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## Introduction

- A seasonal variation of clinical and laboratory parameters, mortality and hospitalization has been established in the hemodialysis (HD) population [1].
- In the current research we aimed to analyze the seasonal variation of mortality and hospitalization in a large US HD population and to also compare this seasonality with that of a subset of incident HD patients.

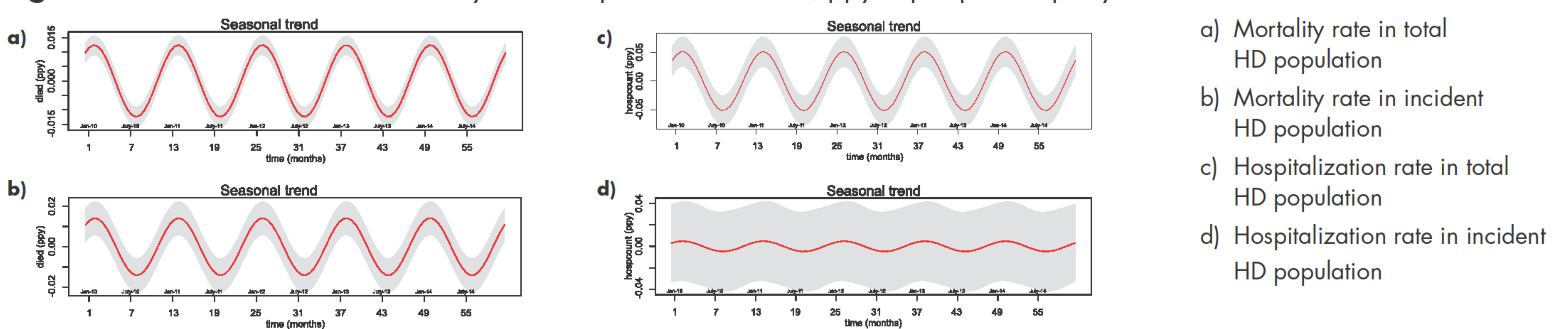
## Methods

- All patients receiving HD in Fresenius Medical Care North America (FMCNA) clinics from 1/2010 to 12/2014 were included in the study.
- Seasonality of all-cause mortality and hospitalization rates, per patient per year (ppy), was determined using partial spline models, allowing the separation of trends over time from seasonal effects [2].
- We conducted analyses in the total and incident HD populations, respectively. Incidence is defined as <120 days on HD.
- The total rate of all-cause mortality and hospitalization were also calculated for the observation period.

## Results

- 354,572 patients receiving HD in FMCNA clinics were studied during the observation period.
- A statistically significant seasonal trend in all-cause mortality with a peak in winter was found in the total and incident population (Figure 1a & 1b).
- The same significant seasonal trend, consistent with that of mortality rate, was found for all-cause hospitalization rate in the overall population (Figure 1c).
- However, no statistically significant seasonal trend in all-cause hospitalization rate was found in the incident population (Figure 1d).
- All-cause mortality and hospitalization rates range from 0.15 to 0.3 ppy and 1.2 to 2.1 ppy, respectively.

**Figure 1** Seasonal Trends of Mortality and Hospitalization Rates; ppy = per patient per year



## Conclusions

- While there is a clear seasonal variation of all-cause mortality in the total and incident HD population, the seasonal variation in hospitalization rate is only observed in the total HD population.
- In other words, incident HD patients appear to be, as compared to the total HD population, at an equal risk of hospitalization at all times during the year.
- This corroborates the fact that incident patients face a plethora of maladies following their initiation of HD.
- Seasonal variation may be of lesser concern when designing or interpreting studies examining hospitalization in the incident HD population.

## References

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2. Wang (2011). *Smoothing Splines: Methods and Applications* Chapman & Hall

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