Cardiotoxiciteit bij prostaatkanker

En hoe hier mee om te gaan

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Cheryl Bruijnen, internist-oncoloog

Disclosure belangen spreker

(potentiële) belangenverstrengeling	Geen / Zie hieronder
Voor bijeenkomst mogelijk relevante relaties met bedrijven	Bedrijfsnamen
• Sponsoring of onderzoeksgeld • Honorarium of andere (financiële) vergoeding • Aandeelhouder • Andere relatie, namelijk …	• geen • Presentatievergoeding en/ of adviesraden van J&J, Novartis, Ipsen, Bayer Vergoeding voor de afdeling

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Studies on Prostatic Cancer

I. The Effect of Castration, of Estrogen and of Androgen Injection on Serum Phosphatases in Metastatic Carcinoma of the Prostate*

Charles Huggins, M.D., and Clarence V. Hodges, M.D.

(From the Department of Surgery, the University of Chicago, Chicago, Illinois)

(Received for publication March 22, 1941)

(Reprinted with permission from Cancer Res, 1: 293-297, 1941)

Carcinoma of the prostate gland is peculiarly favorable for endocrine investigation since frequent serial observations of

Colorimetric procedures were carried out with the Evelyn photoelectric colorimeter using a 6600 Å filter. The results

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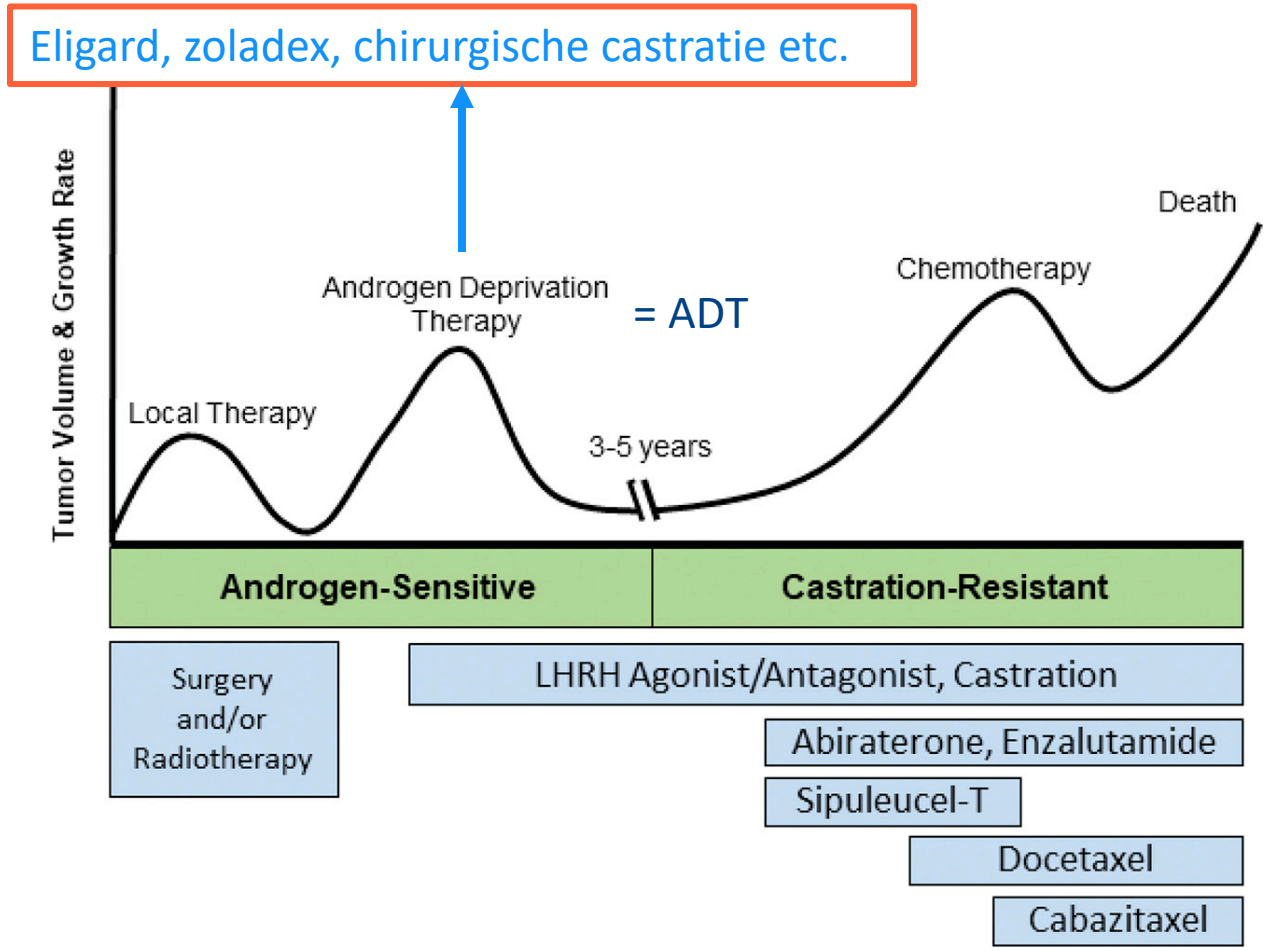
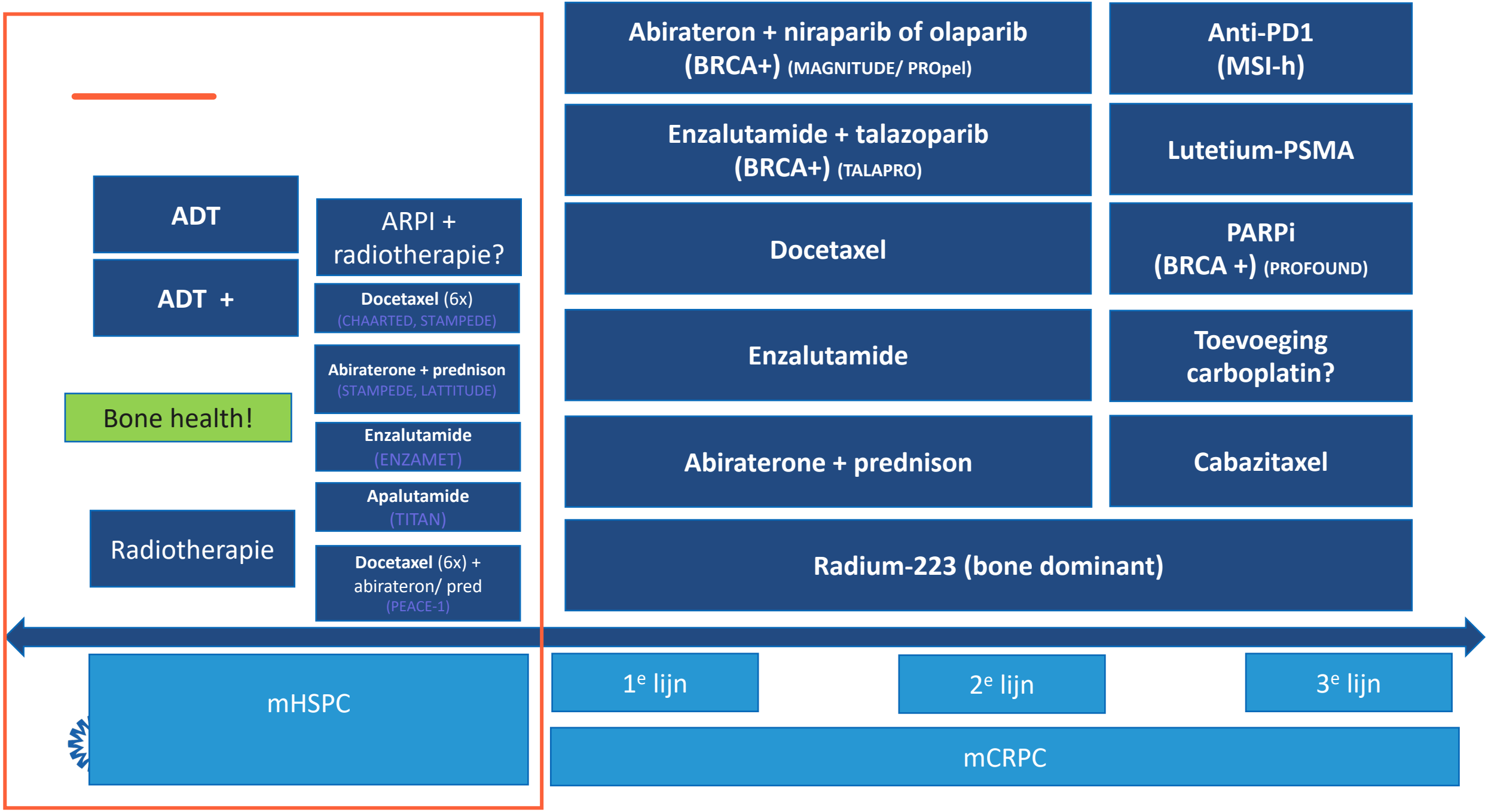
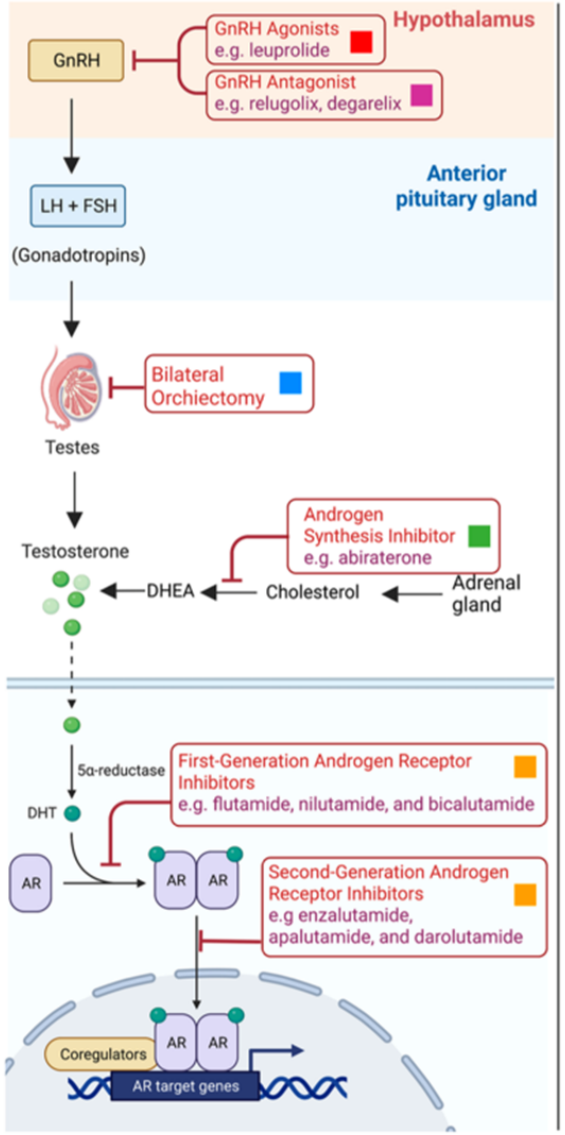
Hormoongevoelig (mHSPC) versus castratie-resistant (mCRPC)



Dannah R. Miller et al. *Prostate* Cancer 2021


ADT
ADT +
Bone health!
Radiotherapie
ARPI + radiotherapie?
Docetaxel (6x) (CHAARTED, STAMPEDE)
Abiraterone + prednison (STAMPEDE, LATTITUDE)
Enzalutamide (ENZAMET)
Apalutamide (TITAN)
Docetaxel (6x) + abirateron/ pred (PEACE-1)
Abirateron + niraparib of olaparib (BRCA+) (MAGNITUDE/ PROpel)
Enzalutamide + talazoparib (BRCA+) (TALAPRO)
Docetaxel
Enzalutamide
Abiraterone + prednison
Radium-223 (bone dominant)
Anti-PD1 (MSI-h)
Lutetium-PSMA
PARPi (BRCA +) (PROFOUND)
Toevoeging carboplatin?
Cabazitaxel
mHSPC
1e lijn
2e lijn
3e lijn
mCRPC

Anti-hormonale behandeling prostaatkanker



ADT:
- LHRH-agonisten
- LHRH-antagonisten
- Chirurgische castratie

Androgen recepthor pathways inhibitors (ARPI):
- Abirateron

Androgen recepthor pathways inhibitors (ARPI):
- Enzalutamide
- Darolutamide
- Apalutamide

