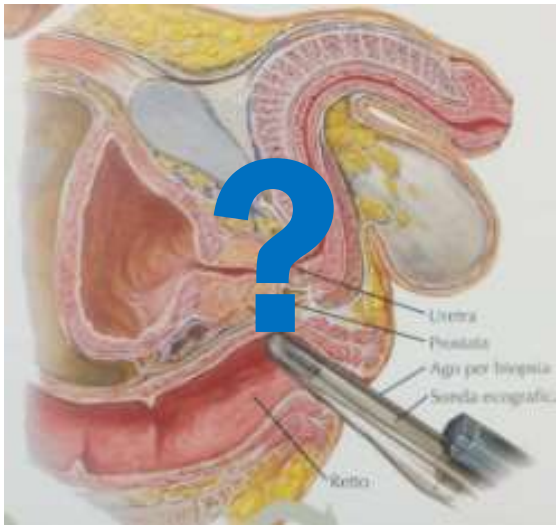
ASP di CATANIA – P.O. «S. MARTA E S. VENERA» - ACIREALE

U.O.C. di UROLOGIA

Direttore: Dr. Giuseppe Salvia

LA BIOPSIA PROSTATICA: QUANDO, QUANTE VOLTE, QUANTI PRELIEVI

Giuseppe Salvia



***Carcinoma della Prostata*:**

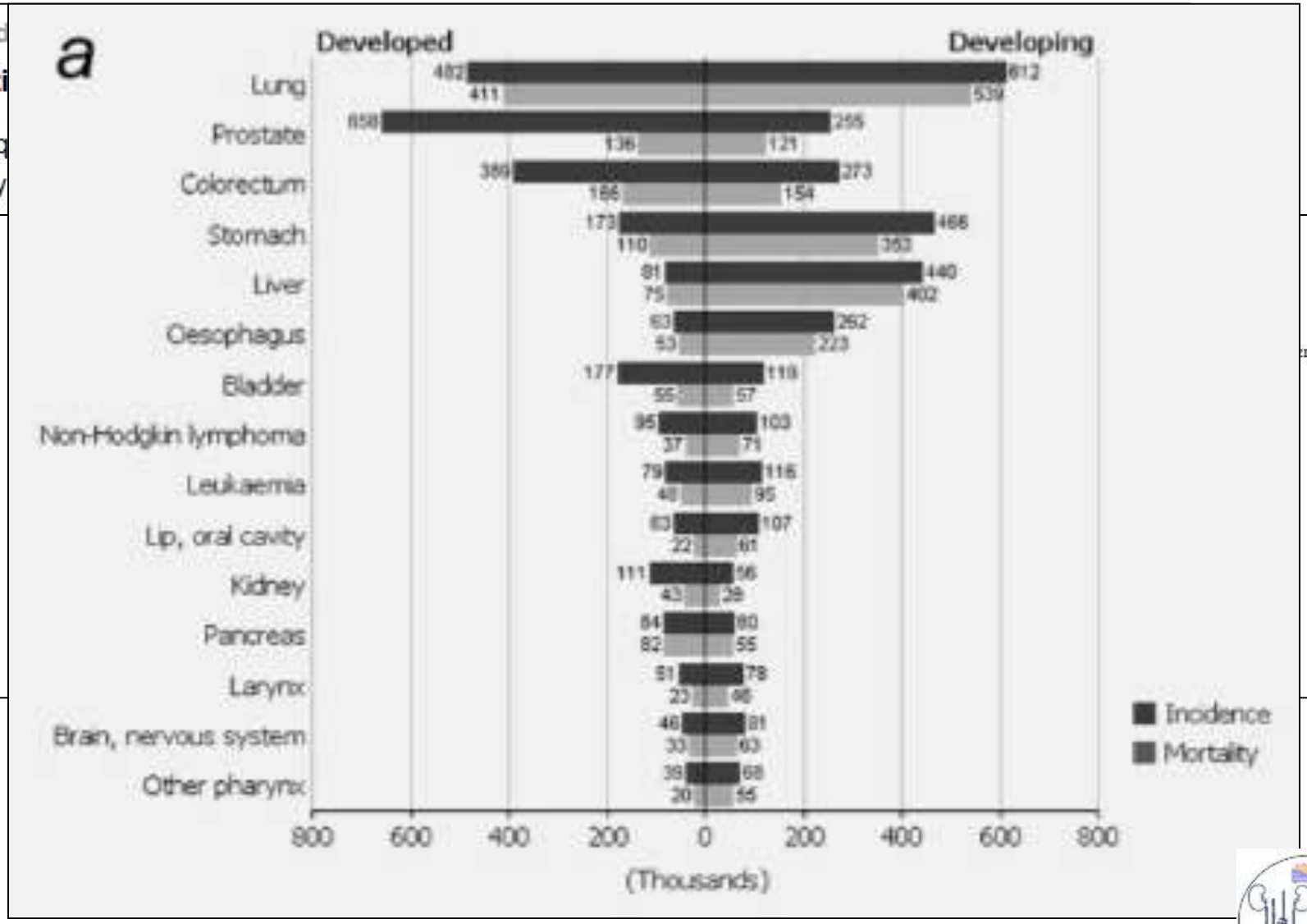
- In termini di incidenza il principale tumore maligno negli over ‘50 (12%)

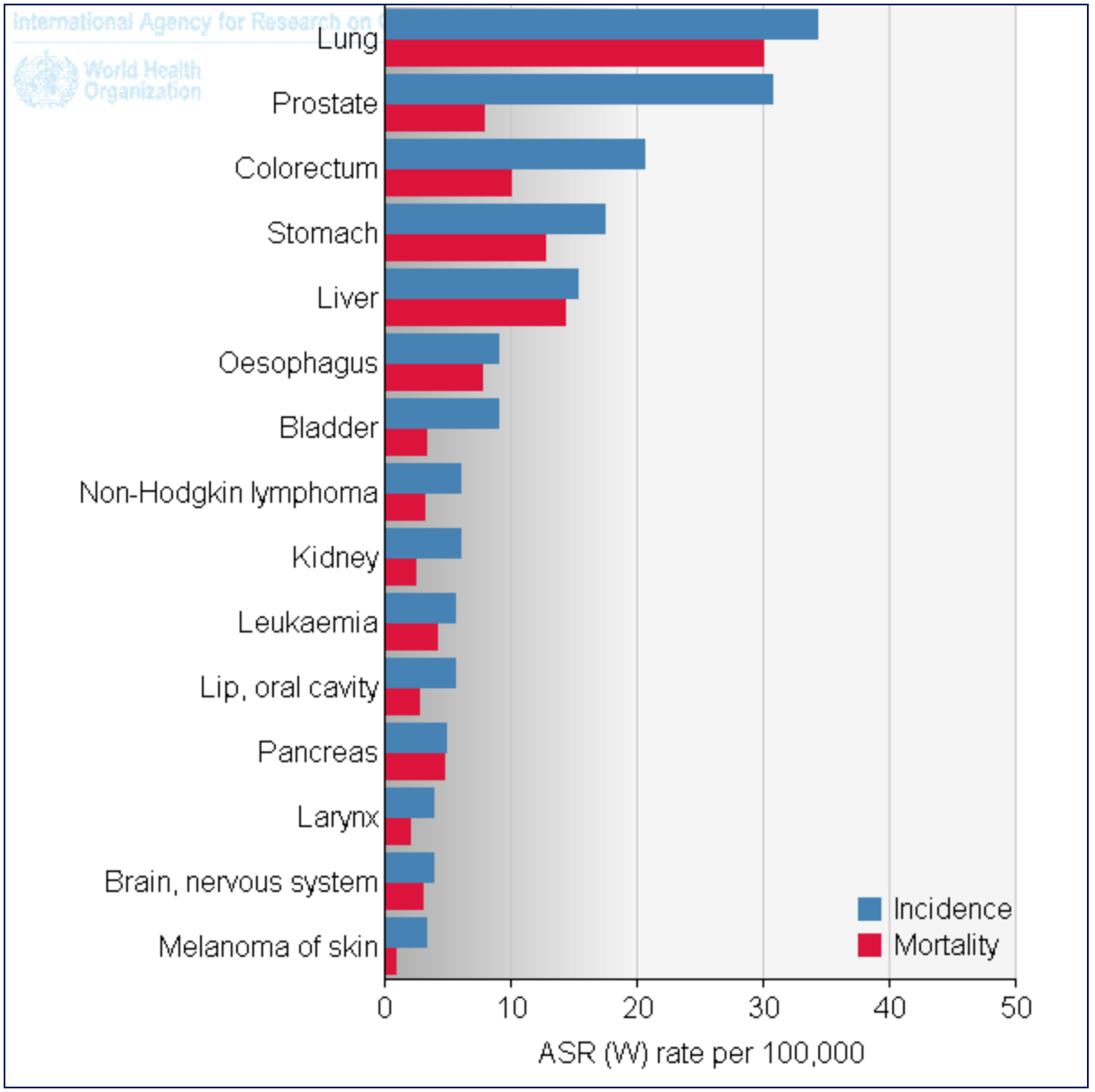
- Ha superato anche il ca polmonare (10%)

