AI in the WILD

An Invitation to Translational Investigations

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CAIM

CAIM

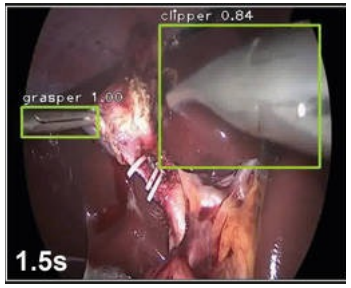
A child prodigy

Diagnose Covid pneumonia more accurate than expert radiologists

Fontanellaz M et al, Invest Radiol 2020, doi: 10.1097/RLI.0000000000000748

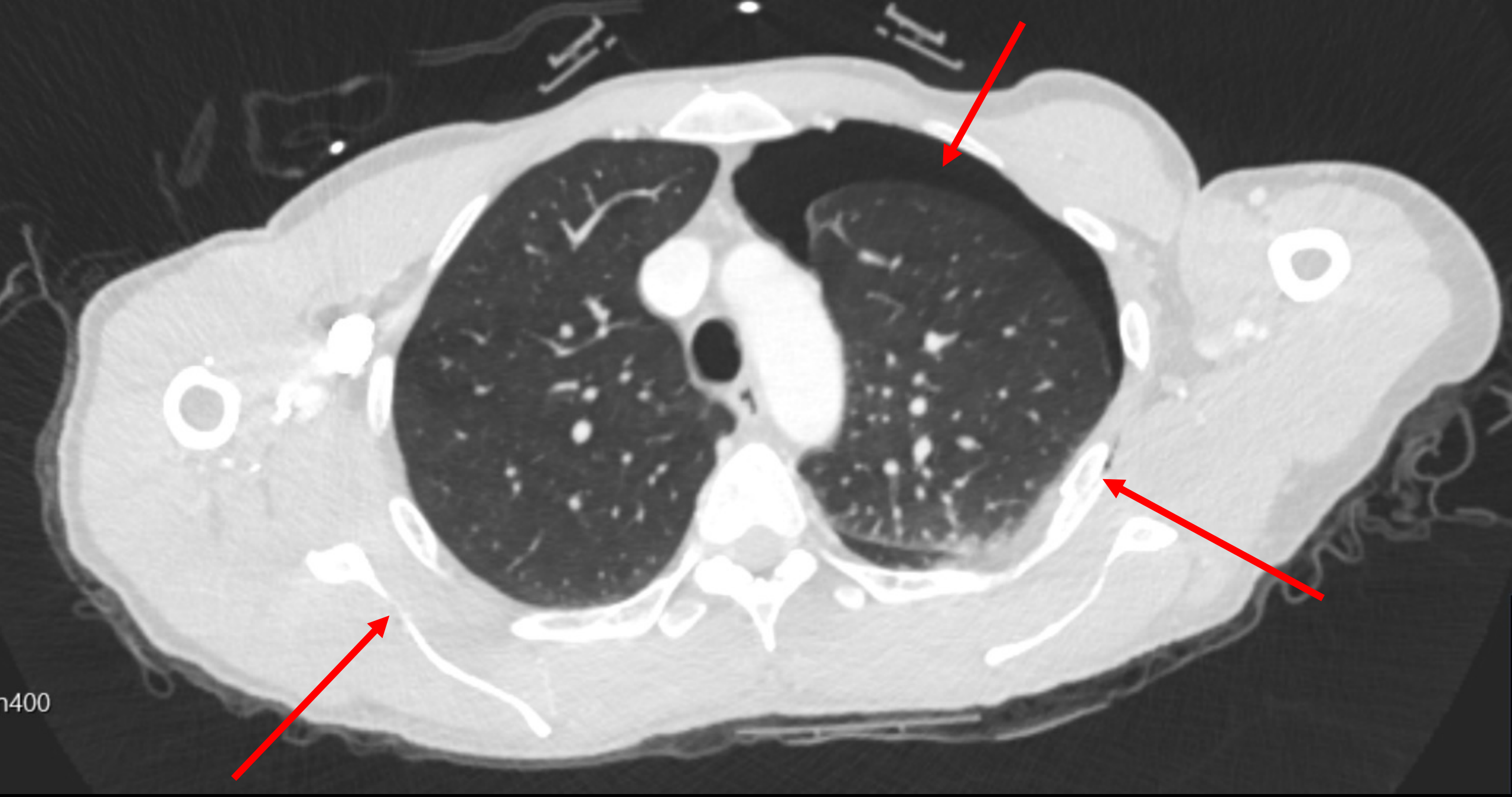
Tell you how healthy your diet is from smartphone pictures