Janice Kim et al. Current Oncology Reports (2023) 25:965–977

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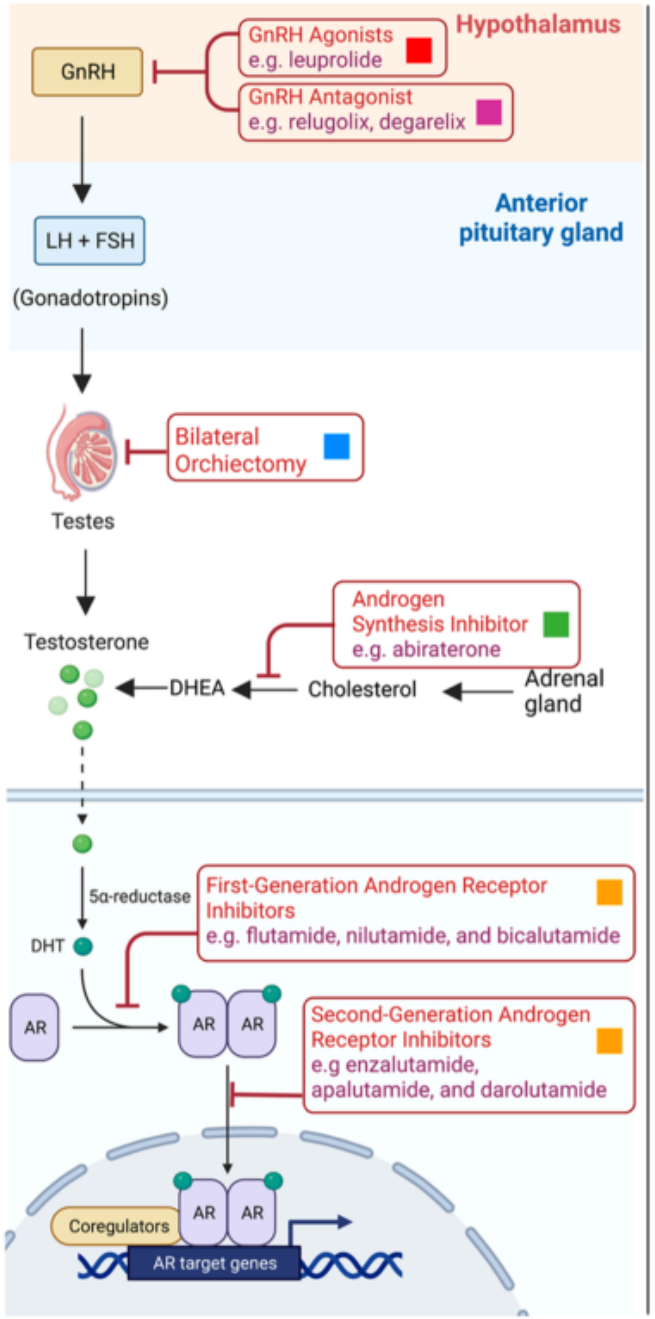
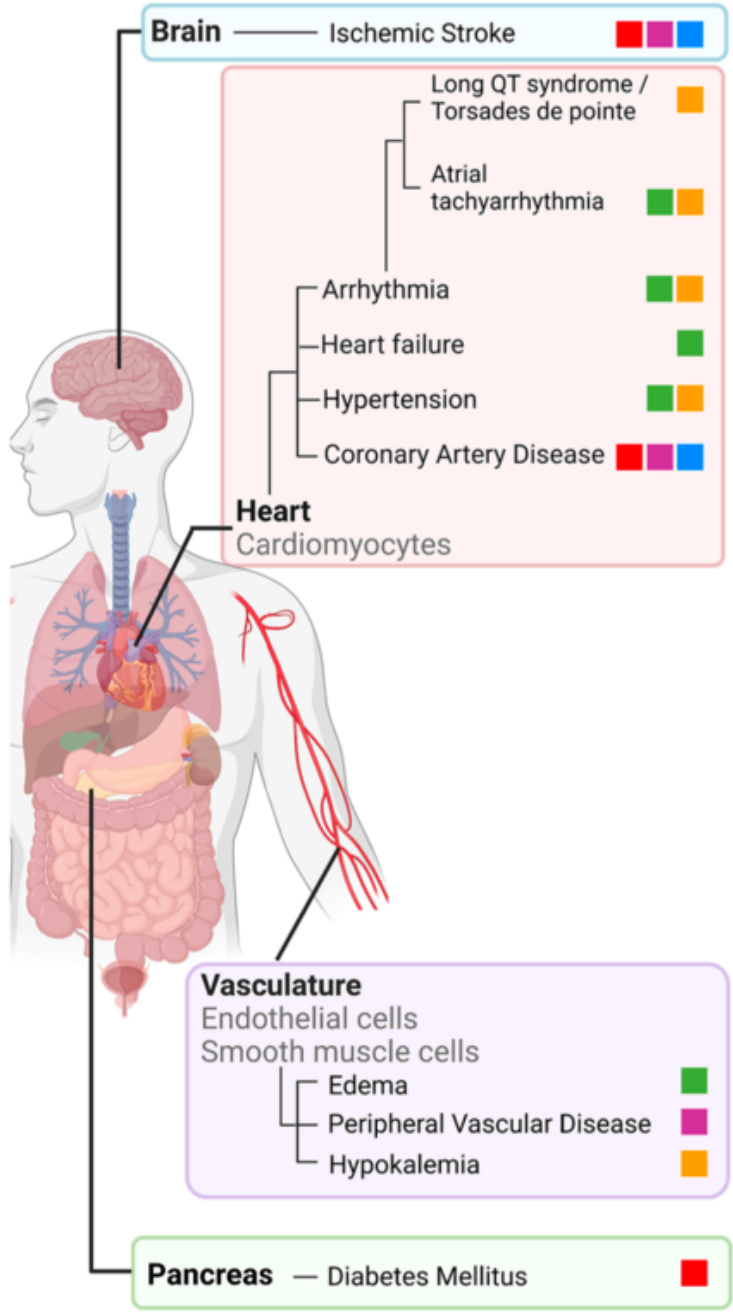

Hypothalamus
GnRH
GnRH Agonists
e.g. leuprolide
GnRH Antagonist
e.g. relugolix, degarelix
Anterior pituitary gland
LH + FSH
(Gonadotropins)
Bilateral Orchiectomy
Testes
Testosterone
Androgen Synthesis Inhibitor
e.g. abiraterone
DHEA
Cholesterol
Adrenal gland
5α-reductase
DHT
First-Generation Androgen Receptor Inhibitors
e.g. flutamide, nilutamide, and bicalutamide
AR
AR
AR
Second-Generation Androgen Receptor Inhibitors
e.g enzalutamide, apalutamide, and darolutamide
Coregulators
AR
AR
AR target genes


Brain
Ischemic Stroke
Long QT syndrome / Torsades de pointe
Atrial tachyarrhythmia
Arrhythmia
Heart failure
Hypertension
Coronary Artery Disease
Heart
Cardiomyocytes
Vasculature
Endothelial cells
Smooth muscle cells
Edema
Peripheral Vascular Disease
Hypokalemia
Pancreas
Diabetes Mellitus

ADT en cardiovasculaire toxiciteit

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Associatie ADT met ‘cardiale events’

J Clin Oncol. 2006 Sep 20;24(27):4448-56. doi: 10.1200/JCO.2006.06.2497.

Diabetes and cardiovascular disease during androgen deprivation therapy for prostate cancer

Nancy L Keating [1], A James O'Malley, Matthew R Smith

- Observational study, SEER-Medicare database, n = 73K
- GnRH agonist uses associated with
  - Increased risk of DM, HR 1.44; p<0.001
  - Increased risk of CHD, HR 1.1.6; p<0.001
  - Increased risk of MI, HR 1.11; p=0.03
  - Increased risk of SCD, HR 1.34; p<0.004.
- Men treated with orchiectomy were more likely to develop diabetes (adjusted HR, 1.34; p<0.001
- This finding has spurred numerous observational studies and retrospective studies from randomized controlled trials (RCTs).

Er is een duidelijke relatie met het gebruik van ADT en diabetes, hartziekten, myocard infarct en acute hartdood.

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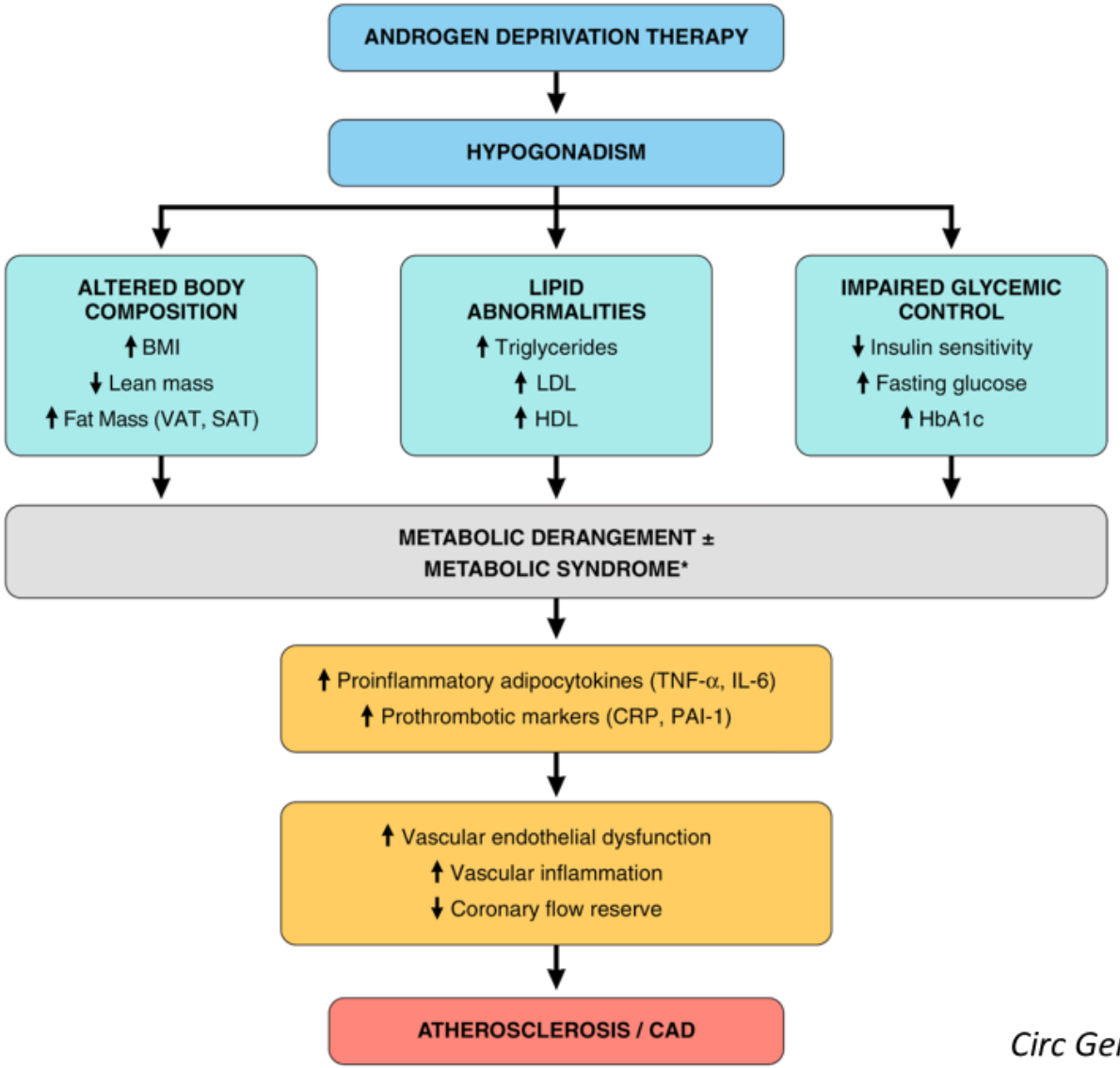
DM; Diabetes mellitus, CHD; coronary heart disease, MI; myocardial infarction, SCD; sudden cardiac death

Keating et al. J Clin Oncol. 2006 Sep 20;24(27):4448-56

Associatie ADT met ‘cardiale events’

