# Renal Recovery Function Trends and Dispositions

Shu-Cheng Chen, MPH, MS, James Ebben, BS, Robert Foley, MD, Allan Collins, MD, FACP
United States Renal Data System, Minneapolis Medical Research Foundation, University of Minnesota Twin Cities

## Introduction

- Generally only a very small percent of ESRD patients are expected to recover renal function after ESRD initiation.
- Recent reports from CMS and the renal communities have shown a steady increase in"recover renal function (RRF)" rates over the past 20 years.
- This unexpected development, combined with the many RRF events that have occurred months or years after initiation of regular chronic dialysis, raise concerns regarding the ESRD certification process and the accuracy of RRF ascertainment at dialysis facilities.

## Objectives

- Analyze current RRF coding system and evaluate RRF definition between CMS and USRDS.
- Study trends of RRF events, geographic variations, and post-RRF dispositions.

## Methods

- Data were derived from the CMS SIMS (Standard Information Management System) Patient Event File (cutoff date - 9/30/2011) and the USRDS 2012 ADR database.
- A total of 98,761 patients were selected from the SIMS Patient Event File as the study population, using the 'Recover Function' event code (i.e. CMS/ESRD Networks RRF definition).
- Concurrently, a total of 66,388 patients were selected from the USRDS database based on the USRDS RRF definition:
  1. RRF event (i.e. defined by 'Recover Function' event code) must occur within 180 days of first ESRD service date,
  2. RRF event must last at least 90 days, and
  3. RRF event must not be contradicted by other USRDS data sources.
- These two datasets were used simultaneously in descriptive analyses.

## Results

- Based on the CMS/ESRD Networks RRF definition, 73% of the RRF events occurred in the first 6 months of ESRD initiation (Figure 1).
- However, we discovered many RRF patients that had subsequent events immediately within a 90-day window did not truly recover renal function. In fact, we found that 72% of them had restarted dialysis and another 25% had died (Figure 2). These findings gave evidence for a more robust RRF definition.
- With the enhanced definition (i.e., the USRDS RRF definition), we found a steady escalation of RRF rates among incident dialysis patients, from 1.6% in 1990 to 5.2% in 2010 (Figure 3), a 3.25 times increase in 20 years.
- Regionally, similar rising treads were observed in 2010 (vs. 1990) across ESRD Networks, with Network 3 having the lowest RRF rate at 2.0% and Network 7 the highest at 8.1% (Figure 4).
- Among these USRDS RRF patients, 11% were found to restart dialysis and 25% to have died within a one-year following-up period (Figure 5).

Figure 1
Time (month) from First ESRD Service Date to RRF Event – SIMS Event File
(N = 98,761)

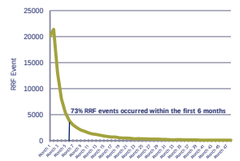



Figure 2
Distribution of Termination Events following RRF Events within a 90-day window -SIMS Event File
(N = 5,005)

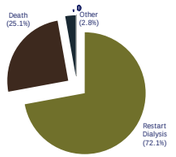



Figure 3
RRF Events among Incident Dialysis Patients by Year – USRDS Data
(N = 66,388)

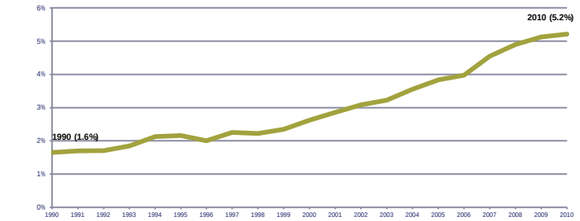



Figure 4
RRF Events among Incident Dialysis Patients by ESRD Network – USRDS Data
(N = 66,388)

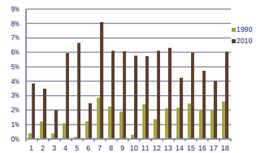
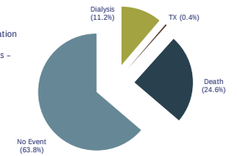



Figure 5
Distribution of Termination Events within a 1-year follow-up of RRF Events – USRDS Data
(N = 39,109)




## Conclusions

- Increases in RRF in recent years suggest that the criteria for ESRD certification have changed.
- The renal community should adopt a consistent and more accurate definition of ESRD for certification.
- A more robust RRF definition, with a post-assessment process, might be needed to address potential mis-ascertainment of renal function recovery.
- From the post-RRF event distribution (Figure 5), the observed one-year death rate of 25% was almost 1/3 higher than the 1-year crude death rate of 19% among dialysis patients reported in the 2012 USRDS ADR.
- More studies are needed to assess factors associated with rising RRF rates and to evaluate the reasons behind rates of post-RRF death and return to ESRD.

USRDS Coordinating Center
www.usrds.org NIH/NIDDK/DKUHD