

Artificial Intelligence session - Focus on AI in radiation oncology

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Holiday Inn Brussels Airport

bmuc.be/bmuc2026



**13th Belgian Multidisciplinary
Meeting on Urological Cancers**

Conflicts of interest

I have the following potential conflict(s) of interest to report

Type of affiliation / financial interest	Name of commercial company
Receipt of grants/research supports:	ArteraAI, ELEKTA, RayStation
Receipt of honoraria or consultation fees:	CURIUM, Barrigel





In Radiation Oncology

Laundry and dishes:

- Paperwork (discharge letter, etc.)
- Organs at risk contouring
- Easy target volumes at plans

Art and writing

- Time with patients
- Better risk prediction models
- Tricky target volumes and plans



(i) Consultation



(ii) Treatment Planning CT



(iii) Organ Delineation



(iv) Target Definition



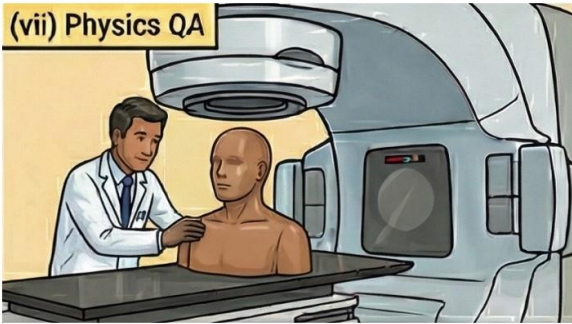
(v) Treatment Decision



(vi) Physics Planning



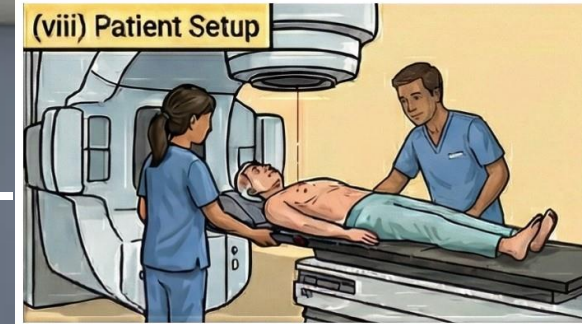
(vii) Physics QA



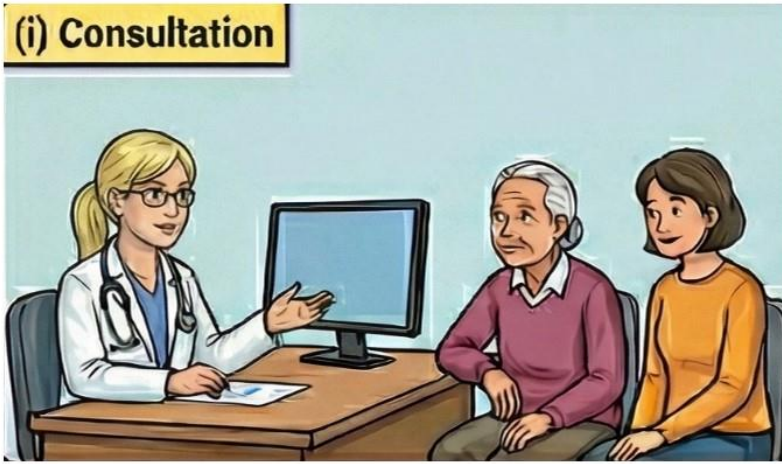
(ix) Image Guidance



(viii) Patient Setup

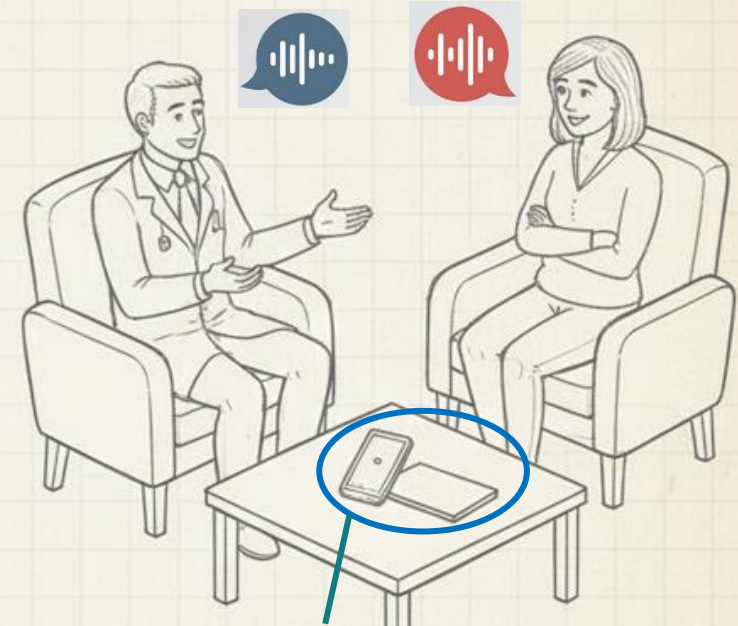


(i) Consultation



Impersonal

Time-consuming



AI scribe

Notepad | Transcript | Multiple Complaints +

11:05 AM

Hello? Please. Yes. Let me see. Thank you. Goodbye. James. Yes. histology with you, the report? Oh, the report. Yeah. Okay. I follow scan. Yes. Good. Not there.

