

Arutusvead radioloogias

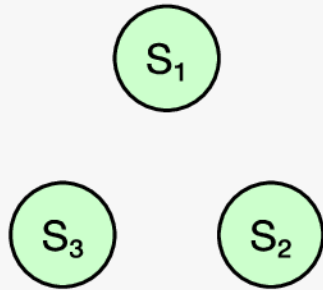
Julius Juurmaa



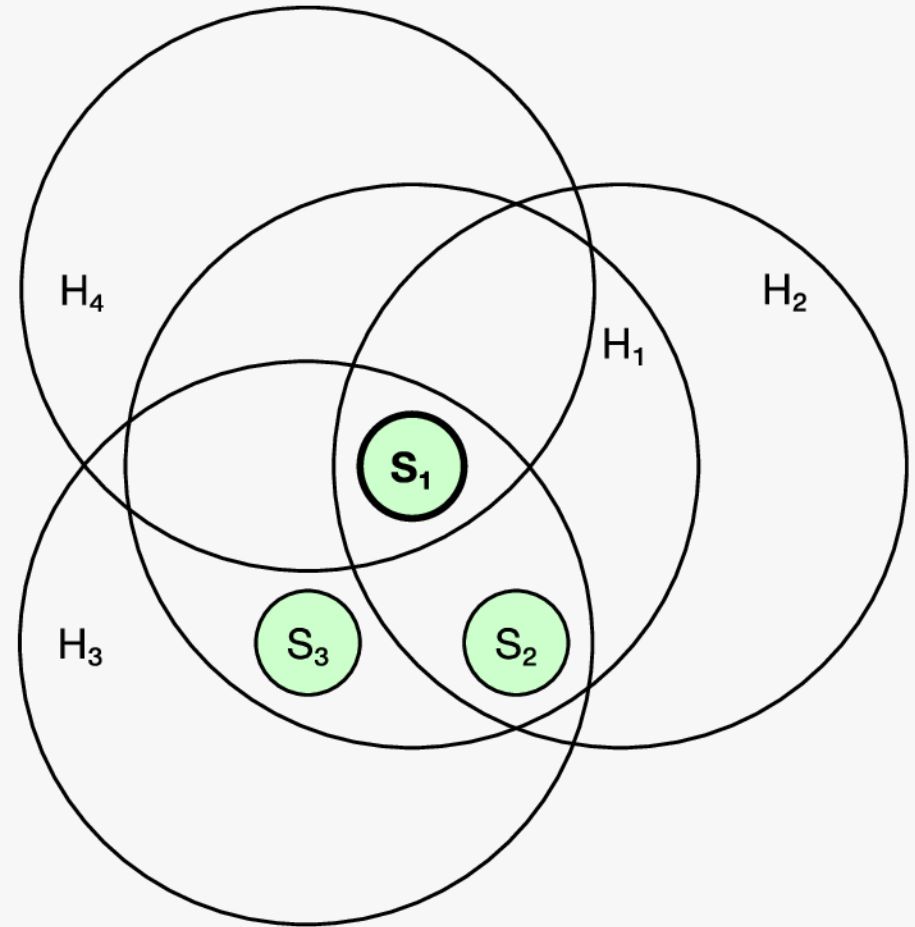
IDA-TALLINNA KESKHAIGLA



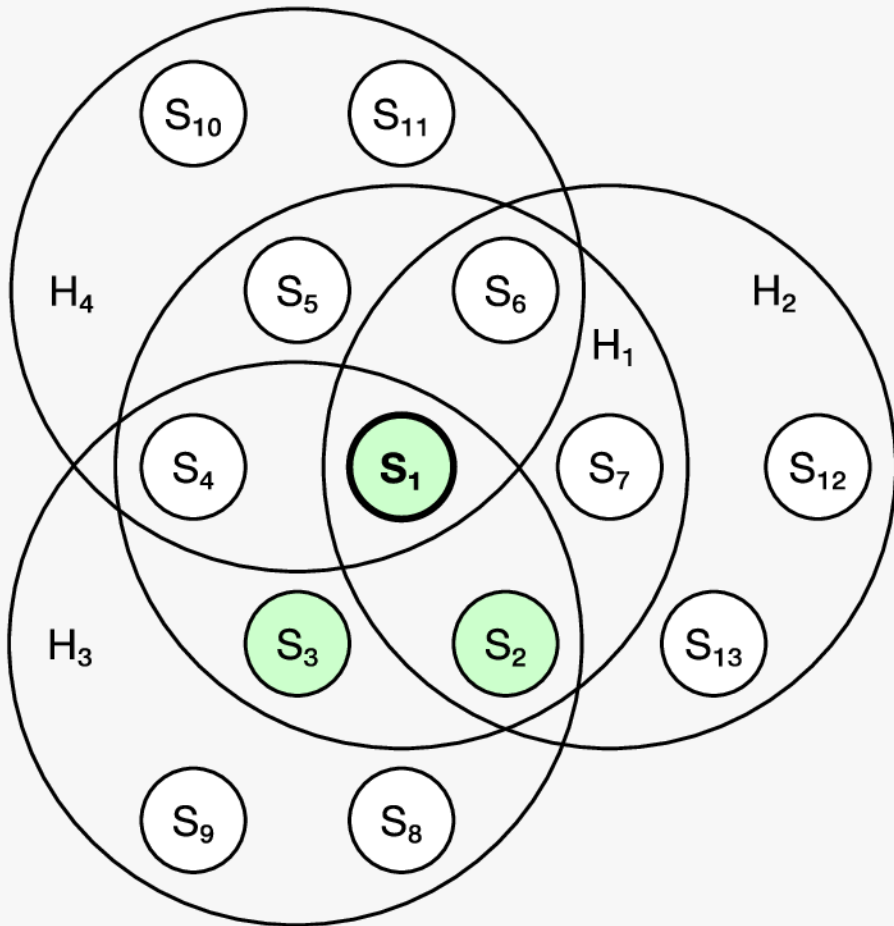
1. Vaatlus



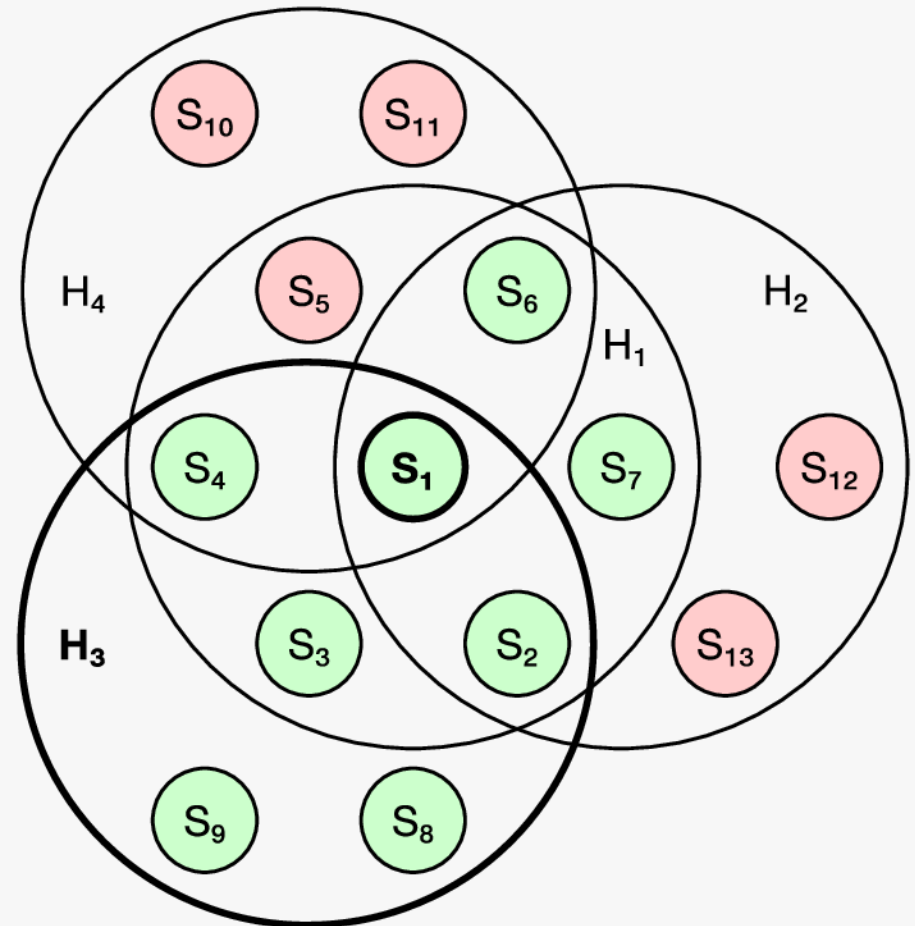
2. Abduktsioon



3. Deduktsioon



4. Induktsioon



Kognitsiooni kahe protsessi teooria

- Süsteem 1

- alateadlik
- stereotüüpne, emotsionaalne
- nõuab vähe aega
- nõuab vähe energiat
- struktuur defineerib meid
- igapäevaelus asendamatu
- kliinilises kontekstis võib olla nii kasulik kui ka ohtlik

- Süsteem 2

- teadvustatud
- loogiline, kalkuleeriv
- nõuab palju aega
- nõuab palju energiat
- meie defineerime struktuuri
- igapäevaelus võib olla nii kasulik kui ka ohtlik
- kliinilises kontekstis asendamatu

THINKING, FAST AND SLOW



DANIEL

KAHNEMAN

WINNER OF THE NOBEL PRIZE IN ECONOMICS

“A general *law of least effort* applies to cognitive as well as physical exertion. The law asserts that if there are several ways of achieving the same goal, people will eventually gravitate to the least demanding course of action. In the economy of action, effort is a cost, and the acquisition of skill is driven by the balance of benefits and costs. Laziness is built deep into our nature.”