Vasilougly MF et al, Nutritients 2020, doi: 10.3390/nu12123763



Assess you how skilled your surgeon is

Lavanchy JL et al, Scientific Reports 2021, doi: 10.1038/s41598-021-84295-6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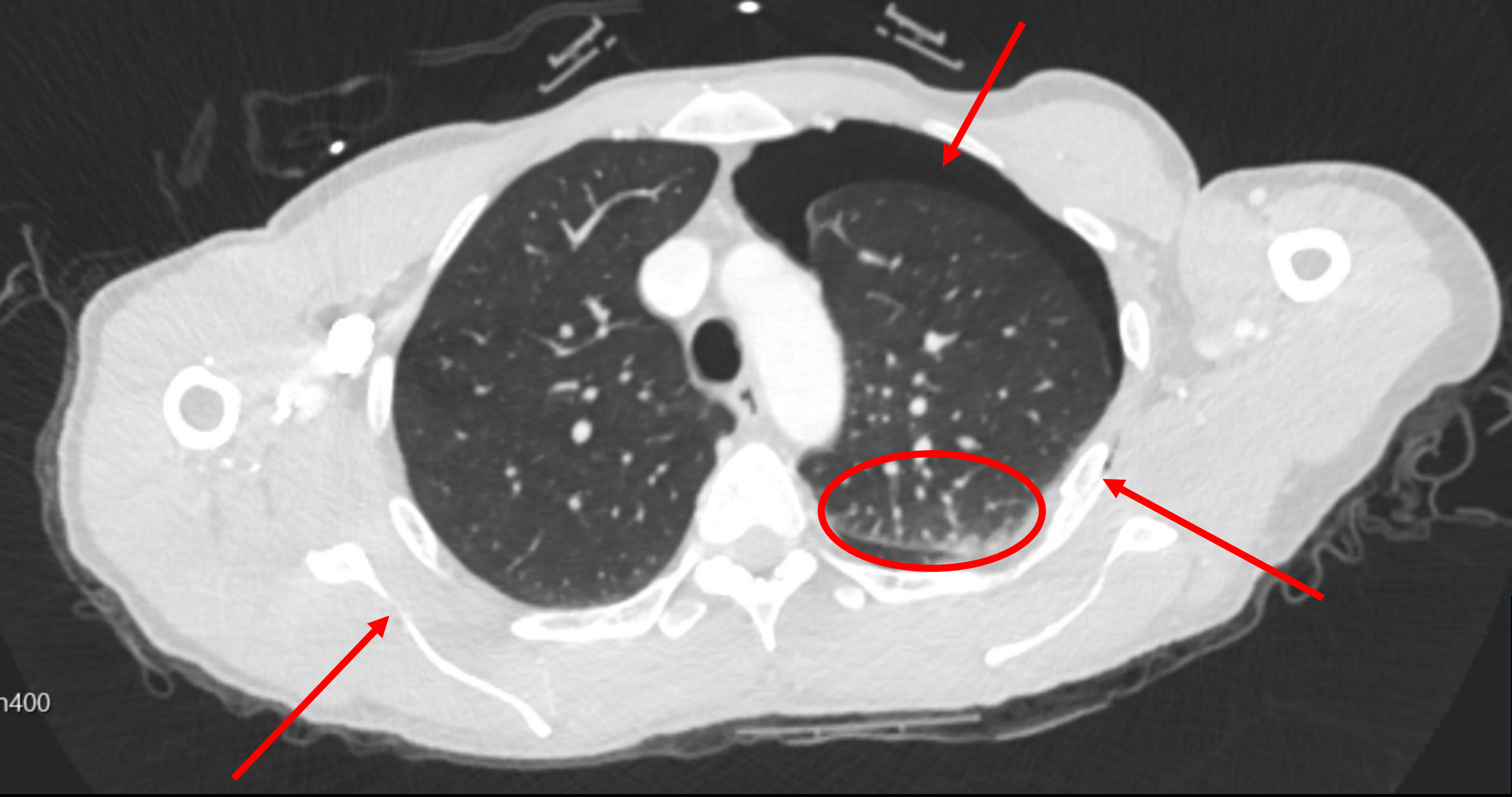
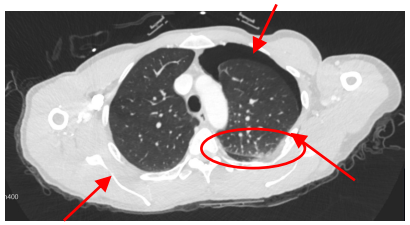

