INTRODUCTION

- New financial pressures on dialysis facilities due to ongoing payment reductions for the Medicare end-stage renal disease (ESRD) PPS highlight the importance of efficiency in the delivery of high-quality dialysis care. Few studies have been published on the efficiency of US dialysis centers. Given the limited research available, the objective of this study was to assess the characteristics of efficient dialysis centers just prior to implementation of the PPS, which occurred in January 2011.

OBJECTIVE

- The objective was to identify dialysis facility characteristics that were positively associated with the efficient delivery of dialysis care.

METHODS

- This was a post-hoc analysis of data from a recently-published study of the technical efficiency of 4343 free-standing dialysis facilities in the US that offered in-center hemodialysis in 2010 (Shreay et al., 2013). Efficiency is measured by comparing the costs and quantity of resource inputs (labor, capital, and equipment) with outputs (number of treatments). Technical efficiency considers whether any waste can be eliminated without worsening any input or output.

- Study Design: A cross-sectional facility-level retrospective analysis, utilizing Data Envelopment Analysis (DEA) to estimate facility efficiency. Treatment data and cost and labor inputs of dialysis treatments were obtained from 2010 Medicare Renal Cost Reports.2

- Data Envelopment Analysis: DEA techniques were used to model the relative efficiency of free-standing dialysis centers by converting multiple inputs (eg, costs, staffing levels) and an output measure (number of dialysis sessions) to a single efficiency score between 0 and 1. A score of 1 equates to ‘efficient’ and scores of less than 1 equate to ‘non-efficient’. Efficiency scores are proportional; that is, a score of .50 is twice the distance from the efficiency frontier as a score of .75. For the output measure, all dialysis treatments were normalized to 4-hour hemodialysis session equivalents. Details of the DEA model can be found in Shreay et al., 2013.1

- Statistical Analysis: Mean efficiency scores and proportions of efficient versus non-efficient facilities were tabulated with facility operational and cost metrics and facility characteristics such as size, Medicare penetration, and modality mix. Tests for statistically significant differences in proportions (using Chi-square tests) and in efficiency score means and ranks (using ANOVA and Kruskal-Wallis tests) were performed.

RESULTS

Efficiency Scores

- The mean (standard deviation) efficiency score of all facilities was 0.783 (0.110), with 26.6% of facilities designated as efficient, 36.4% with efficiency scores of 0.70 to 0.99, and 21.8% with efficiency scores of 0.60 to 0.69. Very few facilities (0.5%) scored below 0.40.

Characteristics of Efficient Facilities

- Facilities affiliated with smaller dialysis organizations in general were more efficient than facilities that were part of larger organizations (Figure 4). Facilities with no home program and those with more than 50% of patients dialyzing at home were more efficient than facilities with home patients that made up less than 50% of their patient population (Figure 5).

- All associations shown in Figures 2–5 were statistically significant at the p < .001 level.

- Facilities with the highest concentration of Medicare patients were also more efficient than facilities with a lower percent of Medicare patients (Figure 3.)

- Very few facilities (0.5%) scored below 0.40.

DISCUSSION

- Small facilities and those affiliated with smaller organizations have disadvantages with regard to scale economies, and facilities with a high proportion of Medicare patients receive lower average payments with which to offset treatment costs. These facilities appear to manage these disadvantages by achieving higher than average technical efficiency. However, as Medicare payments continue to decline, opportunities for further efficiency improvements in these facilities may be quite limited, with potential adverse effects on quality and access to care for their patients.

- The financial advantage of having patients in home dialysis is somewhat offset by the challenges of running both an in-center and home dialysis program, at least until the home program matures to include at least half of all patients treated.

- Given the challenges of lower average reimbursements and poor economies of scale, small facilities and facilities with high Medicare patient loads may have been more technically efficient in order to survive financially prior to implementation of the PPS.

REFERENCES


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