Kliiniline mõtlemine

Esmane vaatlus

Esmane käsitus

Juhtiva tunnuse identifitseerimine

Diferentsiaaldiagnostilise rea koostamine

Teisene vaatlus ja instrumentaaldiagnostika

Kõige tõenäolisema diagnoosi identifitseerimine

Lõplik käsitus

Radioloogiline mõtlemine

Esmane vaatlus

Esmane kommunikatsioon

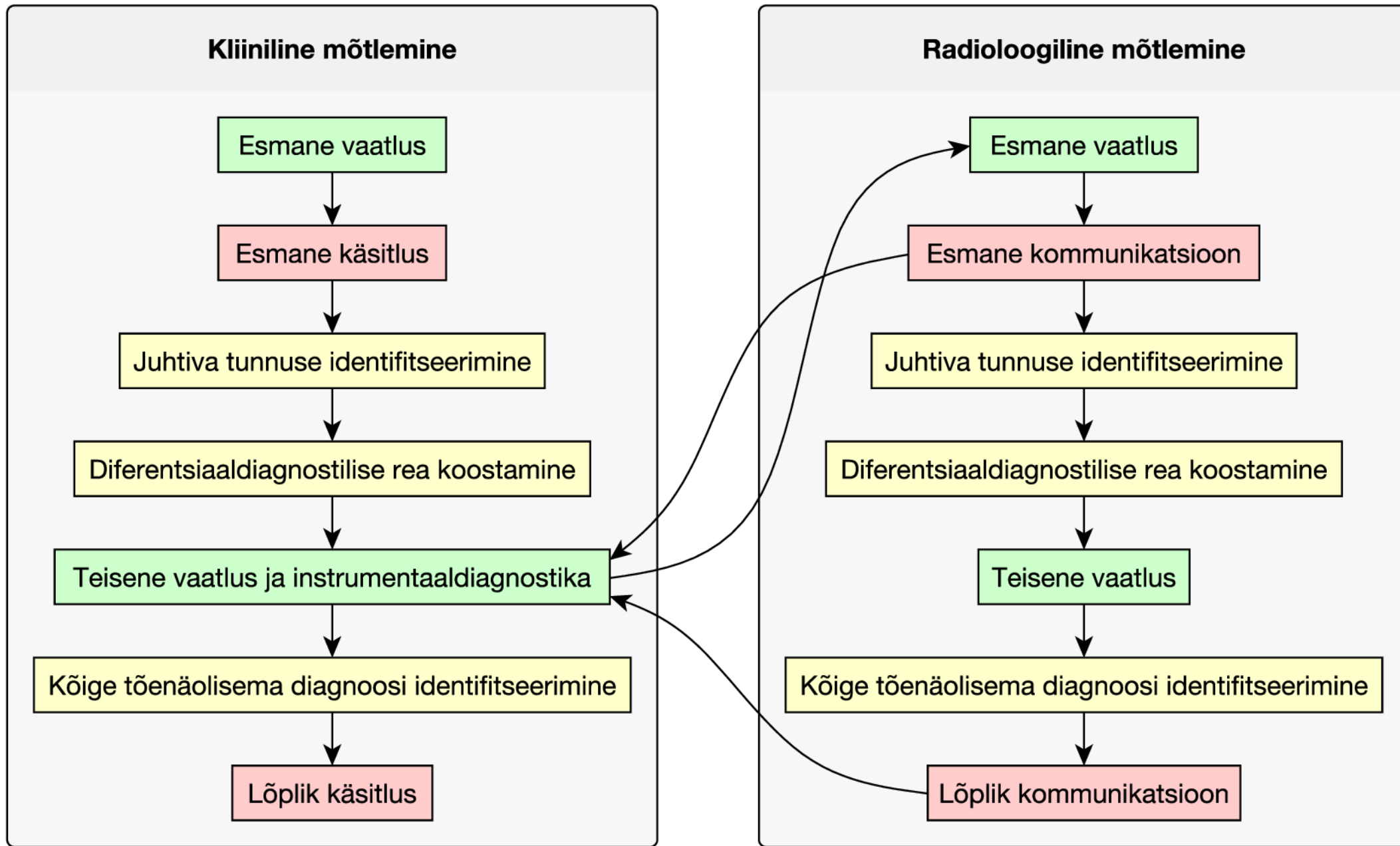
Juhtiva tunnuse identifitseerimine

Diferentsiaaldiagnostilise rea koostamine

Teisene vaatlus

Kõige tõenäolisema diagnoosi identifitseerimine

Lõplik kommunikatsioon

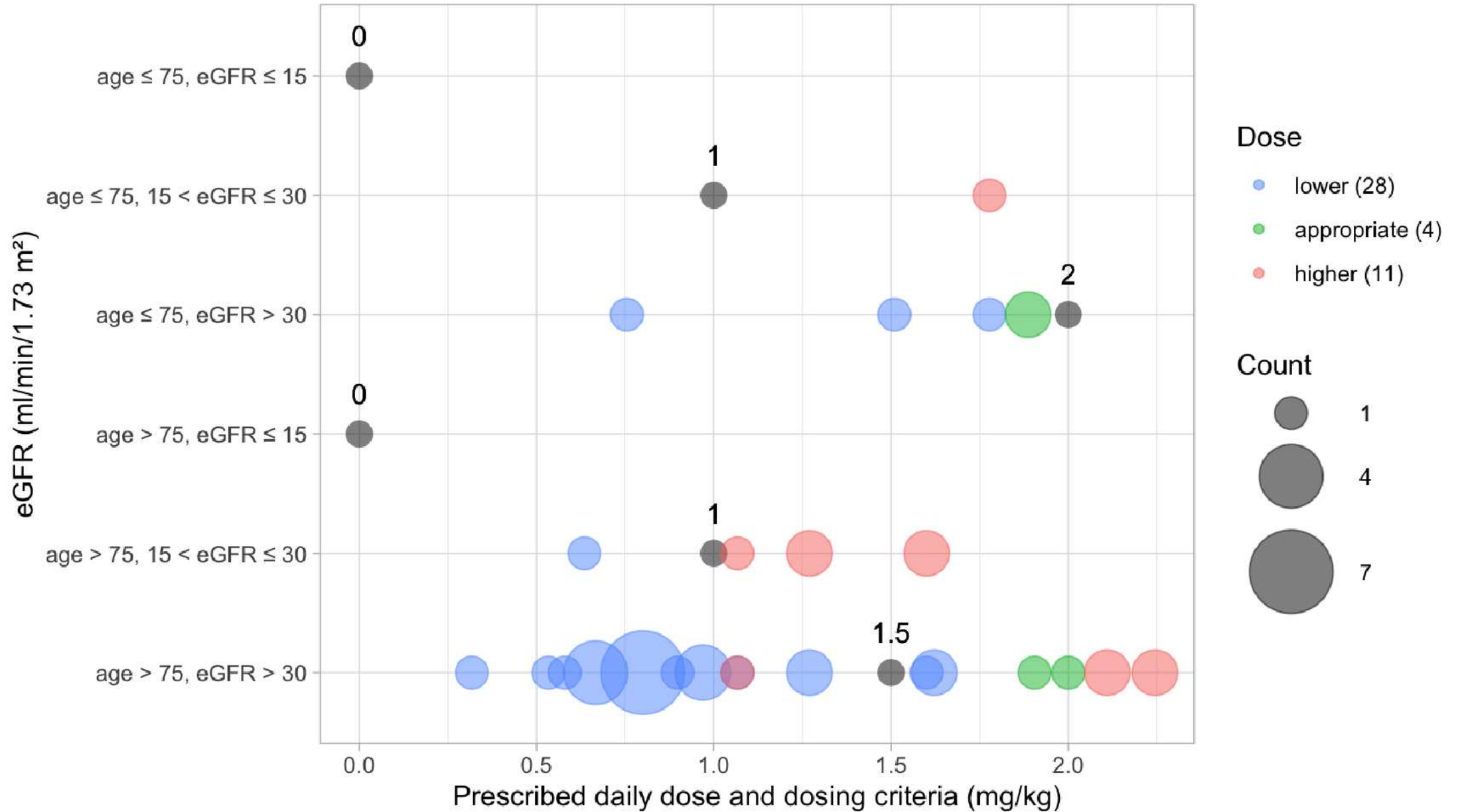


Alustame probleemi tunnistamisest

- 5—14% erakorralistest patsientidest jääb õige diagnoos panemata või viibib, lahkamisuuringutes on diagnostilise vea määr 10—20%
- Kui diagnoos on õige, ei saa kuni 45% patsientidest tõenduspõhist ravi, samal ajal 20—30% patsientidest saab ravi, mida pole vaja
 - Neale G, et al. J R Soc Med 2001; 94: 322—30
 - Aalten CM, et al. Neth J Med 2006; 64: 186—90
 - McGlynn EA, et al. N Engl J Med 2003; 348: 2635—45
- Pooltel juhtudest on tegu arutlusveaga—veaga, mis juhtub info kogumise, sünteesimise või otsustamise käigus
 - Thomas EJ, et al. Med Care 2000; 38: 261—71
 - Wilson RM. Med J Aust 1999; 170: 411—5

Enoxaparin (subcutaneous) for vte

43 prescription × days analyzed



Metoclopramide (intravenous)

