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**Figure 1. Workflow tasks and their associated cost, given in EUR, for a conventional CT/MR workflow compared to an MRI-only workflow. Price lists from 2019 were used for cost estimations. Original prices were given in Swedish crowns (SEK) and converted to EUR using an exchange rate of 0.10.**

Workflow task	Cost per patient				
	CT+MR	MRI-only		Difference MRI-only vs CT/MR	
		Short-term	Long-term	Short-term	Long-term
Fiducial marker implantation	462	462	462	0	0
Nurse visit information	94	94	94	0	0
CT-imaging	144	0	0	-144	-144
MR-imaging	309	309	309	0	0
Surface markers	0	13	13	13	13
Fiducial marker identification	47	94	0	47	-47
QA fiducial markers	0	63	0	63	0
Synthetic CT generation	0	0	0	0	0
Target delineation	245	184	184	-62	-62
Treatment planning	479	479	479	0	0
Physicist check	440	440	440	0	0
Nurse check	47	47	47	0	0
QA synthetic CT	0	63	0	63	0
Radiotherapy treatment*	198	198	198	0	0
Late rectal bleeding**	114	114	71	0	-43
<b>Sum</b>	<b>2 580</b>	<b>2 558</b>	<b>2 297</b>	<b>-21</b>	<b>-283</b>

No difference
Reduced cost
Increased cost
Unknown

\* Cost of one treatment fraction calculated as a 15 minute time slot

\*\* Mitchell L. et al.  
Normal Tissue Complication Probability (NTCP) modeling of late rectal bleeding following external beam radiotherapy for prostate cancer: A Test of the QUANTEC-recommended NTCP model. *Acta Oncol.* 2016; 49(7) 1040-1044

Cost estimation references  
Regional prices and compensations for Södra sjukvårdsregionen 2019  
<https://sodrasjukvardsregionen.se/avtal-priser/regionala-priser-och-ersattningar/>  
Bild- och funktionsmedicin, price list 2019, Region Skåne  
<https://vardgivare.skane.se/patientadministration/avgifter-och-prislistor/prislistor-bild-funktionsmedicin/>

## Conclusion

The implementation of an MRI-only workflow is associated with reduced costs due to time efficacy as well as reduced rectal toxicity, compared to a combined CT/MR workflow. For MRI-only radiotherapy to be cost-saving, the sCT cost should not exceed 283 EUR/patient.

The main contributor of the MRI-only cost reduction is exclusion of the CT-examination. On a short-term basis, the economic benefit is limited due to the extra costs of QA procedures. The economic benefits of MRI-only are first seen when the workflow is well established, and margin reduction has been included.

## PO-1045 The impact of COVID-19 restrictions on radiotherapy referral pathways in Victoria, Australia

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### Purpose or Objective

Cancer services in Australia and radiotherapy specifically prioritize access, safety and quality for all patients, and where possible, care close to home. Ongoing expansion of treatment facilities, combined with pre-existing referral pathways, are key enablers to meeting this need across vast geographical expanses. At the height of the COVID-19 pandemic in 2020, jurisdictional government enforced restrictions were imposed to limit disease transmission in Victoria, Australia. Restrictions included significant barriers on movement in and out of regional Victoria into metropolitan Melbourne- often a necessity to meet complex radiotherapy needs. The restrictions only allowed essential, permitted travel to traverse the physical greater Melbourne boundary. The aim of this review was to investigate recent Victorian radiotherapy patient pathways and determine the impact (if any) of pandemic restrictions on radiotherapy referrals.

### Materials and Methods

All patients treated with radiotherapy in Victoria from January 2018 to December 2020 were included in this analysis. Each radiotherapy department was classified as metropolitan or regional, according to the metropolitan Melbourne geographical boundary. Patients were categorized into geographic rings (10km, 25km, 50km, 75km, 100km, 150+km) from the radiotherapy department where they received their care. Anatomical treatment site for each patient was also captured to assess disease-specific referral impact.