n400

Where we need your help (most)



The most frequently missed pathology in acute care?
The second one! Mattson B et al, BMJopen 2018, doi: 10.1136/bmjopen-2017-020230

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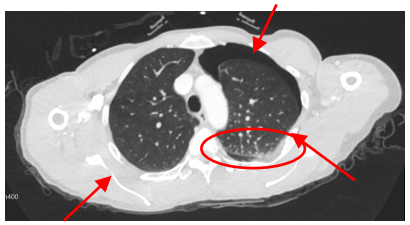

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One in ten diagnoses is wrong (in acute care)

Balogh et al. National Academic Press; 2015, doi: 10.17226/21794
Hautz WE at al, Scand J Trauma Resuc 2019, doi: 0.1186/s13049-019-0629-z

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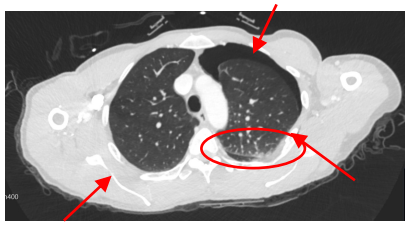

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Current diagnostic decision support is of unknown value

Hautz WE et al, SNF funding, 2020, http://p3.snf.ch/project-187284

Diagnostic decision support

Name	ICD10	Info	Match
Sepsis und Schock	R65.21	Info	100%
Lungenembolie	I27.82	Info	99%
Kardiogener Schock	R57.0	Info	82%
Coronavirus	B97.21	Info	82%
Perikarderguss / Tamponade	I31.3	Info	80%
Natriumazid-Toxizität	T54.2	Info	64%
Pneumothorax	J93.9	Info	61%
ARDS	J80	Info	55%
Herzinsuffizienz / CHF	I50.20	Info	55%
Lungenödem	J81.0	Info	55%
Aspirationssyndrome	J69.0	Info	53%
Aortenaneurysma / Dissektion	I71	Info	51%
Anaphylaxie	T78.2	Info	49%