11:06 AM

Bone scan was in January. Has no metastasis. Very nice. Where v The prostate. Prostate. Yes. In ah, here. Gisela. Gisela. Okay. Year

11:06 AM

E al

11:07 AM

Mhmm. Okay.

11:07 AM

Good. I need a copy of this, the rest I have. Thank you. Let's see. the prostate. Right? MRI? MRI of the of the

11:08 AM

MRI. There's small tube there. No. I don't think so. I haven't seen i have to do this. Okay. Good. Now his PSA is is high. Okay? 8. I f Yeah. I would like to to test it again to be sure that it's really that h they check it again to see if it remains that high, the PSA?

11:08 AM

PSA. Yeah. I remember when I've done that. Okay. So we we will v Okay. Again, to be sure that it's high. Good. The other thing is, we shows that his disease is his disease is only localized in the prost: does not seem that it has spread to any lymph nodes or anywhere Yeah. Yeah. It seems that the this is only in the process. So what v

11:09 AM

Do is to erratic the prostate. Okay? Eradi. Do radiotherapy in the p is therapy? Radiotherapy. Radiotherapy. Radiotherapy. Yeah. Yeah because my father is older Mhmm. Yes. The radiotherapy for him is good. Mhmm. Yes. Yes. That's

Prostate MDT

Date of MDT: 09/02/2026

Patient data:

Name and Surname:	
ID number	0505000603
Date of birth:	
HIS Number:	20049361
Referring doctor:	Dr. Strouthos

Specific question regarding medical imaging and/or pathology: ☐

Question:

NCCN Risk Group: Favourable interm.

Hormonal status: Hormone-sensitive

If metastatic:

Medical Information:

Diagnosis and course of disease	Diagnosis:	Prostate-Ca Initial diagnosis: 01/14
	Localization	Bilobar
	Histology:	Invasive adenocarcinoma of the prostate
		Rt: 1/4 cores Lt: 1/6
	Grade:	Gleason: 7a (3+4), Grade Group: 2 (Favourable intermedi-ate risk group)
	Classification	pT2c cNx M0 Pn1 L0 V0 R0-(2014)
	Metastases:	None
	iPSA	15ng/ml (2014)

(iii) Organ Delineation



SELECTION



Frontiers in Oncology

TYPE Original Research

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 Check for updates

OPEN ACCESS

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A clinical evaluation of the
performance of five commercial
artificial intelligence contouring
systems for radiotherapy

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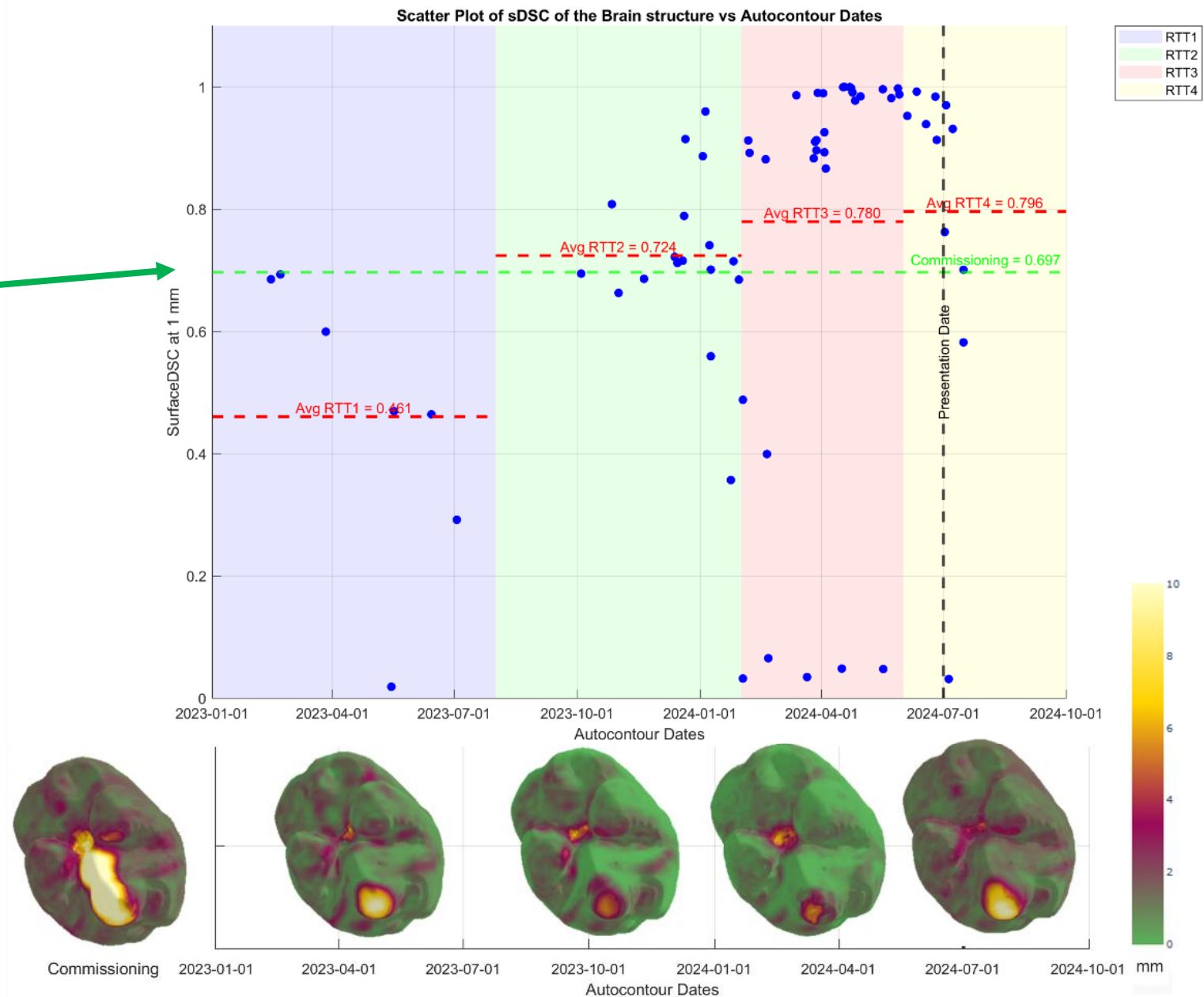
TABLE 2 Mean time needed to correct AI-generated contours and time saving compared to manual contouring, for three patients and five different AI contouring solutions.

