Health Economics

A comparative cost analysis of 25-fraction vs 5-fraction postoperative radiotherapy regimens for breast cancer

Dem Aliaj[1] | Guido Schüpfer[2] | Gabriela Studer[3]

[1] University of Lucerne • [2] Lucerne Cantonal Hospital (LUKS) • [3] Institute for Radiation Oncology, LUKS

THE TAKEAWAY

A new 5-fraction regimen:

53%
CHF 972 / case
Lower hospital cost (personnel + equipment)

42%
CHF 3,153 / case
Lower insurer charges (TARMED perspective)

62%
CHF 372 / case
Lower productivity loss (time away from work)

Contact

BACKGROUND

Postoperative breast radiotherapy historically required 25 daily fractions over 5–6 weeks. Randomised trials cited in this study support comparable local control and treatment tolerance for selected 5-fraction partial- and whole-breast regimens, completed in 1–2 weeks. Swiss economic consequences across provider, insurer and societal perspectives had not previously been quantified. Booth groups groups were analysed at the Radiation Oncology Department, Lucerne Cantonal Hospital (LUKS),

OBJECTIVE

To compare 25-fraction versus 5-fraction postoperative radiotherapy for breast cancer from hospital/provider, insurer and societal perspectives, including productivity loss from treatment-related absence from work.

METHODS

- **Study setting and comparators**

  Data were retrieved from 1 July–31 December 2020. Costs were discounted at 3% for time-independent comparison. Results were reported per treatment course for hospital personnel and equipment costs, TARMED insurer charges, and productivity loss; economic reporting followed the CHEERS checklist.

- **Hospital/provider cost calculation (TDABC)**

  A care-delivery value chain and process map identified activities from initial consultation with the medical doctor to treatment completion. Clinical staff and equipment time were estimated from workflow observation, staff consultation and manual validation of 10 coded 5-fraction episodes.

- **Analysis**

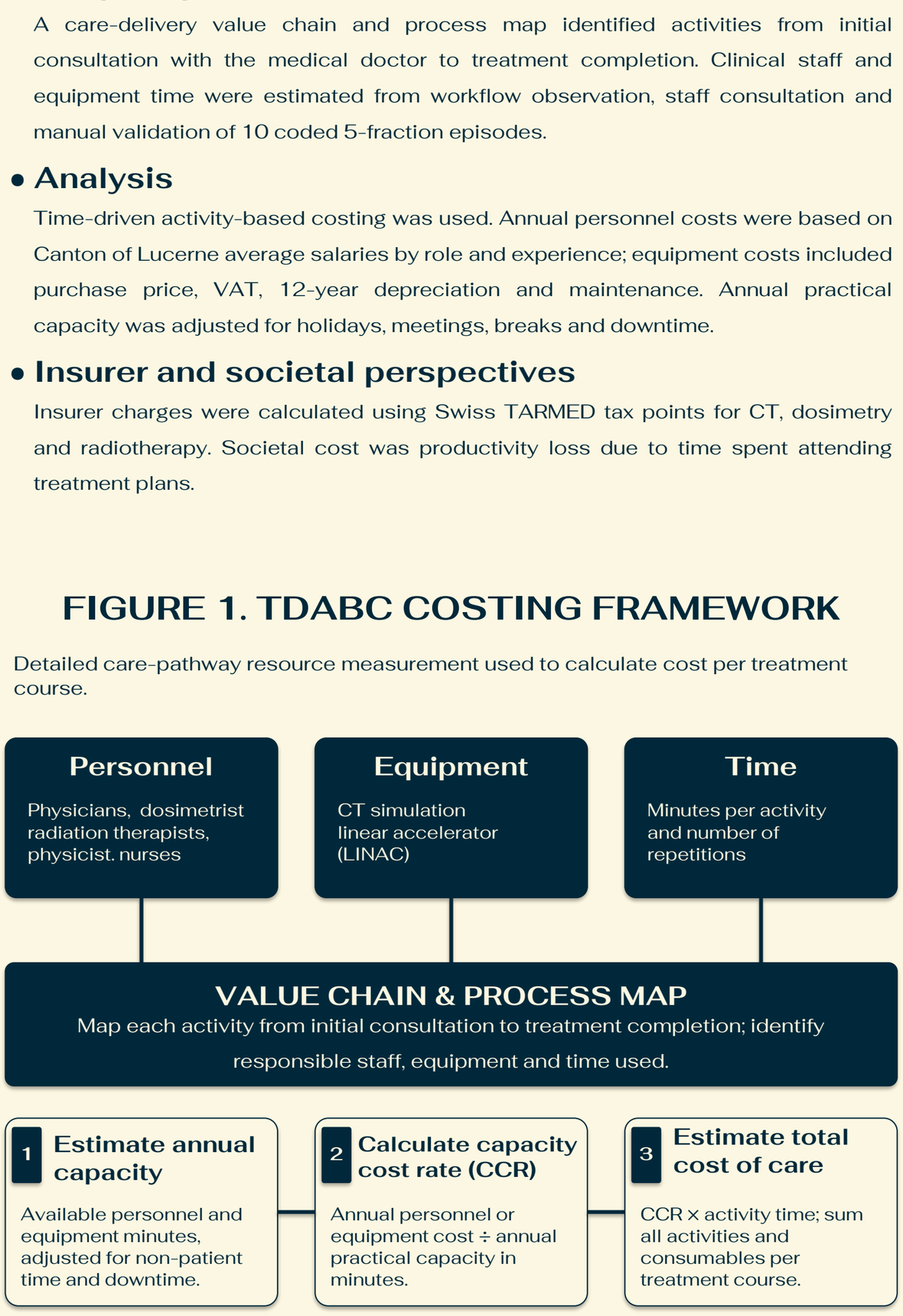
  Time-driven activity-based costing was used. Annual personnel costs were based on Canton of Lucerne average salaries by role and experience; equipment costs included purchase price, VAT, 12-year depreciation and maintenance. Annual practical capacity was adjusted for holidays, meetings, breaks and downtime.