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Blood Cultures, labs

CT-Scan

More labs, Ultrasound

PCR test, Xray

Echocardiographia

…

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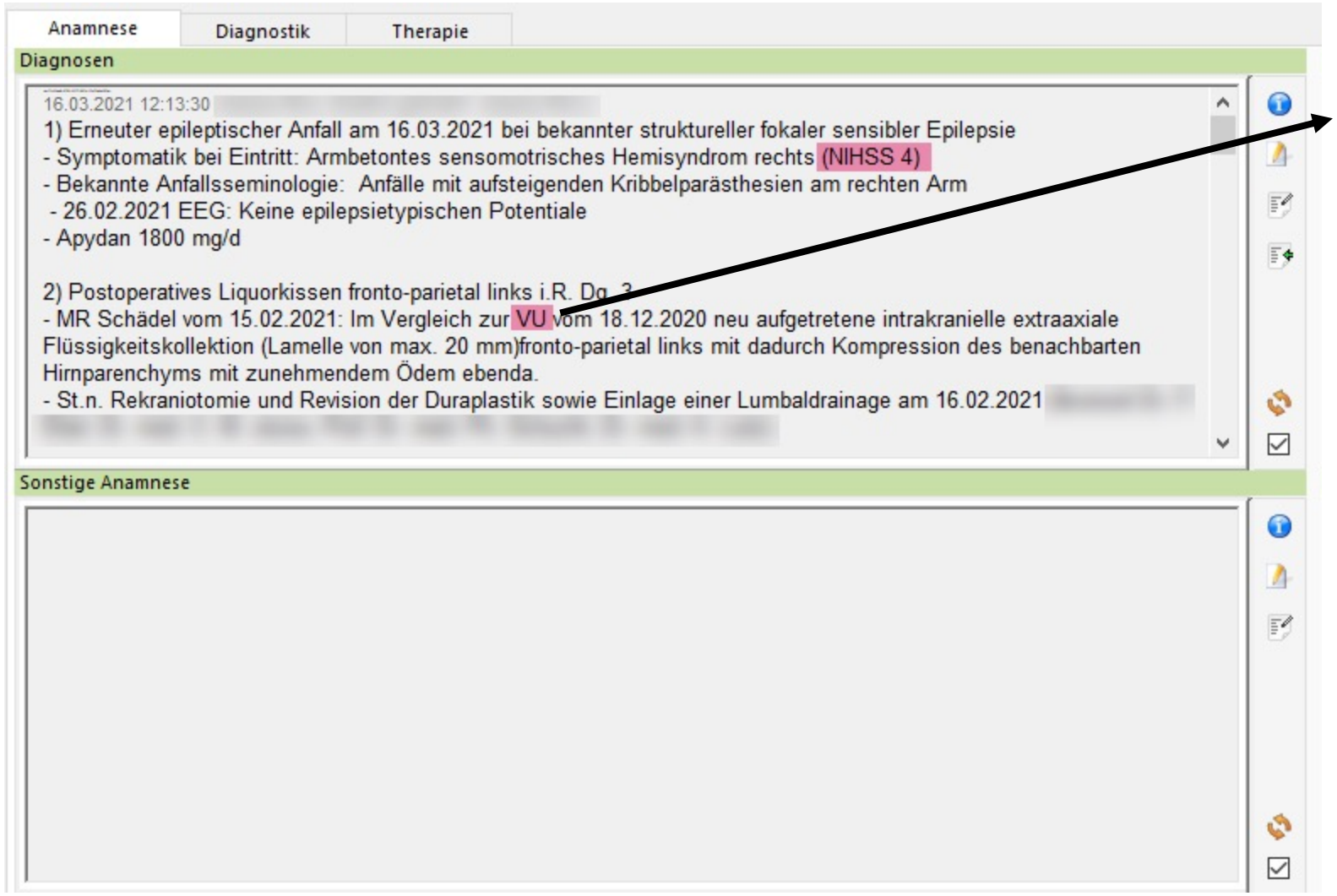
We usually do consider (but disregard) the correct diagnosis

