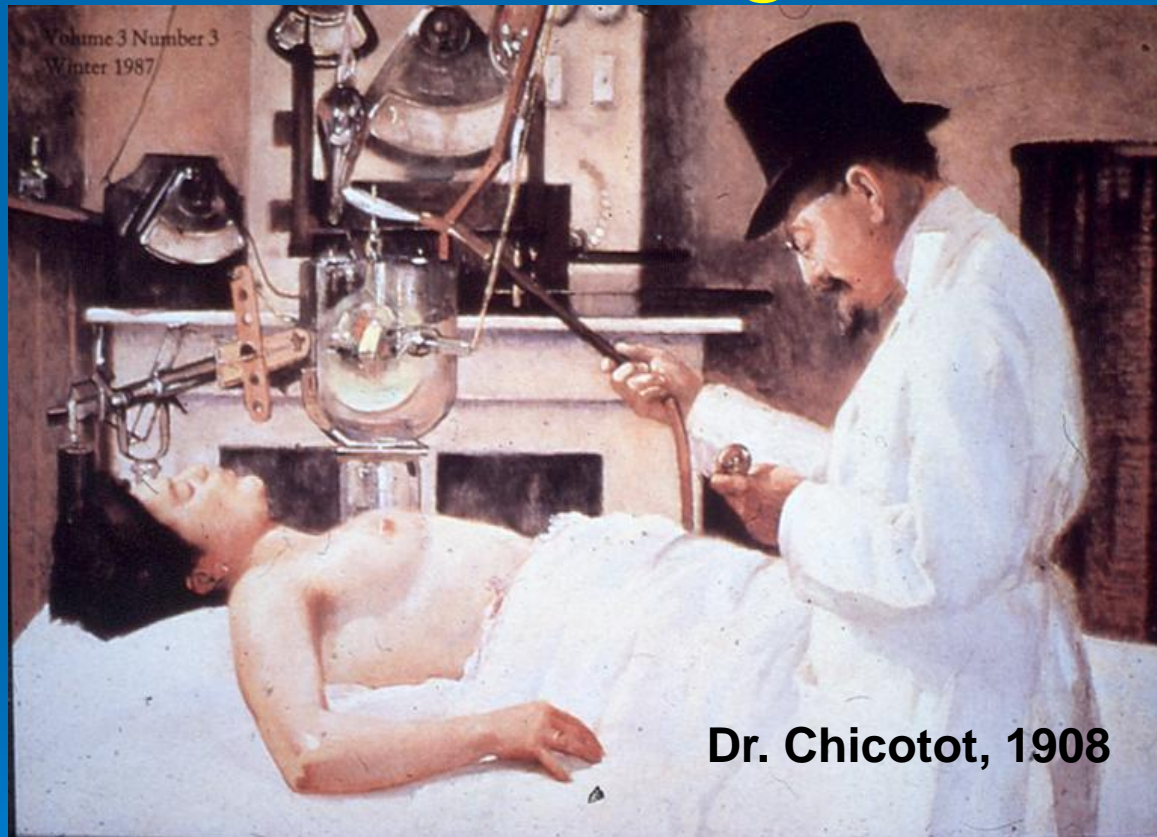


Radiotherapy of early breast cancer, status on the Skagen Trial 1



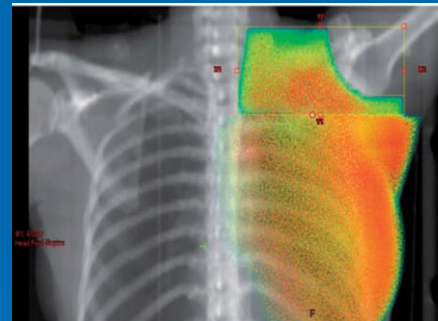
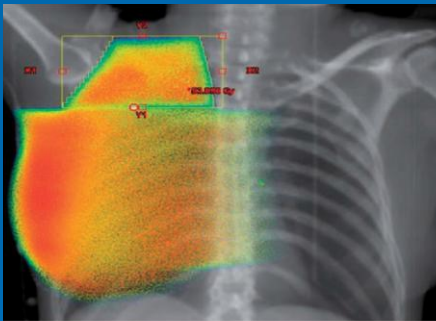
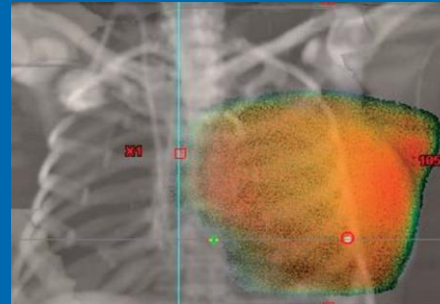
Dr. Chicotot, 1908