50 prescription × days analyzed

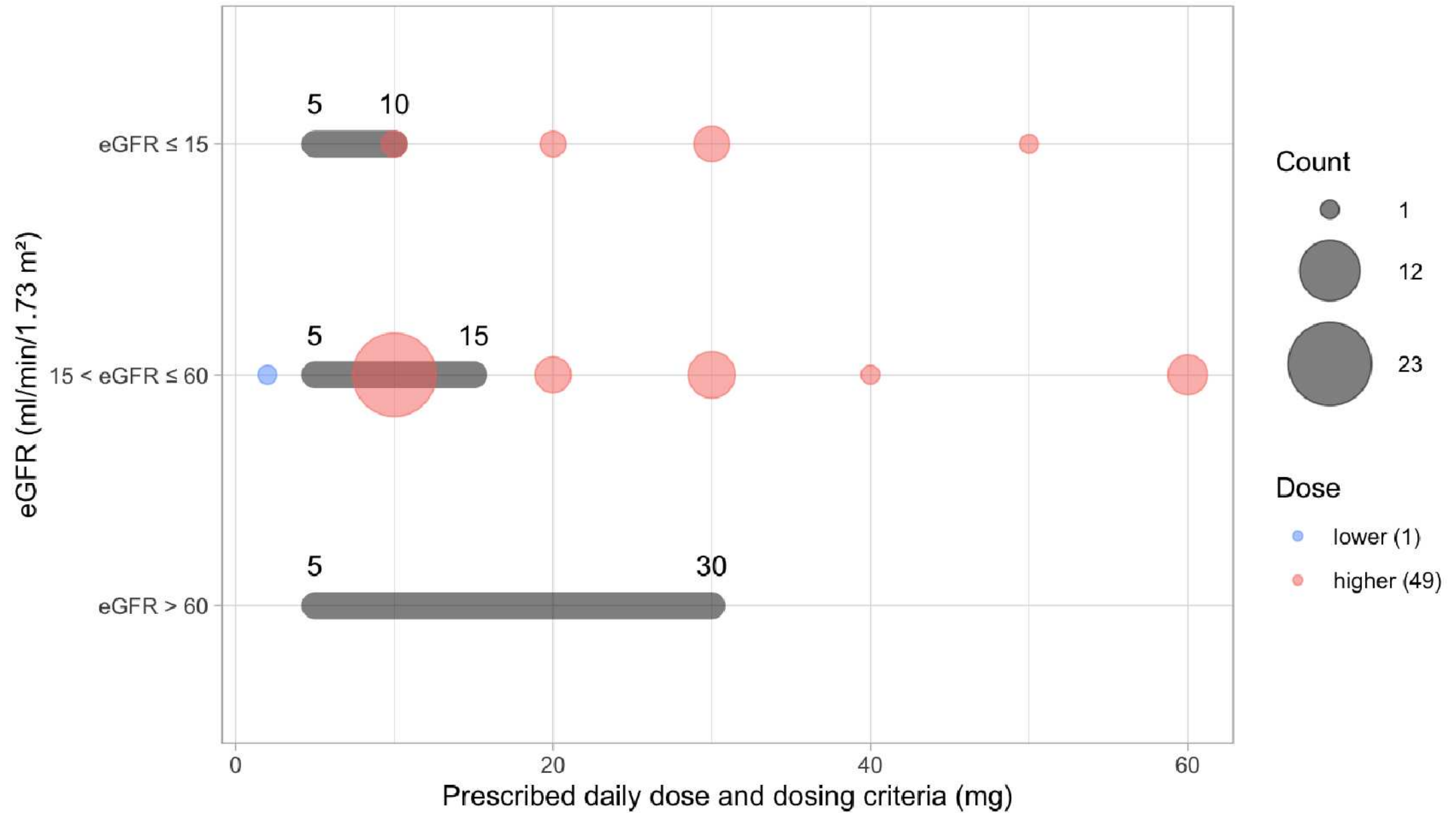


Table 2: Types of Cognitive Biases

Cognitive Bias	Definition	Strategies to Counteract Bias
Anchoring bias	Failing to adjust an initial impression, despite receiving additional information	Gather all available clinical data before making a diagnosis, seek to disprove one's initial diagnosis, and seek a second opinion
Confirmation bias	Searching for data to reaffirm an existing hypothesis	Reexamine and seek new evidence, particularly that which supports alternate hypotheses Be conscious of the psychologic impact of retracting an initial diagnosis
Availability bias	Judging the probability of an event by the ease with which it comes to mind	Use objective data on the base rates of disease to correlate with one's own rates of diagnosis, and create a differential diagnosis
Satisfaction of report	Perpetuating an impression from a prior report	Review the examination and generate an impression before reviewing the prior report, and consider a second opinion
Framing bias	Drawing different conclusions from the same information, depending on how the information is presented	Consider other organ systems or causes Read an image first while the clinical history and the side of concern are masked, and then review the history Review the patient's chart if the provided history substantially impacts the diagnosis

Table 2: Types of Cognitive Biases

Cognitive Bias	Definition	Strategies to Counteract Bias
Attribution bias	Attributing findings to patient characteristics or stereotypes	Be aware of this bias Read an image first while the clinical history is masked, and then review the history Review the patient's chart if the demographic information impacts how the diagnosis is formulated
Satisfaction of search	Decreasing vigilance and/or awareness for additional abnormalities after differentiating the first abnormality	Use a systematic or checklist approach, particularly for common and commonly missed diagnoses Initiate a secondary search after differentiating the first finding Remain aware of related diagnoses and common diagnostic combinations
Premature closure	Accepting a preliminary diagnosis as final	Keep an open mind when formulating a working diagnosis, and generate a differential diagnosis
Inattentional bias	Missing findings hiding in plain sight due to unexpected location or nature	Know one's own blind spots, and always step back to look at the big picture
Hindsight bias	Retrospectively de-emphasizing the difficulty in making the initial diagnosis	Do not lose confidence or become overconfident as a result of retrospective analysis, and try to understand a colleague's perspective

Table 3: Questions to Guide a Strategic Approach for Unbiased Interpretation

Task	Questions to Guide Unbiased Interpretation
Generate a hypothesis: formulate a likely or differential diagnosis	What other diagnosis could this be? What cases have I seen often or recently that might impact my interpretation? What information or diagnoses have I forgotten to consider?
Interpret the data: confirm that the diagnosis is appropriate for the clinical scenario	Which aspects of the clinical information do not fit with my initial diagnosis, and do those aspects support an alternate diagnosis? Would I have made this diagnosis if I had a different clinical history? Would I have suspected this diagnosis if I did not know the patient's demographic information? Would I have diagnosed this if I interpreted the prior study myself and did not read the prior impression?
Verify the diagnosis: ensure that a thorough evaluation has been performed	Did I adhere to my primary and secondary search patterns? Did I remember to check my blind spots? Do I have enough information to make a final diagnosis?

Mida me teha saame

- Individuaalselt

- muutuseid otsime süstemaatiliselt
- kirjutame võimaluste piires lahti diferentsiaaldiagnostilise rea ja selle kitsendamise protsessi
- harjutame sisse mõned kognitiivsed kontrollpunktid
- teadvustame emotsioone, mida patsiendid ja kolleegid meis tekitama kipuvad
- õpime armastama viga

- Süsteemi tasemel

- vähendame, kus võimalik, segavaid tegureid, nt tööjaotuse ja adekvaatsete infosüsteemidega
- vähendame, kus võimalik, otsustuskohti, nt protokollidega
- teeme follow-upi nii lihtsaks kui võimalik, sh radioloogilise ja patoloogilise leiu korrelatsiooni
- rohkem teist lugemist
- õpime armastama viga

Mida me teha saame

• In

Vananev rahvastik sunnib rajama kombinaathaiglat

- Suurhaiglas nõrgeneb kontakt patsiendi ja arsti vahel.
- Haiglate koondamisest loodetakse ravikvaliteedi tõusu.