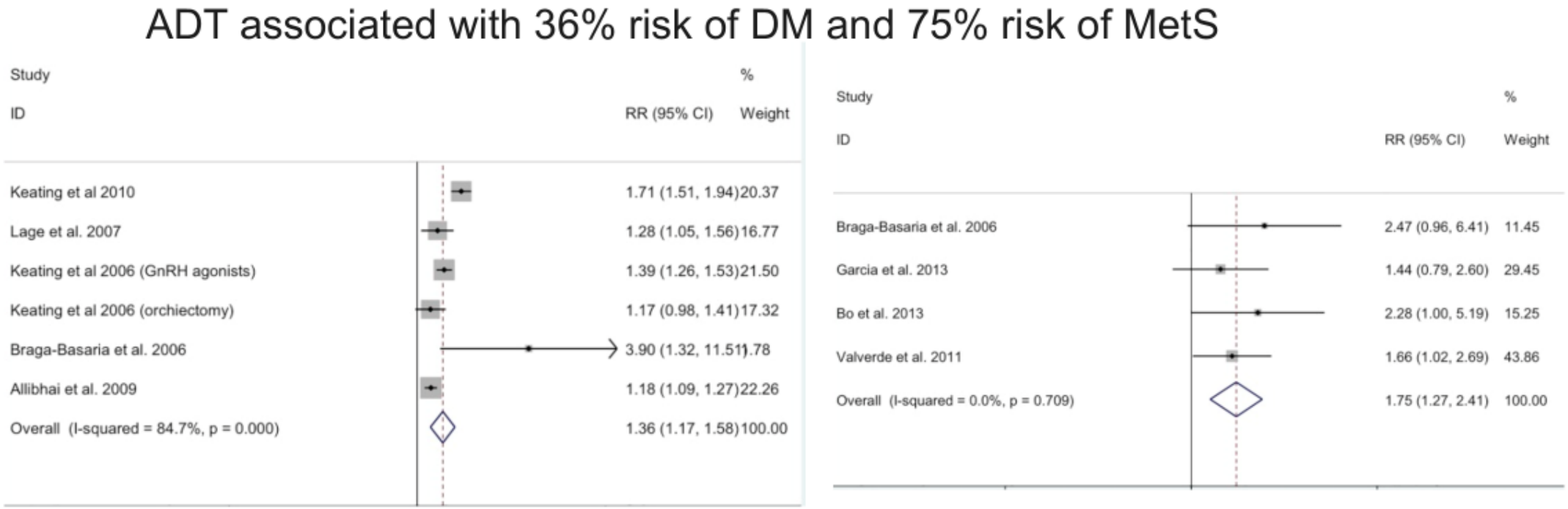
	Type	Treatment Agent (No. of Patients)	Comparator Agent (No. of Patients)	CV Mortality	Any Nonfatal CVD	Myocardial Infarction	Stroke
Nguyen et al[19]	RCT	ADT (n=2200)	Nonimmediate ADT (n=1941)	RR, 0.93 (CI, 0.79–1.10; *P*=0.41; I^2=0%; N=8)			
Bourke et al[20]	RCT	ADT (n=1065)	Nonimmediate ADT (n=814)	RR, 1.06 (CI, 0.80–1.40; *P*=0.69; I^2=0%; N=4)			
Zhao et al[18]	Obs.	ADT (n=129 802)*	Non-ADT (n=165 605)*	HR, 1.17† (CI, 1.04–1.32; *P*=0.01; I^2=57%; N=6)	HR, 1.10 (CI, 1.00–1.21; *P*=0.06; I^2=72%; N=6)	HR, 1.10 (CI, 0.97–1.26; *P*=0.14; I^2=68%; N=6)	
Zhao et al[18]	Obs.	ADT (n=39 465)*	Watchful waiting (n=43 648)*	HR, 1.30† (CI, 1.13–1.50; *P*=0.0003; I^2=0%; N=4)	HR, 1.19† (CI, 1.08–1.30; *P*=0.0004; I^2=0%; N=3)		
Carneiro et al[16]	Obs.	ADT (n=52 308)	Non-ADT (n=74 590)	OR, 1.92 (CI, 0.79–4.68; *P*=0.15; I^2=97%; N=3)	OR, 1.06 (CI, 0.70–1.61; *P*<0.78; I^2=100%; N=2)	OR, 2.05† (CI, 1.93–2.17; *P*<0.00001; I^2=100%; N=2)	OR, 1.07 (CI, 0.66–1.72; *P*=0.79; I^2=99%; N=2)
Carneiro et al[16]	RCT	ADT (n=8388)	Non-ADT (n=8411)	OR, 0.97 (CI, 0.81–1.18; *P*=0.79; I^2=0%; N=6)	OR, 1.55† (CI, 1.09–2.20; *P*=0.01; I^2=0%; N=3)	OR, 1.23 (CI, 0.92–1.64; *P*=0.16; I^2=0%; N=2)	OR, 1.02 (CI, 0.71–1.46; *P*=0.93; I^2=0%; N=2)
Meng et al[17]	Obs.	ADT (n=74 538)	Non-ADT (n=85 947)				HR, 1.12 (CI, 0.95–1.32; *P*=0.16; I^2=85%; N=6)
Meng et al[17]	Obs.	ADT (n=39 029)	Watchful waiting (n=42 073)				HR, 1.16† (CI, 1.03–1.31; *P*=0.01; I^2=0%; N=2)

The comparator (non-ADT) group in these studies could include radical prostatectomy, radiotherapy, or watchful waiting.



Circ Genom Precis Med. 2021

ADT en risico op metabool syndroom



Diabetes

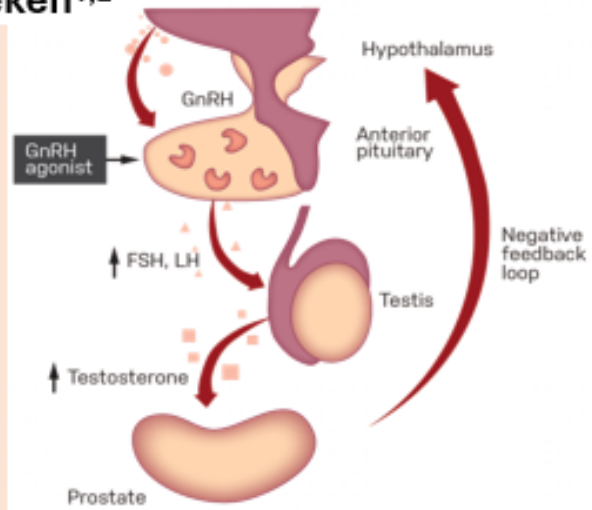
Metabool syndroom

LHRH-agonist of LHRH-antagonist?

LHRH (GnRH) agonists

Vermindert de activiteit van LHRH/GnRH-receptoren en bereikt castratie binnen 2 tot 4 weken[1,2]

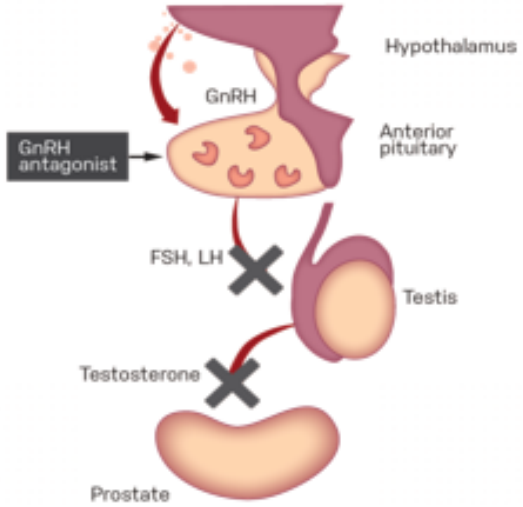
- Initiële overstimulatie van LHRH-receptoren leidt tot een tijdelijke toename of 'flare' in de productie van LH en testosteron.
- Chronische toediening leidt uiteindelijk tot onderdrukking van LH, wat resulteert in onderdrukking van testosteron.[1,2]



Toegediend als depotinjecties met een frequentie van 1, 3 of 6 maanden[2]

LHRH (GnRH) antagonists

Bindt aan, maar stimuleert de LHRH-receptoren niet, en bereikt castratie op dag 3 van de behandeling[1,2]

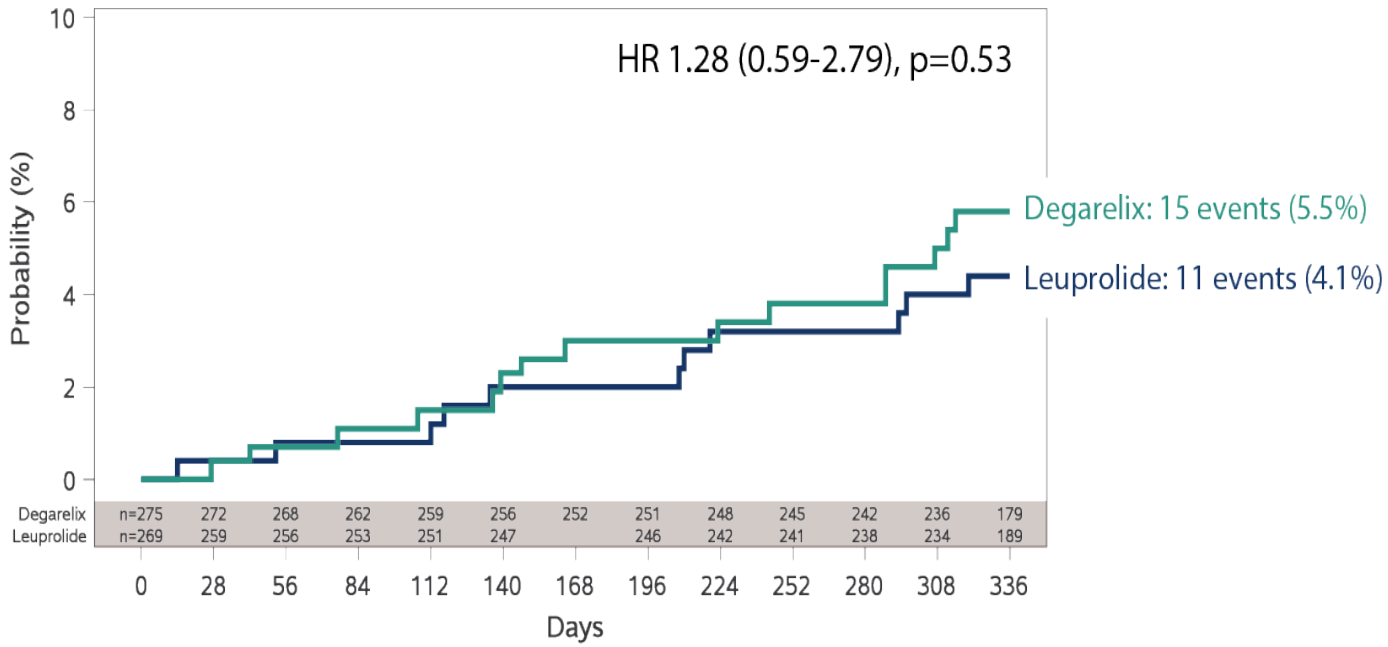


- LHRH-antagonisten hebben een intermediair begin van werking, waarbij de afgifte van gonadotrofinen wordt voorkomen door blokkade van de receptoren, wat leidt tot een snelle onderdrukking van LH en testosteron.[1,2]

Geen langwerkende depotformulering beschikbaar; maandelijkse injectie en dagelijkse orale formuleringen zijn beschikbaar[2]

UroToday. Available at: https://www.urotoday.com/journal/everyday-urology-oncology-insights/articles/96381-assessment-of-cardiovascular-risk-with-the-use-of-androgen-deprivation-therapy-for-prostate-cancer-everyday-urology-full-text-article.html

LHRH-agonist of LHRH-antagonist?



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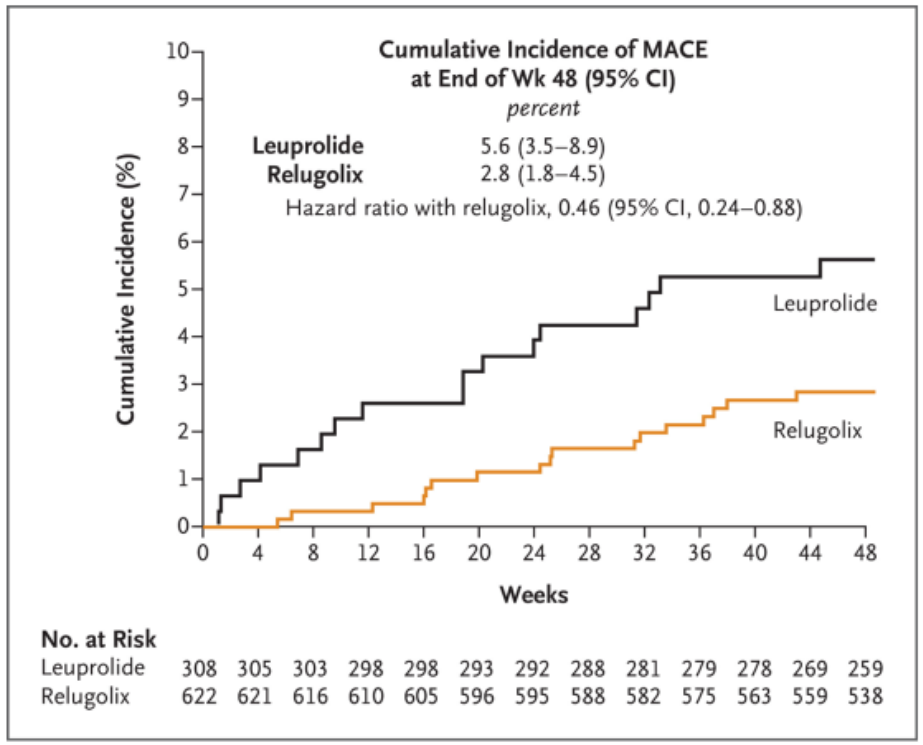
Lopes R, *et al*. 2021 Circulation

LHRH-agonist of LHRH-antagonist?

- Phase III trial demonstrates relugolix (GnRH antagonist) reduces risk of MACE and achieves superior testosterone suppression compared to that of leuprolide (GnRH agonist).
- HERO trial- 54% reduction in MACE with relugolix compared to leuprolide
- In metanalysis (6 Phase III trials) - men with preexisting CVD, the risk of cardiac events within 1 year therapy was significantly lower with GnRH antagonists than LHRH agonists (HR, 0.44; 95% CI, 0.26 to 0.74; P=0.002).
- The absolute risk reduction in major CV and CVA events at 12 months using GnRH antagonist was 18.1% (95% CI 4.6-31.2, p=0.032).