Birgitte Vrou Offersen
Overlæge, lektor, ph.d.
Aarhus University Hospital



DBCG HYPO II, The Skagen Trial 1 Background

- 75% breast only, 40 Gy/15 fr
 - DBCG HYPO
 - DBCG PBI
- 25% loco-regional RT, 50 Gy / 25 fr



- The UK and Holland have started loco-reg RT based on 40 Gy / 15 fr, and Holland uses SIB (simultaneous integrated boost) as standard



AIM

- Assure a systematic and quality-controlled introduction of moderately hypofractionated loco-regional breast RT based on 40 Gy/15 fr in Denmark
- Introduce simultaneous integrated boost



Randomization

stratification: institution, surgical type, systemic therapy

Woman ≥ 18 years
c. mammae
pT1-3, pN0-3,
ER/PgR +/-,
Grade I, II, III,
HER2 +/-,
Primary syst therapy,
breast implant, connective
tissue disease accepted

50 Gy / 25 fractions

40 Gy / 15 fractions

If she is a boost candidate, the boost will be provided as a SIB shortening the overall treatment time with 5 days



Endpoints

- Primary: arm lymphedema
- Secondary: DBCG morbidity as previously used incl photos, PROM, ROM, use of sleeve, recurrence (where and when)

This will take place before RT, then yearly 1-5 and 10



Statistics

- Null hypothesis: hypofractionated RT does not increase the risk of lymphedema 3 yr after RT compared to normofractionated RT
- Lymphedema is $\geq 10\%$ increased arm circumference 15 cm above / 10 cm below olecranon
- Cross-sectional study in Aarhus, 2007-12, 277 pts (ALND, taxane, reg RT 50 Gy) showed 10% with lymphedema median 3 yr FU*
- We expect 10% risk of lymphedema, accept a 5% increase, 80% power, 1-sided test, 5% sign level, 5% yearly drop out rate, 3 yr accrual and 3 yr follow up
- Thus we need **131 events or 1012 patients with 3 yr follow up**
- Accrual continues until 131 events/1012 pts are followed for 3 yr
- Thus potential for >2000 pts included