		Mean time					
		Manual Institution	Correction Mirada	Correction MIVision	Correction Radformation	Correction RayStation	Correction Therapanacea
Breast	No. structures	10	8	8	10	5	10
	Time for 10 structures [min]	22	7.5	1.6	7.8	3.1	1.4
	Saving [min/%]		14.5/66.0%	20.4/92.8%	14.2/64.4%	18.9/86.0%	20.6/93.7%
Head and neck	No. structures	19	27	27	27	26	30
	Time for 19 structures [min]	97	8.2	9.8	22.7	4.6	4.4
	Saving [min/%]		88.8/91.6%	87.2/89.9%	74.3/76.6%	92.4/95.3%	92.6/95.4%
Lung	No. structures	6	6	6	6	5	6
	Time for 6 structures [min]	26	5.2	1.2	6.0	1.5	0.4
	Saving [min/%]		20.8/80.1%	24.9/95.6%	20.0/76.8%	24.5/94.4%	25.6/98.4%
Prostate	No. structures	10	8	9	9	5	10
	Time for 10 structures [min]	42	7.4	0.3	4.3	5.2	0.1
	Saving [min/%]		34.6/82.3%	41.7/99.3%	37.7/89.7%	36.8/87.6%	41.9/99.7%

The saving refers to the time saved computed by finding the mean time correct each contour, multiplied by the number of contours drawn by the manual.