- Rappresenta circa il 15% di tutti i tumori maschili diagnosticati

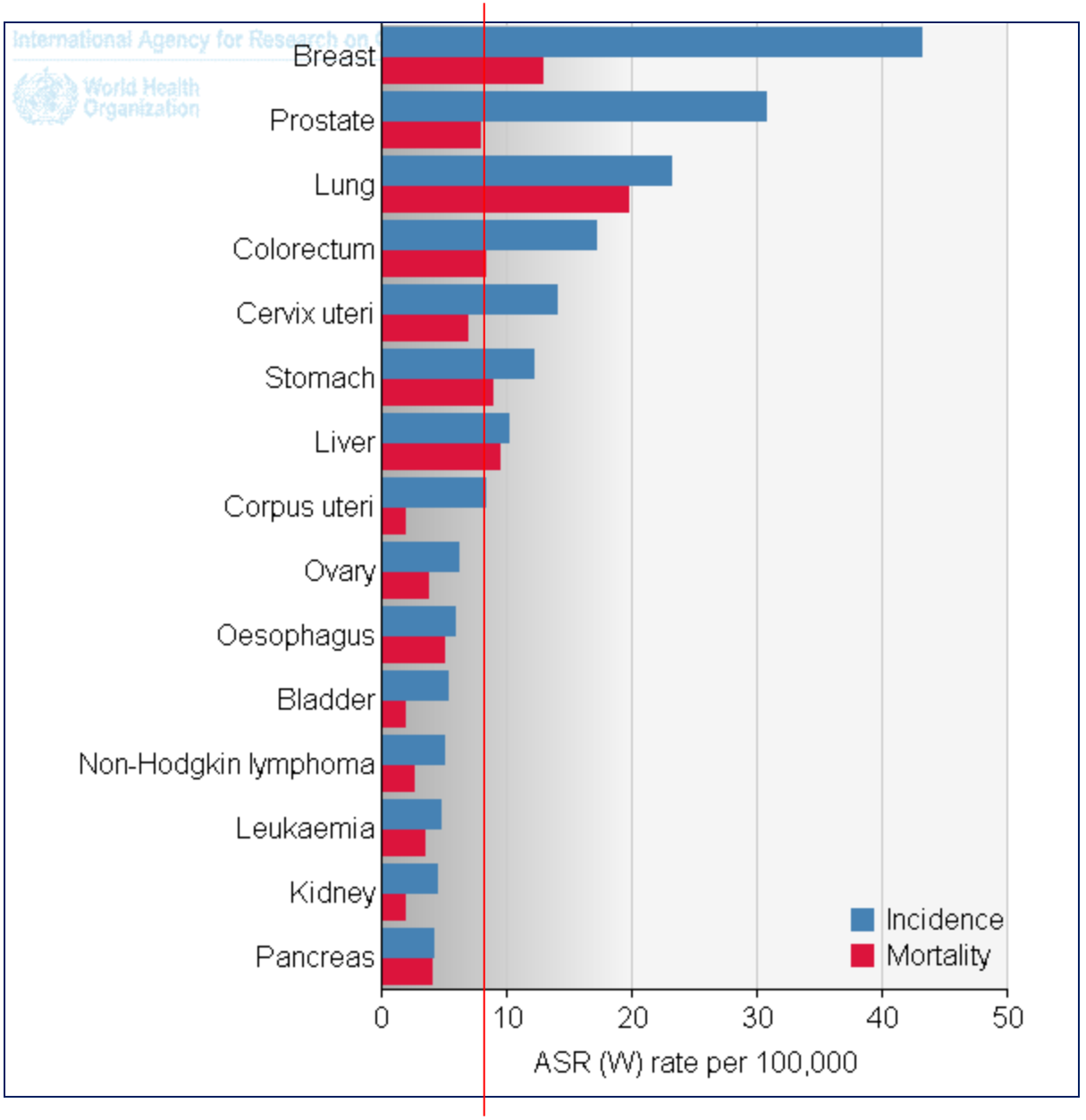
- + 53% negli ultimi 10 anni

EPIDEMIOLOGIA DEL CaP





Estimated age-standardised incidence and mortality rates: men – Globocan 2012

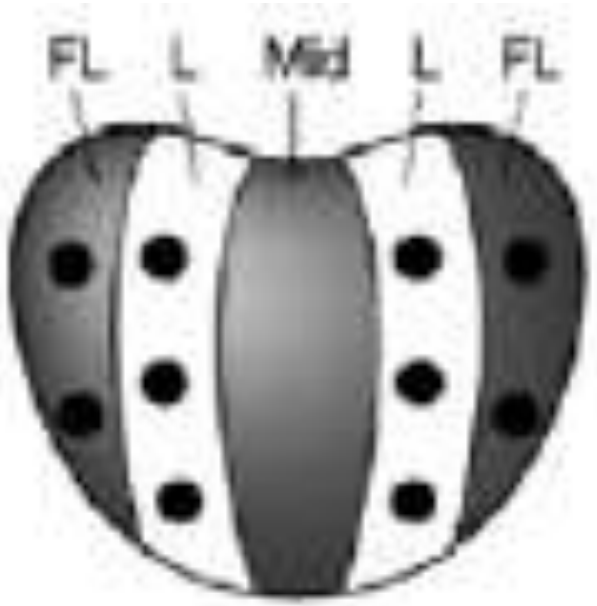


Estimated age-standardised incidence and mortality rates: both sexes – Globocan 2012

Guidelines on
Prostate Cancer

N. Mottet (Chair), J. Bellmunt, E. Briers (Patient Representative), R.C.N. van den Bergh (Guidelines Associate), M. Bolla, N.J. van Casteren (Guidelines Associate), P. Cornford, S. Culine, S. Joniau, T. Lam, M.D. Mason, V. Matveev, H. van der Poel, T.H. van der Kwast, O. Rouvière, T. Wiegel

eau
European Association of Urology



Sextant (6)

Screening del CaP

5.1.1 ***Guidelines for screening and early detection***

	LE	GR
An individualised risk-adapted strategy for early detection might be offered to a well-informed man with a good performance status and at least 10-15 years of life expectancy.	3	B
Early PSA testing should be offered to men at elevated risk for PCa. Risk groups are: • men over 50 years of age • men over 45 years of age and a family history of PCa • African-Americans • men with a PSA level of > 1 ng/mL at 40 years of age • men with a PSA level of > 2 ng/mL at 60 years of age	2b	A
A risk-adapted strategy might be considered (based on initial PSA level), which may be every 2 years for those initially at risk, or postponed up to 8 years in those not at risk.	3	C
The age at which early diagnosis of PCa should be stopped is influenced by life expectancy and performance status; men who have < 15-year life expectancy are unlikely to benefit based on the PIVOT and the ERSPC trials.	3	A

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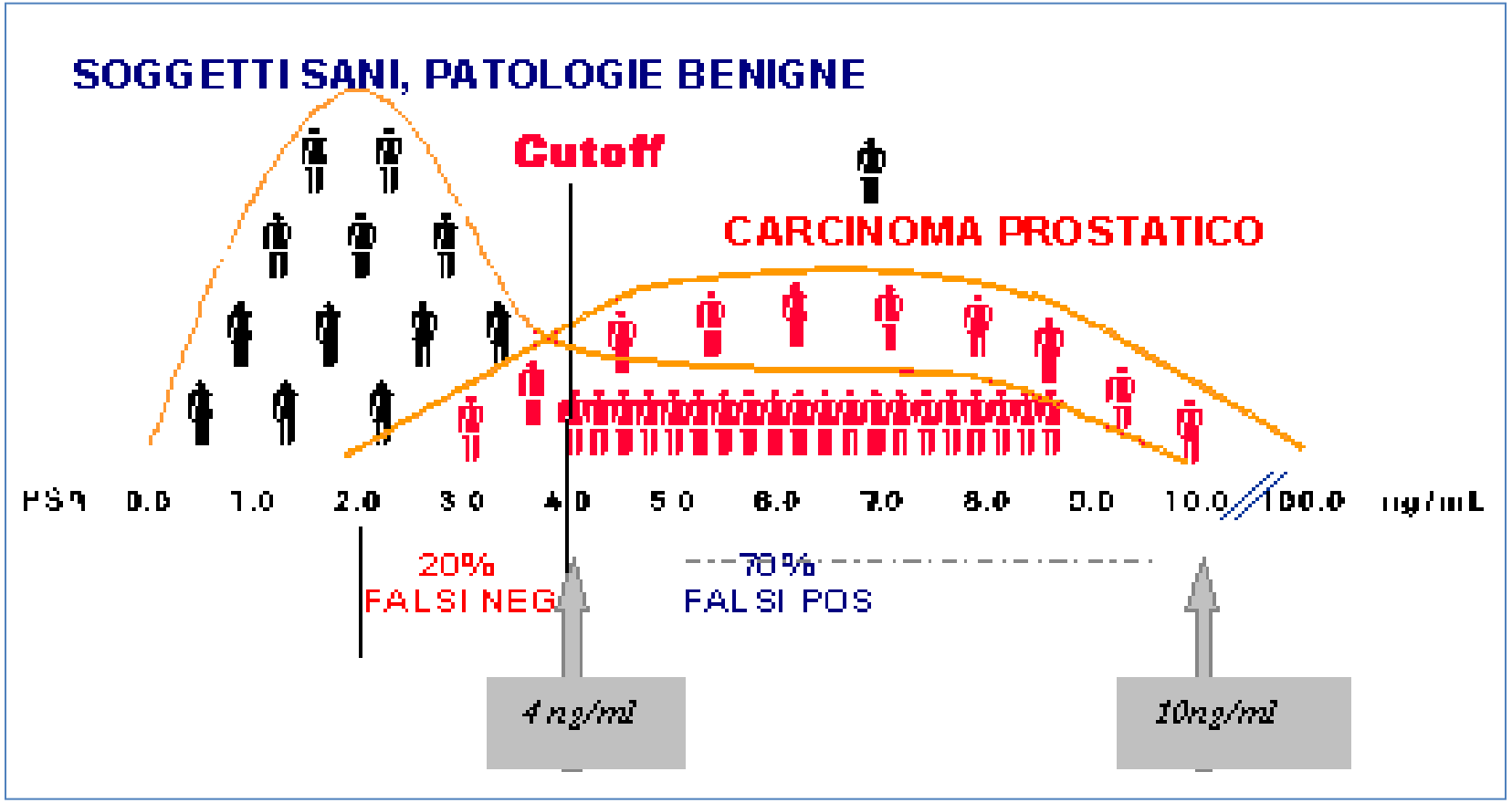
PSA e patologie prostatiche



PSA e CaP

Table 5.2.1: Risk of PCa in relation to low PSA values

PSA level (ng/mL)	Risk of PCa (%)	Risk of Gleason ≥ 7 PCa (%)
0.0-0.5	6.6	0.8
0.6-1.0	10.1	1.0
1.1-2.0	17.0	2.0
2.1-3.0	23.9	4.6
3.1-4.0	26.9	6.7

Table 4.1.2: EAU risk groups for biochemical recurrence of localised and locally advanced prostate cancer

	Low-risk	Intermediate-risk	High-risk	
Definition	PSA < 10 ng / mL and GS < 7 and cT1-2a	PSA 10-20 ng /mL or GS 7 or cT2b	PSA > 20 ng / mL or GS > 7 or cT2c	any PSA any GS cT3-4 or cN+
	Localised			Locally advanced

EAU Guidelines 2015

CaP - Diagnosi

Stadi avanzati: nella stragrande maggioranza dei casi la palpazione della ghiandola permette la diagnosi e la biopsia è utile solo per la conferma istologica e per il Gleason score ai fini della prognosi

Stadi precoci: la diagnosi certa è solo ed esclusivamente ***istologica***, pertanto la biopsia è assolutamente necessaria non solo per la diagnosi in sé ma anche ai fini terapeutici e prognostici, oltre che medico-legali

CaP – stadiazione TNM

Table 4.1.1: Tumour Node Metastasis (TNM) classification of PCa [19]

T - Primary tumour	
TX	Primary tumour cannot be assessed
T0	No evidence of primary tumour
T1	Clinically inapparent tumour not palpable or visible by imaging
T1a	Tumour incidental histological finding in 5% or less of tissue resected
T1b	Tumour incidental histological finding in more than 5% of tissue resected
T1c	Tumour identified by needle biopsy (e.g. because of elevated prostate-specific antigen (PSA) level)
T2	Tumour confined within the prostate[1]
T2a	Tumour involves one half of one lobe or less
T2b	Tumour involves more than half of one lobe, but not both lobes
T2c	Tumour involves both lobes
T3	Tumour extends through the prostatic capsule[2]
T3a	Extracapsular extension (unilateral or bilateral) including microscopic bladder neck involvement
T3b	Tumour invades seminal vesicle(s)
T4	Tumour is fixed or invades adjacent structures other than seminal vesicles: external sphincter, rectum, levator muscles, and/or pelvic wall
N - Regional lymph nodes[3]	
NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Regional lymph node metastasis[4]
M - Distant metastasis[5]	
MX	Distant metastasis cannot be assessed
M0	No distant metastasis
M1	Distant metastasis
M1a	Non-regional lymph node(s)
M1b	Bone(s)
M1c	Other site(s)

Linee guida per la diagnosi del CaP

5.2.7 ***Guidelines for the clinical diagnosis of prostate cancer***

	LE	GR
Transurethral resection of the prostate should not be used as a tool for cancer detection.	2a	A
PCa should be graded according to the ISUP 2005 modified Gleason grading system.	2a	A
Biopsy decision should be based on PSA testing and DRE.	2b	A
Transition zone biopsies are not recommended initially due to low detection rates.	2b	B
For initial diagnosis, a core biopsy of 10-12 systematic transrectal or transperineal peripheral zone biopsies should be performed under ultrasound guidance.	2a	B
Transrectal prostate needle biopsies should be taken under antibiotic protection.	1b	A
Local anaesthetic by periprostatic infiltration is recommended for prostate needle biopsies.	1a	A
Prostate core biopsies from different sites should be submitted separately for processing and pathology reporting.	3	A
Processing and reporting of prostatectomy specimens should follow the guidelines of the 2010 ISUP consensus meeting.	3	A
One set of repeat biopsies is warranted for persistent indications for PCa (abnormal DRE, elevated PSA or histopathological findings suggestive of malignancy at initial biopsy).	2a	B

DRE = digital rectal examination; GR = grade of recommendation; ISUP = International Society of Urological Pathology; LE = level of evidence; PSA = prostate-specific antigen.

