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Economic Burden of Incident Unplanned Starts on Peritoneal Dialysis in a High Specialty Health Care Facility in Mexico City

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ABSTRACT

Objectives: Few studies have examined hospitalization costs for unplanned initiation of peritoneal dialysis (PD). We used data from a health care facility in Mexico to examine first hospitalization costs associated with the unplanned initiation of PD. **Methods:** Descriptive analyses focusing on initial hospitalization costs during the unplanned initiation of PD were conducted. In addition, multivariate regression models examined the association of costs with requiring urgent hemodialysis (HD) at the time of starting PD, and the association of driving distance with requiring urgent HD. **Results:** Of 195 patients hospitalized in 2010 for PD catheter placement, 51 patients met criteria for unplanned PD initiation and 25 of them required urgent HD prior to PD initiation. Ninety-two percent of the patients received 90% or greater government subsidy of hospital costs. Average inpatient costs for the first hospitalization related to the unplanned initiation of PD were 64,174 Mexican Pesos (MXN) (US $4,657). Costs were 78,683 MXN ($5,710) per patient for those requiring urgent HD and 50,225 MXN ($3,645) for those who did not, a difference ($P < 0.05$) of roughly 28,000 MXN ($2,032), and regression results were similar. In addition, long driving distance to the institution was significantly associated with requiring urgent HD. **Conclusions:** Our findings highlight potential cost savings to payers for developing better strategies to manage PD starts in Mexico and should help inform policy regarding oversight and coverage of low-income patients at risk of dialysis.

Keywords: costs, hospitalization, peritoneal dialysis, unplanned.

Introduction

Chronic kidney disease (CKD) ranks as the 12th leading cause of death worldwide and the 11th in Mexico [1,2]. CKD has five defined stages of irreversible renal function impairment that may ultimately progress to end-stage renal disease (ESRD) requiring renal replacement therapy (RRT) (i.e., peritoneal dialysis [PD], hemodialysis [HD], and/or kidney transplantation) for survival [1–4]. Most countries, including Mexico, have yet to develop and implement prevention, early detection, and intervention policies for CKD and ESRD, which may result in an underestimate of the current burden of the disease [4]. According to the Kidney Early Evaluation Program, CKD is highly prevalent, with a 22% prevalence rate in Mexico City, but mostly underdiagnosed and underrecognized even among high-risk individuals [5]. Different authors talk about the growing incidence and prevalence of not only CKD but also ESRD in Mexico, estimating in 2008 at least 4.5 million with CKD at any level and 130,000 with ESRD and RRT requirement [6–8]. Furthermore, in addition to diabetes, hypertension, and obesity, CKD in Mexico and other countries has been associated with poverty and low socioeconomic status [7,9,10].

Currently, some South American countries have reached universal access to RRT, while others, including Mexico, have covered almost two-thirds of the population with social security [2,11]. In 2009, López-Cervantes et al. [6] used modeled data and concluded that there were roughly 129,000 Mexicans with urgent need for RRT, with only half receiving it by means of social security, leaving the poor and unemployed without access to RRT [6].

As the use of PD accounts for 60% to 80% of the total population with RRT in Mexico, understanding PD costs is particularly important [6,9,12–15]. Past studies within Mexico have found that the annual total health care costs per patient of PD were lower than those for in-center hemodialysis and that PD was cost-effective in treating patients with ESRD, which may explain why the ratio of in-center hemodialysis to PD is 24:76 [16–20]. For example, a recent study in Mexico reported that in 2006 the total treatment-related costs of PD were $15,724 per patient compared with $24,032 per patient for in-center hemodialysis [16]. In measuring the costs of PD treatment, hospitalization has been shown to represent a substantial portion of costs, and this is true in Mexico [21]. In addition, per patient costs for PD are likely to increase when there