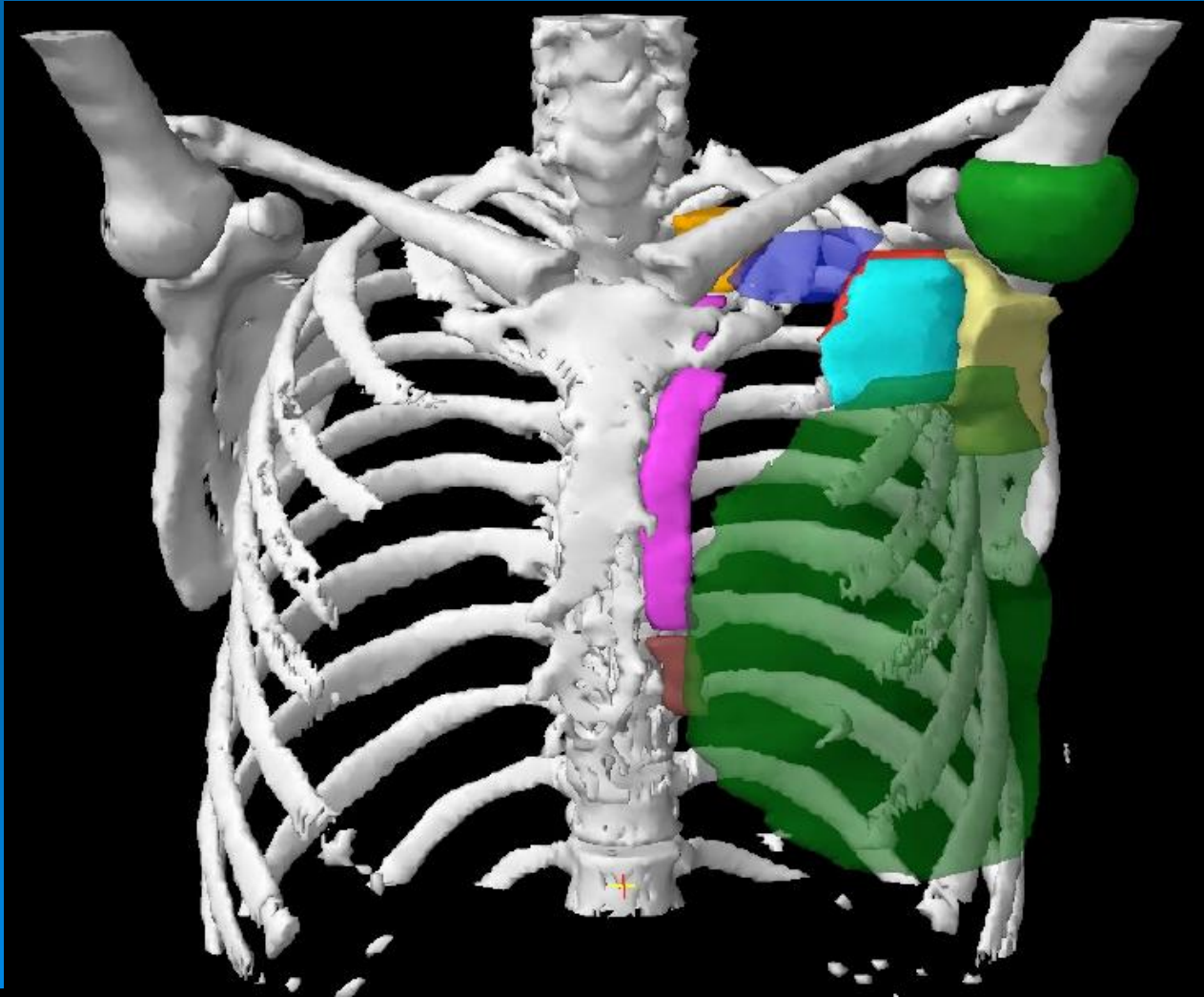
* Nielsen et al, Acta Oncol, *in press*, 2017