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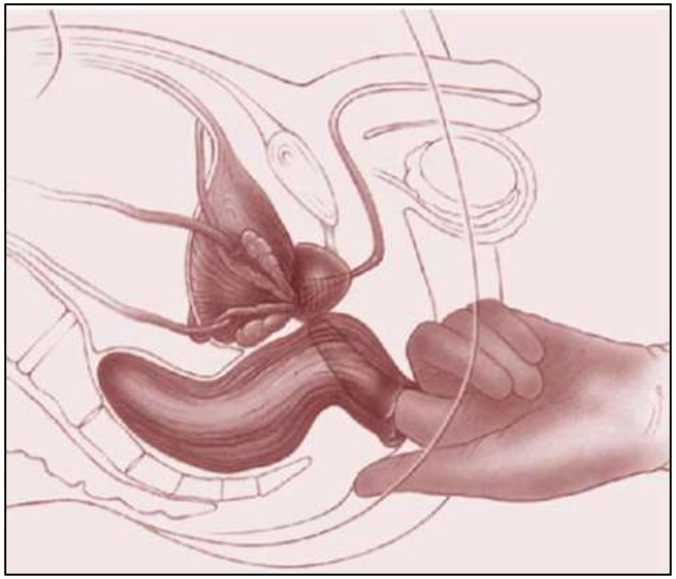
Quando eseguire la biopsia?

RR positiva



- **Va eseguita la biopsia a prescindere dal valore del PSA**

PSA elevato ed RR negativa

PSA > 10 ng/ml

sempre trusb in assenza di sintomatologia da prostatite

4 < PSA <10 ng/ml

se valore ancora elevato dopo terapia antibiotica (2 sett) con chinolonico

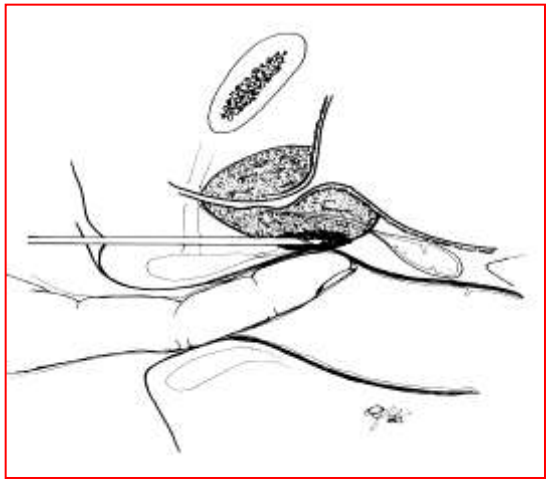
Nel 75% delle biopsie prostatiche viene segnalata flogosi indipendentemente dalla presenza di sintomatologia

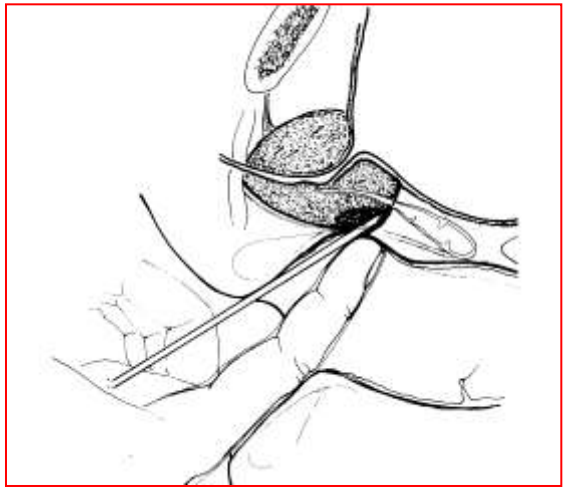
TIPI DI BIOPSIA PROSTATICA

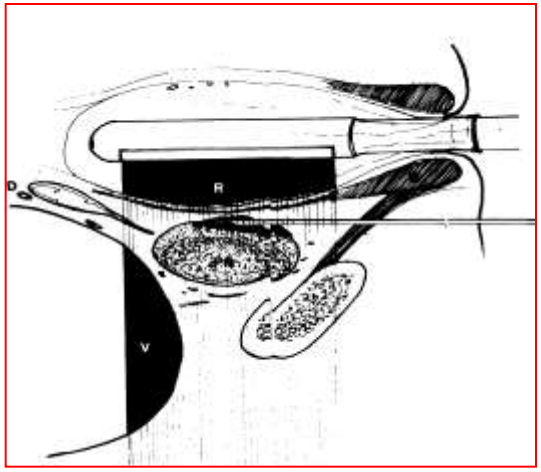
- ***Digitoguidata trans-perineale***
- ***Digitoguidata trans-rettale***
- ***Ecoguidata trans-perineale***
- ***Ecoguidata trans-rettale***

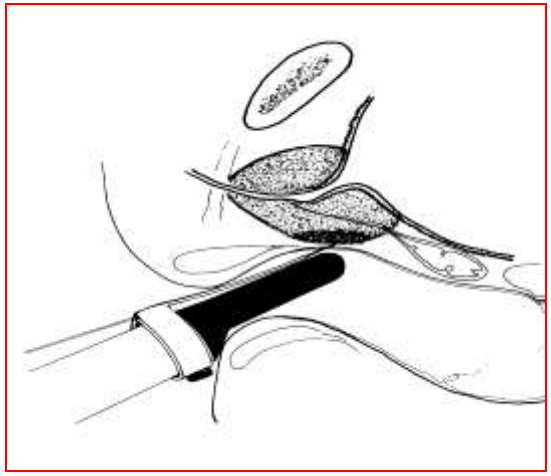
La modalità di biopsia il più delle volte è scelta in base alle sonde ecografiche di cui si dispone

TIPI DI BIOPSIA PROSTATICA









IL CANCRO ALLA TRUS

- ***Nodulo o area ipoecogena della zona periferica nel 70-75%***

- ***Nodulo o area isoecogena nel 25-30% (tra cui i cancri infiltranti che sono il 12-25% di tutti i tumori prostatici)***

- ***Nodulo o lesione iperecogena nell'1%***

TRUS NELLA DIAGNOSI DI CANCRO PROSTATICO

- ***Il 25-30% dei cancri sono isoecogeni***
- ***Solo 1/3 dei noduli ipoecogeni della zona periferica sono in realtà positivi***
- ***Spesso risultano positive per cancro biopsie eseguite a random e non quelle su noduli sospetti della stessa ghiandola***

VALIDA SOLO COME GUIDA AL CAMPIONAMENTO BIOPTICO

ECOGRAFIA TRANS-RETTALE DELLA PROSTATA

Posizione fetale - decubito laterale sx

Sonde → frequenza > 7 MHz

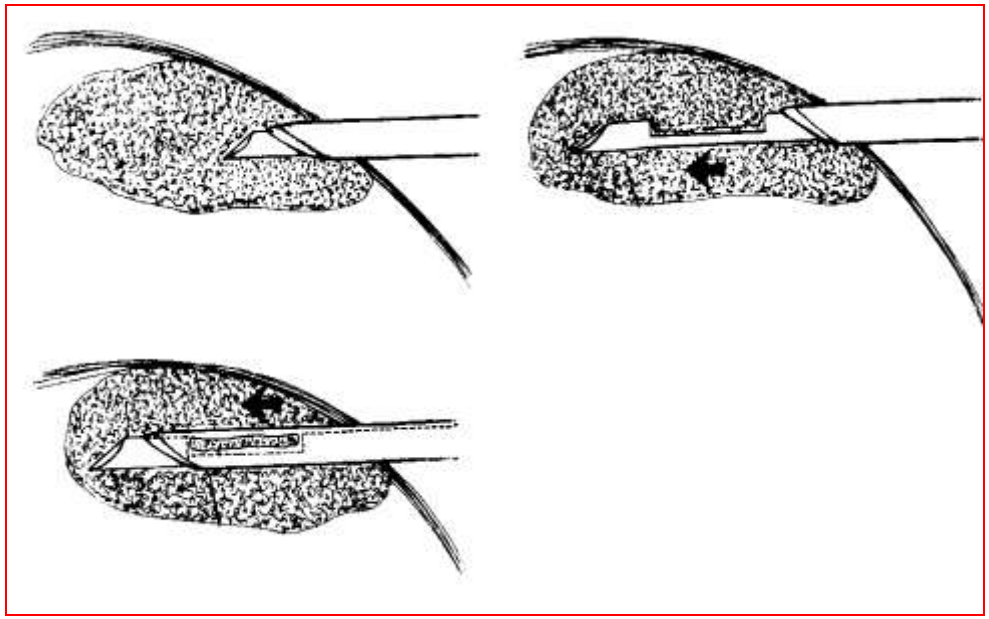
Scansioni assiali ad intervalli di 5 mm (∅ diametro trasverso e longitudinale)

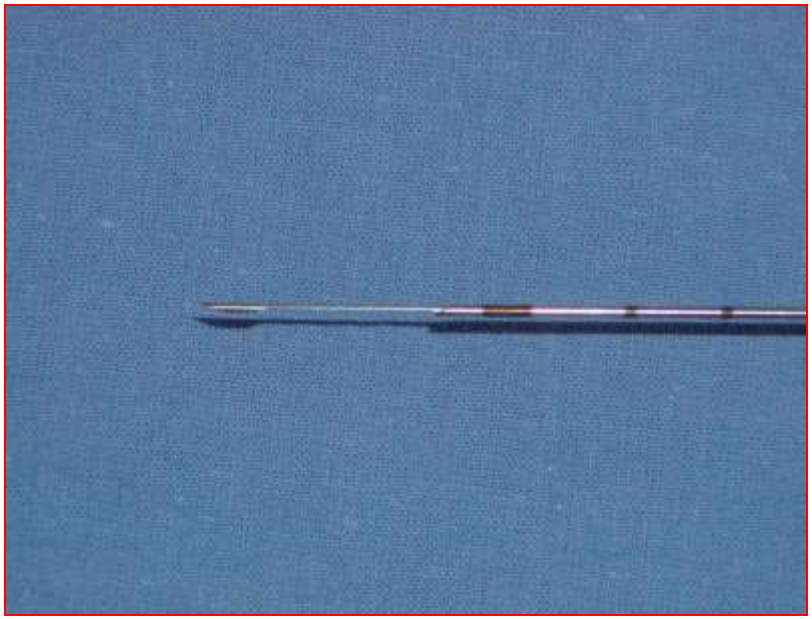
Determinazione volume (normale = 19cc ± 10 DS)

PREPARAZIONE DEL PAZIENTE

- ***Sospensione temporanea di farmaci antiaggreganti e anticoagulanti***
- ***Determinazione di PT e PTT***
- ***Profilassi antibiotica***
- ***Clisma evacuativo***
- ***Consenso informato (rettorragia, ematuria, emospermia, prostatite, sepsi talvolta anche grave)***

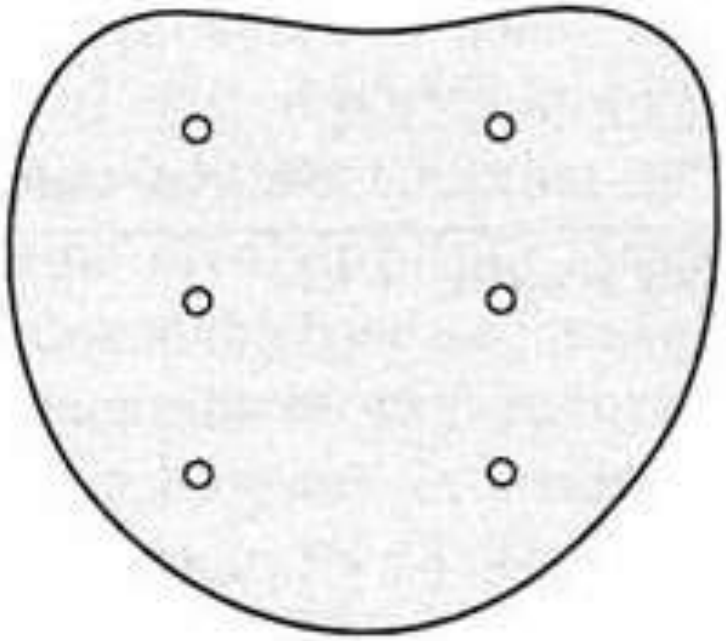
AGO DA BIOPSIA





- **Ago tranciante da 18 G di lunghezza 20 cm**

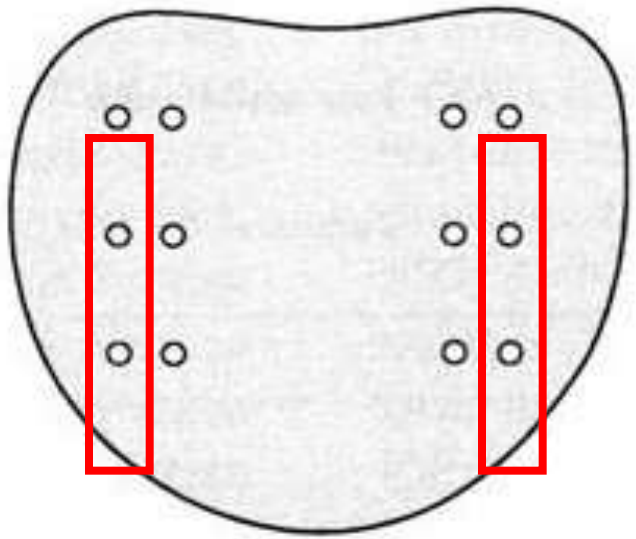
Schema a "sestanti"



Hodge et al.

