Mortality patterns & day of the week: the United States Renal Data System (USRDS)

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Introduction

• In most conventional intermittent hemodialysis programs, intervals between treatments are typically two, two and three days every week.
• There is concern that the long interval (typically Friday-Monday or Saturday-Tuesday) may place patients at risk, especially those who experience difficulty with fluid and potassium restrictions.
• The objective of this ecological study was to evaluate trends in mortality distribution in US patients on renal replacement therapy on different days of the week.

Methods

• We examined all deaths in the USRDS dataset for the years 1980 through 2007.
• The date of death was used to determine the day of the week on which the patient expired.
• Given the expectation that days of the week for death should be randomly distributed, one would expect that 1/7 or 14.29% of all deaths should occur on each day from Sunday to Saturday.
• The deviation from this expectation was calculated as 100 x (observed percentage - 14.29)/14.29.

Results

• Although the relative excess narrowed, from 17.4% in 1981 to 7.9% in 2007, it was consistently observed that Monday had the highest proportion of all deaths.
• A similar pattern was observed for Tuesday, with a smaller relative excess than on Monday.
• Mortality was consistently lower on Sundays.

Conclusions

• Day-to-day mortality appears to differ substantially in RRT patients in the US, compatible with the hypothesis that long interdialytic intervals may have adverse consequences.