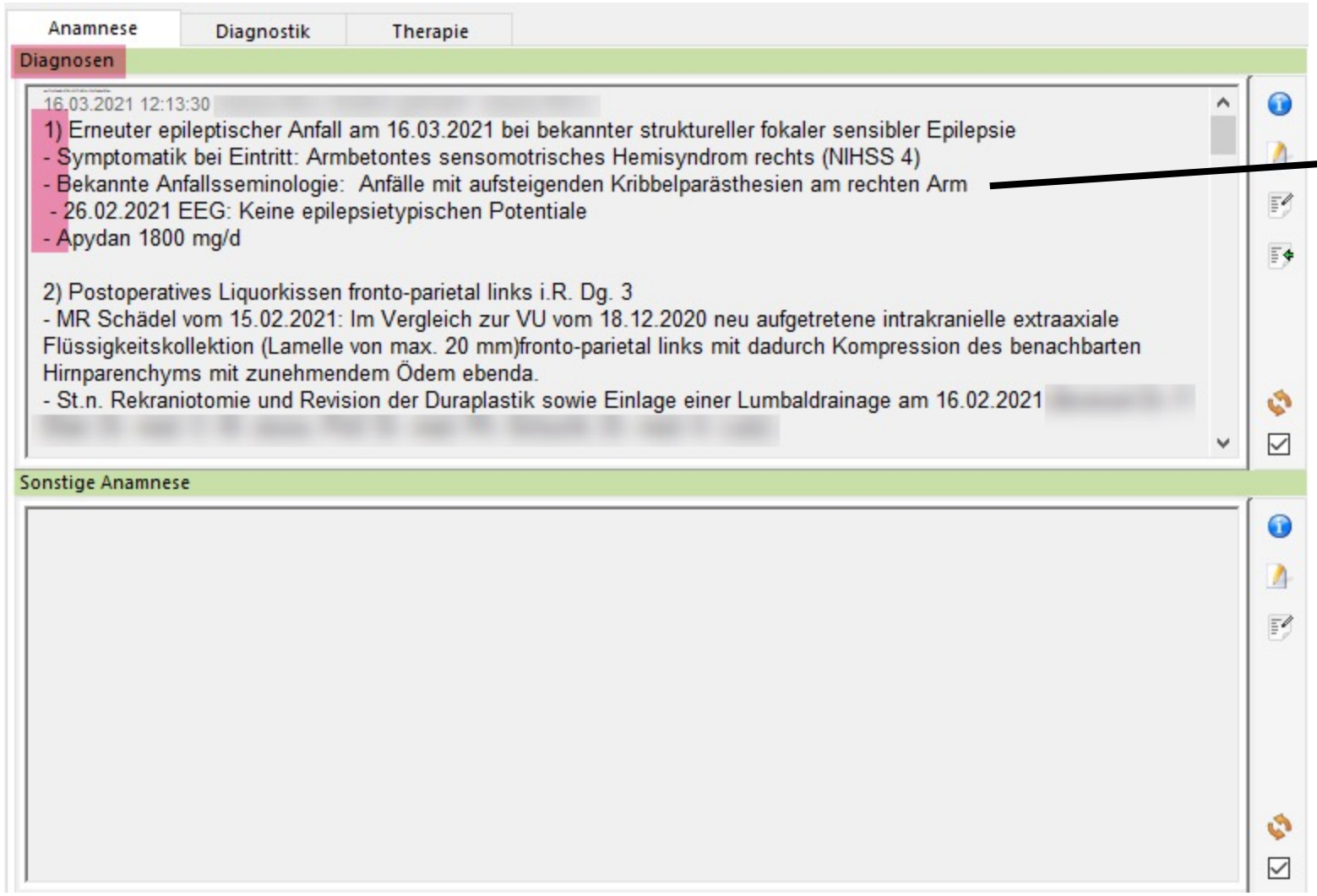
Why our problems are hard



Im Vergleich zur VU: **V**or**u**ntersuchung

VU vom 18.12.: **V**erkehrs**u**nfall

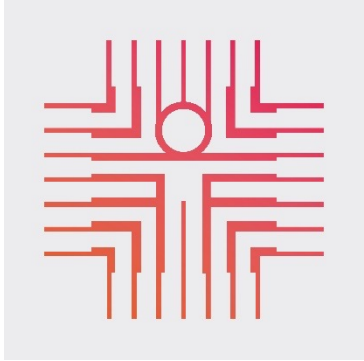
Why our problems are hard



Justification
current treatment
suggested procedure
contradictory evidence

all intermixed
with actual diagnosis

Your next challenge?



Compared to images or videos

- Much more information in much less data
- Data are ambiguous
- Meaning is context dependent
- Data are much less structured
- The space of correct possible outcomes is vast
- …

npj | digital medicine

Perspective | Open Access | Published: 16 August 2019

The “inconvenient truth” about AI in healthcare

Trishan Panch, Heather Mattie & Leo Anthony Celi ✉

npj Digital Medicine **2**, Article number: 77 (2019) | Cite this article

However, “the inconvenient truth” is that at present the algorithms that feature prominently in research literature are in fact not, for the most part, executable at the frontlines of clinical practice. This is for two reasons: first, these AI innovations by themselves do not re-engineer

What we bring to the journey

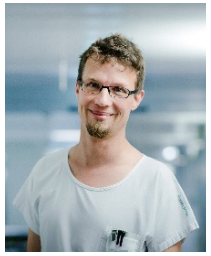
In depth knowledge of when and why we make diagnostic errors

Statistician

Qualitative Researcher

Social Scientist

Cognitive psychologist



Physician

Rehab. Specialist

AI in the WILD
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