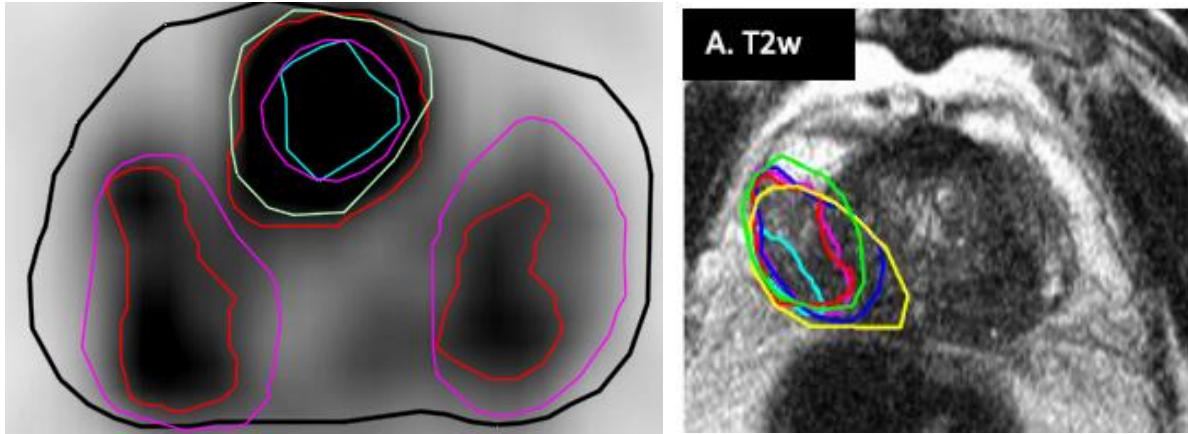
ON-GOING
MONITORING

AUTOMATION BIAS

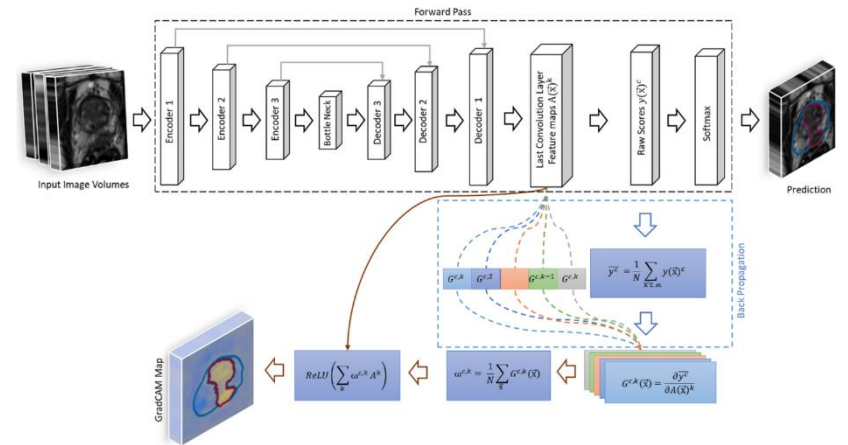


MANUAL VS AUTOMATIC

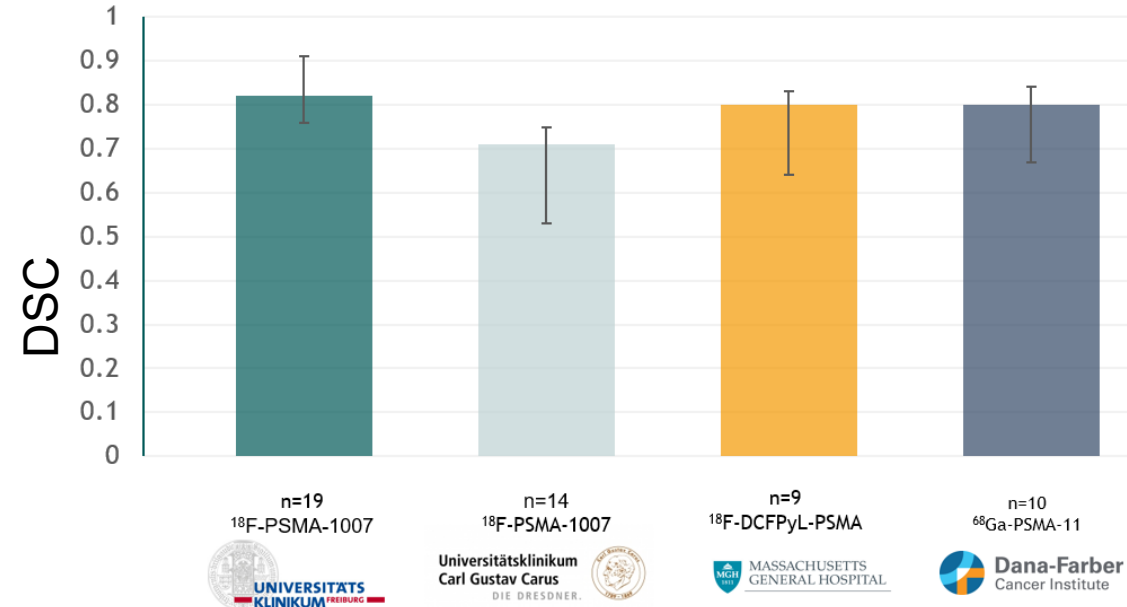
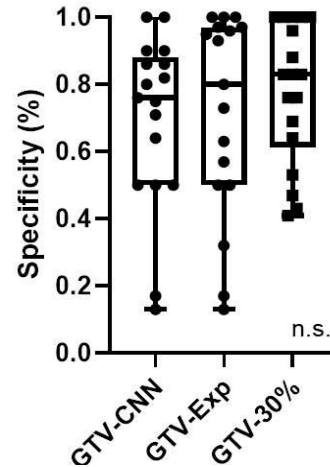
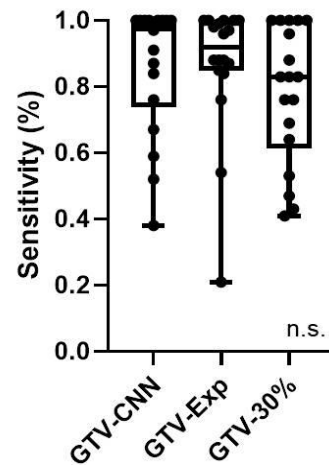
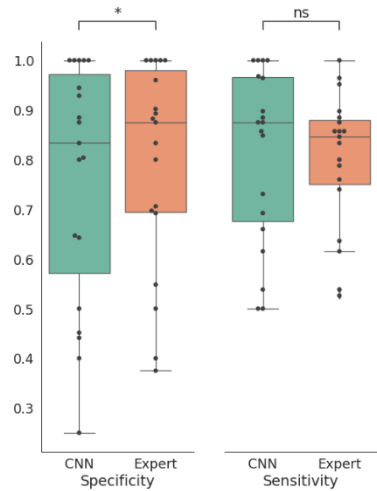
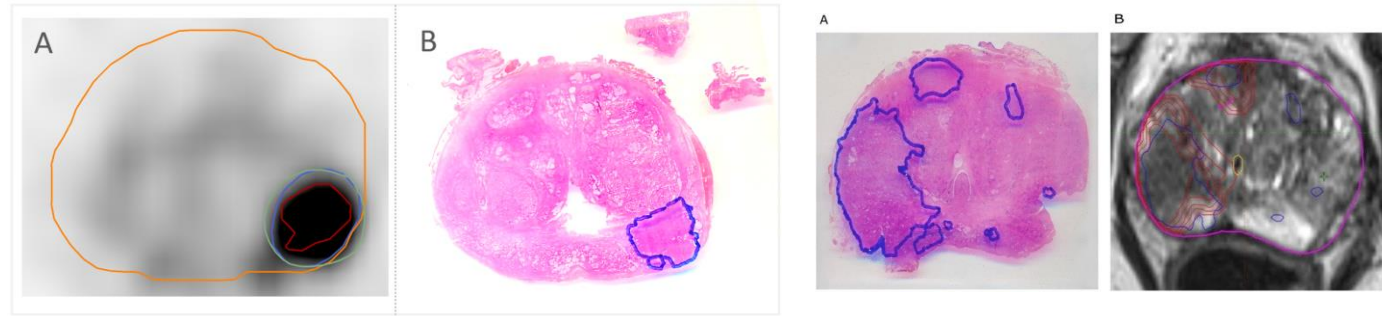
Manual contouring



