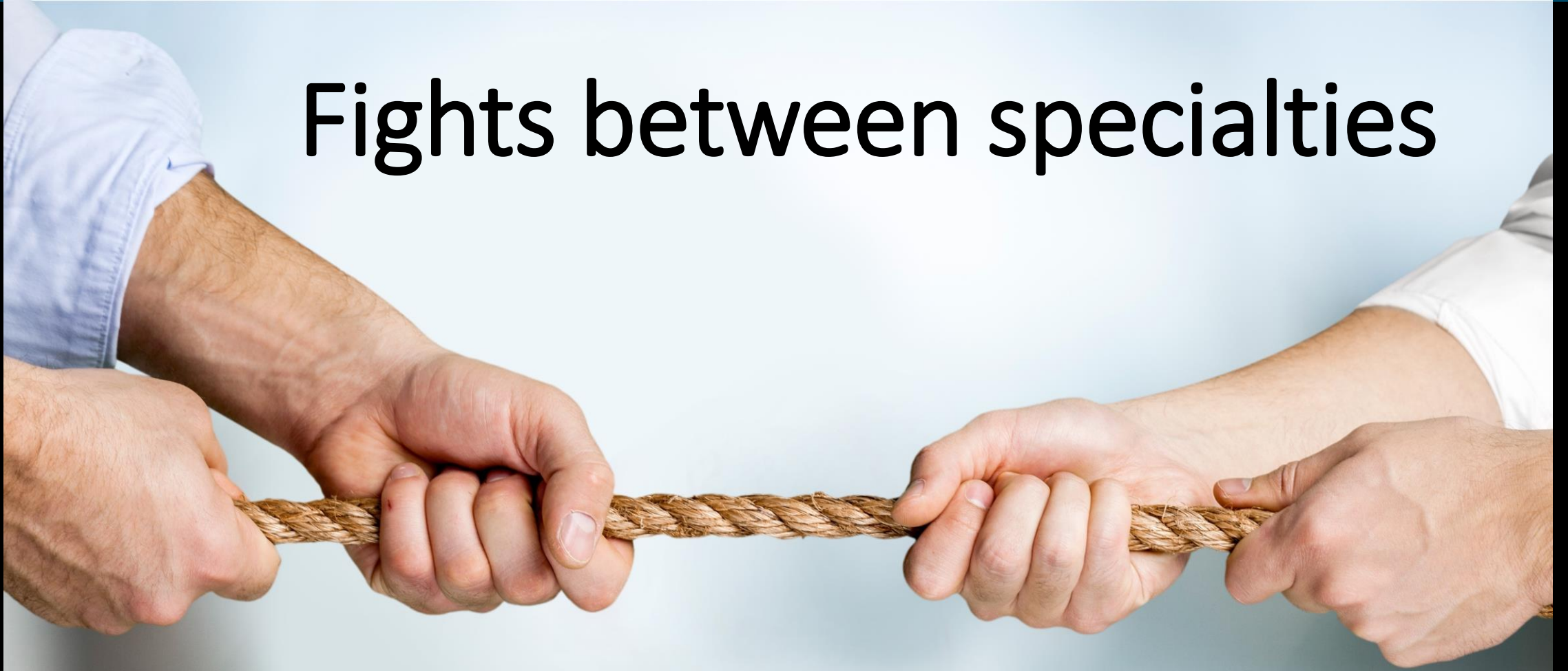




# Barriers

- Non-believers of new ideas
- Fights between specialties

# Fights between specialties



Fear of being out-of-control  
Budget shift



# Barriers

- Non-believers of new ideas
- Fights between specialties (budget-shift)
- Conservative science: RCT's



A golden chalice with a red cross on its stem, resting on a rock in a dark cave with a bright light source in the background.

Holy grail of RCT's



A golden chalice with a red cross on its stem, resting on a rock in a dark cave with a bright light source in the background.