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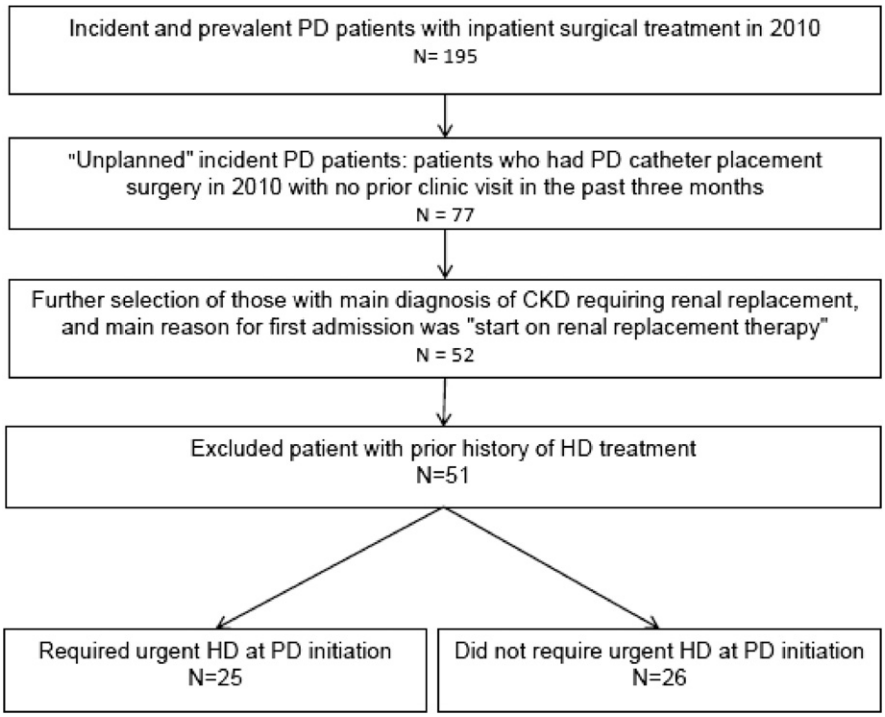

Fig. 1 – Sample selection and sample sizes for unplanned initiation of peritoneal dialysis (PD). CKD, chronic kidney disease; HD, hemodialysis.

are gaps or delays in care that result in unplanned dialysis initiation, and hospitalizations may be different for the unplanned initiation of PD in an uninsured population [22]. Furthermore, one of the reasons hospitalization costs are so important is that RRT therapy is only available inpatient for the uninsured because they cannot afford home care, but the government subsidizes inpatient treatment [6,7,23–25]. Hence, it is useful to focus on understanding hospitalization costs related to the unplanned initiation of PD in an uninsured population to inform policy regarding PD treatment. We are unaware of any published studies regarding the hospitalization costs of the unplanned initiation of PD for Mexico, or any other Latin American country. Furthermore, patients who delay care may require urgent HD prior to being put on PD, and the cost and outcome implications of those requiring urgent HD versus those who do not have not been studied in a Latin American population.

This study presents new information about hospitalization costs associated with unplanned PD initiation in an uninsured population in 2010 from a high specialty health care facility from a payer perspective. Furthermore, the study compares costs for patients who required urgent HD at the time of initiating PD versus those who did not and examines the association of distance from the clinic on the need for urgent HD.

Methods

Data

The project utilized highly detailed retrospective data based on linked medical and financial claims records from the National Institute of Cardiology Ignacio Chavez in Mexico from January to December 2010. This hospital and clinic in Mexico serves patients who do not have social security in Mexico. Every patient receives a socioeconomic survey that takes into account the address and employment of the patient, and that information is used to determine the level of subsidy.

The data allowed selection of patients experiencing unplanned initiation of PD along with detailed information regarding inpatient costs. The patients in the data were first identified on the basis of surgical records at the hospital indicating PD catheter placement for the first time within the time frame of January 1, 2010, to December 31, 2010. Within that group, incident unplanned patients were selected on the basis of information from the hospital's ambulatory clinic. In particular, patients with any PD-related visit scheduled during the 3 months prior to the surgery were excluded. Furthermore, the clinical notes for the patients in the medical records were checked and patients with a primary reason for surgery denoted as starting PD were included. Finally, one patient was excluded for having a history of HD treatment before switching over to PD treatment. From the selected population of unplanned initiation of PD, medical records were used to further identify patients who required urgent HD during the initial hospitalization for PD catheter placement (see Fig. 1).

For each patient, detailed patient demographic and clinical records as well as inpatient costs were collected from financial claims and medical records. We also observed the level of government subsidy issued for each patient. Distance from the hospital was also estimated on the basis of knowledge of the hometown of the patient in the medical record. Costs were available at several levels of granularity down to the item code; however, it was not possible to associate dates for costs other than the admission and discharge date of the hospitalization. Note that in examining the costs of PD bags, we discovered inconsistencies between the financial records and the lists of supplies given to patients. PD bags have fewer controls than other supplies, and often the information for the PD bags that were given to poorer patients was not passed along to financial claims. Consequently, for costs associated with PD bags, which are part of the pharmacy supplies department, we subtracted the