

Offering Peritoneal Dialysis to the Older Patient: Medical Progress or Waste of Time?

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Summary: Over the past decade the number of individuals of all ages started and maintained on peritoneal dialysis (PD) has been dwindling across the world with a shift in attitudes towards favoring survival over quality of life. While consistently registry data suggest HD and PD have different mortality trajectories, with poorer survival over time with PD, particularly few studies incorporate the intrusiveness of disease or the therapy into their analyses. In this review we offer arguments against a survival attitude and argue that the nondialysis care, hemodialysis and peritoneal dialysis, each have a unique place within the practice of geriatric nephrology and offer practical suggestions for the clinician.

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Over the past decade the number of individuals of all ages started and maintained on peritoneal dialysis (PD) has been dwindling in the United States. However, countries such as Australia, Canada, and the United Kingdom continue to use PD as a common initial dialysis modality (in 2008 it was 32%,^{1,2} 18.2%,³ and 19.8%⁴ in Australia, Canada, and the United Kingdom, respectively). Careful review of the data suggests that in both Canada and the United Kingdom, much of the use is in younger patients, with a gradual decline in PD use in the elderly. In the 2004 UK Renal Registry report,⁴ 22% of those aged 65 years or older starting dialysis were initiated on PD. In 2009 this proportion had decreased to 16%. In Canada the decline in PD use in elderly patients was seen as early as 2004 as hemodialysis (HD) became more widely available (17.9% of those aged ≥ 75 years in 1999 were started on PD, in contrast to only 11.4%

and 11.7% in 2004 and 2008, respectively).³ This trend to reduced use of PD in older individuals suggests a subtle shift in clinical practice that perhaps reflects more concern about survival than quality of life.

Much of the decline in PD use in older individuals may be attributable to the increased accessibility of HD over time, but changes in physician and societal attitudes also may have influenced the trend to decreased use of PD.⁵ Despite arguments in favor of PD being a kinder and gentler form of dialysis for older patients,^{6,7} many nephrologists perceive less of a role for PD in this group, citing the literature on survival differences, barriers to PD initiation, and voicing concerns about infection risk by way of justification. In this article we review the literature and conclude that although the available data may support comparable or better survival for older patients started on HD in comparison with PD, the actual survival time gained is small, and possibly not of as great importance as it first appears. We also discuss the implications of survival in the context of other outcomes such as quality of life, functionality, and the quality of dying, and conclude by reiterating why, in our opinion, PD still may offer best care for selected groups of older individuals.

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MORTALITY DIFFERENCES ATTRIBUTABLE TO DIALYSIS MODALITY CHOICES

In the modern medical world, we increasingly accept that our role as physicians is to improve life, rather than just prolong it. If so, perhaps asking, “Which of the two modalities offers better survival?” is the wrong question. In the context of living with a chronic disease, we should be asking what the patient wants to do with their remaining, albeit short, time left. However, in practice, one of the main arguments against the increased use of PD is that there seems to be a higher overall mortality rate in the older patient population, when compared with HD. The literature on the topic is extensive, spans more than 3 decades, and is open to confounding by indication bias and selection bias.⁸⁻²⁵ Much of the literature and discussion has focused on which of the two dialysis modalities offers better survival without considering the quality of the information. Much of the data come from large observational cohort studies, national registries, and post hoc interpretation of information collected for other purposes. Attempts at gathering robust information from randomized controlled trials have been unsuccessful because often patients and families do not agree to randomization.^{7,26}

Both the results of studies looking at modality-related survival, and their interpretation, vary widely. The differences are in part owing to a disparity in the definitions used to establish when and what the first treatment modality is, the populations studied, and the methodologies used to adjust for known predictors of outcome. Clear trends are emerging such that most would agree that HD and PD have different mortality trajectories, and that PD may be associated with an increase in mortality risk relative to HD over the long term. The data for increased mortality risk are particularly strong for those with higher baseline risk, such as those with diabetes and with concomitant cardiac comorbidities, but the impact and explanation for these modality-specific outcomes remain unclear.

We have chosen to limit much of the data we report on to that published in the past 10 years because earlier studies often were confounded

by poor-quality data and a limited ability to adjust for nonproportional mortality hazards. Because the relative mortality risks change over the course of a patient’s lifespan, we also have divided our discussion into two separate sections: that pertaining to survival during the first year after dialysis initiation (early survival) and that relating to survival for more than 1 year after initiation of dialysis (late survival).

EARLY SURVIVAL

Of the more recent well-designed studies, three analyses support an early survival advantage for older patients initiated on PD in preference to HD.^{15,24,25} Two other studies found neither an advantage nor a disadvantage with either therapy,^{23,27} and one study reported a clear disadvantage of PD for older diabetic patients (particularly women).¹⁰ Many did not report on early survival in older patients (Table 1).^{14,16,17,22} Inherently, the nature of clinical practice leads to significant biases, many of which would overestimate PD-associated survival. For example, it has been identified that the type of social network an individual has correlates with long-term survival,²⁸ and individuals who report having a poor social network are more likely to opt for HD than PD. Thus, not including a detailed evaluation of the social support network as a predictive variable may lead to a systematic bias favoring PD outcomes. Other factors that might bias outcomes include the expediency of PD catheter insertions, allied health support, and physician preferences. These factors often are unquantifiable but likely still influence outcomes (termed *residual confounding*).^{7,18} Furthermore, although individual physician practices vary, when faced with an unstable or frail elderly individual, many physicians are liable, implicitly, to initiate dialysis with HD rather than PD, even if full resources are available.

Weinhandl et al²⁵ used propensity matching to compare survival in a cohort of US dialysis patients. The results showed a greater than 20% early (first year) survival advantage for those started onto PD aged 65 years and older. What is interesting is that on secondary analyses, the time at which the investigators determined the treatment modality made a large difference to the results. If they restricted the analysis to only those

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