Holy grail of RCT's



# Barriers

- Non-believers of new ideas
- Fights between specialties (budget-shift)
- Conservative science: RCT's
- Lack of sufficient high-quality diagnostic equipment/procedures/personnel



5 MRI's / 1,000 men



# Lack of high-quality MRI





# Lack of high-quality personnel



# How to Increase MRI-capacity?

## MRI-scanners and personnel

- New MRI-scanners



# How to Increase MRI-capacity?

## MRI-scanners and personnel

- New MRI-scanners
- Education

# How to Increase MRI-capacity?

## MRI-scanners and personnel

- New MRI-scanners
- Education
- Centralization of excellent diagnostic care



# How to Increase MRI-capacity?

## MRI-scanners and personnel

- New MRI-scanners
- Education
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- Quality Control

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## MRI-scanners and personnel

- New MRI-scanners
- Education
- Centralization of excellent diagnostic care
- Quality Control
  - Self assessment

# How to Increase MRI-capacity?

## MRI-scanners and personnel

- New MRI-scanners
- Education
- Centralization of excellent diagnostic care
- Quality Control
  - Self assessment
  - Accreditation & Certification



# Barriers

- Non-believers of new ideas
- Fights between specialties (budget-shift)
- Conservative science: RCT's
- Lack of sufficient high-quality diagnostic equipment/procedures/personnel
- Inadequate financial incentives by insurance companies and hospitals (IKEA)



# Barriers

- Non-believers of new ideas
- Fights between specialties (budget-shift)
- Conservative science: RCT's
- Lack of sufficient high-quality diagnostic equipment/procedures/personnel
- Inadequate financial incentives by insurance companies and hospitals (IKEA)
- **Lack of communication: patient, GP**



## DISCLAIMER



Onafhankelijke informatie is niet gratis. Het NTvG investeert veel geld om het hoge niveau van haar artikelen te waarborgen, door een proces van peer-review en redactievoering. Het NTvG kan alleen bestaan als er voldoende betaalde abonnementen zijn. Het is niet de bedoeling dat onze artikelen worden verspreid zonder betaling. Wij rekenen op uw medewerking.

# ‘Intelligente opsporing’ van prostaatkanker

## Een alternatief voor bevolkingsonderzoek

Theo M. de Reijke, Ivo G. Schoots en Kees van den Berg

### Samenvatting

De Gezondheidsraad heeft tot nu toe geen goede basis gevonden om in Nederland een landelijk bevolkingsonderzoek naar prostaatkanker te starten en bracht in 2018 een negatief advies uit op een vergunningsaanvraag voor een pilot-bevolkingsonderzoek naar prostaatkanker. De nadelen voor de volksgezondheid (overdiagnostiek, overbehandeling en psychische belasting) zouden niet opwegen tegen de voordelen van een bevolkingsonderzoek. De laatste jaren zijn er echter nieuwe ontwikkelingen in de diagnostiek en therapie voor prostaatkanker, waarbij eerdere cijfers wijzigden, richtlijnen zijn aangepast en inzichten genuanceerd moeten worden. Wij vragen aandacht voor deze veranderende cijfers en inzichten rond prostaatkanker en bepleiten een ‘intelligente opsporing’, om patiënten met een verhoogd risico op agressieve prostaatkanker beter te kunnen identificeren. Daarmee kan de hoge mortaliteit waarschijnlijk worden verminderd en wordt tegelijkertijd overdiagnostiek grotendeels voorkómen.



A close-up photograph of two hands shaking in a firm grip, symbolizing a business agreement or partnership. The hands are wearing dark blue suit sleeves with white cuffs. The background is a blurred office setting with a computer monitor, a desk with papers, and a vase of flowers.