- ***Si identificano cancri di almeno 1 cm^3***
- ***Falsa negatività nel 15-30%***
- ***Esclusi dalla biopsie zone importanti come i corni laterali e la zona transizionale***

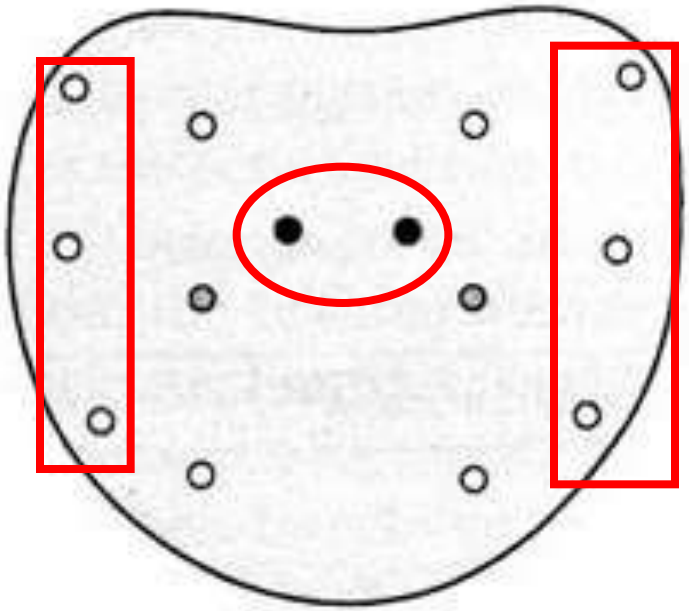
"12-core biopsy" di Naughton



Naughton et al.

- ***Aumento del 30% delle diagnosi***
- ***Tecnica poco appropriata pensando a come si distribuisce il cancro prostatico***

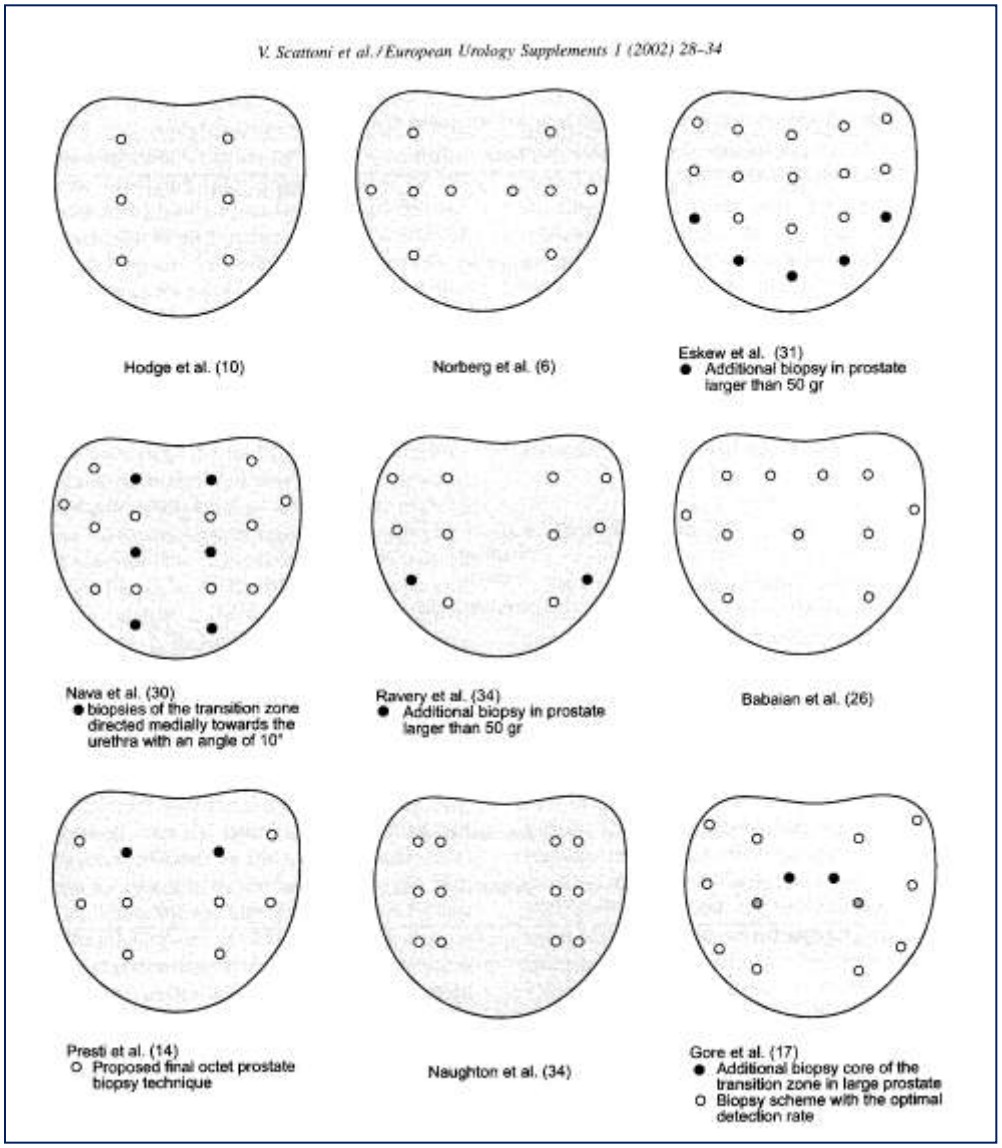
"8-14-core biopsy" di Gore



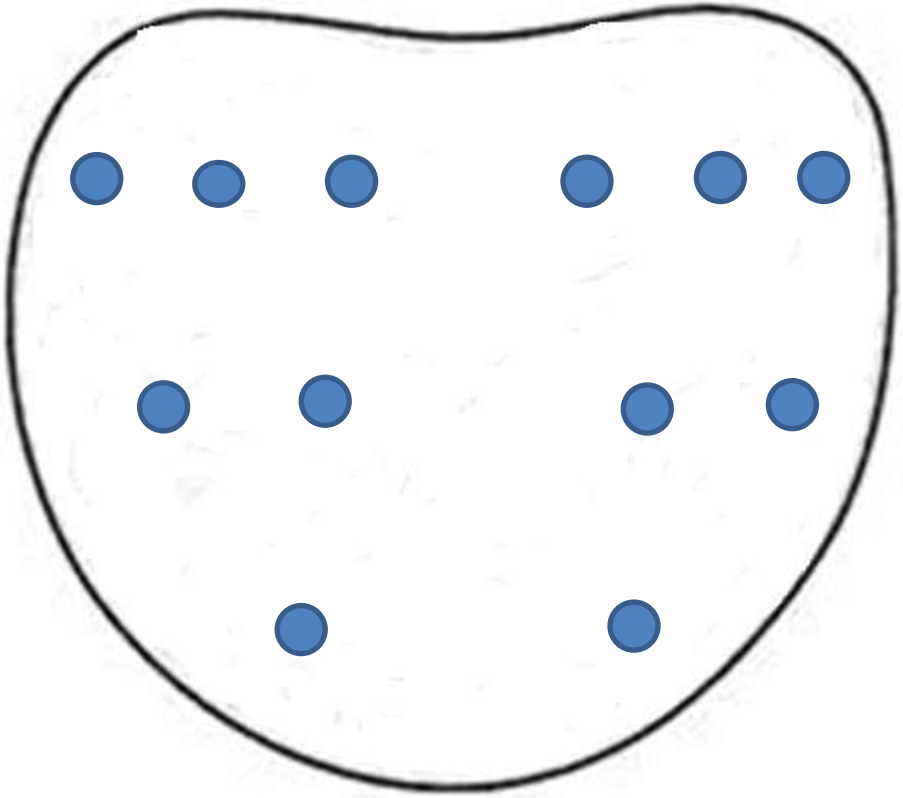
Gore et al.
- ● Additional biopsy core of the transition zone in large prostate
- ○ Biopsy scheme with the optimal detection rate

- ***In caso di prostate piccole vengono ritenuti sufficienti 8-10 prelievi***
- ***In caso di prostate voluminose i prelievi salgono a 14 con l'aggiunta di due biopsie della TZ***

VARI SCHEMI PER BIOPSIE PROSTATICHE

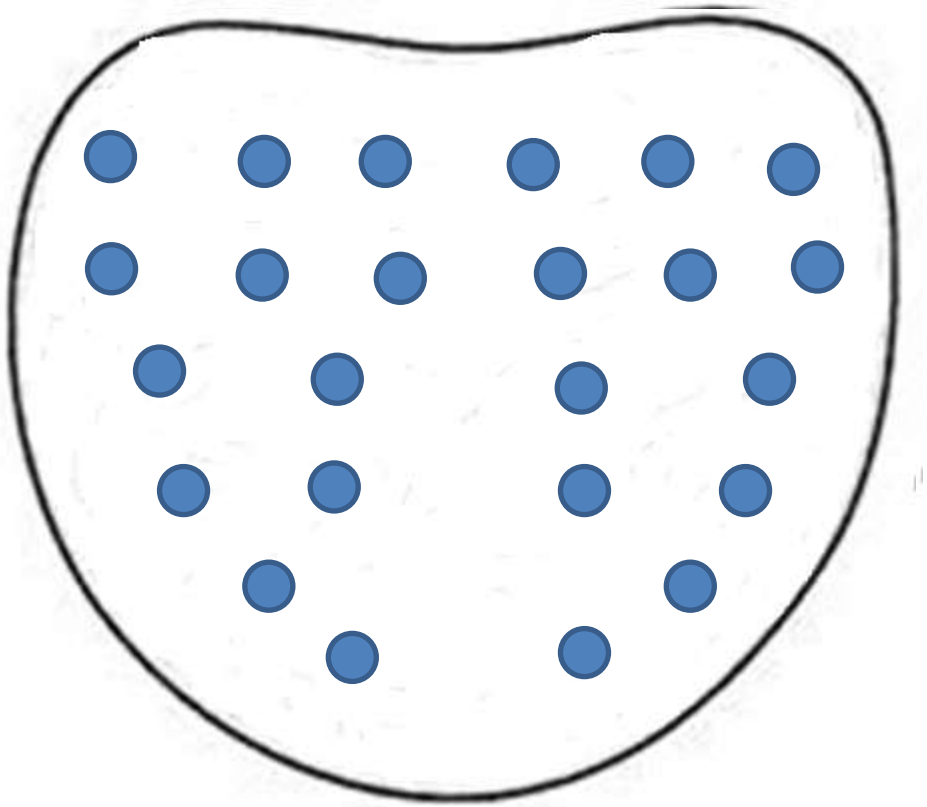


Schema personale a 12....