Shore ND, et al NEJM 2020

Margel D et al. J Urol. 2019

Cirne *et al.* 2022 Eur Heart J Cardiovasc pharmacother

Abufaraj *et al.* 2021 Eur Urol

Crawford *et al.* 2023 JU

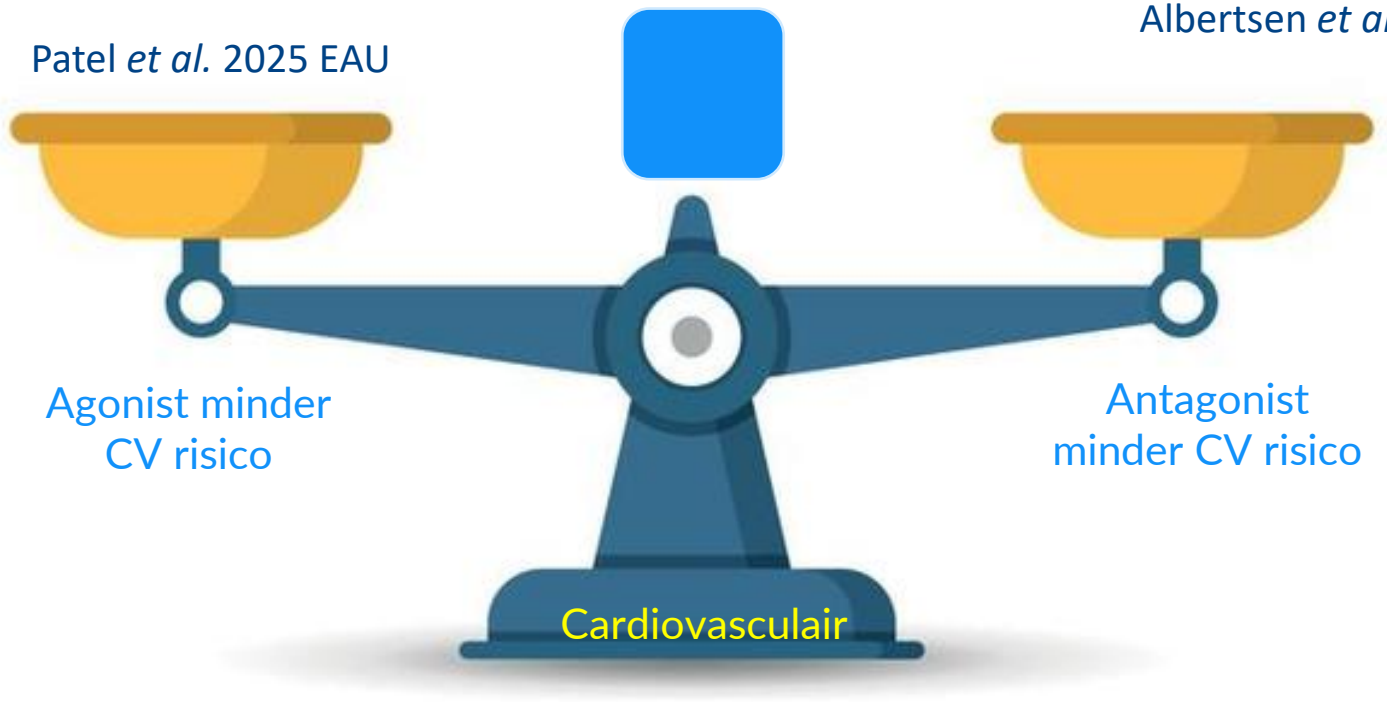
Nelson *et al.* 2023 JACC

George *et al.* 2020 Cardio Epi

Albertsen *et al.* 2014 EU

Patel *et al.* 2025 EAU

Davey *et al.* 2021 WJU



Talrijke retrospectieve meta-analyses hebben tegenstrijdige bevindingen gerapporteerd

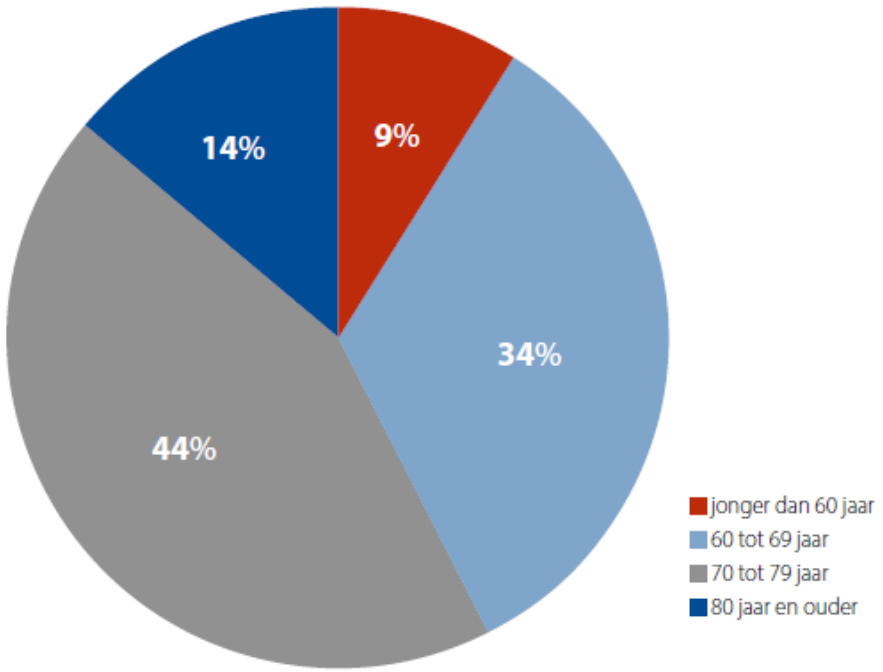
DISCLAIMER: Dit is geen uitputtende lijst van alle studies gedaan!!

Cardiovasculaire comorbiditeit

De gemiddelde leeftijd waarop prostaatkanker wordt gediagnosticeerd ligt rond de 70 jaar

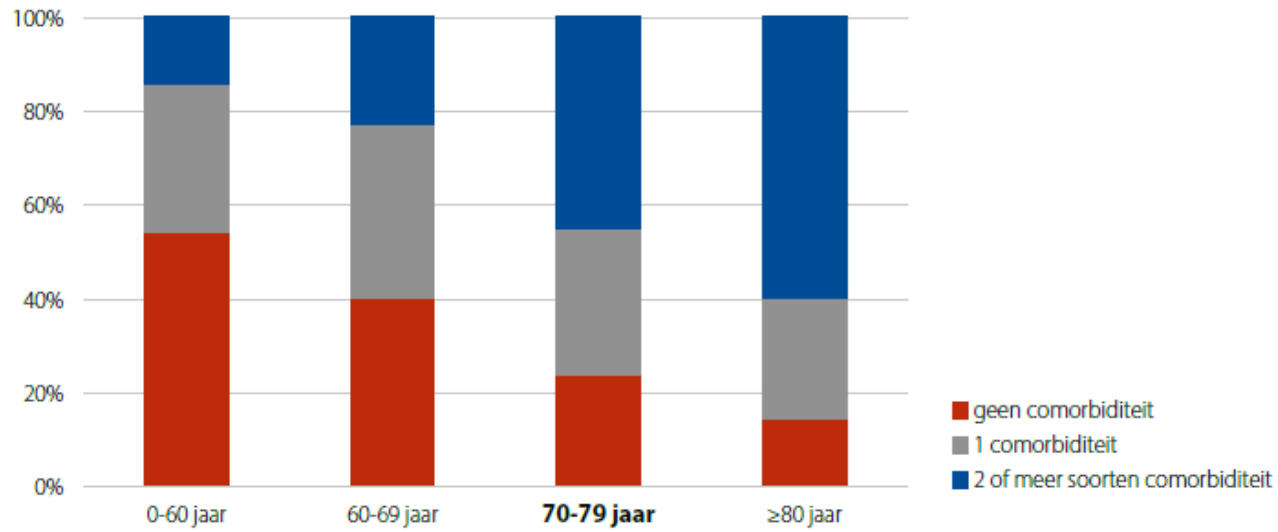
Leeftijdsverdeling

Driekwart van de patienten is bij diagnose tussen de 60 en 80 jaar. De gemiddelde leeftijd bij diagnose is 70 jaar.



IKNL: prostaatkankerinNL(2016)

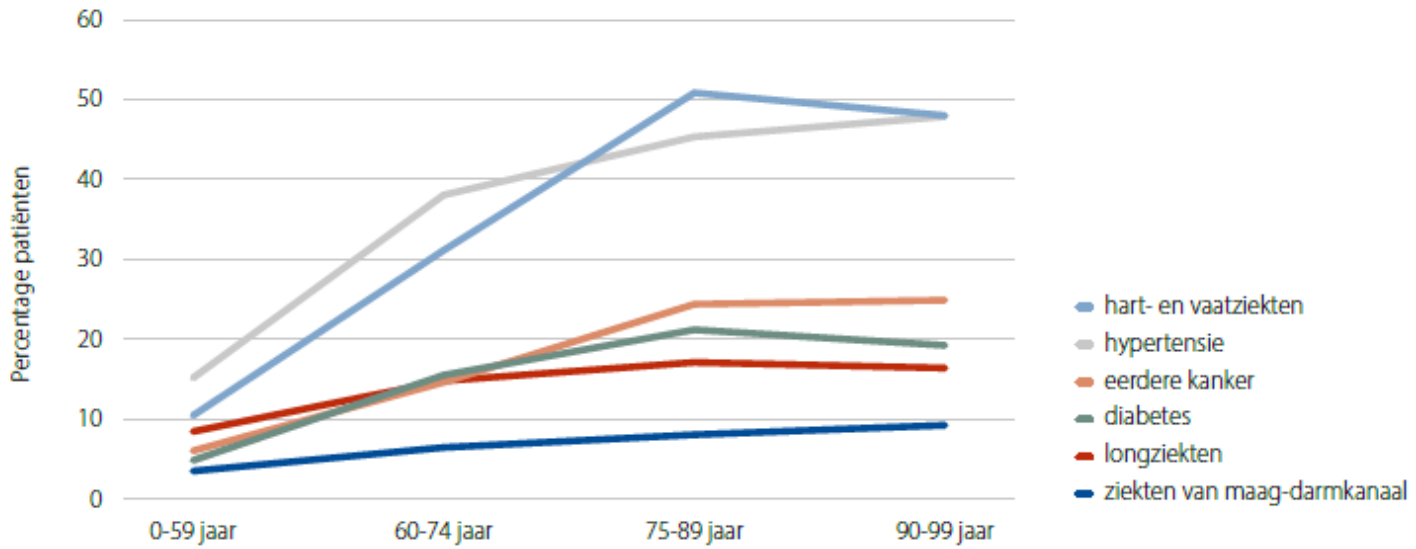
45% van de patiënten met prostaatkanker hebben ≥ 2 comorbiditeiten



Comorbiditeit bij patiënten met prostaatkanker,
gediagnosticeerd in Zuidoost-Nederland, per leeftijdsgroep (n=1.448)

IKNL: prostaatkankerinNL(2016)

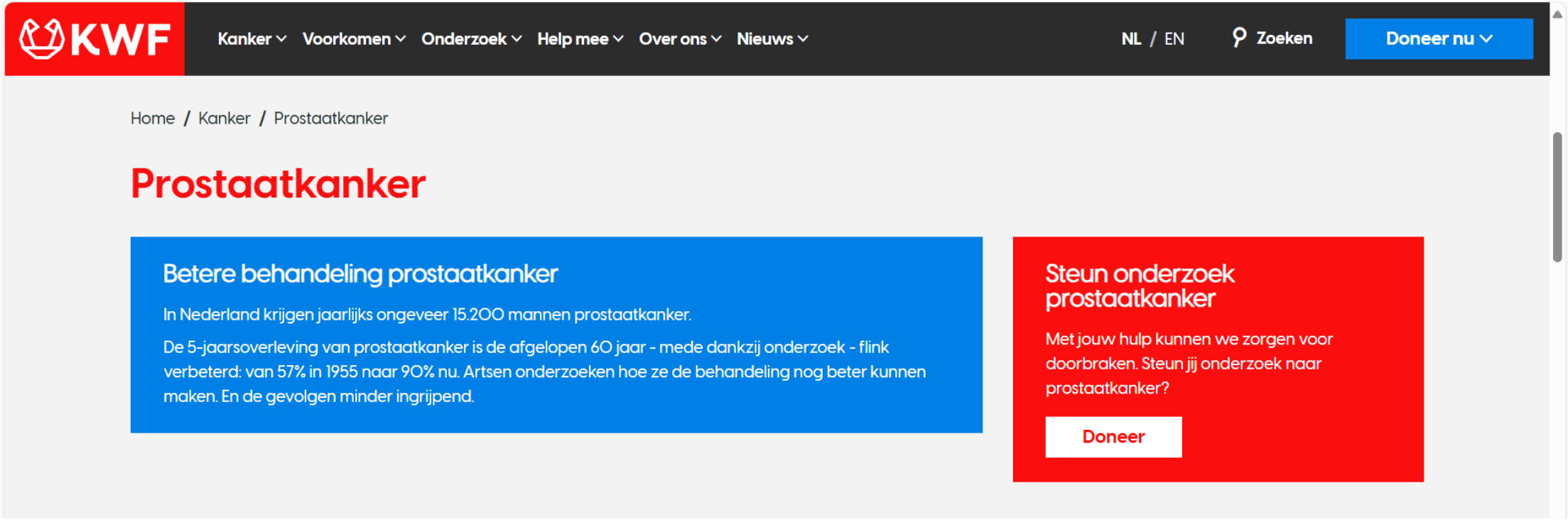
Hart- en vaatziekten zijn de meest voorkomende comorbiditeit bij patiënten met prostaatkanker



