USRDS
UNITED STATES RENAL DATA SYSTEM

Volume 1: CKD Analytical Methods

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Introduction

In this chapter we describe the data sources, preparation and management, variable definition, and analytic methods used to produce the statistics presented in Volume 1 of the 2016 USRDS Annual Data Report (ADR), which focuses on chronic kidney disease (CKD) prior to end-stage renal disease (ESRD). Datasets and methods used for ESRD analyses are described in the ESRD Analytic Methods chapter of Volume 2.

Data Sources

The USRDS uses several data sources to describe pre-ESRD kidney disease in the United States (U.S.), through obtaining data on diagnoses, demographic characteristics, health care procedures, prescription drug plan participation, and filled prescriptions. Data on the non-institutionalized, general population were obtained from the National Health and Nutrition Examination Survey (NHANES) and the Behavioral Risk Factor Surveillance System (BRFSS). For patients with CKD, acute kidney injury (AKI) and related comorbidities, data from three health care systems were used: the standard Centers for Medicare and Medicaid Services (CMS) Medicare 5% sample, the Clinformatics™ Data Mart Database of people with commercial health insurance plans as obtained from OptumInsight, and the Veterans Administration.

National Health and Nutrition Examination Survey

NHANES is a series of health examination surveys conducted by the National Center for Health Statistics (NCHS) of the U.S. Centers for Disease Control and Prevention (CDC). Begun in 1959, NHANES was designed to monitor the health and nutritional status of the non-institutionalized civilian population in the U.S.. NHANES III was conducted in two phases between 1988 and 1994. In 1999, NHANES became a continuous, annual survey to provide for regular estimates, with the release of public-use data files every two years. Both NHANES III and NHANES 1999–2014 were nationally-representative, cross-sectional surveys with a complex, stratified, multi-stage probability cluster sampling design that included the selection of primary sampling units (counties), household segments within the counties, and sample persons from selected households (Johnson et al., 2013). Survey participants were interviewed in their homes and/or received standardized medical examinations in mobile examination centers. Both sets of surveys over-sampled African Americans, Mexican Americans, and individuals aged 60 or older to improve the estimates for these subgroups.

Behavioral Risk Factor Surveillance System

The BRFSS is a series of telephone-based surveys of health-related risk behaviors, chronic health conditions, and use of preventive services; BRFSS sampling is designed to provide state-specific estimates (CDC, 2015). Like NHANES, it is also conducted by the CDC through the NCHS. BRFSS began in 1984 with 15 states, and expanded nationwide in 1993. As of 2011, in addition to traditional land-line subscribers, cell phone users were included in the sample frame. A question regarding kidney health was added in 2012—specifically, respondents were asked, "Has a doctor, nurse, or other health professional ever told you have kidney disease? Do NOT include kidney stones, bladder infection or incontinence (Incontinence is not being able to control urine flow)." Allowable responses were "yes", "no", and "not sure", with additional coding for "refused to answer" and "missing/not asked." Of the 475,687 respondents in 2012, only 202 respondents refused to answer (0.04%), three were missing, and 1,322 answered "not sure" (0.28%).

Clinformatics™ Data Mart Database (OptumInsight, Eden Prairie, MN)

The Clinformatics™ Data Mart data provides paid medical and prescription claims and enrollment information for national participants in commercial insurance plans of a large U.S. managed care health insurance company. The data is purchased from OptumInsight, and participants are enrolled in both a medical and a prescription plan.

The Clinformatics™ data license requires that data not be merged with any other data files, so we are unable to match these individuals with the USRDS ESRD databases to comprehensively identify ESRD patients. Therefore, we assign these individuals a first service date for ESRD as the date of either the first

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