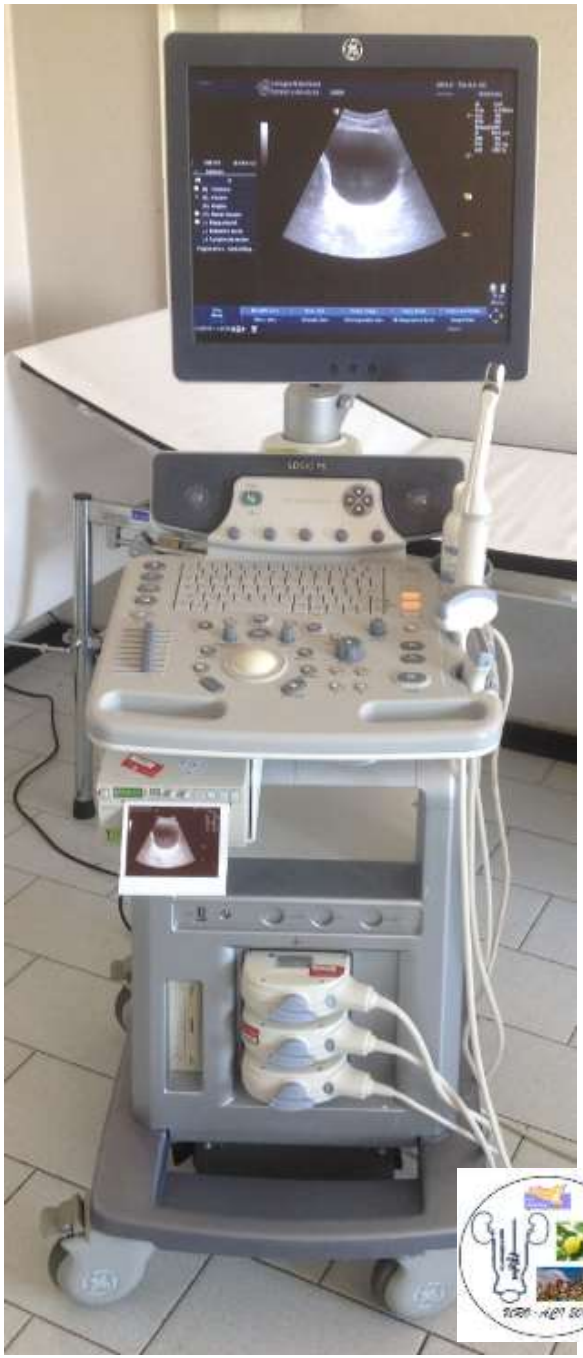
Schema di mapping bioptico a 12 prese

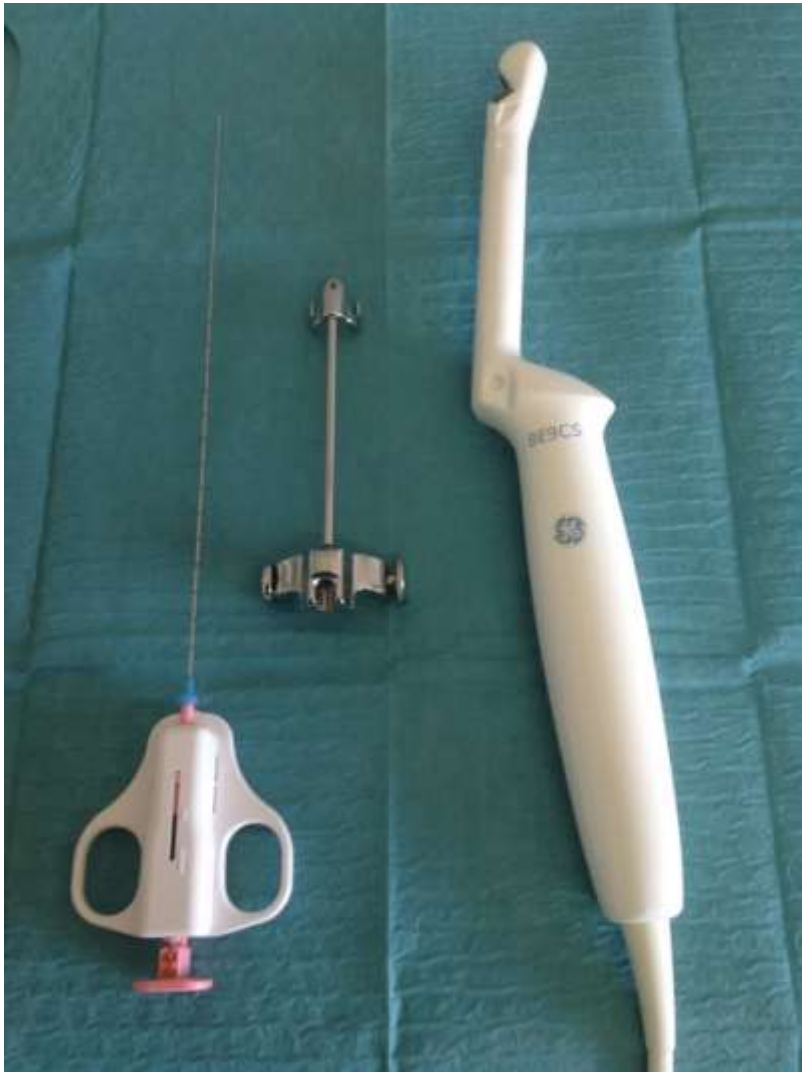
…..e 24 prese

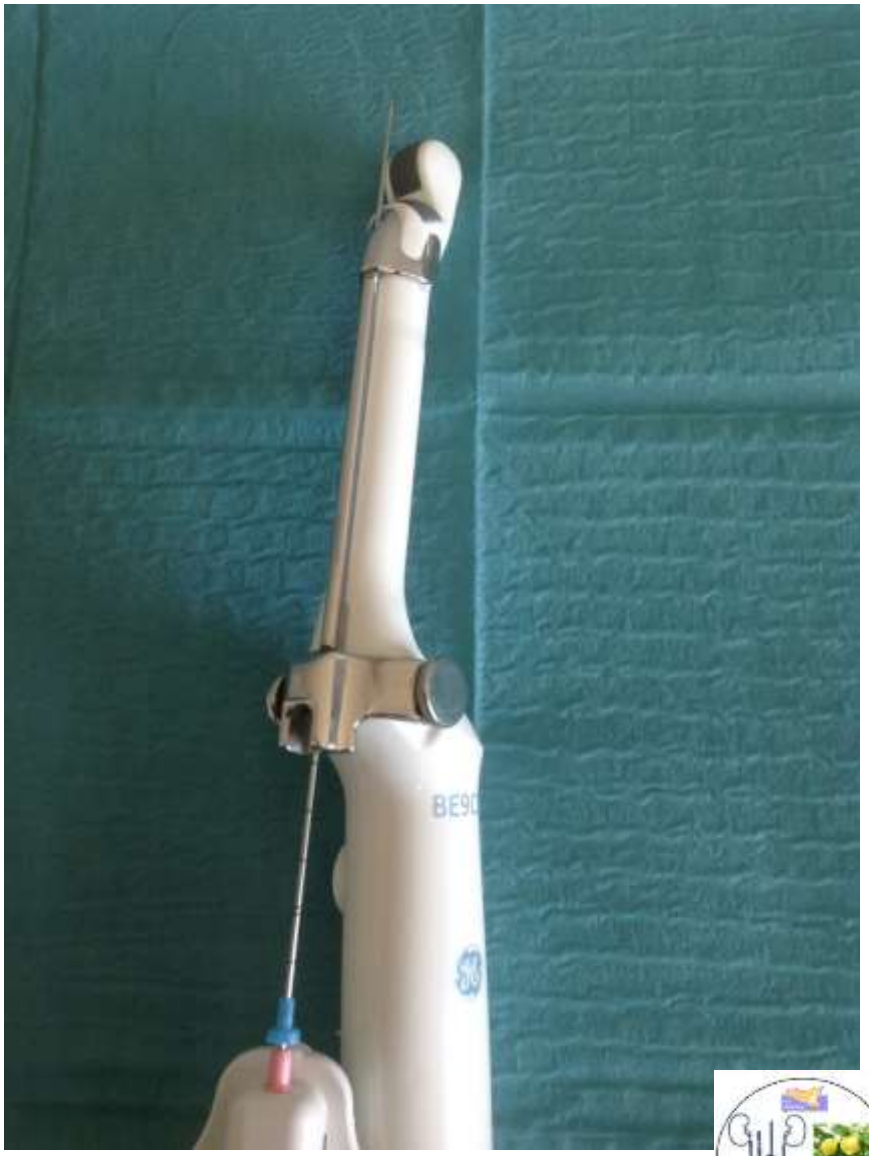


Schema di mapping bioptico di saturazione a 24 prese


E9CS







Quando ripetere la biopsia?

5.2.3.2 Repeat biopsy after previously negative biopsy

The indications for repeat biopsy are:

- rising and/or persistently elevated PSA (see Table 5.2 for risk estimates);
- suspicious DRE, 5-30% cancer risk [41, 42];
- atypical small acinar proliferation (i.e., atypical glands suspicious for cancer), 40% risk [72];
- extensive (multiple biopsy sites, i.e., ≥ 3) high grade prostatic intraepithelial neoplasia (HGPIN), ~30% risk [72, 73];
- A few atypical glands immediately adjacent to high grade prostatic intraepithelial neoplasia (i.e., PINATYP), ~50% risk [74].

- ***Ancora PSA elevato***
- ***DRE sospetta (5-30% di rischio)***
- ***ASAP (40% di rischio)***
- ***HGPIN in 3 o più prelievi (30% di rischio)***
- ***Ghiandole atipiche adiacenti HGPIN (50% di rischio)***

EAU Guidelines 2015

Ma anche se:
- PCA 3 o proPSA/PHI significativi

4K score Test

Predice lo «score» (punteggio) di percentuale di rischio da <1% a >95% di avere per un uomo un carcinoma aggressivo della prostata.

Esso si basa su:
a) 4 kallicreine specifiche per la prostata nel siero: PSA totale, PSA libero, PSA Intatto (?) e Kallicreina umana 2 (hK2)
b) Combinazione degli stessi in un algoritmo con età del paziente, esame rettale (presenza o assenza di noduli), e prima biopsia negativa

Biopsie ripetute…….

5.2.3.3 Saturation biopsy

The incidence of PCa detected by saturation repeat biopsy (> 20 cores) is 30-43% and depends on the number of cores sampled during earlier biopsies [76]. Saturation biopsy may be performed with the transperineal technique, which detects an additional 38% of PCa. The high rate of urinary retention (10%) is a drawback [77].

5.2.3.4 Sampling sites and number of cores

On baseline biopsies, the sample sites should be bilateral from apex to base as far posterior and lateral as possible in the peripheral gland. Additional cores should be obtained from suspect areas by DRE/TRUS.

Sextant biopsy is no longer considered adequate. For prostate volume 30-40 mL, ≥ 8 cores should be sampled. Ten to 12 core biopsies are recommended [78], with > 12 cores not being significantly more conclusive [79, 80].