Specifieke soorten comorbiditeit, gediagnosticeerd in Zuidoost-Nederland, per leeftijdsgroep (bron: NKR/IKNL)

IKNL: prostaatkankerinNL(2016)

Focus op comorbiditeiten steeds meer van belang, want we houden onze patiënten langer in leven



kwf.nl/prostaatkanker (accessed 04-11-2025)

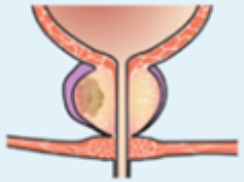
Cardiovasculaire comorbiditeit is reëel probleem

Characteristic	N = 2981	
Baseline characteristics		
Age, median (IQR), y	74	(67, 80)
Race, No. (%)		
White	2129	(71)
Black or African American	351	(12)
Patient declined to respond	287	(9.6)
Other	151	(5.1)
Asian	63	(2.1)
Insurance, No. (%)		
Medicare	2137	(72)
Private	710	(24)
Medicaid	134	(4.5)
BMI >30, No. (%)	211	(7.1)
Charlson Comorbidity Index, median (IQR)	8	(6, 11)
Prostate cancer–specific history, No. (%)		
Family history of prostate cancer	205	(6.9)
History of prostatectomy	514	(17)
History of radiation	325	(11)
Concurrent systemic prostate cancer therapy	950	(32)
Androgen receptor pathway inhibitor	906	(31)
Chemotherapy	184	(6.2)
ADT type and year of initiation, No. (%, duration on ADT in mo, IQR)		
Degarelix (January 2018–November 2020)	24	(0.8, 2.2, 1-7.2)
Degarelix (December 2020–March 2024)	56	(1.9, 3.8, 1.5-6.7)
Leuprolide (January 2018–November 2020)	1128	(38, 17.2, 7.1-29.0)
Leuprolide (December 2020–March 2024)	1397	(47, 9.4, 5.8-18.7)
Relugolix	376	(13, 6, 5.2-11.7)
Had any metastatic disease, No. (%)	907	(30)
Cardiovascular background and outcomes		
Median follow-up, median (IQR), mo	20.0	(8.8, 36.3)
Treatment-onset MACE, No. (%)	105	(3.5)
History of previous MACE, No. (%)	381	(13)
At least 1 cardiovascular risk factor[a], No. (%)	2368	(79)
No. of cardiovascular risk factors (categorical), No. (%)		
0	624	(21)
1	653	(22)
2	839	(28)
≥3	865	(29)
Noncardiovascular mortality, No. (%)	343	(12)
Prostate cancer–specific mortality, No. (%)	188	(6.3)
Cardiovascular mortality, No. (%)	29	(1.0)

Abbreviations: ADT, androgen deprivation therapy; MACE, major adverse cardiovascular event.
[a]Cardiovascular risk factors included are listed in methods.

Li, Urology Practice (2025)

Inschatten risicoprofiel en monitoring

	CVD Risk Assessment	*Monitoring	*Prevention/Management
ANDROGEN DEPRIVATION THERAPY FOR PROSTATE CANCER 	**For Duration of Therapy** • Elevated CVD risk with longer duration of ADT **Type of Therapy** • GnRH agonists and CAB > early generation AAs alone • GnRH agonists > GnRH antagonists	• Monitor for reversible CVD risk factors • Higher risk of metabolic syndrome on ADT: – monitor BP, lipids, BMI, waist circumference, HbA1c, FBG – Q 3 months if ≥ 2 risk factors	**Multi-disciplinary approach Consider:** • Cardio-oncology (or general cardiology) if CVD and/or ≥ 2 risk factors • Endocrinology if diabetes • Social Work/Mental health services if barriers to care

Risico profiel

Monitoring

Preventie/behandeling

American Heart Association 2025

Casus: Jan, 75 jaar

Presenteert zich bij huisarts met pijn in de linker heup

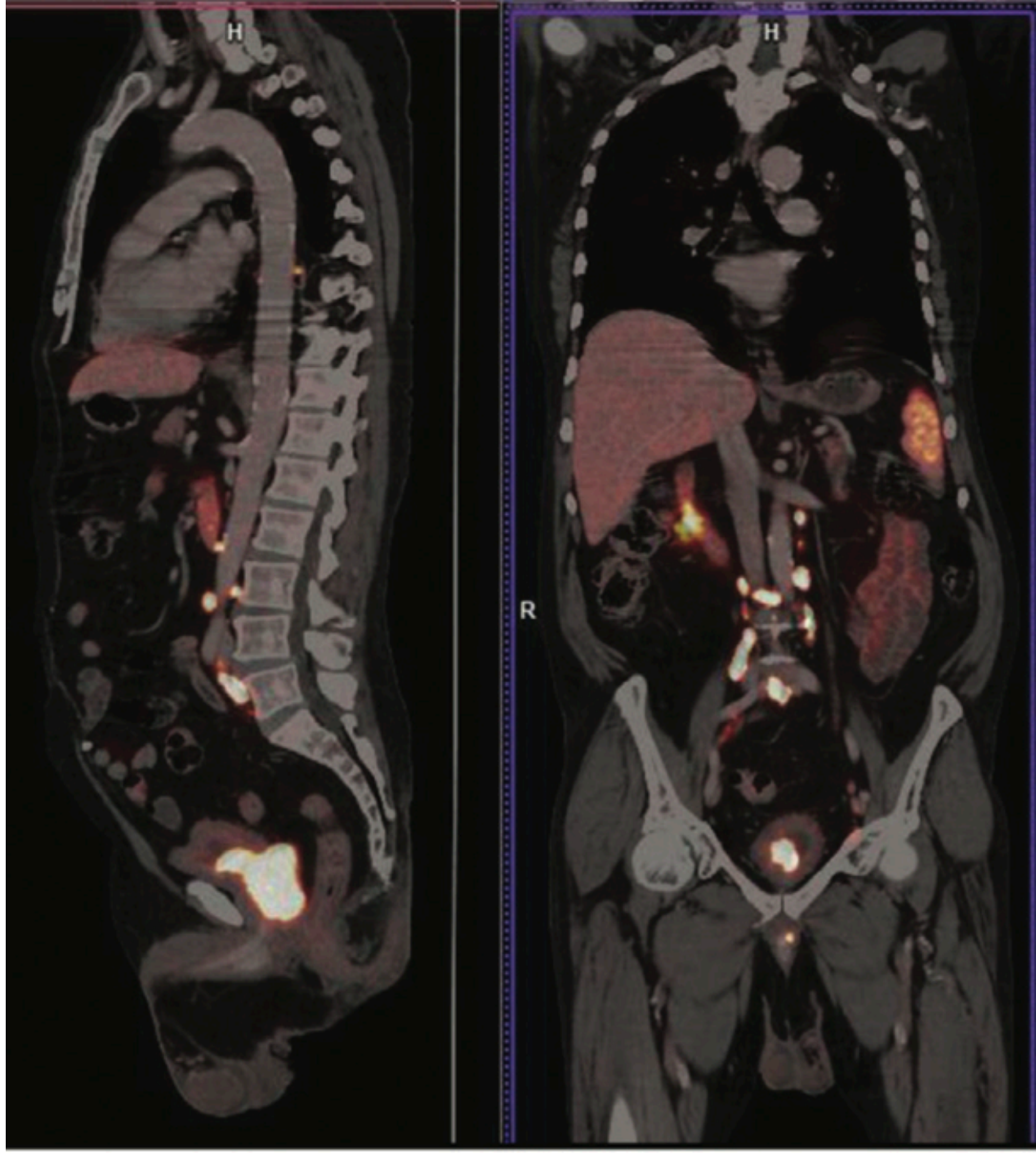
In verband met bekend familiar prostaatcarcinoom besluit huisarts om RT, PSA en röntgenonderzoek uit te voeren:

- Afwijkend toucher (T2-3)
- PSA 14
- Röntgenfoto afwijkend

Verwijzing volgt naar uroloog

Workup

- MRI: T3N0Mx
- Target biopten: Gleason 4 + 4
- Beeldvorming PSMA-PET/CT: T3bN1M1b, met oligometastasen (2 botlesies met substraat op low dose CT)
- 5 sibs, waarvan 2 broers prostaatkanker (diagnose leeftijd 65 en 67), vader prostaatkanker op oudere leeftijd



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Synchroon low volume mHSPC

- ECOG 1
- Lab: Bloedbeeld normaal, kreatinine 120, AF 135, leverfunctie normaal, CRP 7
- Comorbiditeit:
  - 2021 PTA linker been
  - 2024 NIDDM2
  - hypertensie
  - vroeger gerookt (40PY)
- Cholesterol (totaal 6.5, LDL 4.3, HDL 1.3, TG 2.0 mmol/L)
- HbA1c 68 mmol/mol
- Bloeddruk 146/85, P70 reg
- Gewicht 125kg, lengte 175cm met BMI 40.8

Medicatie

- Amlodipine 10mg
- Atorvastatine 10mg
- Metformine 500mg bd
- Ascal 80mg

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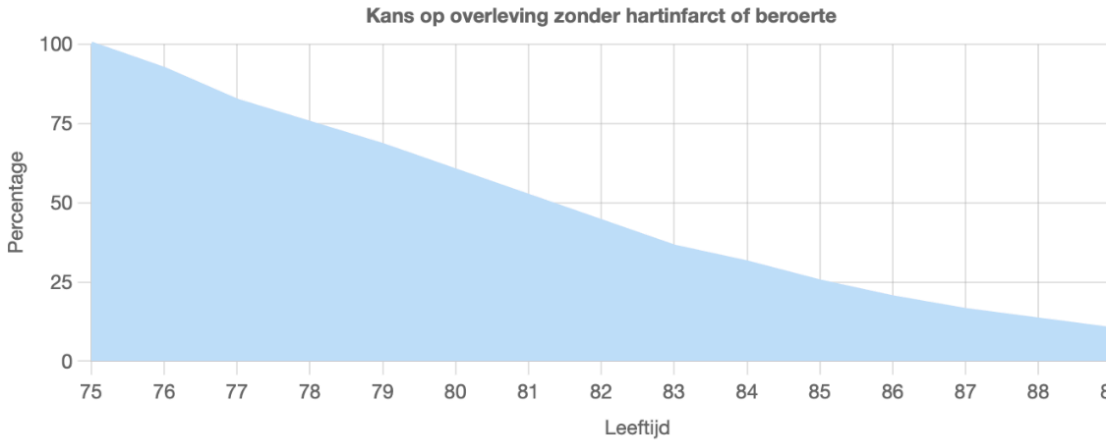
Levensverwachting (SMART-REACH)

Huidig 10-jaars risico op een hartinfarct, beroerte of CV event bij Jan: **54%**

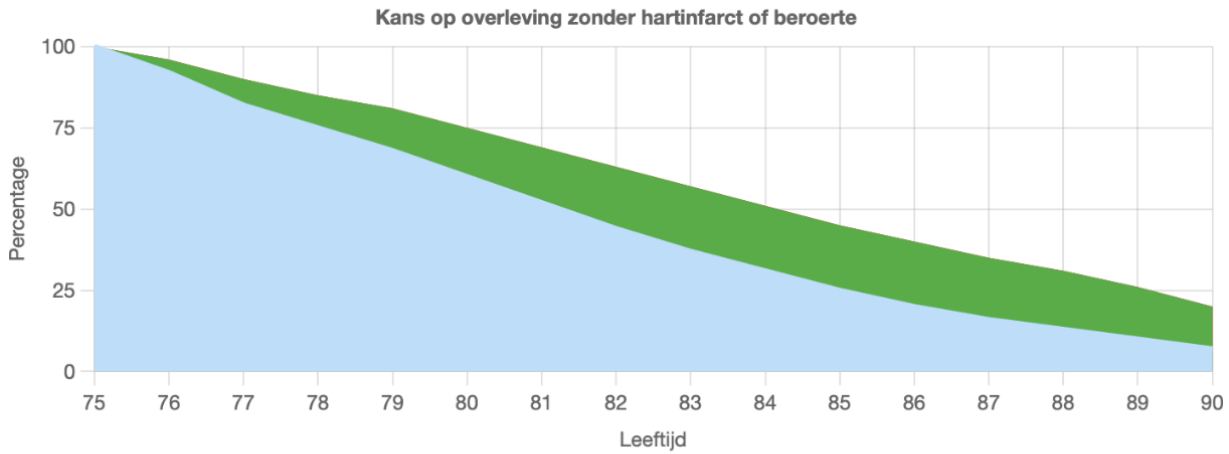
Behandeling bloeddruk <140 mmHg: winst 0.5 jaar
Ophogen statine: winst 0.6 jaar
HbA1C < 58 mmol/mol: winst 0.3 jaar
Lifestyle + mediterraan dieet: winst 1 jaar
Allen samen: 3 jaar