AI-based contouring



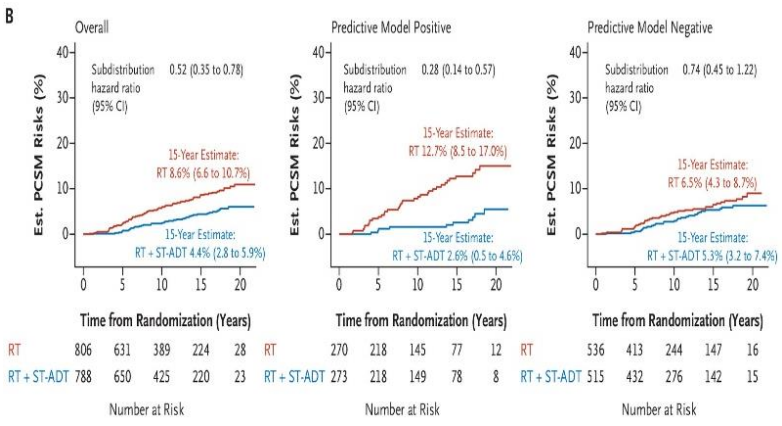
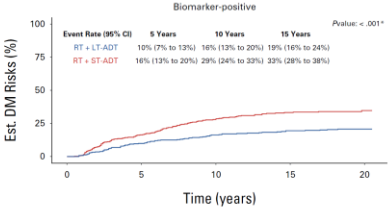
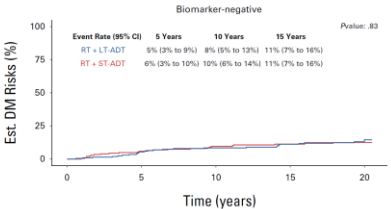
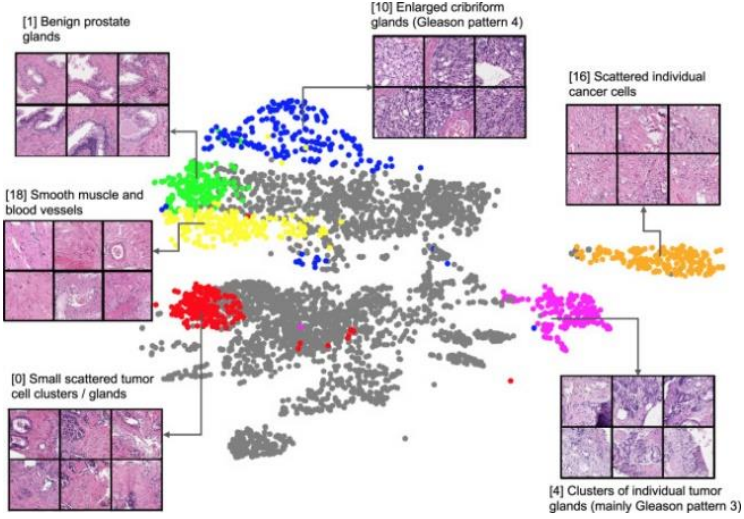
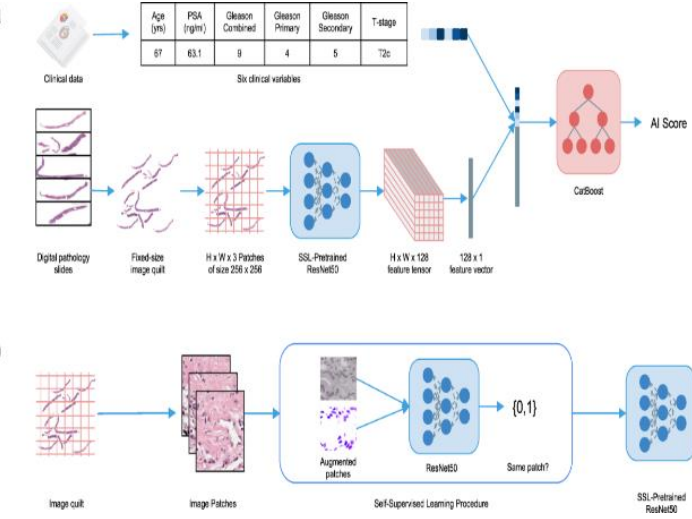
VALIDATION



