

2019 Researcher's Guide to the USRDS Database

Appendix A: USRDS Products and Services

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Introduction

The United States Renal Data System provides a range of data products and services. The *Annual Data Report* (ADR) on chronic kidney disease (CKD) and end-stage renal disease (ESRD) in the United States is published annually at www.USRDS.org and www.ajkd.org. In addition to HTML pages, the ADR includes downloadable PDFs, Excel data files, and PowerPoint slides for all figures and tables.

The *Researcher's Guide to the USRDS Database* is also published annually on the USRDS website. The USRDS also provides Standard Analysis Files (SAFs) and specialized datasets to researchers upon request and presents the results of its research at national conferences and in peer-reviewed journals. Also, the USRDS maintains RenDER, an online data querying application that allows users to create customized data tables and regional maps. Products and services provided by the USRDS to support the work of the renal community are detailed in Table A.

Table A. USRDS Products and Services

The USRDS Website - www.usrds.org

The USRDS website features the full content of current and past ADRs. These are supplemented by additional products and services, including: PDF files of the ADR chapters, data Reference Tables, a Researcher's Guide, Excel files of the data used to create the chapter figures and tables, PowerPoint slides of ADR figures and USRDS conference presentations, notices of current news and analyses, links to related Internet sites, and contact information for the USRDS.

Requests for data - www.usrds.org/request.aspx

Data requests: Two-hour. Brief questions and data requests that are not answered directly by the ADR can be submitted to the Coordinating Center; those that require less than two hours of staff time to fulfill may be submitted online through our [data request form](#), or by email to USRDS@usrds.org

Data requests: More than two hours Questions and data requests that require more than two hours of staff time must be submitted in writing and require a data use agreement (DUA) approved by the USRDS Project Officer. Fulfillment of these requests is subject to staff availability; please allow 2-4 weeks for processing and completion of your request. All necessary forms and a submission checklist can be found on the website.

Standard Analysis Files: SAFs provide patient-specific and facility-specific USRDS data to support ESRD research. Users must sign a DUA with the NIDDK.

Merged data files: Merged files can be created by the Coordinating Center for a limited number of approved research projects per year. Users must sign a DUA with the NIDDK. Contact the USRDS Coordinating Center for more information.

RenDER - www.usrds.org/render/xrender_home.asp

The USRDS Renal Data Extraction and Referencing (RenDER) System is a querying application that allows users to create downloadable data tables and interactive maps. A tutorial is available on this site to help new users.

Researcher's Guide to the USRDS Database

This primary reference for researchers who use USRDS data files provides a detailed description of the USRDS database and the Standard Analysis Files.

Publications and presentations

Most USRDS research studies result in published papers or presentations at national meetings. Figures from abstracts and presentations conducted by the Coordinating Center and a list and links to published abstracts and journal articles can be found on the website.

Contact Information

USRDS Coordinating Center
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 Minneapolis, MN 55415
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Data Requests

Making information on ESRD available to the renal community is a primary objective of the USRDS, and we are committed to the timely fulfillment of data requests. In many cases, requests can be answered through data published in the ADR or elsewhere. Requests for data not available in material published by the USRDS and that require two hours or less of staff time are often fulfilled by the Coordinating Center within one week. However, more complex requests — those requiring more than two hours of staff time — and requests for SAFs and custom or merged files must be accompanied by a written proposal (see Table D, later in this document). Data requests will be completed only upon written approval of a Data Use Agreement (DUA) by the USRDS Project Officer.

Research Files

The Coordinating Center maintains a set of SAFs that can meet the majority of research needs and provide easy access to the data used in the ADR. The SAFs were introduced in 1994, as the NIDDK began awarding new grants focusing on research using the USRDS data. The result has been an annual increase in the number of files provided by the USRDS.

Before 1994, all researcher files were created for specific projects. Since the introduction of the SAFs, however, custom files are generally limited to cases in which a researcher provides a patient finder file to be matched with the USRDS database. For more information on merged data requests, please see the USRDS website or contact the Coordinating Center at USRDS@usrds.org.

The Core set of SAFs contains basic patient data and is required to use all the other SAFs. Included are each patient's demographic information, payer and treatment history, limited transplant data, provider data, and data from many of the USRDS Special Studies. Approximately half of the researchers using the USRDS SAFs need only these datasets.

The Transplant dataset contains detailed transplant and transplant follow-up data collected by the Centers for Medicare & Medicaid Services (CMS) and the Organ Procurement and Transplantation Network (OPTN). Data on hospital inpatient stays are found in the Hospitalization dataset. All Medicare billing data are available by individual year (see Table B).