tekitama kipuvad

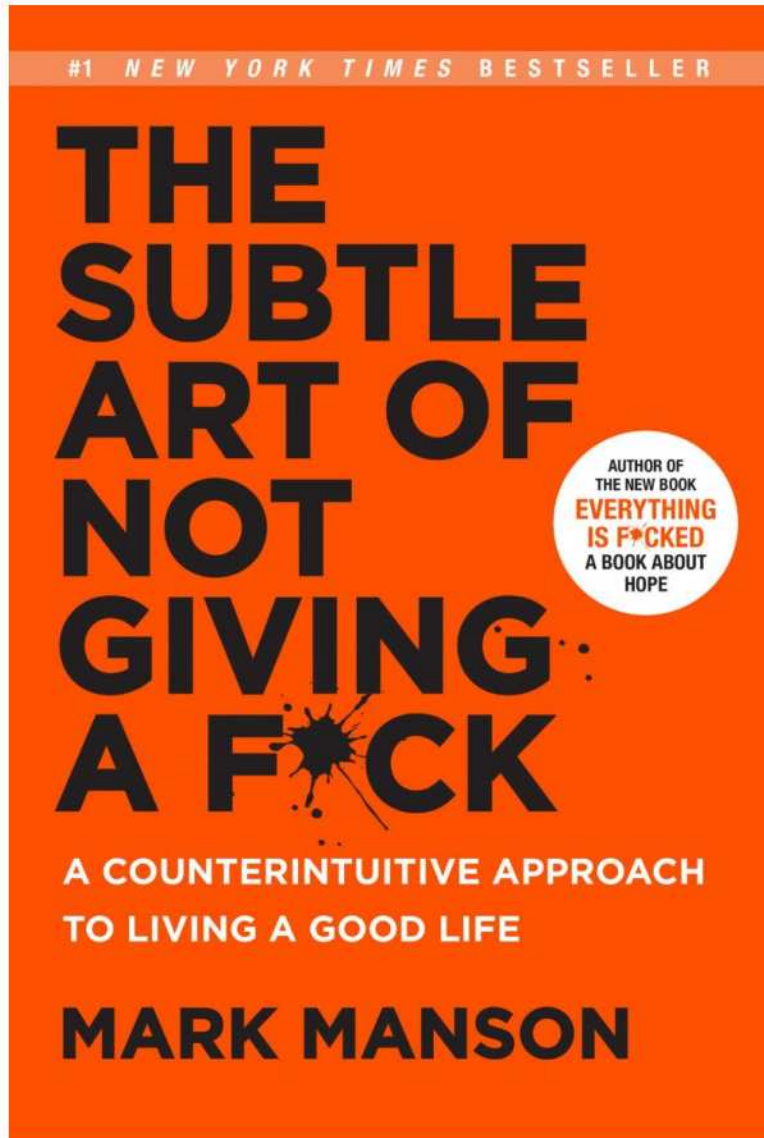
- õpime armastama viga

• rohkem teist lugemist

- õpime armastama viga

Õpime armastama viga

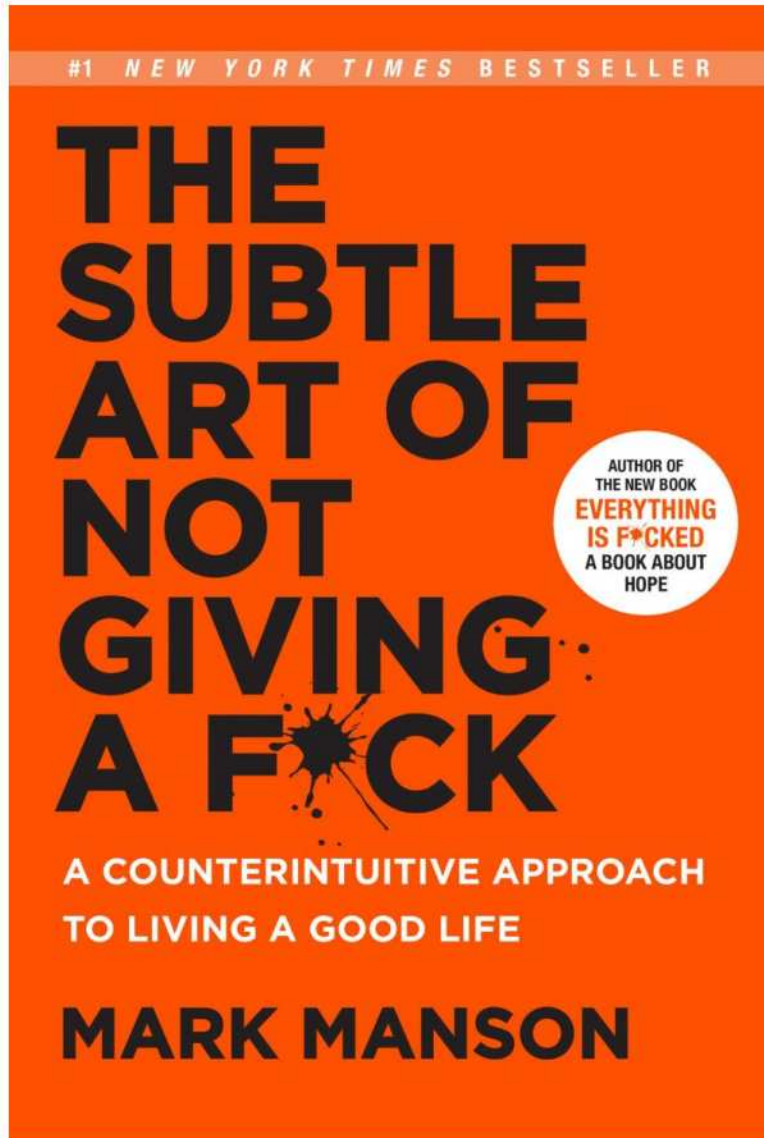
- Kui viga juhtub, küsime endalt kaks küsimust
 - kas viga juhtus vaatlusel, abduktsioonil, deduktsioonil või induktsioonil
 - millise arutlusveaga oli tegu? kas me järgmisel korral suudame seda vältida?
- Viga ütleb meile midagi olulist enda kohta
 - osutades ohukohale meie mõtlemises, mis võiks pigem varem kui hiljem välja tulla—optimaalselt muidugi residentuuri ajal
- Viga ütleb teistele midagi olulist meie kohta
 - pikas perspektiivis defineerib meid arstina see, kuidas me käitume iseenda ja (iseäranis!) kolleegide vigadega
 - kuidas me küsime tagasisidet, kuidas me anname tagasisidet