# Enablers

# Enablers

- Visionairs with new ideas



# Enablers

- Visionairs with new ideas
- Enough followers

# Enablers

- Visionairs with new ideas
- Enough followers
- Scientific validation



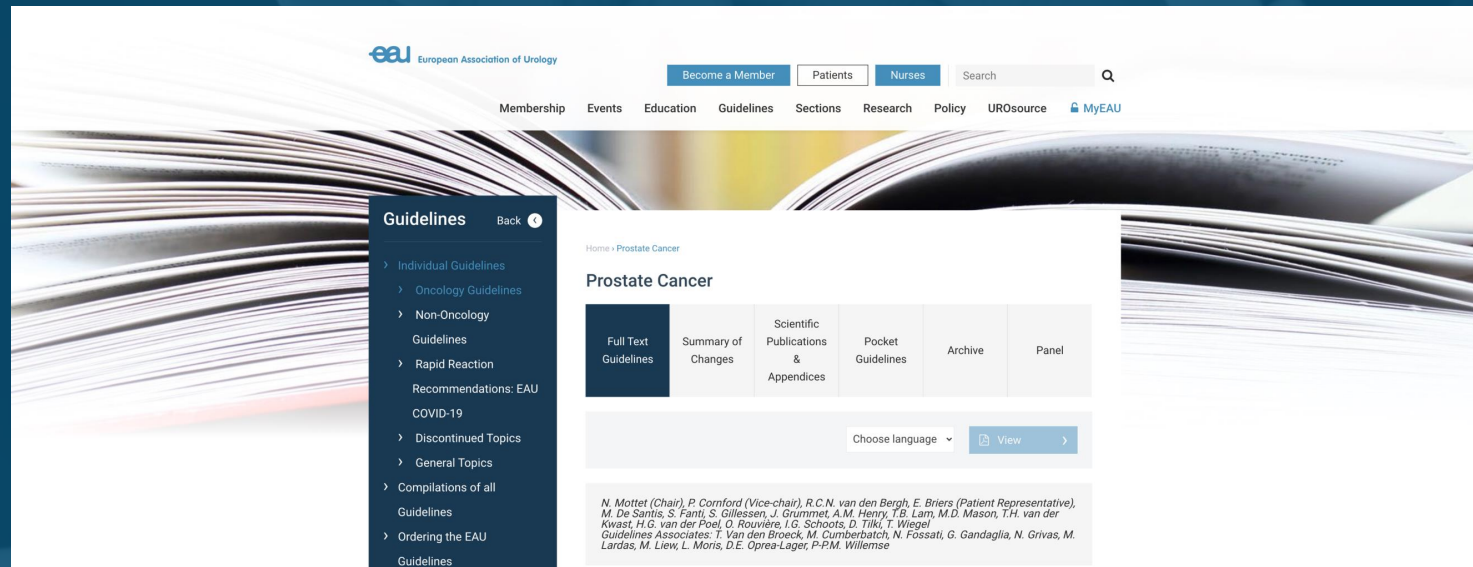
# Prostate MRI

A close-up photograph of a person's hands sorting through a large, thick stack of papers. The papers are white and appear to be medical records or reports, with some showing blue and red headers. The hands are positioned at the top of the stack, with fingers carefully separating the pages. The background is blurred, showing more stacks of papers and a person's arm in a blue patterned sleeve.

12,750 papers  
1,500/yr

# Enablers

- Visionairs with new ideas
- Enough followers
- Scientific validation
- Inclusion into guidelines





# Enablers

- Visionairs with new ideas
- Enough followers
- Scientific validation
- Inclusion into guidelines
- Pro-active professional society (NVvR)

# Working group implementation prostate MRI

## Implementation protocol prostate MRI

### Chair

**Ivo Schoots**



Guideline Com  
Prostate Cancer

**Rob Bourez**



CvB

**Jesse Habets**



Quality Comm

**Thomas Bollen**



Abdominal  
Section-chair

**Jelle Barentsz**

Weergeven

Bewerken



Guideline Com  
Prostate Cancer



# Werkgroep Prostaat MRI

Januari 2020

## Opdracht

- 1) Vormgeven kwaliteitskader voor MRI prostaat, waarin protocollen, verslaglegging, richtlijnen en kwaliteitscriteria gebundeld worden, ook als basis voor educatie, training en kwaliteitsborging.
- 2) Ontwikkelen voorstel/plan voor bij-/nascholing, training, klinische lessen e.d.
- 3) Opstellen voorstel/plan voor kwaliteitsregistratie t.b.v. kwaliteitsborging, bij voorkeur i.s.m. met NVU in aansluiting op SKMS-project kwaliteitsregistratie prostaatkanker.
- 4) Uitwerken voorstel/advies voor bekostiging en financiering i.s.m. FMS en NVU (en evt. andere stakeholders).