Table B. USRDS Standard Analysis Files (SAFs)

Core datasets	These are needed to use all other files. Please note that the Medicare Payment/Claims data lags behind vital status information (e.g. death, graft loss) contained in the PATIENTS and TRANSPLANT files by about six to nine months.
Transplant dataset	Detailed transplant data from CMS and OPTN.
Hospitalization dataset	Derived from the Institutional claims; contains diagnosis and surgical procedure codes for each stay, but does not include the cost data from the Institutional claims records.
Special Studies Data	
DMMS Claims	Contains survey data, and all the Institutional and Physician/Supplier claims data for the patients in the USRDS Dialysis Morbidity and Mortality (DMMS) Special Study.
Case Mix Adequacy claims	Contains survey data, and all Institutional and Physician/Supplier claims data for patients in the USRDS Case Mix Adequacy Special Study.
CDS Survey dataset	Contains survey information and laboratory values, all the Institutional and Physician/Supplier claims data for the patients in the Comprehensive Dialysis Survey.
Active/Adipose	Contains survey data, and all Institutional and Physician/Supplier claims data for patients in the USRDS Active/Adipose Special Study.
Transition of Care in Chronic Kidney Disease dataset - KPSC	Contains the patient master file. Patients' demographic and comorbidity information, vital signs and laboratory values with all the Institutional and Physician/Supplier claims data for the patients in the Transition of Care in Chronic Kidney Disease Special Study Kaiser Permanente Southern California.
Transition of Care in Chronic Kidney Disease dataset - VHA	Contains patients' demographic and comorbidity information and laboratory values for the patients in the Transition of Care in Chronic Kidney Disease Special Study Veterans Health Administration data
ESRD Medicare payment data	
Institutional claims	pre-1989 through 2017*
Medicare Claims Clinical data	2011-2017
Physician/Supplier claims	1991-2017
Part D Prescription Drug claims	2006-2017
Pre-ESRD Medicare payment data	
Institutional claims	1993-2017
Physician/Supplier claims	1993-2017
Part D Prescription Drug claims	2006-2017
CROWNWeb Clinical data	2012-2017, 1/2018-5/2018
CKD 5% Medicare Sample SAFs	
Core	Patient master file, payer sequence file, co-morbid file
Hospitalization file	1992-2017
Institutional claims	1992-2017
Physician/Supplier claims	1992-2017
Part D Prescription Drug claims	2006-2017
ESRD Clinical Performance Measures	
Survey data	Includes 1994-2008 hemodialysis survey years and 1995-2008 peritoneal dialysis survey years
ESRD CPM/SAF linked files	Core, Hospitalization, Transplant
ESRD CPM Medicare participant Institutional and Physician/Supplier claims	pre-1989 through 2008

Standard Analysis Files

SAF use is governed by the USRDS policy on data release for investigator-initiated research. Research proposals must be approved by a USRDS Project Officer, and institutions and researchers must sign the applicable USRDS data use agreement (Agreement for Release of Data or Merged Dataset Agreement for Release of Data) found in Appendix D and available at the USRDS Website.

Most SAFs provide patient-specific data and are considered limited datasets. All patient identifiers are removed or encrypted, but data confidentiality remains a serious concern. The USRDS data use agreements describe restrictions on SAF use and disposition. The agreement(s) must be signed by the appropriate institutional authority responsible for Information Technology and privacy security, then co-signed by the investigators/analysts to acknowledge their responsibility for protecting the privacy of this kind of individual patient data. SAFs include an encrypted ID number to allow patient data from multiple SAFs to be merged.

CORE DATASET

The Core Standard Analysis Files contain the most frequently used data and are required for the use of the Transplant, Hospitalization, or ESRD Medicare claims. Included files are as follows (also see Table C).

PATIENTS

The Patients (PATIENTS) file contains one record per patient in the USRDS database and provides basic demographic and ESRD-related data.

RESIDENCE

The Residence file (RESIDENC) is a

longitudinal record of each patient's residence by ZIP code.

PAYER HISTORY

The Payer History file (PAYHIST) contains a new record for each patient at each change in insurance payer.

TREATMENT HISTORY/MODALITY SEQUENCE

The Treatment History files (RXHIST, RXHIST60) contain a new record for each patient at each change in modality or dialysis provider.

MEDICAL EVIDENCE

The Medical Evidence file (MEDEVID) contains full data from the 1987, 1995, 2005, and 2015 versions of the CMS Medical Evidence form (CMS 2728, see Appendix D). In April 1995, a new version of the form was introduced, collecting data on comorbidity, employment status, lab values at initiation, and Hispanic ethnicity; an expanded form was later implemented in 2005. The 2015 form was implemented to align with the transition to use of ICD-10-CM codes to report Primary Cause of Renal Failure.

DEATH

The Death file (DEATH) contains full data from the 1976, 1996, and 2004 versions of the CMS Death Notification form for ESRD patients (CMS 2746, see Appendix D).