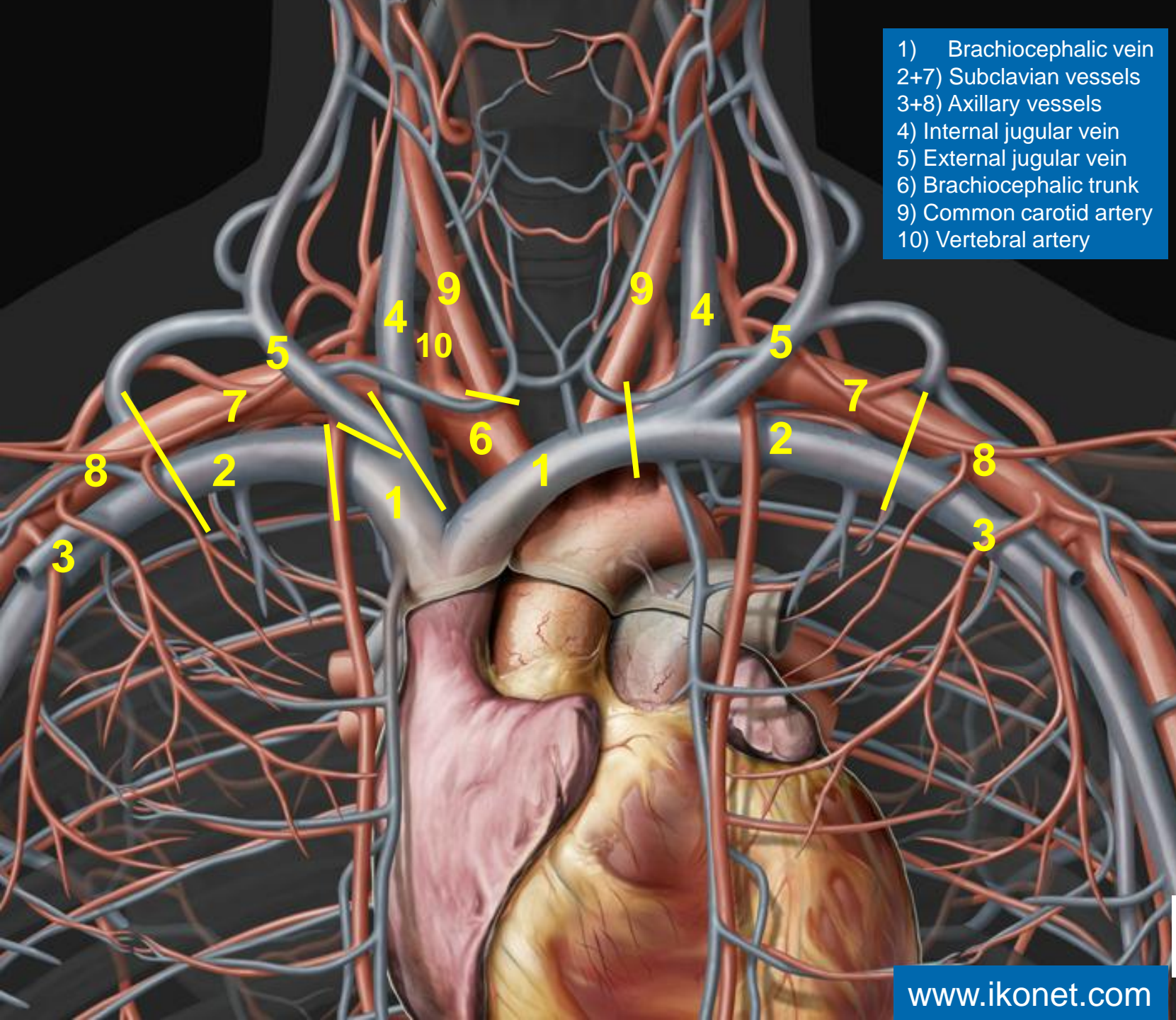
Danish Breast Cancer Group, DBCG

DBCG HYPO II

The Skagen Trial 1

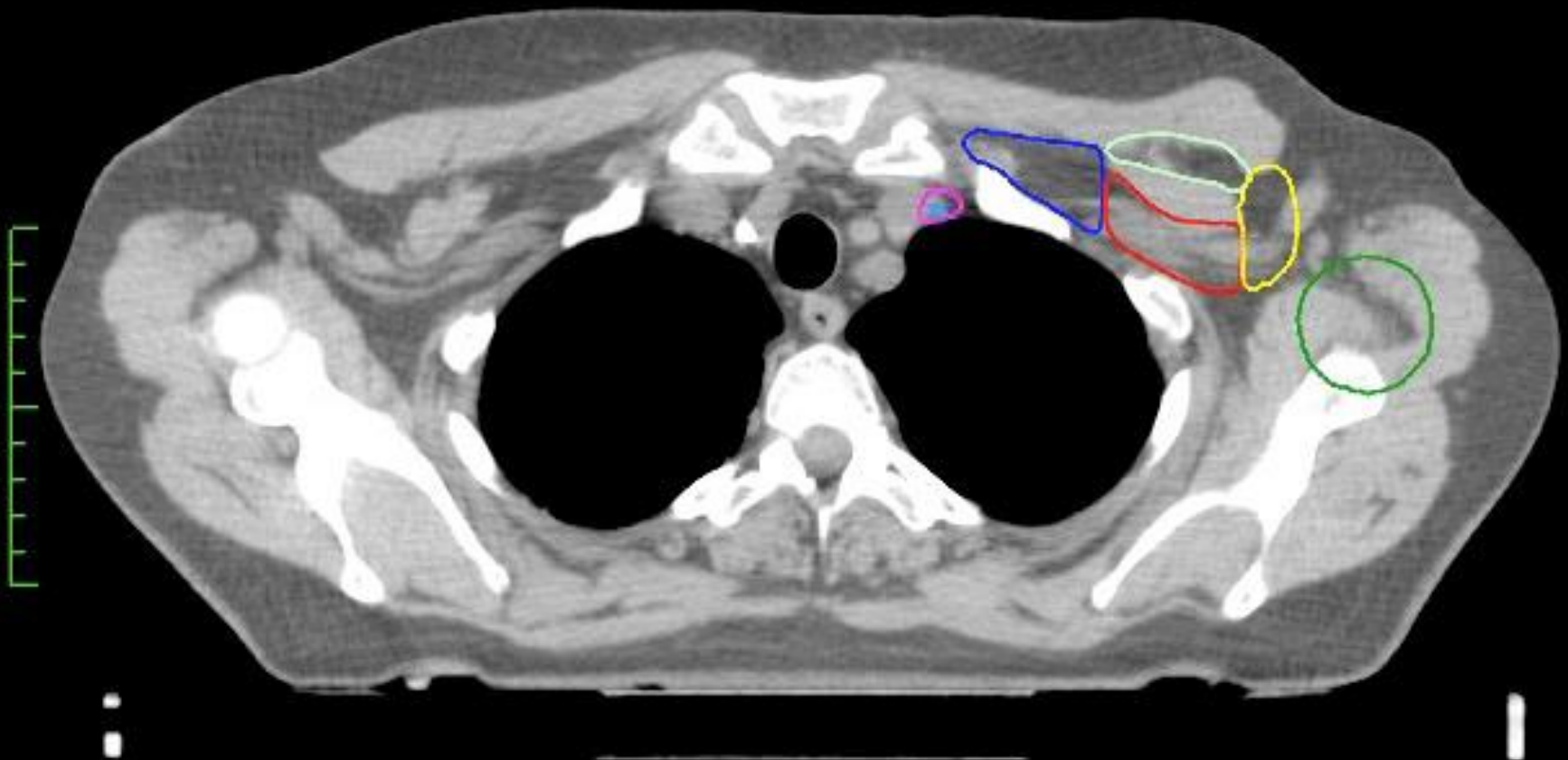


 CIRRO



- 1) Brachiocephalic vein
- 2+7) Subclavian vessels
- 3+8) Axillary vessels
- 4) Internal jugular vein
- 5) External jugular vein
- 6) Brachiocephalic trunk
- 9) Common carotid artery
- 10) Vertebral artery