# Werkgroep Prostaat MRI

Mei 2021



Nederlandse Vereniging voor

**Radiologie**

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# Enablers

- Visionairs with new ideas
- Enough followers
- Scientific validation
- Inclusion into guidelines
- Pro-active professional society (NVvR)
- Active and efficient patient society (PKS)



Prostaatkankerstichting

Professionals

zoeken



Home

Prostaatkanker

Leven met prostaatkanker

Voor u

Actueel

Over ons

Steun ons

Contact



## Mannen van 50+: Praat (niet te laat) over je prostaat!

Bijna de helft van de mannen is bij diagnose  
prostaatkanker jonger dan 70 jaar.

[Lees verder](#)

Active and efficient patient society (PKS)



# Enablers

- Visionairs with new ideas
- Enough followers
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- Pro-active professional society (NVvR)
- Active and efficient patient society (PKS)
- Inter-collegial communication and collaboration

# Enablers

- Visionairs with new ideas
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- Active and efficient patient society (PKS)
- Inter-collegial communication and collaboration
- Quality-control and -assurance



# Quality prostate MRI

## Delphi Analysis

European Radiology

<https://doi.org/10.1007/s00330-020-06929-z>

UROGENITAL



### ESUR/ESUI consensus statements on multi-parametric MRI for the detection of clinically significant prostate cancer: quality requirements for image acquisition, interpretation and radiologists' training

Maarten de Rooij<sup>1</sup>  • Bas Israël<sup>1,2</sup> • Marcia Tummers<sup>3</sup> • Hashim U. Ahmed<sup>4,5</sup> • Tristan Barrett<sup>6</sup> • Francesco Giganti<sup>7,8</sup> • Bernd Hamm<sup>9</sup> • Vibeke Løgager<sup>10</sup> • Anwar Padhani<sup>11</sup> • Valeria Panebianco<sup>12</sup> • Philippe Puech<sup>13</sup> • Jonathan Richenberg<sup>14</sup> • Olivier Rouvière<sup>15,16</sup> • Georg Salomon<sup>17</sup> • Ivo Schoots<sup>18,19</sup> • Jeroen Veltman<sup>20</sup> • Geert Villeirs<sup>21</sup> • Jochen Walz<sup>22</sup> • Jelle O. Barentsz<sup>1</sup>

- *To ensure high-quality prostate MRI, experts consider checking and reporting of image quality mandatory. Prostate radiologists must attend theoretical and hands-on courses, followed by supervised education, and must perform regular self- and external performance assessments.*

# PI-QUAL v. 1.0

## Objective image-quality assessment

EUROPEAN UROLOGY  
ONCOLOGY

BRIEF CORRESPONDENCE – PRIORITY ARTICLE *EDITORIAL BY BARIS TURKBEY AND PETER L. CHOYKE. ON PP. 620–621 OF THIS ISSUE* | [VOLUME 3, ISSUE 5, P615-619, OCTOBER 01, 2020](#)

### Prostate Imaging Quality (PI-QUAL): A New Quality Control Scoring System for Multiparametric Magnetic Resonance Imaging of the Prostate from the PRECISION trial

[Francesco Giganti](#)   • [Clare Allen](#) • [Mark Emberton](#) • [Caroline M. Moore](#) <sup>†</sup> • [Veeru Kasivisvanathan](#) <sup>†</sup> •  
for the PRECISION study group • [Show footnotes](#)

