A new approach to the tradeoff between quality and accessibility of health care
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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
The study assessed the most efficient trade-off between regionalization of care and accessibility of the facilities for women with breast cancer. The authors concluded that Dutch society would benefit from regionalization of breast cancer care because potential quality gains would outweigh greater travel costs from the reduction in the number of medical centres. The study used a specific methodology that focused on the assessment of the relationship between quality and accessibility associated with regionalization. The authors’ conclusions appear robust.

Type of economic evaluation
Cost-utility analysis

Study objective
The study objective was to assess the most efficient trade-off between regionalization of care and accessibility of the facilities for the specific case of women with breast cancer. The analysis presented a model to quantitatively calculate the optimal number of facilities considering that regionalization may decrease the accessibility of the health facility to patients seeking breast cancer care.

Interventions
A scenario of regionalization of breast cancer care centres (reduced number of structures treating a high volume of patients) was compared to the number of treatment locations in the authors’ setting.

Location/setting
The Netherlands/tertiary care.

Methods
Analytical approach:
The analysis was based on an analytic model with a lifetime horizon. The model simulated a stepwise regionalization process (from 94 extant hospitals to an imagined one hospital). The authors did not explicitly state the perspective.

Effectiveness data:
Different approaches were used to identify relevant sources of data. Selected inputs for the model were taken from Dutch specific sources such as Dutch National Public Health Compass and the Dutch registration system for hospital declarations. Additional data on the relationship between hospital volume and clinical outcomes (the key inputs of the analysis) were based on the results of a systematic search in electronic databases. Inclusion/exclusion criteria and other key features of the literature review were reported. Eight studies met these inclusion criteria. Methodology based on hazard ratios was used to compare the different studies with respect to key outcomes. As none of the studies identified in the literature included a volume category of more than 300 treatments per year, two scenarios were presented: a conservative scenario (no effect of a higher volume on quality of treatment) and a scenario in which the authors conservatively extrapolated data (and assumed a maximum possible survival gain of 5%).

Monetary benefit and utility valuations:
Utility valuations were based on published studies and authors' assumptions.

Measure of benefit:
Quality-adjusted life-years (QALYs) were used as the summary benefit measure. A financial value of €50,000 was assigned to each QALY gained from regionalization.
Cost data:
The economic analysis assessed the costs of decreasing accessibility of care (increased travel costs for patients that stem from the regionalization process). This calculation involved information such as total amount of time travelling and travel expenses per time unit based on Dutch official statistics and authors’ opinions. Travel expenses per hour were derived from costs of travelling by taxi and loss of income by travelling using national median income rates. It was assumed that a second person always accompanied the patient to outpatient visits. Travel distances and travel time were calculated using the Dutch Drive Time Matrix. Costs were in Euros (€). The price year was not stated clearly.

Analysis of uncertainty:
A sensitivity analysis was carried out to assess the robustness of base case findings by varying the value of a QALY from €10,000 to €100,000 as well as the amount of QALYs gained per patient from one tenth (0.5% gains in five-year survival) to two times (10% gains in five-year survival).

Results
The analytic model summed the quality and accessibility functions to determine the optimum range of locations for breast cancer given the volume-outcome relationship and Dutch demographics and geography.

In 2008, there were 94 breast cancer hospitals in the Netherlands and the expected QALYs per patient were about 13 after diagnosis. The model found that the regionalization process increased the QALY gain by 0.3 to 0.7 depending on the conservative or extrapolation scenarios; considering the difference between quality gains and travel expenses, the optimum range of breast cancer locations ranged from 15 locations using the extrapolation scenario to 44 using the conservative scenario at a value per QALY of €50,000.

In the sensitivity analysis, changing key model assumptions, the optimal number of locations remained 44 in the conservative scenario and ranged from 11 to 22 in the extrapolation scenario.

Authors’ conclusions
The authors concluded that the Dutch society would benefit from regionalization of breast cancer care because potential quality gains would outweigh greater travel costs as consequence of the reduction in numbers of medical centres.

CRD commentary
Interventions:
Comparator selection was appropriate as the proposed hypothetical regionalization scenario was compared to the number of breast cancer centres in the country.

Effectiveness/benefits:
Clinical data were retrieved mostly from a systematic review of the literature. Details on methods used for the review and inclusion/exclusion criteria were reported appropriately. The authors stated that the studies identified included international data and that the quality of these studies varied. All studies had an observational design so some potential issues may exist. Some changes in the level of impact of regionalization on quality of care were made in sensitivity analysis.

QALYs were a valid benefit measure for patients with breast cancer and enabled comparisons with other disease areas. There were no details on sources of utility weights.

Costs:
The economic analysis was restricted to the change of the costs borne by the patient to travel to a distant hospital because this was the consequence of a reduced accessibility. Conventional methods were used to estimate these costs using data specific to the Dutch setting. Key sources of unit costs were reported and appeared appropriate. The authors stated that economies of scale from using larger hospitals were not included in the analysis, which should be considered conservative against regionalization. The price year was not stated explicitly but the whole analysis appeared to refer to 2008.

Analysis and results:
The study results were presented selectively as most model outcomes were presented using figures rather than tables.
The economic findings were not reported clearly. The issue of uncertainty was only partially investigated as a deterministic approach was used only for selected inputs. Study results were specific to the Dutch context and would not transfer to other settings.

Concluding remarks:
The study used a specific methodology that focused on the assessment of the relationship between quality and accessibility associated with regionalization. Within the limitations of this simulation, the authors’ conclusions appear robust.

Bibliographic details

PubMeID
22444760

DOI
10.1016/j.healthpol.2012.02.016

Original Paper URL

Indexing Status
Subject indexing assigned by NLM

MeSH
Breast Neoplasms /economics /mortality /therapy; Female; Health Care Costs; Health Services Accessibility /economics /standards; Humans; Models, Organizational; Netherlands; Outcome and Process Assessment (Health Care) /methods; Quality Improvement; Quality of Health Care /economics /organization & administration /standards; Quality-Adjusted Life Years; Travel /economics

AccessionNumber
22012017233

Date bibliographic record published
21/08/2012

Date abstract record published
16/04/2013