### Results

Between January 2018 and December 2020, 60,930 patients received radiotherapy in Victoria. Treatment <50km from place of residence occurred in 79.7% (2018), 80.2% (2019) and 82.7% (2020) of patients. While in parallel, treatment >150km from home was seen in 6.8% (2018), 6.2% (2019) and 4.9% (2020) of patients. In metropolitan radiotherapy departments, treatment >150km from home decreased from 7.0% (2018) and 6.3% (2019), to 4.7% (2020). Comparatively, regional patients traveling >150km for radiotherapy remained relatively stable (2018: 6.4%; 2019: 6.1%; 2020: 6.2%). Metropolitan radiotherapy declined 8.6%, 2.7%, 9.5%, 12.2% and 9.9% for breast, lung, brain, lower GI and head and neck radiotherapy courses from 2019 to 2020, respectively. Regional providers experienced mixed referral pathway fluctuations in the same cohorts (breast: -3.7%; lung: +6.7%; brain: +19.0%; lower GI: 0.6%; head and neck: +13.4%). These findings are indicative of the heightened movement restrictions and physical boundary that were put in place in metropolitan Melbourne, compared to regional Victoria.

### Conclusion

Pandemic restrictions had varying impacts on Victorian radiotherapy patients accessing treatment in 2020. Further investigation is required to understand the decreased travel to metropolitan radiotherapy hubs from regional Victoria, and whether adopted pathways are sustainable long term to enable treatment closer to home, where possible, without compromising optimal cancer care.

### PO-1046 Socioeconomic status and treatment prolongation in radiation therapy for lung cancer

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### Purpose or Objective

More advantaged socioeconomic status (SES) has been repeatedly associated with better cancer outcomes, even in clinical trial settings with strict protocol-directed care. Separately, prolongation of overall treatment time in radiation therapy (RT) is known to be associated with inferior outcomes in selected cancers. In this study, we aim to evaluate any association of SES with prolongation of overall RT treatment time in a cohort of lung cancer patients treated with curative intent daily fractionated RT.

### Materials and Methods

This is a retrospective study in a single Australian institution, which runs a metropolitan facility and a regional facility. The maximal ideal treatment time was computed based on number of prescribed RT fractions, considering non-treatment on weekends. Actual total treatment time was calculated based on documented RT start- and end-date. Treatment prolongation was defined as excess number of days beyond the maximal ideal treatment time. SES was derived from patients' residential postcode using the Socio-Economic Indexes for Area (SEIFA) index for Relative Socio-Economic Disadvantage based on the Australian Bureau of Statistics data, and further subdivided into quintiles based on the state of Victoria's general population. Multivariate logistic regressions were used to evaluate factors associated with treatment prolongation, including: age at RT, sex, SES, ECOG performance status, use of concurrent chemotherapy, metropolitan or regional facility, and year of RT.

### Results

From 2000 to 2020, 507 patients received 562 courses of RT. Of these, there was treatment prolongation in 307 (55%) courses of RT. The median RT prolongation was two days (range: 1-15). Patients from lowest SES quintiles were more likely to have treatment prolongation compared to patients from highest SES quintiles (71% vs. 46%, P<0.001). Patients treated in the regional facility were more likely to have treatment prolongation, compared to patients treated in metropolitan facility (67% vs. 45%, P<0.001). In multivariate analyses, SES, treatment facility and year of treatment were independently associated with treatment prolongation. Patients from the third SES quintile were 52% (95%CI=4-76%, P=0.04) less likely to have treatment prolongation than patients from the lowest SES quintile. Patients treated in the regional facility were three times (95%CI=1.6-5.4, P<0.001) more likely to have treatment prolongation than patients treated in the metropolitan facility. Patients treated in 2016-2020 were 58% (95%CI=21-77%, P=0.007) less likely to have treatment prolongation compared to patients treated in 2001-2005.

### Conclusion

Our single institution study suggested that SES and those treated in the regional facility were more likely to have treatment prolongation. More resources should be put into supporting patients from lower SES and regional RT facilities to ensure timely completion of RT.

### PO-1047 Architecture of radiotherapy departments: Comparative floorplan-analysis to identify typologies

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### Purpose or Objective