Published: July 06, 2020 • DOI: <https://doi.org/10.1016/j.euo.2020.06.007> •





# Enablers

- Separation between diagnosis, treatment and after-care

# Enablers

Separation between:





# Enablers

Separation between:

- Diagnosis





# Enablers

Separation between:

- Diagnosis
- Treatment





# Enablers

Separation between:

- Diagnosis
- Treatment
- After-care





# Enablers

- Separation between diagnosis, treatment and after-care
- Revaluation of diagnosis vs. treatment

# Revaluation of Diagnosis vs. Treatment

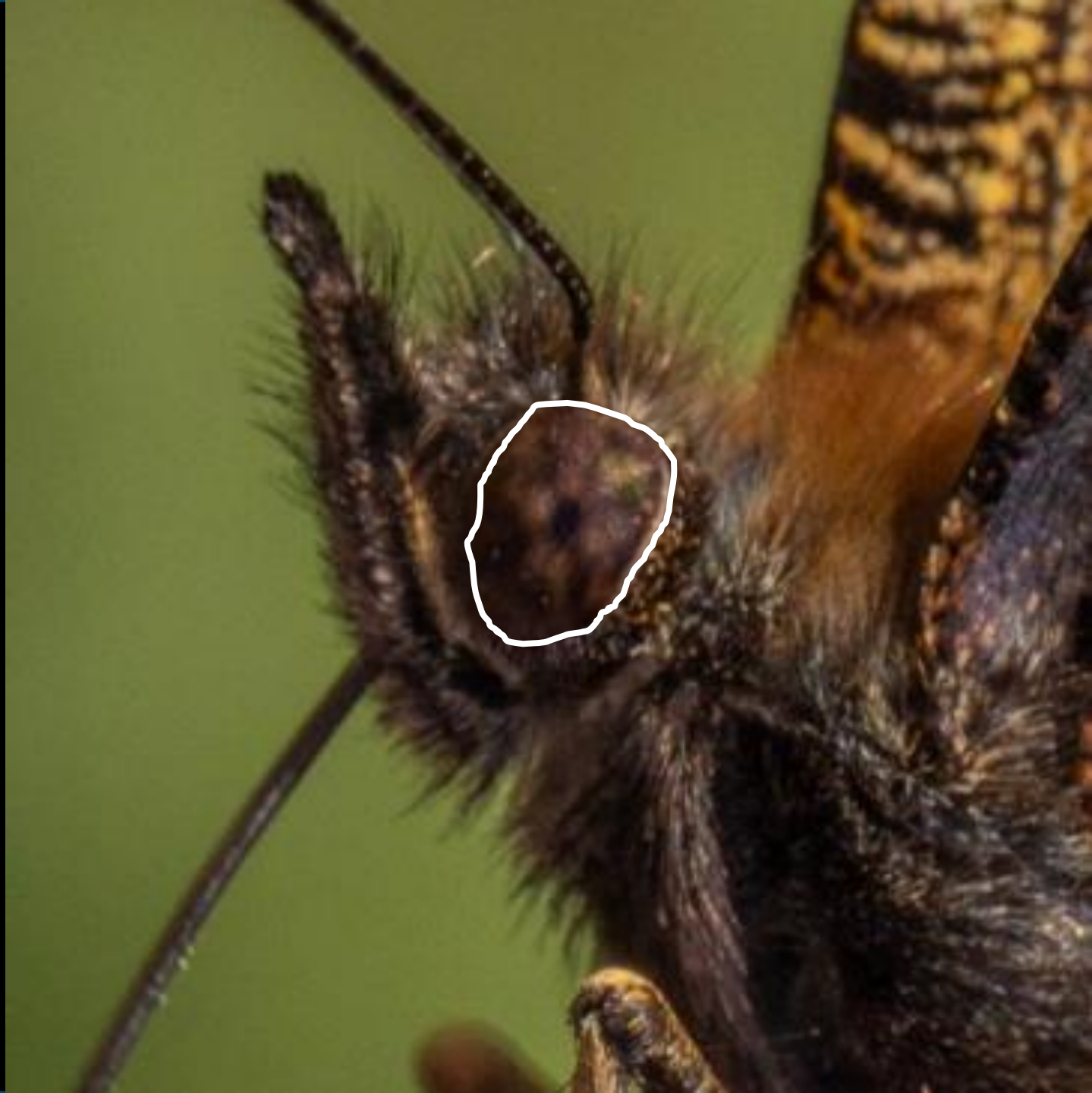




Treatment starts  
with a good  
diagnosis!