ESTRO delineation consensus



SIB

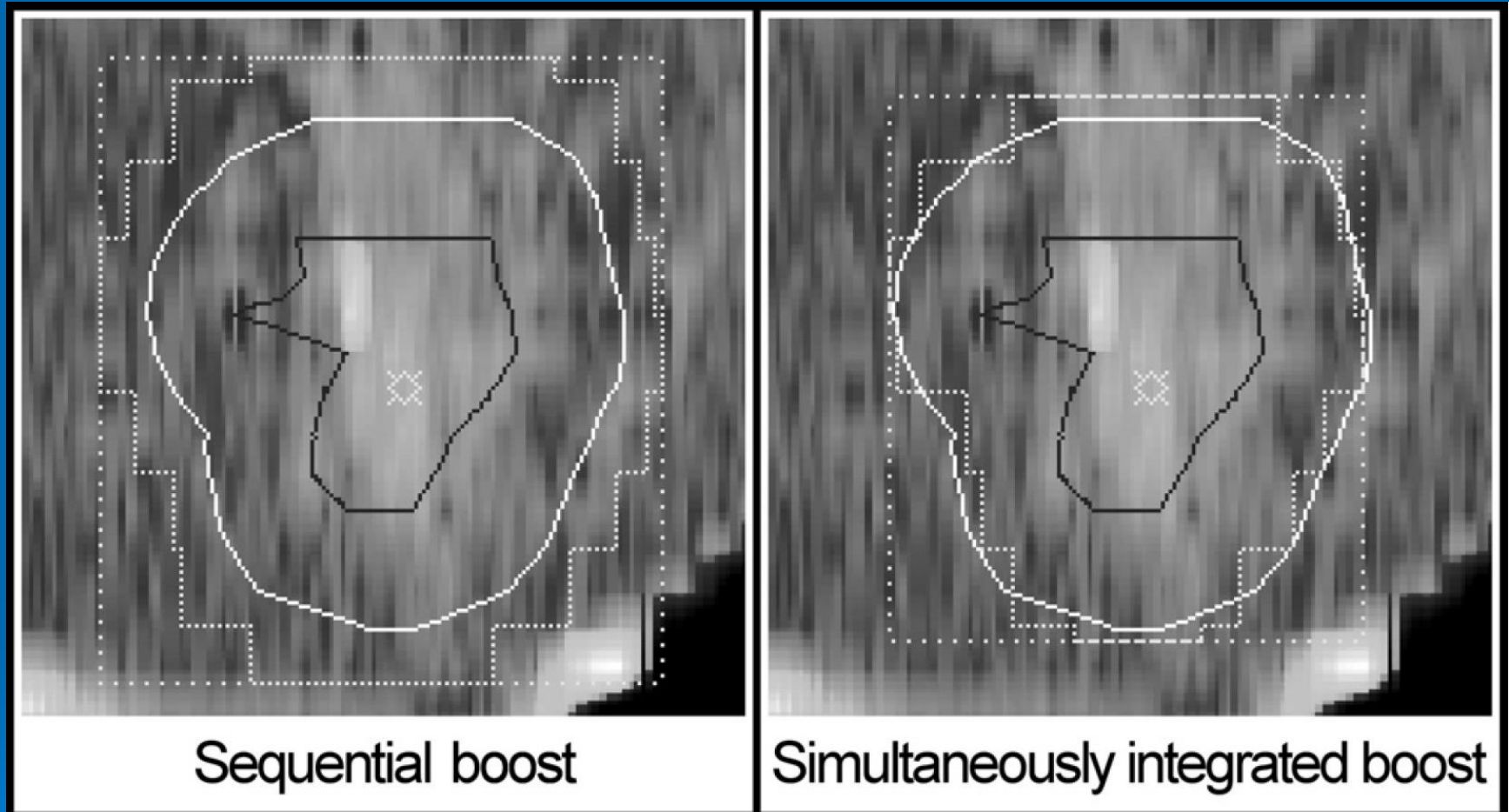


Fig. 1. Reconstructed radiograph from boost beam's-eye-view with sequentially planned and simultaneously integrated boost. With simultaneously integrated boost technique, multileaf collimator shielding (short dotted lines) can be applied without use of margins around boost planning target volume (white solid line), resulting in substantial reduction of excess volumes irradiated.



BED(2 Gy)-based doses for SIB

Randomisation arm	Standard boost	SIB / non-SIB breast / fr
50 Gy / 25 fr	16 Gy / 8 fr	63 Gy / 51.52 Gy / 28 fr
50 Gy / 25 fr	10 Gy / 5 fr	57 Gy / 50 Gy / 25 fr
40 Gy / 15 fr	16 Gy / 8 fr	52.2 Gy / 42.3 Gy / 18 fr
40 Gy / 15 fr	10 Gy / 5 fr	45.75 Gy / 40 Gy / 15 fr



Participating centres Skagen Trial

France
TROG



Current status on accrual

	Jan 1, 2016	Jan 1, 2017
Aarhus	88	214
Næstved	0	30
Rigshospitalet	24	55
Odense	7	55
Vejle	2	45
Aalborg	0	19
Stavanger	19	65
Tromsø	2	35
Kristiansand	0	13
St.Luc, Bruxelles	10	55
Dresden 1	2	25
Dresden 2	1	13
Kielce, Poland	0	3
Total	155	627

DBCG office involvement

- Online system for Danish research data (~easy, \$)
- Online system for foreign departments (~NOT easy)
 - Randomisation procedure
 - Pt and tumour characteristics
 - All endpoints (morbidity, relapse)
 - Ask for missing data
- Constantly provide help at mistakes



Related Issues

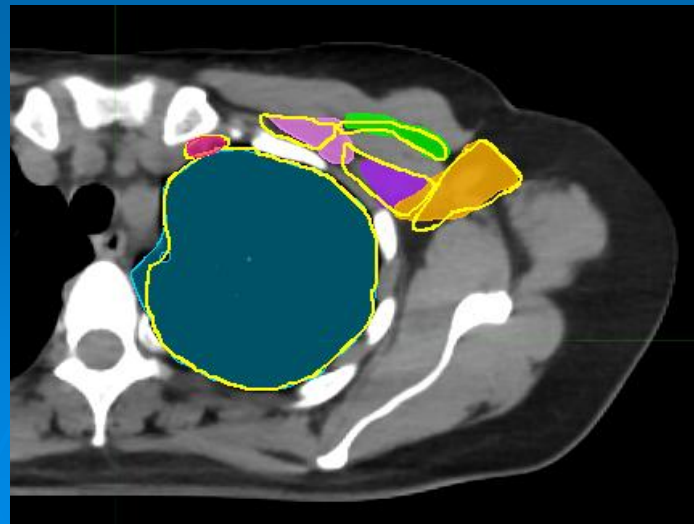
National Dose Plan Bank

Online system for storage of photos (2 students)