- **Insurer and societal perspectives**

  Insurer charges were calculated using Swiss TARMED tax points for CT, dosimetry and radiotherapy. Societal cost was productivity loss due to time spent attending treatment plans.

FIGURE 1. TDABC COSTING FRAMEWORK

Detailed care-pathway resource measurement used to calculate cost per treatment course.



CAPACITY COST RATE (CHF/min) = TOTAL ANNUAL RESOURCE COST ÷ TOTAL ANNUAL PRACTICAL CAPACITY (minutes)

RESULTS

IMPLICATION FOR PRACTICE

For clinically appropriate patients, a 5-fraction regimen reduced resource use, insurer charges and time away from work. Shorter courses may improve convenience and create capacity to treat additional patients.

TABLE 1. SUMMARY OF COST AND PATIENT-BURDEN COMPARISON

Perspective	25 fractions	5 fractions	Absolute difference	Relative reduction	What drives the difference?
Hospital (personnel + equipment)	CHF 1,837	CHF 865	**CHF 972 lower**	**53%**	Fewer repeated staff activities and LINAC use.
Insurer charges (TARMED)	CHF 7,504	CHF 4,351	**CHF 3,153 lower**	**42%**	Radiotherapy charges: CHF 6,310 vs CHF 2,958; fewer billable sessions.
Patient / society (productivity loss)	CHF 601	CHF 229	**CHF 372 lower**	**62%**	Fewer care visits, waiting periods; fewer missed work appointments.
Treatment attendances	25	5	**20 fewer**	**80%**	Treatment course reduced from 5–6 weeks to approximately 1–2 weeks.

The 5-fraction regimen reduced resource use, insurer charges and patient time away from work. Clinical comparability is based on external trials cited in the study; this table reports the Swiss economic analysis.

CONCLUSION

Compared with 25 fractions, 5-fraction radiotherapy was associated with 53% lower hospital cost (CHF 972), 42% lower insurer charges (CHF 3,153) and 62% lower productivity loss (CHF 372) per course.

STUDY LIMITATION

This monocentric to Swiss analysis; results may not directly generalise to other settings.

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SOURCES

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