Conclusion:

- Same performance as experts
- 2 seconds vs 10 minutes

(v) Treatment Decision



●

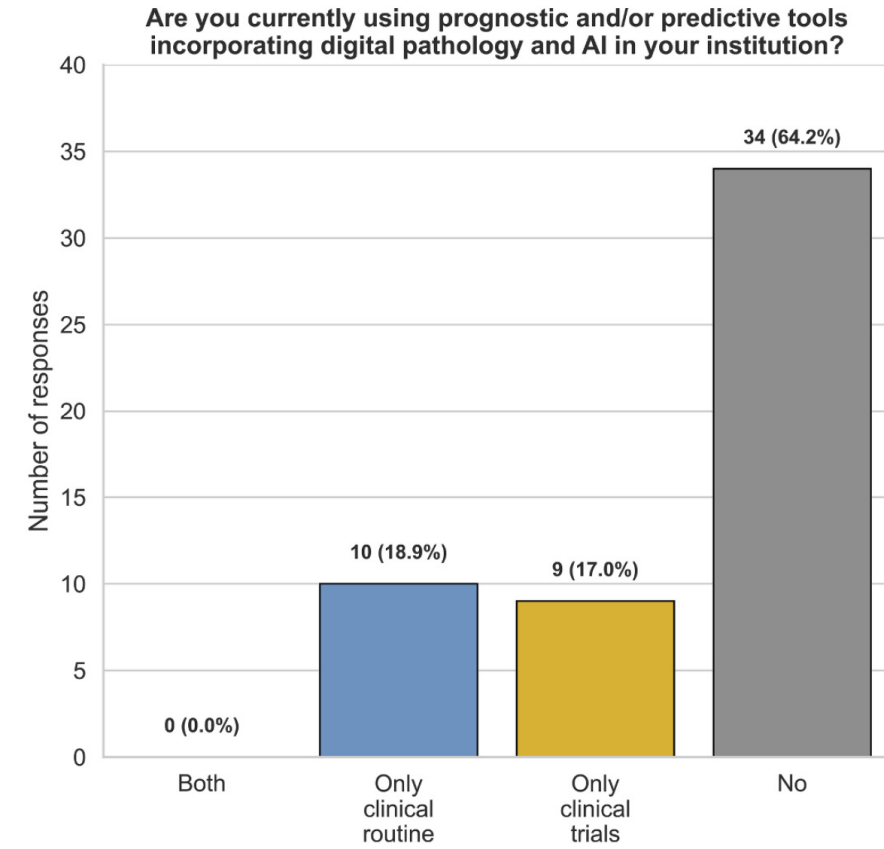
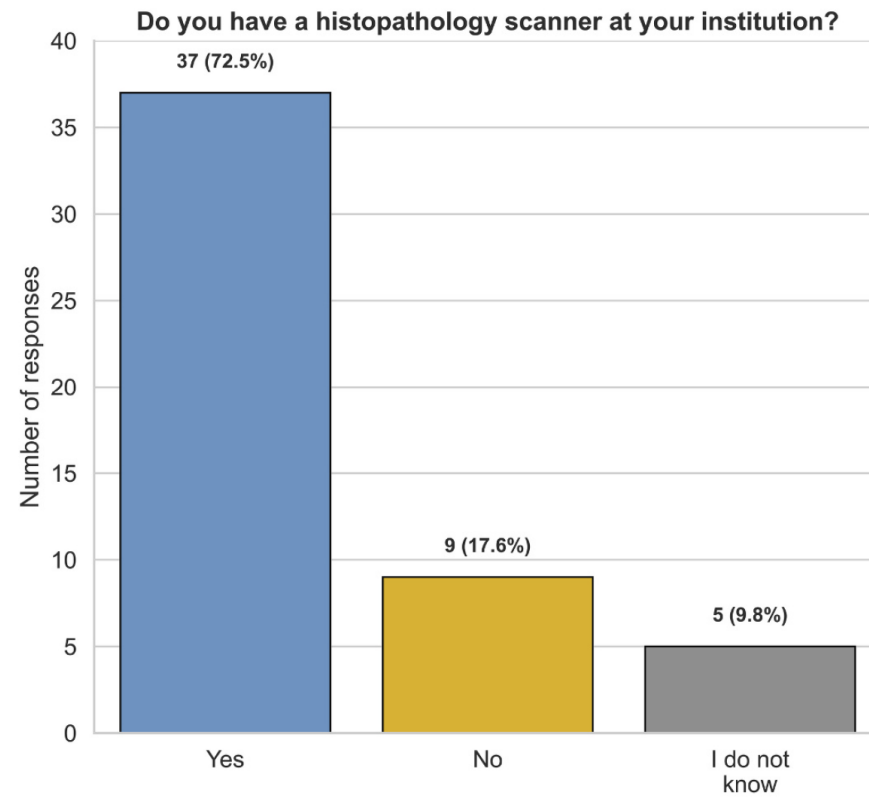
Digital histopathology and AI score (MMAI)