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…… e complicanze

Table 5.2.2: Percentage of complications per biopsy session, irrespective of the number of cores

Complications	Percentage of patients affected
Haematospermia	37.4
Haematuria > 1 day	14.5
Rectal bleeding < 2 days	2.2
Prostatitis	1.0
Fever > 38.5°C	0.8
Epididymitis	0.7
Rectal bleeding > 2 days +/- surgical intervention	0.7
Urinary retention	0.2
Other complications requiring hospitalisation	0.3

EAU Guidelines 2015

Diagnostica per immagini

5.2.4 ***Role of imaging***

5.2.4.1 *TRUS*

Classic hypoechogenicity in the peripheral prostate is not always seen. Grey-scale TRUS is not reliable at detecting PCa [92]. Thus, there is no evidence that targeted biopsies can replace systematic biopsies. New sonographic modalities such as sonoelastography, contrast-enhanced ultrasound or computerised ultrasound (Histoscanning™) are being investigated. There is not currently enough evidence for their routine use.

5.2.4.2 *Multiparametric MRI (mpMRI)*

Correlation with radical prostatectomy (RP) shows that mpMRI, associating T2-weighted imaging with diffusion-weighted imaging, dynamic contrast-enhanced imaging, or H1-spectroscopy, has excellent sensitivity for Gleason score ≥ 7 cancers (Table 5.2.3) [93-96].

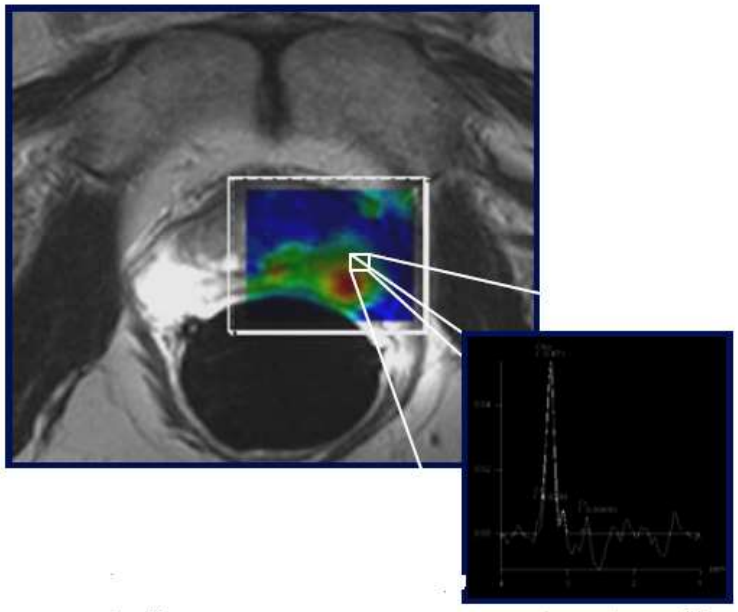
EAU Guidelines 2015

Diagnosi del CaP con RNM multiparametrica

Table 5.2.3: PCa detection rates (%) by mpMRI by tumour volume and Gleason score [96]

Gleason score	Tumour volume (mL)		
	< 0.5	0.5-2	> 2
GS6	21-29%	43-54%	67-75%
GS7	63%	82-88%	97%
GS > 7	80%	93%	100%

EAU Guidelines 2015



JAMA The Journal of the American Medical Association

Results Targeted MR/ultrasound fusion biopsy diagnosed 461 prostate cancer cases, and standard biopsy diagnosed 469 cases. There was exact agreement between targeted and standard biopsy in 690 men (69%) undergoing biopsy. Targeted biopsy diagnosed 30% more high-risk cancers vs standard biopsy (173 vs 122 cases, $P < .001$) and 17% fewer low-risk cancers (213 vs 258 cases, $P < .001$). When standard biopsy cores were combined with the targeted approach, an additional 103 cases (22%) of mostly low-risk prostate cancer were diagnosed (83% low risk, 12% intermediate risk, and 5% high risk). The predictive ability of targeted biopsy for differentiating low-risk from intermediate- and high-risk disease in 170 men with whole-gland pathology after prostatectomy was greater than that of standard biopsy or the 2 approaches combined (area under the curve, 0.73, 0.59, and 0.67, respectively; $P < .05$ for all comparisons).

Diagnosis of Prostate Cancer

M. Minhaj Siddiqui, MD[1,7]; Soroush Rais-Bahrami, MD[1,8]; Baris Turkbey, MD[2]; Arvin K. George, MD[1]; Jason Rothwax, BS[1]; Nabeel Shakir, BS[1]; Chinonyerem Okoro, BS[1]; Dima Raskolnikov, BS[1]; Howard L. Parnes, MD[3]; W. Marston Linehan, MD[1]; Maria J. Merino, MD[4]; Richard M. Simon, DSc[5]; Peter L. Choyke, MD[2]; Bradford J. Wood, MD[1,6]; Peter A. Pinto, MD[1,6]

JAMA. 2015;313(4):390-397. doi:10.1001/jama.2014.17942

COSA E' CAMBIATO PER IL RADIOLOGO: NUOVE INDAGINI DIAGNOSTICHE

MARIA GLORIA ANGERETTI
MARCO DE CHIARA
Radiologia
Ospedale di Circolo – Fond. Macchi
VARESE

Dal Web…

RM MULTIPARAMETRICA

INTEGRAZIONE DI SEQUENZE MORFOLOGICHE, IMAGING DINAMICO DI PERFUSIONE, IMAGING DI DIFFUSIONE, IMAGING SPETTROSCOPICO

INFORMAZIONI ANATOMICHE, FUNZIONALI E MOLECOLARI

la performance della metodica

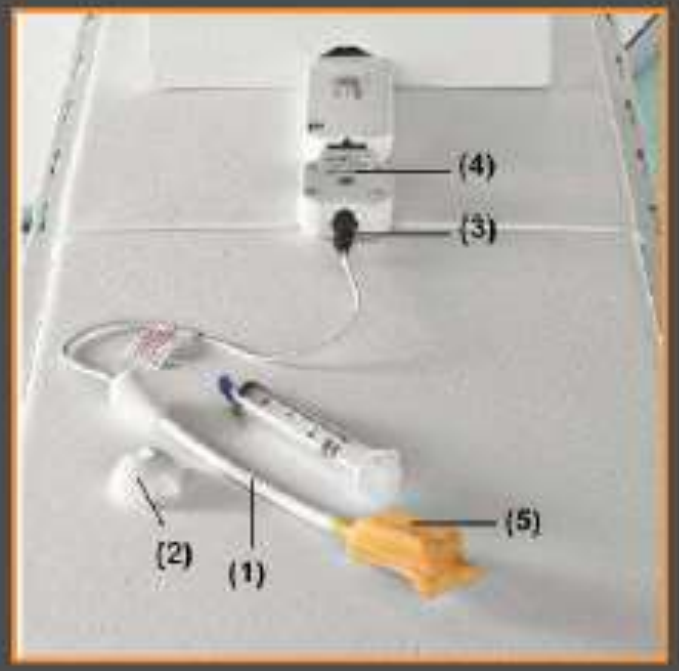
- Diagnosi (conferma o identificazione della lesione)
- Stadiazione locale
- Valutazione della presenza di malattia metastatica o recidiva

Eur Radiol. 2012 Apr;22(4):746-57. doi: 10.1007/s00330-011-2377-y. Epub 2012 Feb
ESUR prostate MR guidelines 20
Barentsz JO et al; European Society of Urogenital Radiolo

RM MULTIPARAMETRICA

BOBINA DEDICATA

Bobina endorettale: bobina di superficie endocavitaria costituita da una antenna ricevente, montata sulla superficie interna di una sonda a palloncino, che consente un facile posizionamento all'interno del retto.

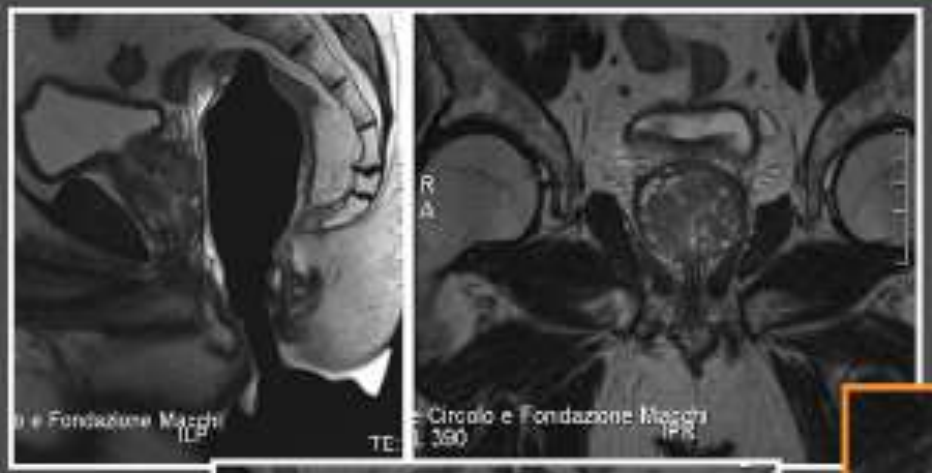


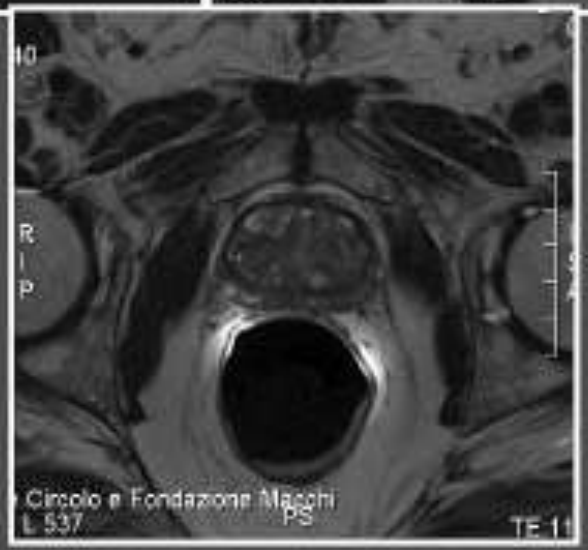
Utilizzo combinato di una bobina endorettale con una bobina pelvi/addominale multicanale.