HVZ-Vrije jaren | 10-jaars risico | Lifetime risico



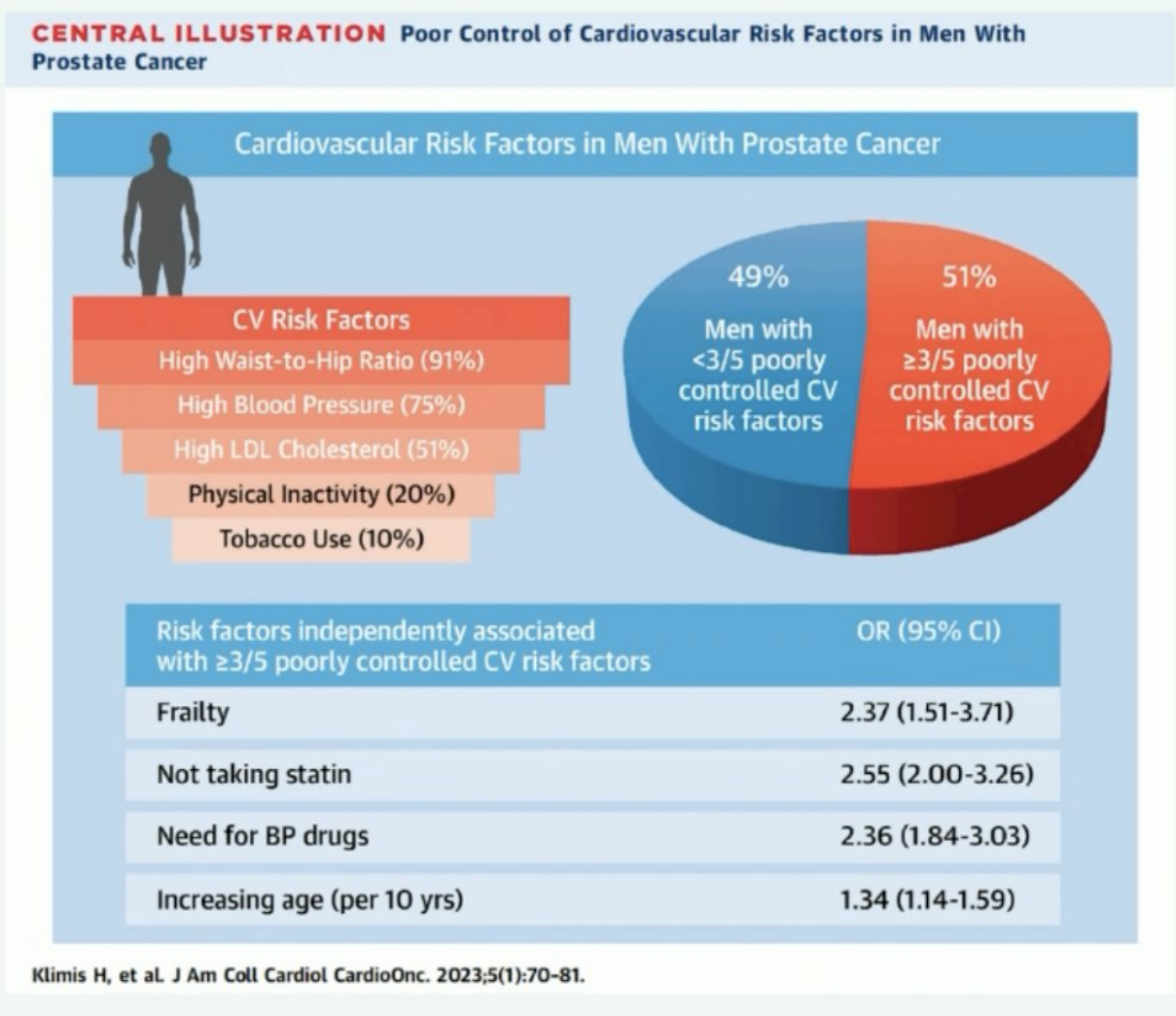
75	81	0
Startleeftijd behandeling	Levensverwachting	Gewonnen levensjaren

HVZ-Vrije jaren | 10-jaars risico | Lifetime risico



75	84	3
Startleeftijd behandeling	Levensverwachting	Gewonnen levensjaren

Zo goed doen we het nu niet…



Klimis *et l.* 2023 JACC: Cardiooncology

Wie?

Internist-vasculair geneeskunde?

Cardioloog?

Oncoloog?

Huisarts?

Verpleegkundige specialist?

Uroloog?

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Casus: Jan, 75 jaar

Low volume gemetastaseerd prostaatcarcinoom

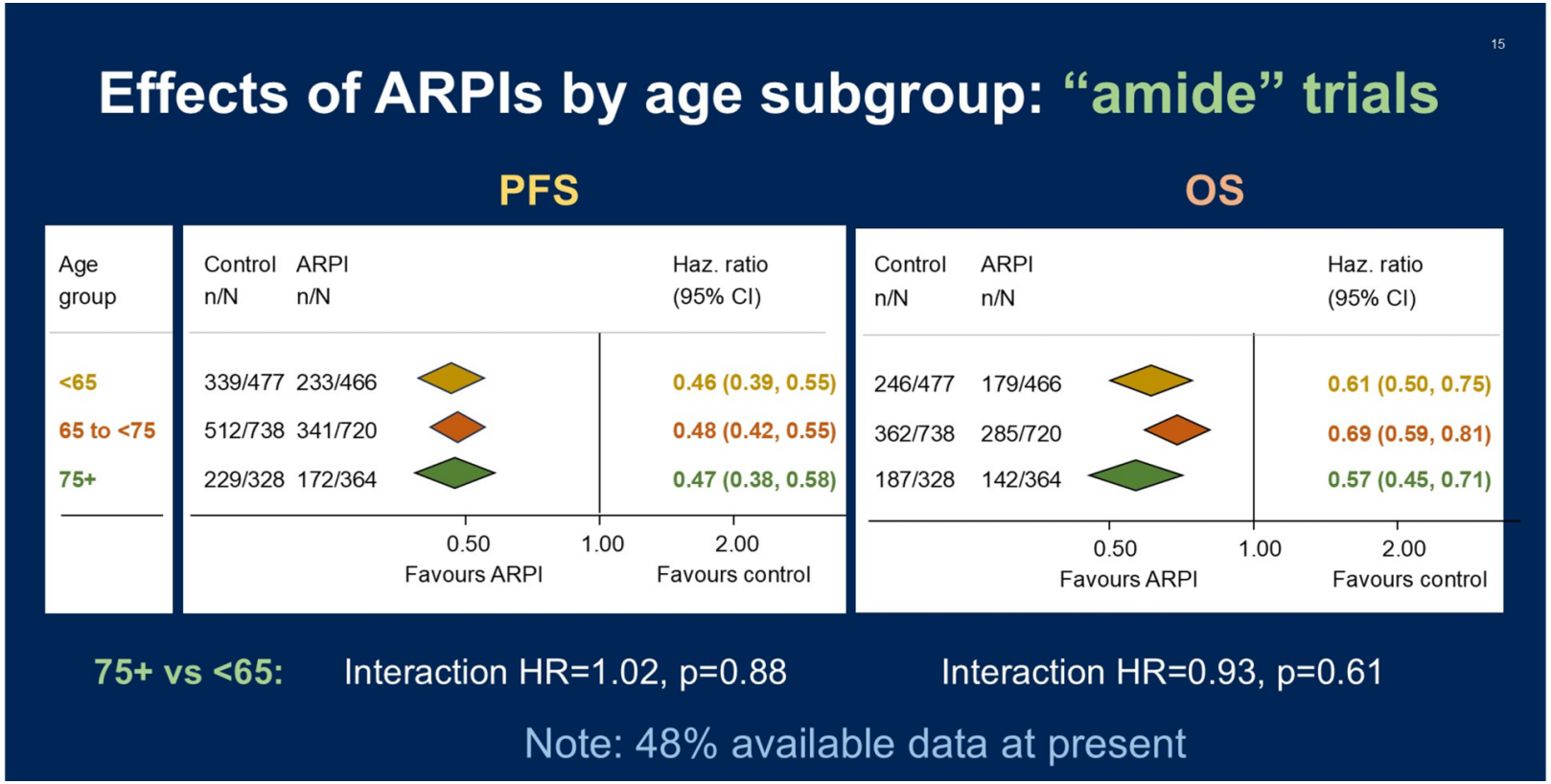
VG/ PTA, DM, Hypertensie, hoog cholesterol
Intox/ heeft gerookt

MDO advies = ADT + ARPI of radiotherapie prostaat

Welke ARPI?

ARPI en cardiovasculaire toxiciteit

Welke ARPI?
STOPCAP meta-analyse ARPI: ‘amides’



STOPCAP Fisher et al. Presented at ASCO GU 2025

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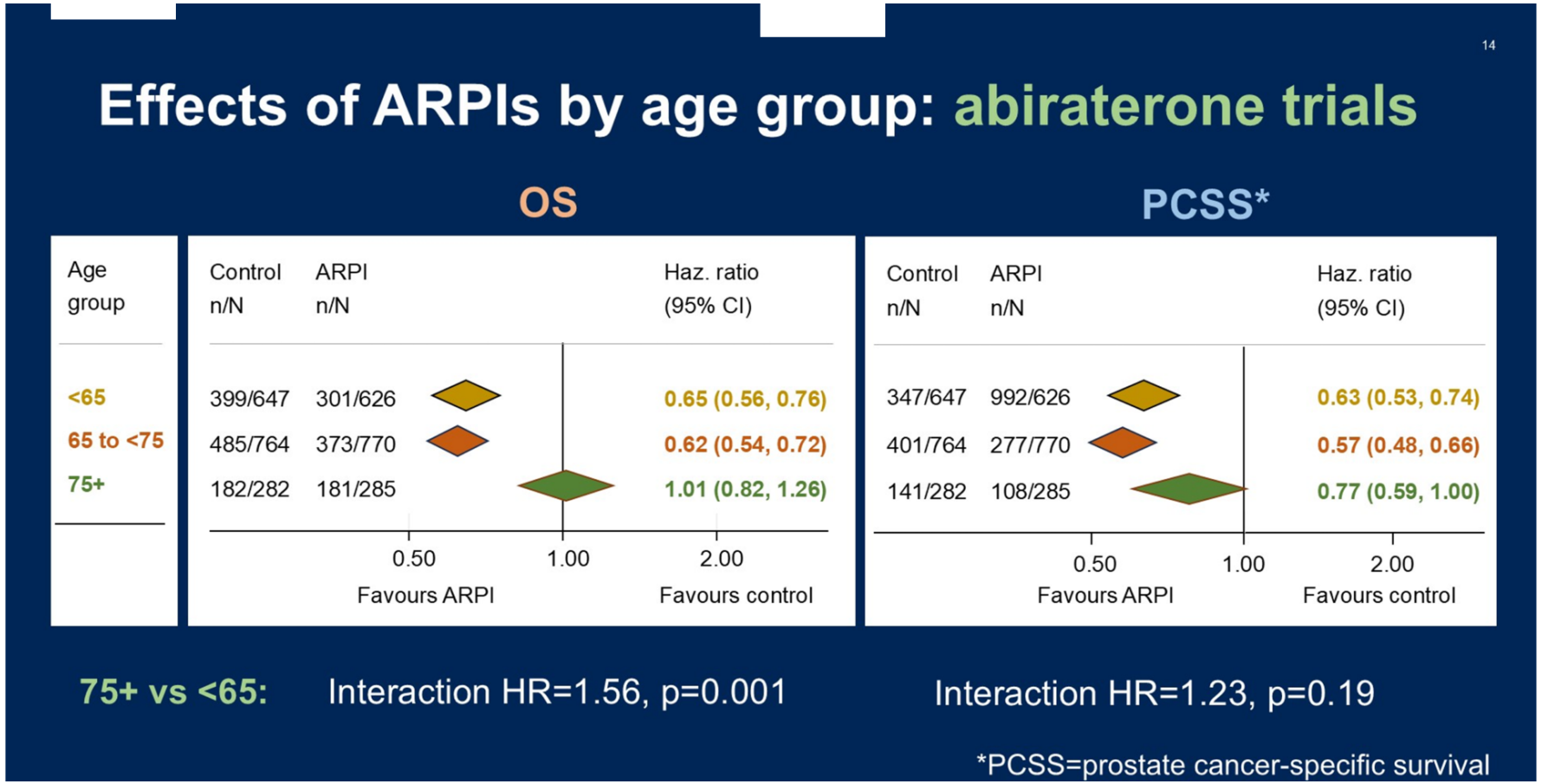
STOPCAP meta-analyse ARPI: **abirateron**