De-escalation study

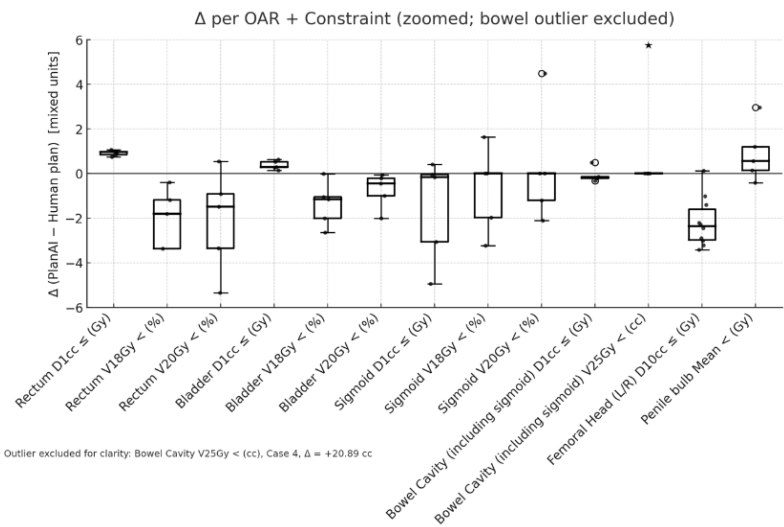
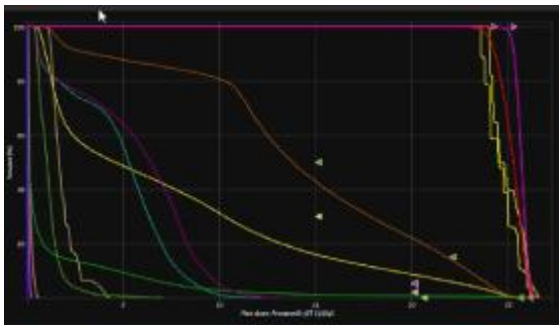
Radiotherapy prostate	SBRT (5 x) + HDR (1 x)
Radiotherapy pelvic lymph nodes	No
Treatment time	3 weeks (1 week brake)
Systemic therapy	12 months ADT

Escalation study

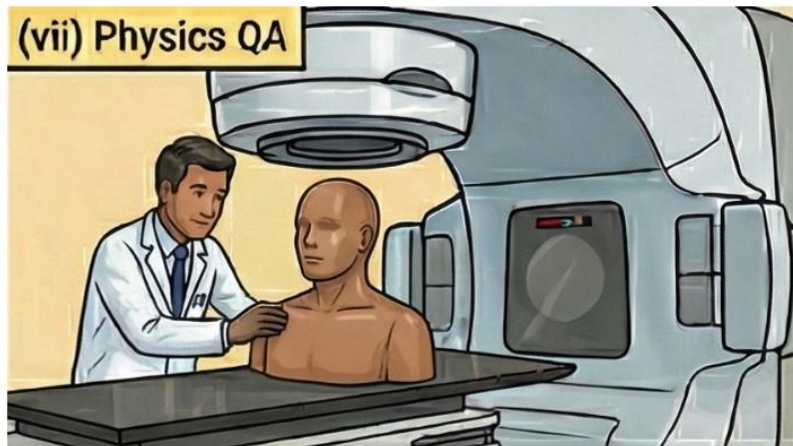
Radiotherapy prostate	SBRT (5 x) + HDR (1 x)
Radiotherapy pelvic lymph nodes	Yes (5 x)
Treatment time	3 weeks (1 week brake)
Systemic therapy	24 months ADT ± Abiraterone