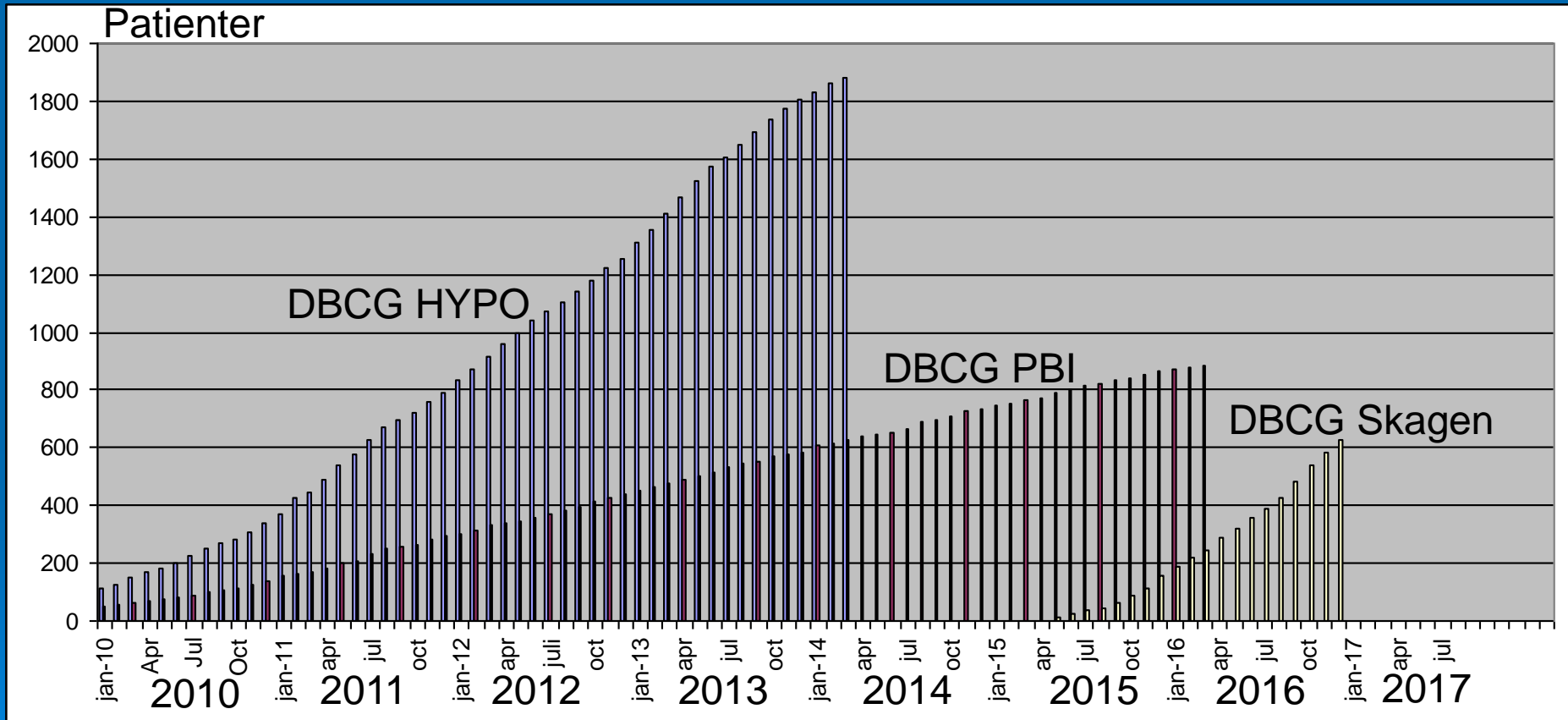
Automated delineation of targets

QA of automated delineation of targets

QA on target delineation and dose planning in the
Skagen Trial 1



Inclusion DBCG RT trials



Conclusion

- The Skagen Trial 1 is active in 6 DK / 7 foreign depts
- France active with a copy trial since Sept 2016
- Australia expected to join us 2017, S will be invited soon
- The DBCG system for data storage is running
- QA of RT technique has been published including all depts

- In 4 years we will have the answer on the safety of 40/15 for loco-regional RT of early breast cancer



Thanks