“When I was young, any time my family got a new VCR or stereo, I would press every button, plug and unplug every cord and cable, just to see what everything did. With time, I learned how the whole system worked. And because I knew how it all worked, I was often the only person in the house who used the stuff.

As is the case for many millennial children, my parents looked on as if I were some sort of prodigy. To them, the fact that I could program the VCR without looking at the instruction manual made me the Second Coming of Tesla.

It’s easy to look back at my parents’ generation and chuckle at their technophobia. But the further I get into adulthood, the more I realize that we all have areas of our lives where we’re like my parents with the new VCR: we sit and stare and shake our heads and say: but how? When really, it’s as simple as just doing it.”



“Everything worthwhile in life is won through surmounting the associated negative experience. Any attempt to escape the negative, to avoid it or quash it or silence it, only backfires.

The avoidance of suffering is a form of suffering. The avoidance of struggle is a struggle. The denial of failure is a failure. Hiding what is shameful is itself a form of shame.

Pain is an inextricable thread in the fabric of life, and to tear it out is not only impossible, but destructive: attempting to tear it out unravels everything else with it. To try to avoid pain is to give too many fucks about pain.

In contrast, if you’re able to not give a fuck about the pain, you become unstoppable.”

#1 NEW YORK TIMES BESTSELLER

THE SUBTLE ART OF NOT GIVING A F*CK

AUTHOR OF
THE NEW BOOK
**EVERYTHING
IS F*CKED**
A BOOK ABOUT
HOPE

A COUNTERINTUITIVE APPROACH
TO LIVING A GOOD LIFE

MARK MANSON

“You and everyone you know are going to be dead soon. And in the short amount of time between here and there, you have a limited amount of fucks to give. Very few, in fact. And if you go around giving a fuck about everything and everyone without conscious thought or choice—well, then you’re going to get fucked.”

Kirjandus

- Busby L, et al. Bias in radiology: the how and why of misses and misinterpretations. *RadioGraphics* 2018; 38: 236—47
- Kahneman D. *Thinking, fast and slow*. New York: Farrar, Straus and Giroux; 2011. 499 p.
- Lawson AE, et al. Inferences of clinical diagnostic reasoning and diagnostic error. *J Biomed Inform* 2011; 44: 402—12
- Lee C, et al. Cognitive and system factors contributing to diagnostic errors in radiology. *Am J Roentgenol* 2013; 201: 611—17
- Manson M. *The subtle art of not giving a fuck*. San Francisco: HarperOne; 2016. 224 p.

Kliiniline küsimus

- N 60
- Kuu aega kõhuvalu, mis viimase 3 päeva jooksul on ägenenud, lisandunud on palavik, iiveldus ja oksendamine
- CRV 280 mg/ml, WBC 12×10^9 rakku/l
- Koletsüstiit? divertikuliit?
- Võrdluseks varasemaid radioloogilisi uuringuid arhiivist ei leia

- Maks on suurenenud /cc suunas 210 mm/, selle tihedus natiivkujutistel veidi langenud /+45 HU ümber/. Vasaku sagara S4b on geograafilise kontuuriga veidi väljendunud tiheduse langus. Põrn on samuti veidi suurenenud /pikimõõt 145 mm/
- Väikesed sõlmjad tihenemised mõlemas /vasakus enam kui paremas/ neerupealises /natiivkujutistel +5 HU ümber/
- Omentumi tagasihoidlik infiltreeritus
- Käärsooles on üksikud divertiikulid, sigmakäärsoole sein on paksenenud /d kuni 10 mm/ u 60 mm pikkusel alal. Sooleseina kihid on üksteisest halvasti eristatavad. Muutuse ümber on mitmed piirdunud vaba gaasi kogumikud ja vaba vedelik vaagnapõhjas, muutusest lähtub suurem vaba gaasi kogumik kõhu eesseina poole. Külgnev peritoneum kontrasteerub intensiivsemalt
- Veidi suurenenud ümarad lümfisõlmed /d kuni 8 mm/ sigmakäärsoole kinnistis ja paraaortaalsel
- Spondüloos rinnasegmentides, osteokondroos ja fassetliigeste OA nimmesegmentides /enam L4 – S1/

Bowel wall thickening

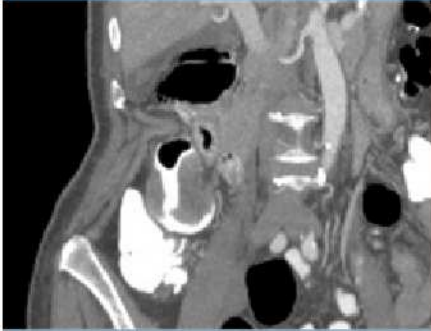
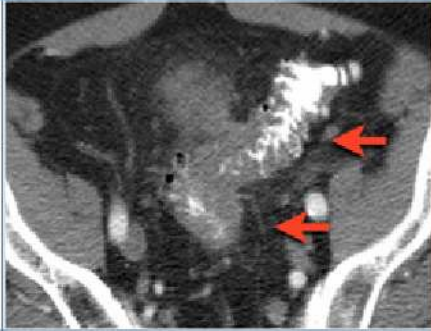