*'To see is to know'*





# Enablers

- Separation between diagnosis, treatment and after-care
- Revaluation of diagnosis vs. treatment
- Different financial incentives

# Enablers

- Separation between diagnosis, treatment and after-care
- Revaluation of diagnosis vs. treatment
- Different financial incentives
- Centralisation of excellent diagnostic care (1.5 line-care)



# Enablers

- Separation between diagnosis, treatment and after-care
- Revaluation diagnosis vs. treatment
- Different financial incentives
- Centralisation of excellent diagnostic care (1.5 line-care)
- **Political support**



A close-up, slightly blurred photograph of a large pile of Euro banknotes. The notes are of various denominations, including 100 (green), 200 (yellow), 50 (orange), and 10 (pink) Euros. The European Union flag is visible on several notes. The text "Crucial Factor" is overlaid in a white box with black text in the center of the image.

**Crucial Factor**



# Costs

4 diagnostic pathways, 18 yrs time-span  
Willingness-to-Pay threshold: € 20,000

Diagnostische prostaatkanker-zorgpaden	QALYs	Kosten (€)
1. Conventioneel – Alleen systematische echogeleide biopten	12.233	3.814,-
2. MRI-ge dirigeerd – Alleen MRI-gerichte biopten	12.447	3.543,-
3. MRI-ge dirigeerd – MRI-gerichte en systematische biopten bij MRI+	12.464	3.620,-
4. MRI-ge dirigeerd – MRI-gerichte en systematische biopten (biopsy all)	12.444	4.264,-

# Costs

4 diagnostic pathways, 18 yrs time-span  
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MRI-pathways are cost-effective: QALY: + 214, –297€



# Implementation prostate MRI

Enable enough high-quality MRI

Different financial impulse → focus on optimal diagnosis

1. € € € outside LOGEX-system

# Implementation prostate MRI

Enable enough high-quality MRI

Different financial impulse → focus on optimal diagnosis

1. € € € outside LOGEX-system
2. No 'bulk' contract → Separate contract for diagnosis



# Implementation prostate MRI

Enable enough high-quality MRI

Different financial impulse → focus on optimal diagnosis

1. € € € outside LOGEX-system
2. No 'bulk' contract → Separate contract for diagnosis:
3. € € € based on quality (bonus-malus)
  - High proven Q: € € €
  - Low Quality: €

# Plan of Action

Enable enough good MRI

1. Guarantee high-Q MRI (NVvR-NVU)
  - education, QC, certification, accreditation

# Plan of Action

## Enable enough good MRI

1. Guarantee high-Q MRI (NVvR-NVU)
  - education, QC, certification, accreditation
2. Finance prostate-MRI outside LOGEX



# Plan of Action

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2. Finance prostate-MRI outside LOGEX
3. Reward high-Q diagnosis (IC, NVvR)
4. Budget shift (NVvR, NVU, IC)
5. Communication (NVvR, NVU, PKS, GP)



# Working group implementation prostate MRI

## Implementation protocol prostate MRI

### Chair

**Ivo Schoots**



Guideline Com  
Prostate Cancer

**Rob Bourez**



CvB

**Jesse Habets**



Quality Comm

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Weergeven

Bewerken



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Prostate Cancer

# Working group implementation prostate MRI

## Think-Tank with stakeholders

- NVvR
- NVU
- PKS
- Insurance Companies
- Hospitals
- GP
- Politics



**THANK YOU FOR YOUR  
ATTENTION**

**QUESTIONS?**



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