STOPCAP Fisher et al. Presented at ASCO GU 2025

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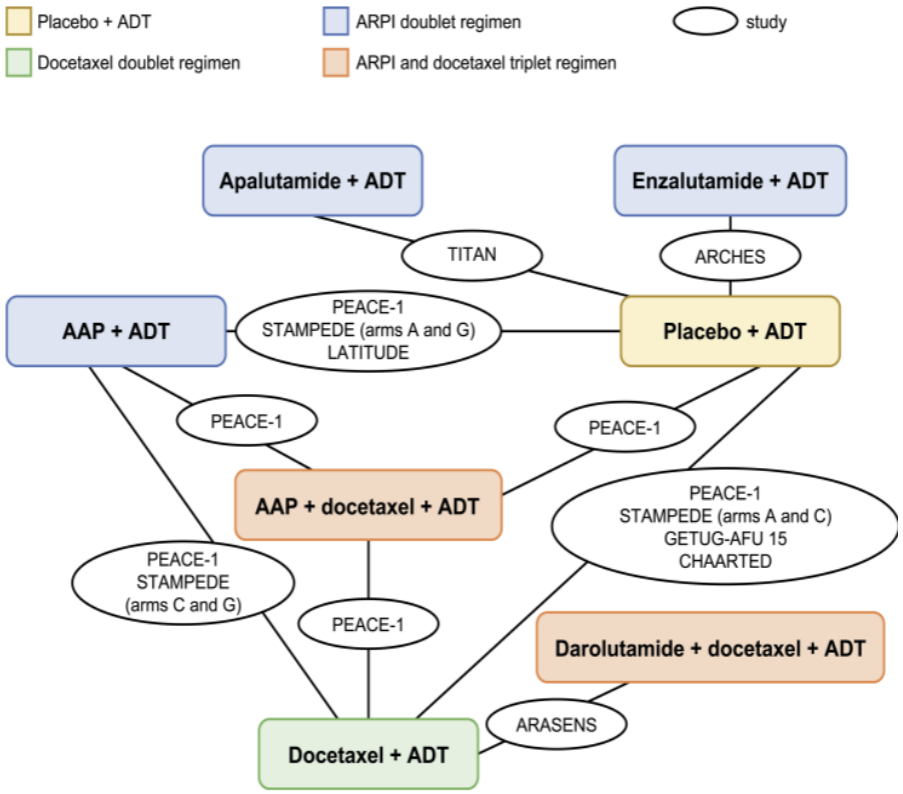
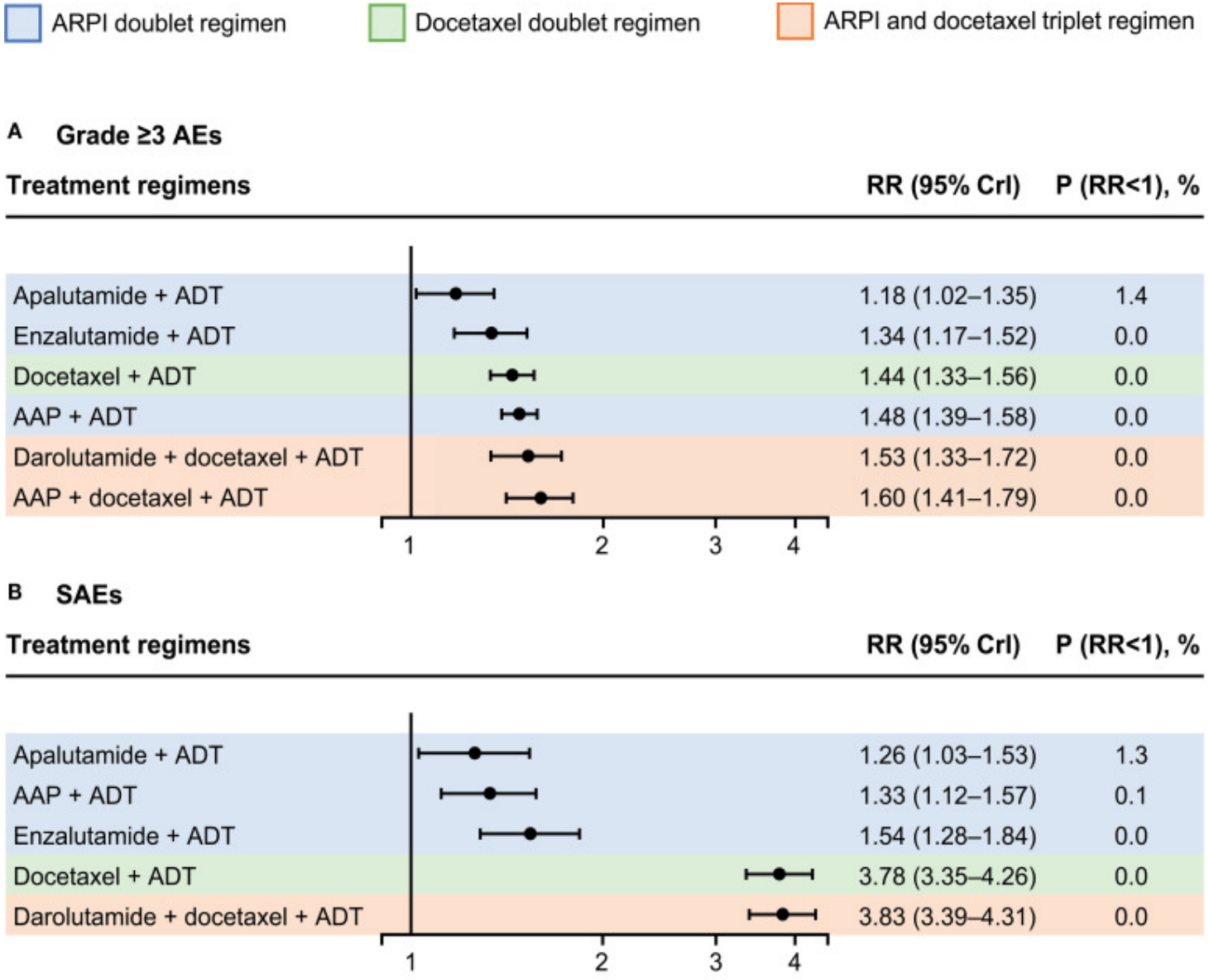
Abiraterone: 75+: geen OS-winst.
PCSS geen significant verschil, dus pt overlijden aan iets anders?
cardiovasculair?

ARPI bijwerkingen

Meta-analyse Di Maio et al (2025):
8 RCTs





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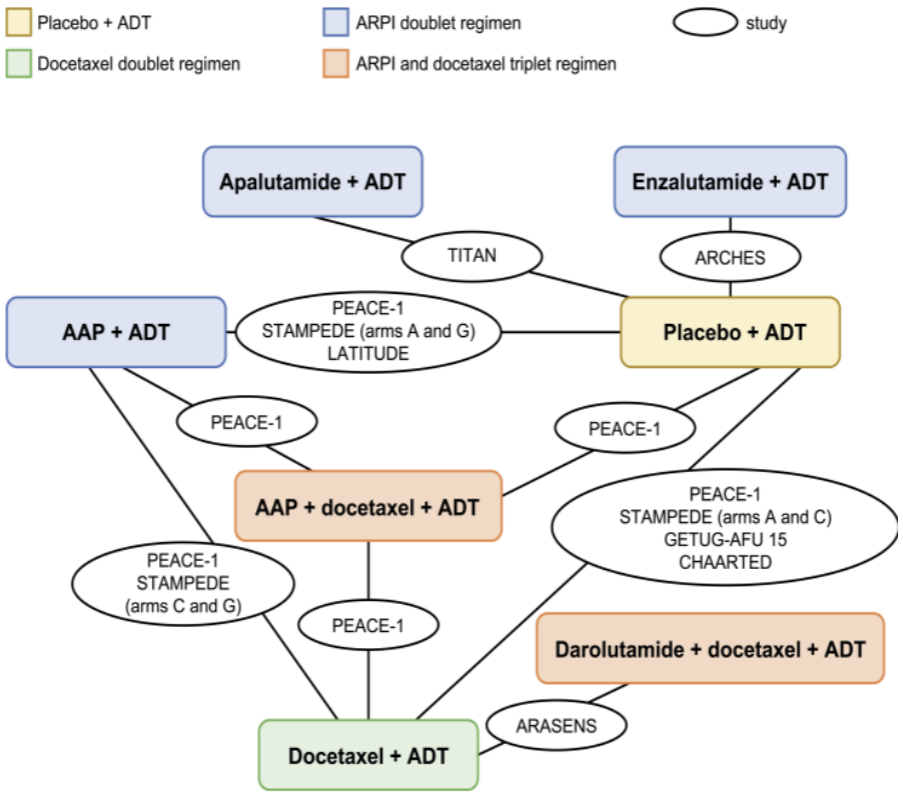
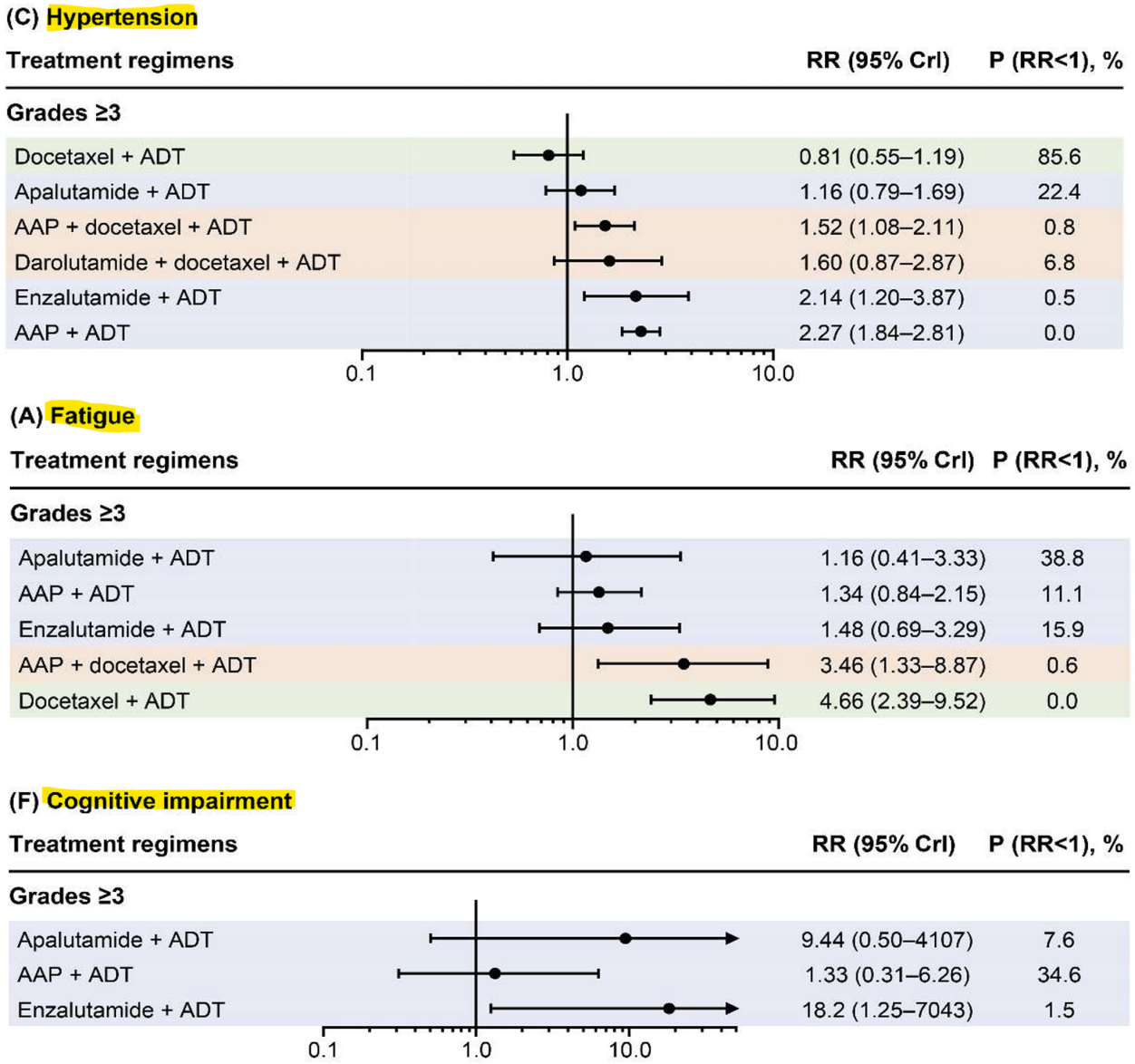
ARPI hypertensie, vermoeidheid, cognitief

Meta-analyse Di Maio et al (2025):
8 RCTs





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Di Maio et al. (2025) Front. Oncol. 15:1468928.