(vi) Physics Planning



* Outlier excluded for clarity: Bowel Cavity V25Gy < (cc), Case 4, $\Delta = +20.89$ cc



Eolas Medical

app.eolasmedical.com/spaces/German%20Medical%20Institute

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Conclusion – Radiation Oncology

In Radiation Oncology

Laundry and dishes:

- Paperwork (discharge letter, etc.)
- Organs at risk contouring
- Easy target volumes at plans

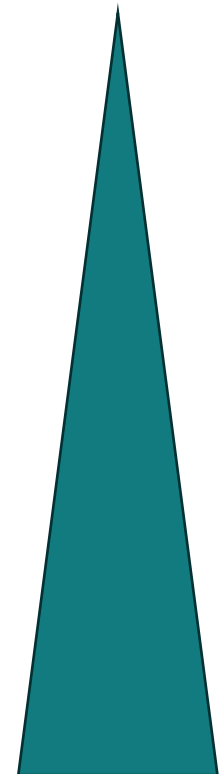
Art and writing

- Time with patients
- Better risk prediction models
- Tricky target volumes and plans

Workload 2026



Workload 2030



AI Department



Director: Paul Doolan

(Physicist Radiation Oncology)

Implementation of novel AI tools

Monitoring AI tools

Education and Training

Research



How?

Roadmap to deployment

4. Deploy and train

- Educate and train users
- Deploy
- Assist with issues

5. Monitor

- Audit
- Ongoing monitoring

2. Vendor selection / ROI

- Provide scientific advice
- AI solution selection
- Risk management
- Applicability
- Compliance

3. Evaluation / retrospective analysis

- Local retrospective evaluation
- Real-world impact
- Update risk management
- Assess usefulness and adoption

1. Define problem and plan

- Departmental AI Champions - healthcare needs
- Feasibility, potential for impact, and prioritisation
- Procure / build / partner decision



Generalization

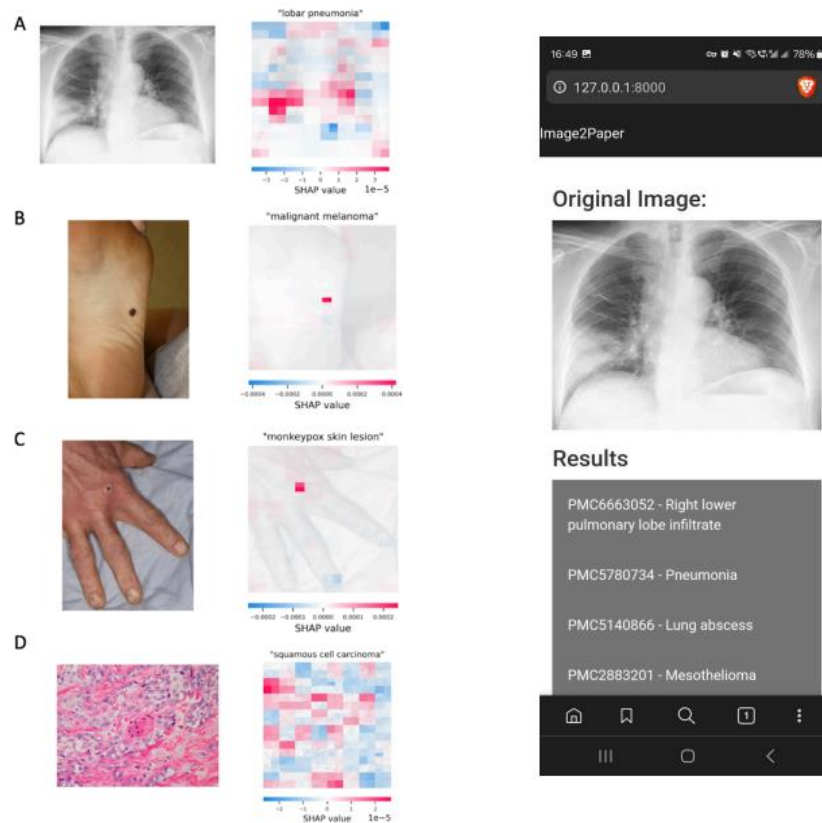


Stanford
University

Physician-level classification performance across multiple imaging domains
with a diagnostic medical foundation model and a large dataset of annotated
medical images

A. Thieme et al. Nature Med 2022

A. Thieme et al., under review



Problems:

- Island: lack of specialists
- Island: Rare genetic diseases
- services: rare disease MDT, pathology, dermatology

Phase I – retrospective (currently ongoing)

Phase II – prospective pilot phase (ethics approval pending)

Thank you very much for your attention