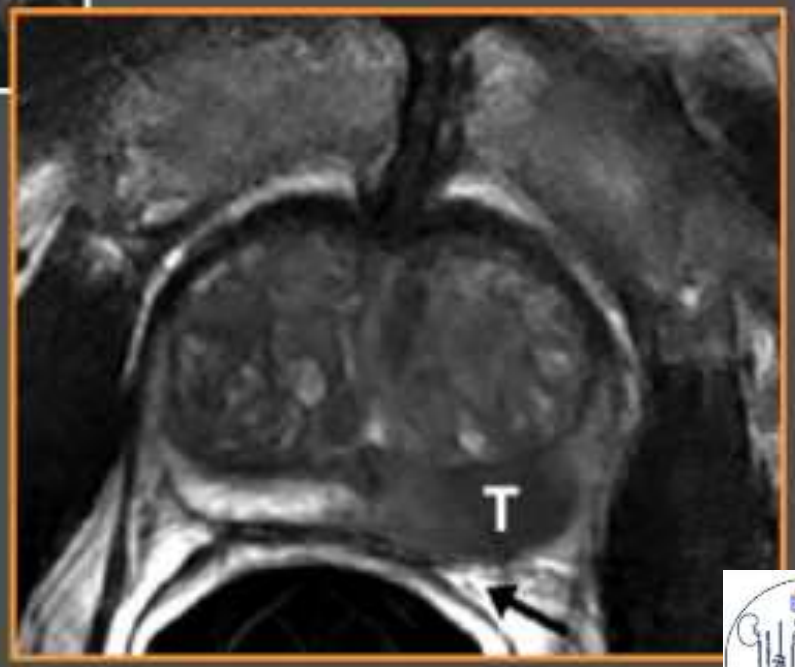
PREPARAZIONE

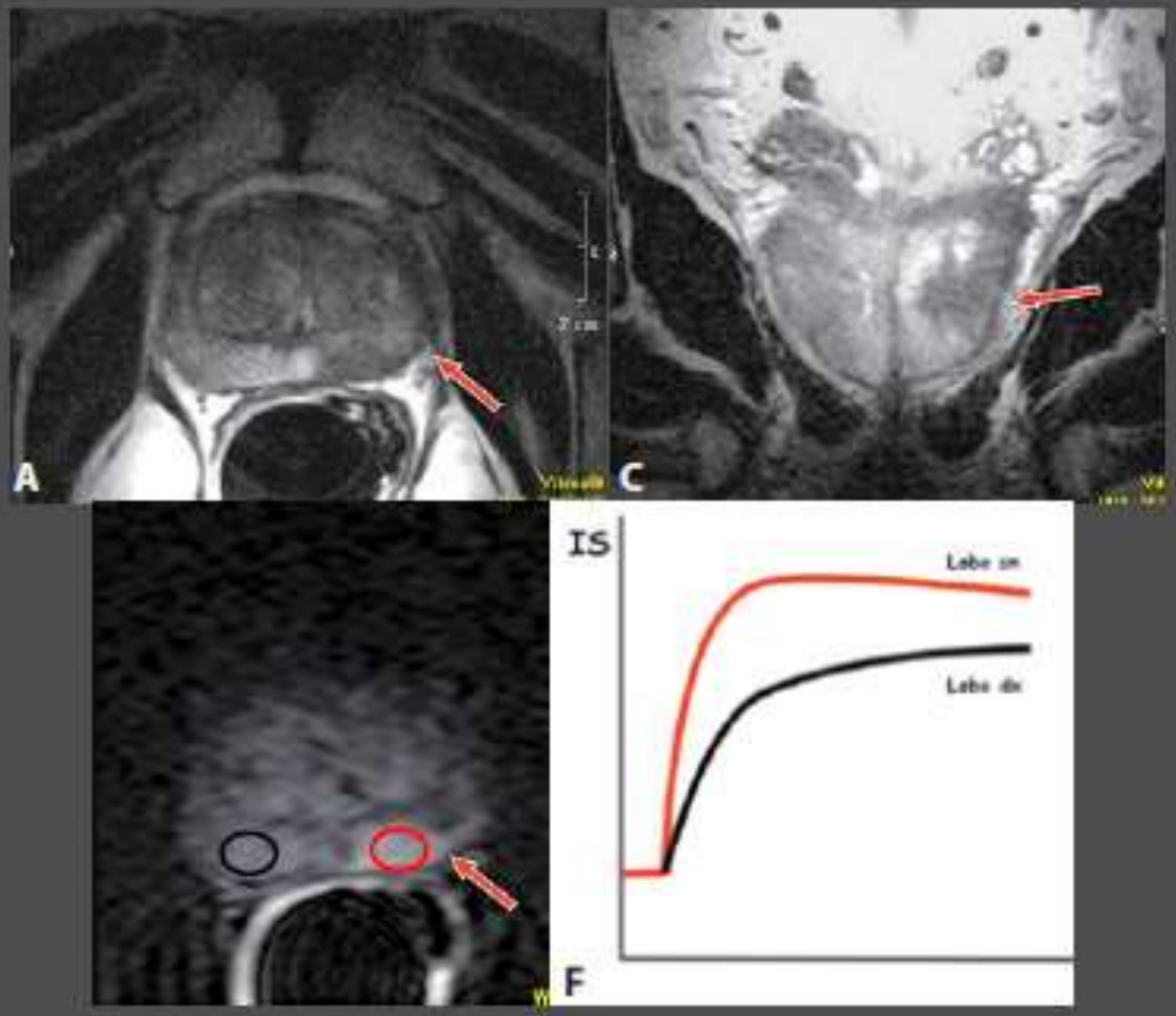
- Adeguata preparazione del Paziente
- Subito prima dell'esame è opportuno somministrare uno spasmolitico endovena o intramuscolo per ridurre al minimo la peristalsi dell'ampolla rettale distesa dalla sonda.

RM MULTIPARAMETRICA









SENSIBILITA' 90% PER LESIONI > 0,5mL

Radiol Clin N Am 50 (2012) 1015-1

RM MULTIPARAMETRICA

SPETTROSCOPIA

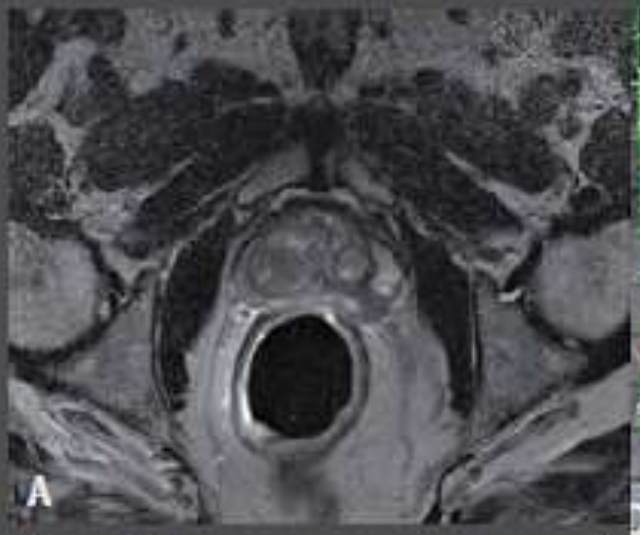
Studio in vivo e non invasivo del metabolismo del tessuto ghiandolare prostatico normale e patologico: le informazioni si basano sulle concentrazioni relative di metaboliti che si trovano nel citosol delle cellule e nei dotti ghiandolari.

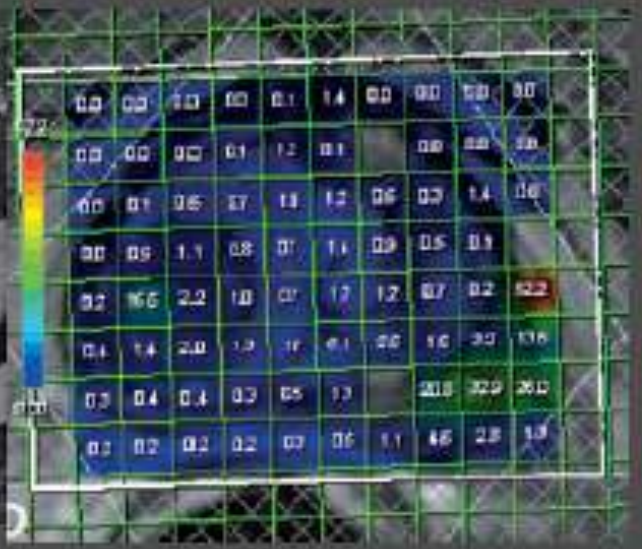
I metaboliti rappresentati nella spettroscopia prostatica sono:

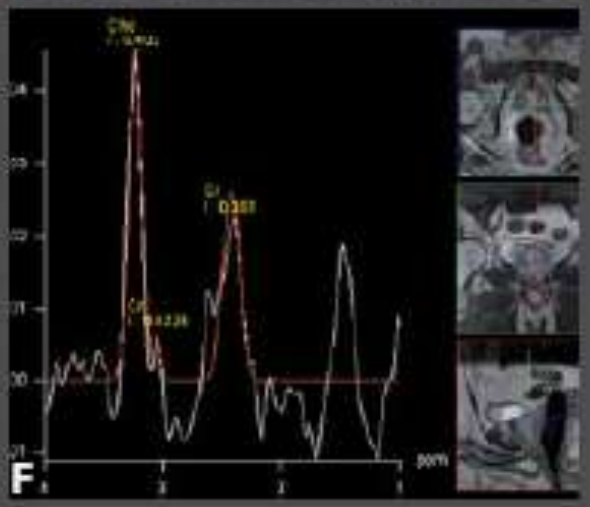
a) Citrato (Ci)
b) Colina (Cho),
c) Creatina (Cr), utilizzata nella sintesi di ATP, è un metabolita di riferimento.

↓ LA CONCENTRAZIONE DEL CITRATO

↑ CONCENTRAZIONE DI COLINA







Cho + Cr/Ci
-normale <0.75
-probabile >0.75 (+2DS)
-certo >0.86 (+3DS)

ACCURATEZZA 88%

Sciarra A, Panebianco V, et
Value of magnetic resonance spectroscopy imaging and dynamic cont
enhancedimaging for detecting prostate cancer foci in men with prior negative bio
.Clin Cancer Res. 2010 Mar 15;1

RM MULTIPARAMETRICA

BIOPSIA PROSTATICA

Table 1. Characteristics of the population randomized in group A and group B

Parameters	Group A	Group B	P
No. of cases	90	90	—
Total PSA (ng/mL), mean ± SD (median; range)	6.30 ± 0.91 (6.0; 4.0-9.0)	6.22 ± 1.03 (6.2; 4.0-9.3)	0.580
Prostate volume (cc), mean ± SD (median; range)	42.17 ± 7.47 (45.0; 30.0-60.0)	43.81 ± 7.55 (45.5; 30.0-63.0)	0.460
Familiarity for prostate cancer	0	0	—
Suspicious at MRSI, no. of cases (%)	—	6 (6.67)	
Suspicious at DCEMR, no. of cases (%)	—	3 (3.33)	
Suspicious at both MRSI and DCEMR, no. of cases (%)	—	36 (40.9)	
Prostate cancer at second biopsy, no. of cases (%)	22 (24.40)	44 (48.88)	0.01
Prostate cancer Gleason score <7 (3+4), no. of cases (%)	9 (40.90)	16 (39.0)	0.560
Prostate cancer Gleason score ≥7 (4+3), no. of cases (%)	13 (59.10)	25 (61.0)	0.450

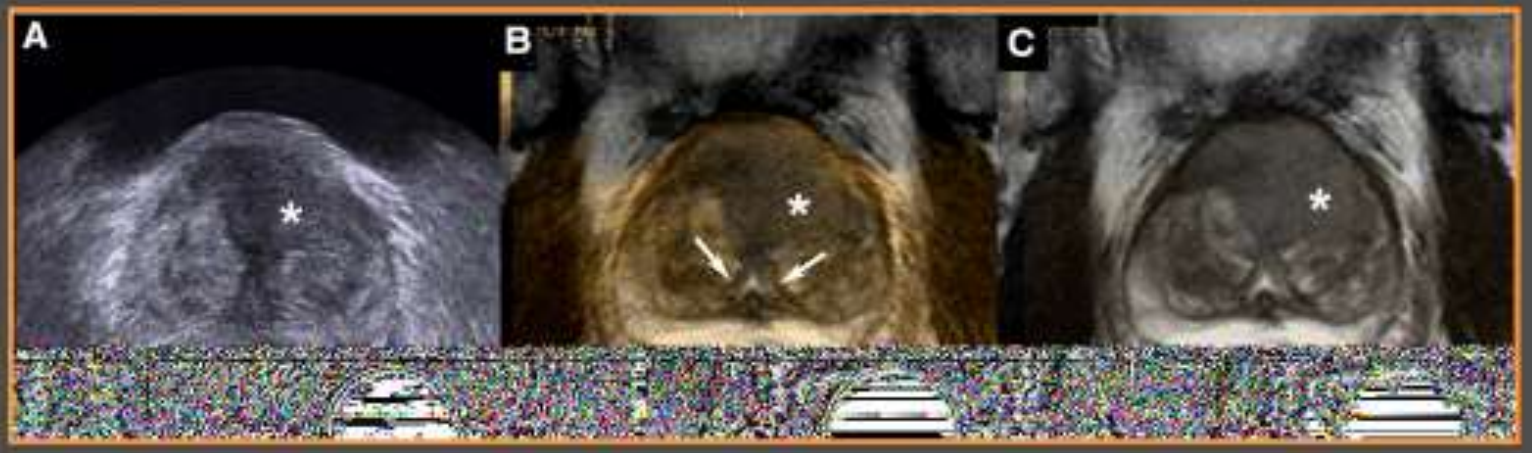
L'impiego della RM, dopo I biopsia negativa, consente di identificare il doppio dei tumori, in circa la metà dei pazienti negativi alla I biopsia. VPN=93%.