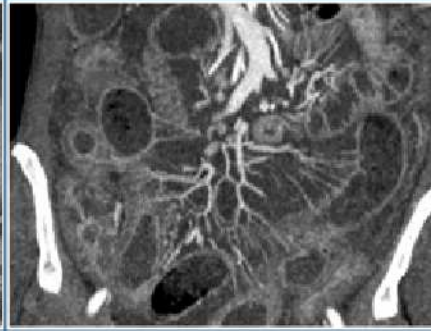
- Enhancement pattern



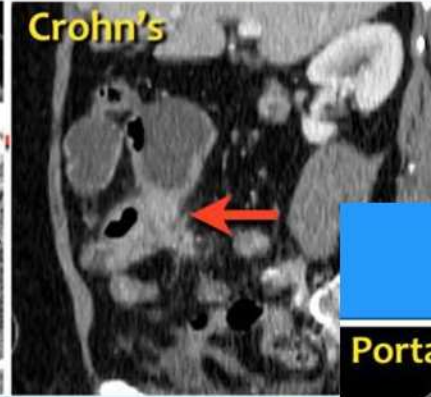
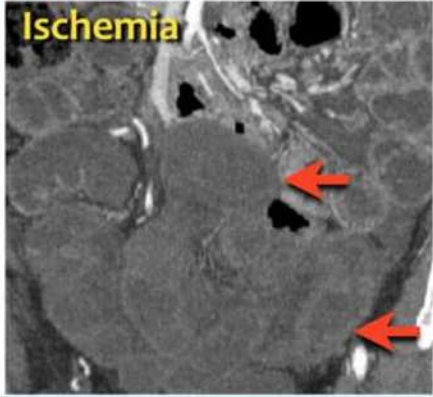
- Length of involvement

- Mural thickness

- Mesentery
- Patency of mesenteric vessels
 - Edema
 - Lymph nodes
 - Fistula

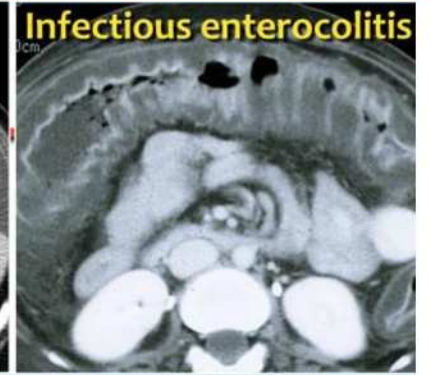
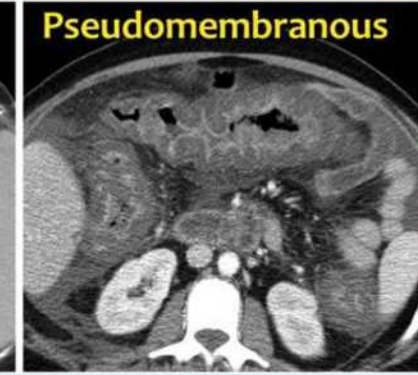
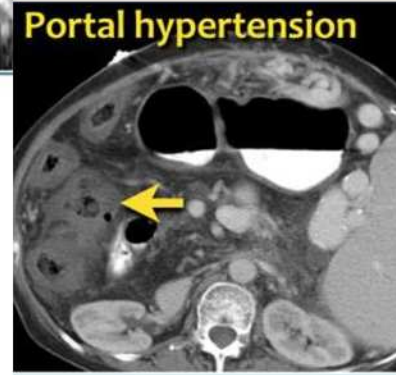
Focal < 5 cm	Focal 5 - 10 cm	Segmental 10-30 cm	Diffuse
			
<ol style="list-style-type: none"> 1. Adenocarcinoma 	<ol style="list-style-type: none"> 1. Diverticulitis 2. Crohn's disease 3. Ischemia 	<ol style="list-style-type: none"> 1. Ischemia 2. Submucosal hemorrh. 3. Radiation 4. Infection 5. Crohn's disease 6. Lymphoma 	<ol style="list-style-type: none"> 1. Infectious Enterocolitis 2. Ulcerative Colitis 3. Edema from low protein or cirrhosis 4. SLE

Gray



1. Chronic Crohn's
2. Ischemia
3. Neoplasm

Target sign- Water



1. Portal hypertension
2. Infection
 - Shigella, Salmonella, E. Coli, CMV, Crypto
 - *Pseudomemb. colitis*
 - AIDS
3. Acute Ulcerating Colitis and Acute Crohn's
4. Typhlitis
5. AIDS
6. Ischemia

Järeldus

- Sigmakäärsoole perforatsioon mitmete külgnevate väikeste abstsessikolletega ning peritoniit
- Selle aluseks on kas tuumor või põletikuline protsess sigmakäärsooles. Käärsooles on üksikud divertiikulid, aga mitte sigmakäärsooles. Üheseid viiteid Crohni tõvele ega haavanduvale koliidile pole ning põletikulise soolehaiguse esmane avaldumine ei sobi hästi vanusega. Promineeruvad lümfisõlmed sigmakäärsoole kinnistis ja paraaortaalsel. Omentumi tagasihoidlik infiltreeritus.