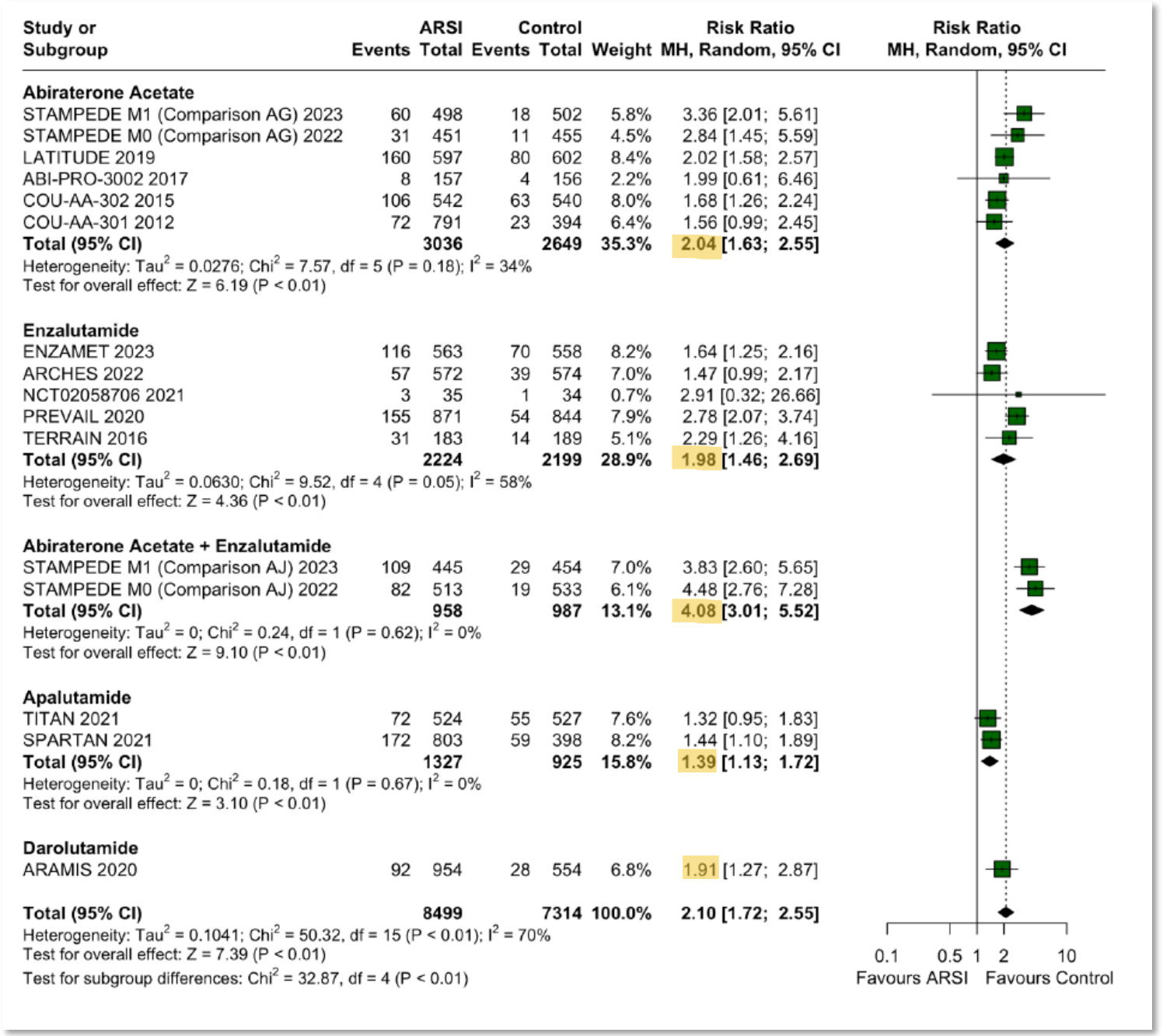
Alle ARPIs verhoogd risico op cardiovasculaire events

By ARPI Agent – Grade ≥ 3
on all different CV AEs cumulative

Risk ratios (highest to lowest):

- Abiraterone + Enzalutamide → RR 4.08
- Abiraterone → RR 2.04
- Enzalutamide → RR 1.98
- Darolutamide → RR 1.91
- Apalutamide → RR 1.39

grade ≥3 CV events based on ARPI



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El-Taji, Omar et al. *JAMA oncology* vol. 10,7 (2024): 874-884. doi:10.1001/jamaoncol.2024.1549 Supplemental Materials

ARPIs en interacties

↑ Strongly increased exposure to ARPI → high risk of toxicity

↑ Moderate increased exposure to ARPI → low risk of toxicity

↓ Strong reduction in exposure to ARPI → high risk of loss of efficacy of ARPI

Inducers/Inhibitors	APALUTAMIDE	ENZALUTAMIDE	DAROLUTAMIDE	ABIRATERONE
Inhibitor of CYP3A4 (ketoconazole, ritonavir, claritromicina)	↑	/	↑	↑
Inhibitor of CYP2C8 (gemfibrozil, clopidogrel)	↑	↑	/	/
Inducers of CYP3A4 (rifampicina)	/	/	↓	↓
Inducers of P-gp (rifampicina, fenitoina, fenobarbital)	/	/	↓	/

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SmPC of apalutamide, enzalutamide, darolutamide, abiraterone; Modified from Lopez-Campos et al, J. Pers. Med 2021

ARPI en comedicatie

THERAPEUTIC GROUP	INTERACTION	PHARMACEUTICAL RECOMENDATION
CARDIOVASCULAR SYSTEM	BISOPROLOL + ABIRATERONE/APALUTAMIDE	REDUCE BISOPROLOL DOSES
	ENZALUTAMIDE + DOXAZOSIN, LECARDIPINE, TORASEMIDE OR NEVIBOLOL	CHANGE THERAPY TO HYDRALAZINE, ANGIOTENSIN CONVERTING ENZYME INHIBITORS, FUROSEMIDE OR ATENOLOL
	STATINS + ENZALUTAMIDE/APALUTAMIDE	REPLACED BY EZETIMIBE OR FIBRATES
ANTITHROMBOTICS	DABIGATRAN, APIXABAN OR ACENOCOUMAROL ARE CONTRAINDICATED WITH ANTIANDROGENIC THERAPY	USE OF HEPARINS OR ORAL ANTICOAGULANTS WITH STRICT INR CONTROL
PROTON PUMP INHIBITORS (PPIS)	ENZALUTAMIDE + PPIS	USE OF PANTOPRAZOLE OR CHANGING TO AN ANTIH2
ANALGESICS	METAMIZOLE/TRAMADOL + ABIRATERONE/APALUTAMIDE	USE OTHER ANALGESIC DRUG

Casus: Jan, ~~69~~ 77 jaar

Low volume gemetastaseerd prostaatcarcinoom

VG/ PTA, DM, Hypertensie, hoog cholesterol
Intox/ heeft gerookt

MDO advies = ADT + ARPI of radiotherapie prostaat

Welke ARPI?

Gedachtespinsel abirateron vs enzalutamide vs apalutamide		
Abirateron + prednison	**Enzalutamide**	**Apalutamide**
Weinig cognitieve klachten gerapporteerd	Minder risico op CV events	Minder risico op CV events
Minder interacties met medicatie	Lijkt effectiever bij pt > 75 jaar	Lijkt effectiever bij pt > 75 jaar
Goedkoper Minder evidence in laag-volume	Geen interactie met voeding, geen prednison	Geen interactie met voeding, geen prednison, minder cognitieve klachten gerapporteerd

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Casus: Jan, ~~75~~ 77 jaar

Low volume gemetastaseerd prostaatcarcinoom

VG/ PTA, DM, Hypertensie, hoog cholesterol
Intox/ heeft gerookt

+ myocardinfarct wv stent 2023 waardoor hartfalen
LVEF 35%

A/ erg snel kortademig

MDO advies = ADT + ARPI of radiotherapie prostaat

Rol ADT monotherapie?

NB. 10jr overleving slechts 2% op basis van Charlson Comorbidity Score los van zijn prostaatkanker

Charlson comorbidity index (CCI)

Table 3. CCI (Charlson comorbidity index) score.

Comorbidity	Score
Prior myocardial infarction	1
Congestive heart failure	1
Peripheral vascular disease	1
Cerebrovascular disease	1
Dementia	1
Chronic pulmonary disease	1
Rheumatologic disease	1
Peptic ulcer disease	1
Mild liver disease	1
Diabetes	1
Cerebrovascular (hemiplegia) event	2
Moderate-to-severe renal disease	2
Diabetes with chronic complications	2
Cancer without metastases	2
Leukemia	2
Lymphoma	2
Moderate or severe liver disease	3
Metastatic solid tumor	6
Acquired immuno-deficiency syndrome (AIDS)	6

doi:10.1371/journal.pone.0154627.t003

Charlson ME, et al. J Chronic Dis. 1987;40(5):373-83.

Casus: Jan, 77 jaar

Low volume gemetastaseerd prostaatcarcinoom

VG/ PTA, DM, Hypertensie, hoog cholesterol
Intox/ heeft gerookt

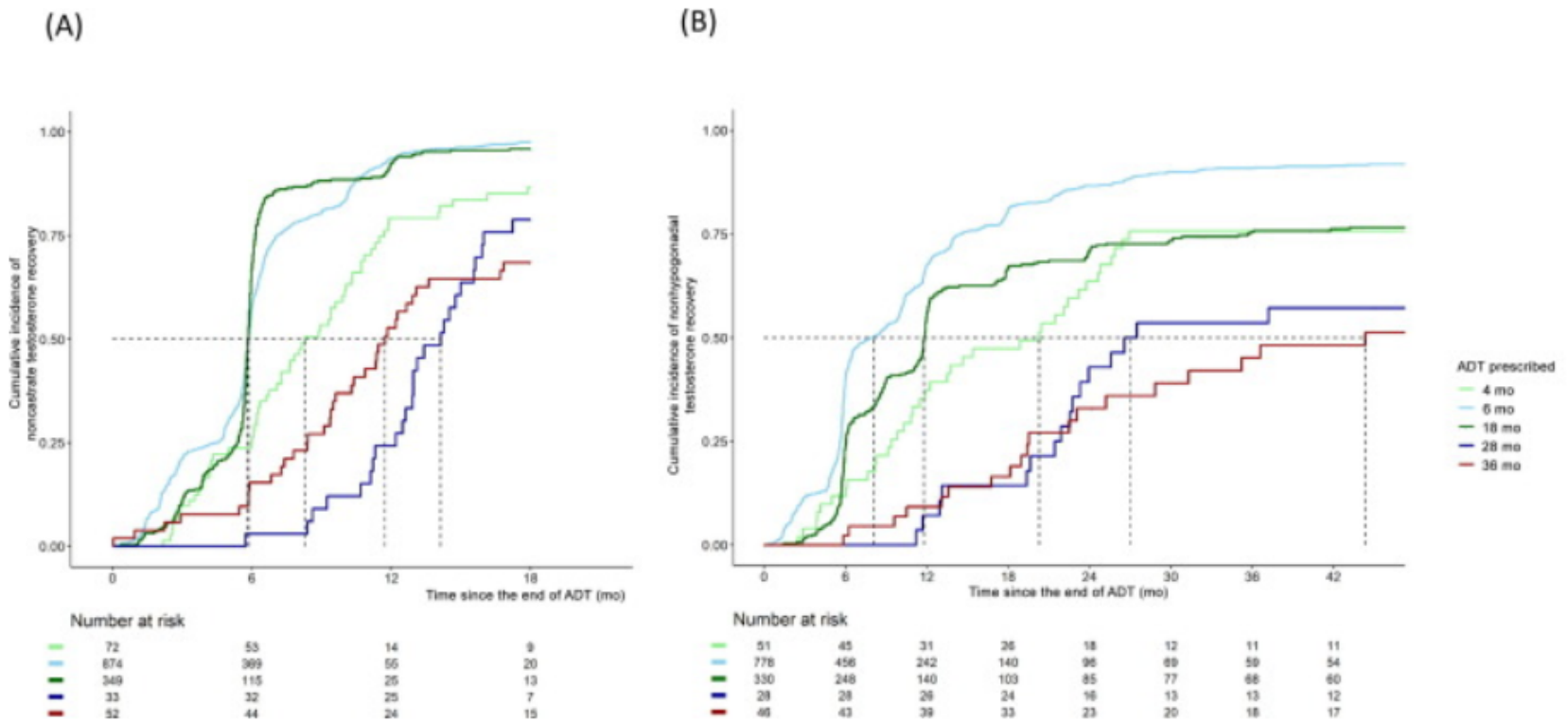
Nu 2 jaar gebruik van ADT + abirateron + prednison: PSA al 2 jaar < 0,10ug/L

Nu opgenomen op CCU met myocardinfarct wv dotter met stent en start dubbele plaatjesremmers

Wat nu?

- ADT en abirateron continueren
- ADT continueren, abirateron staken
- ADT continueren, abirateron switchen naar enzalutamide of apalutamide
- ADT én abirateron staken

Herstel testosteron na staken ADT



Ong et al; Eur Uro (jan 2025)

Cardiotoxiciteit bij prostaatkanker

Cardiovasculair risicomanagement:

- Rol bij opstellen behandelplan
- Follow-up en behandeling ervan moet vaste rol in zorgpad krijgen

Vragen?

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