Sciarra A. et Al. **Value of Magnetic Resonance Spectroscopy Imaging and Dynamic Contrast-Enh Imagingfor Defecting Prostate Cancer Foci in Men With Prior Negative Biopsy** *Clin Cancer Res* 2010;16:18

RM MULTIPARAMETRICA

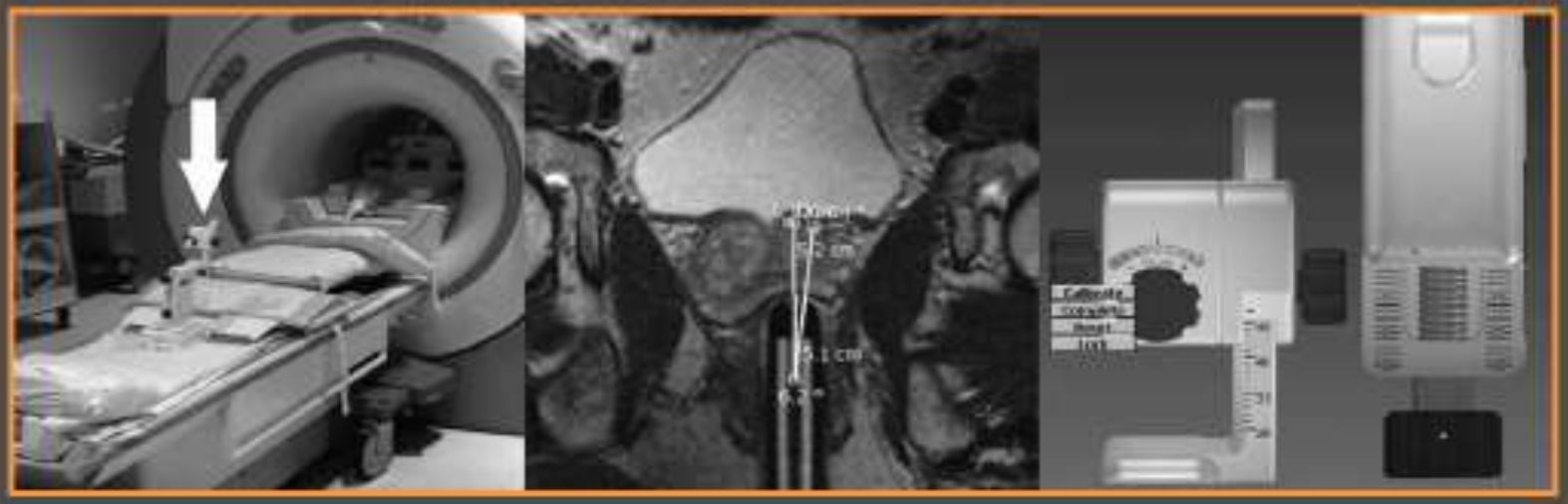
BIOPSIA RM-GUIDATA

- Biopsia RM-guidata "diretta"
- Biopsia RM-guidata "cognitiva"
- RM/US fusion



Current status of magnetic resonance imaging (MRI) and ultrasonography fusion software platforms for guidance of prostate biopsies
BJU Int. 2014 Nov;114(

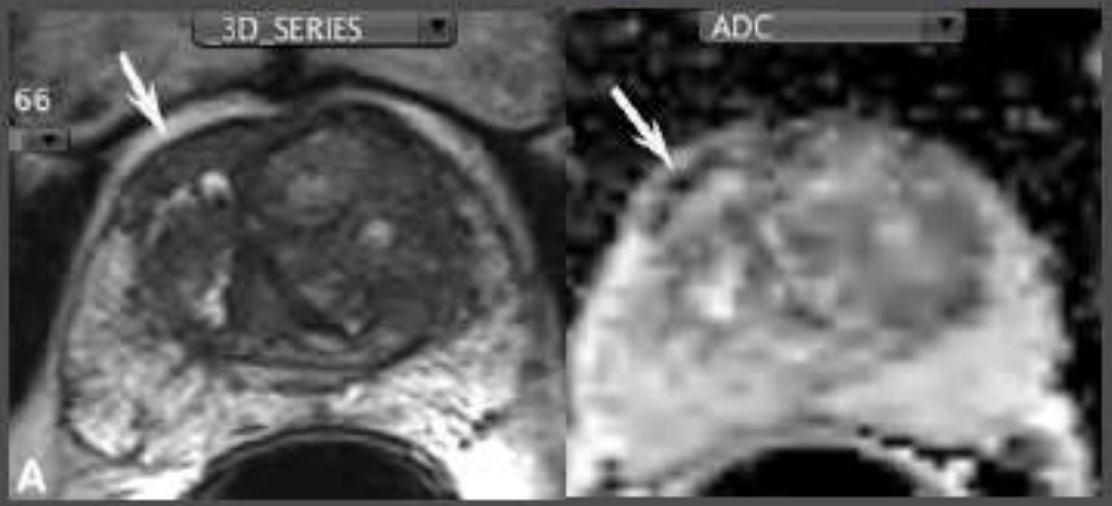
BIOPSIA RM-guidata "diretta"

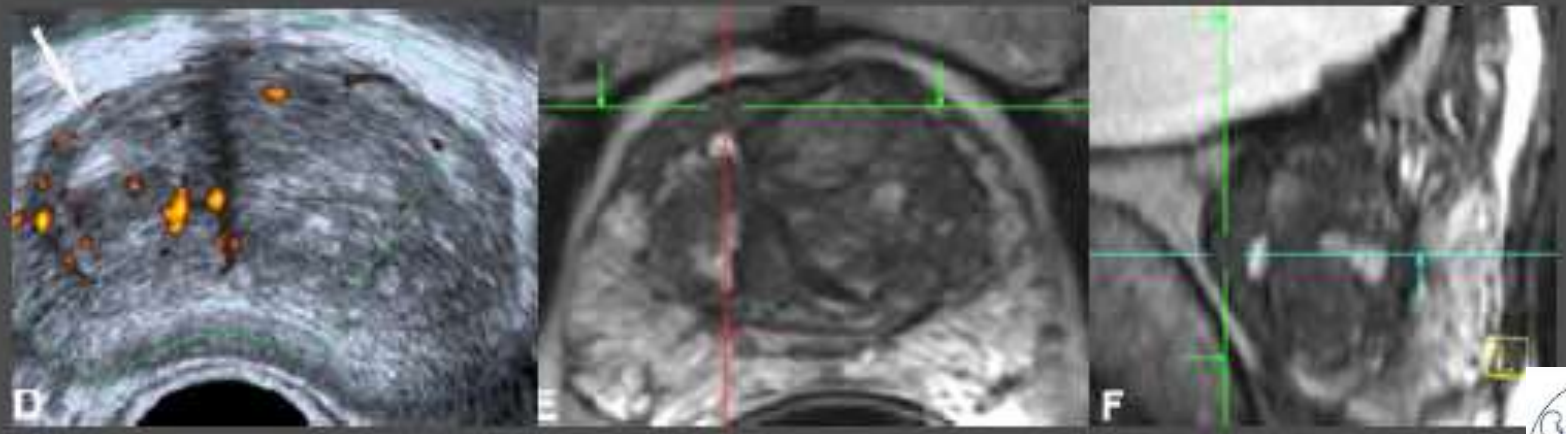


- 71 pazienti, con una media di 3 precedenti mapping negativi;
- 2 gruppi di controllo di pz sottoposti a terzo o quarto mapping TRUS guidato;
- media di 4 core per paziente;
- detection rate (per paziente): 59 % vs 22% e 15% dei gruppi di controllo (p<0,01)

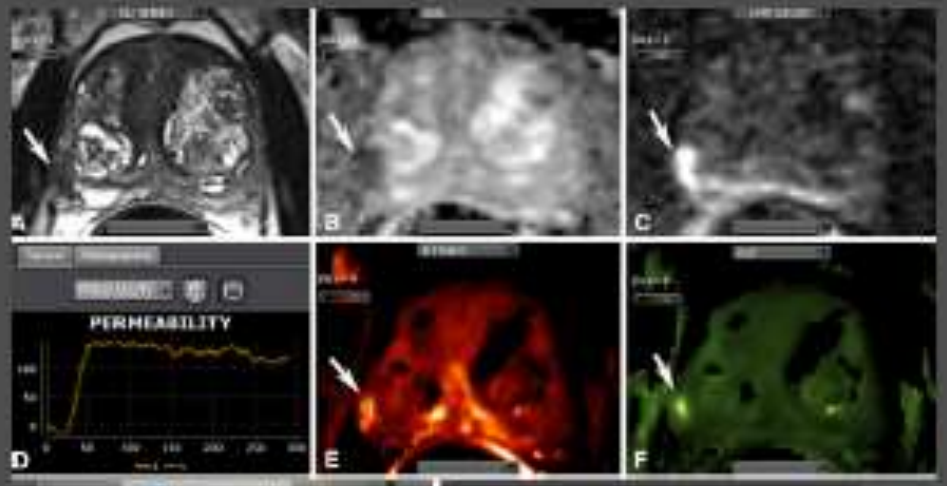
Hambrock
Magnetic resonance imaging guided prostate biopsy in men with repeat negative biopsie increased prostate apecific antigen J Urol 2010,183(2): 52

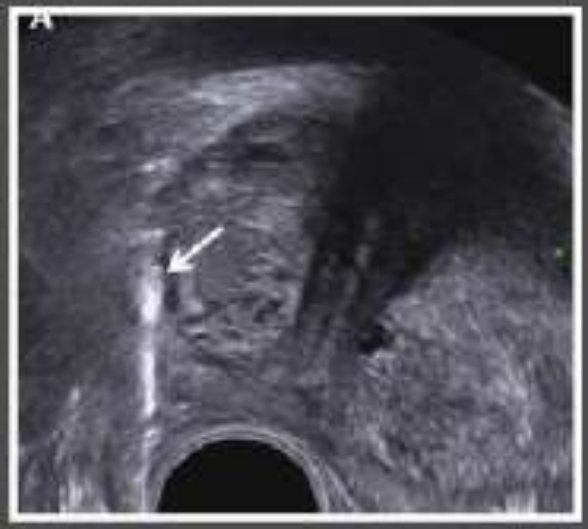
Biopsia RM-guidata "cognitiva"

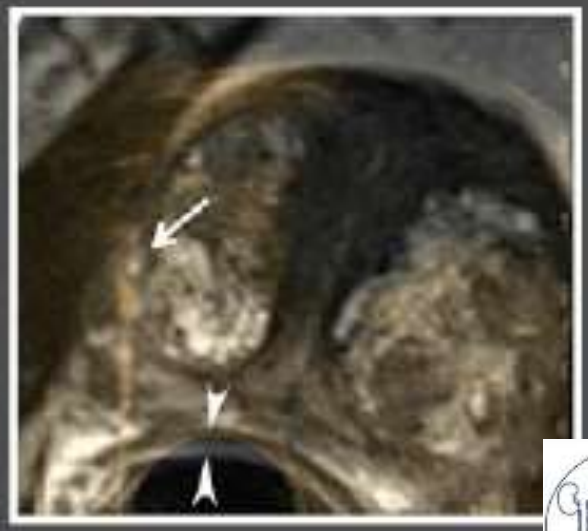




RM/US fusion







RM/US fusion

VANTAGGI

- ⬆ Detection dei tumori clinicamente significativi
- ⬇ Prelievi bioptici
- Archiviazione della mappatura

LIMITI

- Risultati "preliminari"
- Scarsa diffusione dei software