CENSUS

Data sources for Census SAFs are the U.S. Census 2000 and 2010, and CDC postcensal and intercensal estimates. Data include U.S. level population counts from 1980 by race and by year (CPUS3R, CPUS4R), and state-level population counts from 1990 by race and by year (CPST3R, CPST4R).

TRANSPLANT

The Transplant file (TX) contains basic data for all kidney transplants reported by CMS and OPTN, including the date of graft failure. More detailed transplant data are contained in a separate transplant dataset.

TRANSPLANT WAITING LIST

Beginning with 2001 data (used in the 2002 ADR), the Transplant Waiting List files (WAITLIST_KI, WAITLIST_KP, WAITSEQ_KI, WAITSEQ_KP) have been updated to include basic patient demographic data and, from OPTN, all unique waiting-list periods for each dialysis patient.

FACILITY

Conducted annually, the CMS End-Stage Renal Disease Facility Survey is the source of data for the Facility SAF (FACILITY). Geographic variables that can identify facilities have been deleted. The survey period is January 1 through December 31.

FACILITY COST REPORTS

CMS hospital (1989-1995) and independent facility (1989-1993) cost reports are available as SAFs (FCOSHOS, FCOSIND). All geographic variables were deleted to ensure confidentiality. The files can be linked to the Facility SAF using the USRDS provider ID, though analyses at less than a regional or network level are not possible. Because these files are rarely used, additional data will only be added if there is sufficient demand.

DIALYZERS

The Case Mix Severity, Case Mix Adequacy, and DMMS Special Studies collected information on patient dialyzers in the late 1980s to mid-1990s. The SAFs for these studies describe the dialyzer through a code, which must be matched to

information in the Dialyzer file (DIALYZER) to find the manufacturer and model, along with characteristics such as membrane type and clearance. We believe that these data, available from published sources at the time of the study, accurately represent the dialyzer characteristics, but they should be used with caution.

CASE MIX SEVERITY STUDY

For this USRDS Special Study, data were collected on 5,255 patient incidents in 1986-1987 at 328 dialysis units nationwide. Objectives were to (1) estimate the correlation of comorbidity and other factors existing at the onset of ESRD to mortality and hospitalization rates, while adjusting for age, sex, race, and primary diagnosis, (2) evaluate possible associations of these factors with reported causes of death, (3) assess the distribution of comorbidity and other factors among patients on different modalities, and (4) compare relative mortality rates by treatment modality, adjusting for comorbid conditions and other factors.

There are two files included for this study: Case Mix Severity Special Study (CASEMIXS) and Case Mix Severity Special Study Facility (CMSFACS).

PEDIATRIC GROWTH AND DEVELOPMENT

The objectives of the USRDS Pediatric Growth and Development Study were to establish a baseline for assessing the relationship of patient growth and sexual maturation to modality and establish a prototype for the ongoing collection of pediatric data. All patients prevalent in 1990 and born after December 31, 1970, were included in the study, a total of 3,067 patients at 548 units. The file name for this study is PEDGROW.

CONTINUOUS AMBULATORY PERITONEAL DIALYSIS (CAPD) AND PERITONITIS STUDY

The USRDS CAPD and Peritonitis Study examined the relation of peritonitis episodes in CAPD patients to connection device technology and other factors. The study population included all patients newly starting CAPD in the first six months of 1989, a maximum of 14 patients per dialysis unit. All units providing CAPD training participated in the study. The sample contains data on 3,385 patients from 706 units. The filename for this study is CAPD.

DATA FROM OTHER SPECIAL STUDIES

Topics for USRDS Special Studies are approved by the NIDDK, with recommendations from CMS, the Scientific Advisory Committee, the ESRD networks, and the Renal Community Council. Design and sampling plans are developed, samples are selected, and data collection forms and instructions are drafted, tested, and finalized. Some special study data are in the Core Datasets, which include data for Dialyzer, Case Mix Severity Study, Pediatric Growth and Development, and Continuous Ambulatory Peritoneal Dialysis and Peritonitis Study. The other main studies to date are summarized below and are detailed in the Researcher's Guide.

DIALYSIS MORBIDITY AND MORTALITY STUDY (DMMS)

The DMMS was a USRDS Special Study in which data on demographics, comorbidity, laboratory values,

treatment, socioeconomic factors, and insurance were collected, using dialysis records for a random sample of U.S. patients. Waves I, III, and IV were historical prospective studies of a total of 16,812 participants in which data were collected for

patients on in-center hemodialysis on December 31, 1993. Data were abstracted from medical records, and patients were followed to the earliest of data abstraction, death, transplant, change in modality, or transfer to another facility. Wave II was a prospective study of incident hemodialysis and peritoneal dialysis patients for 1996 and early 1997 and included 4,024 participants.

These datasets also include Medicare claims for participants in DMMS. Patients were followed through the reported claims year.

CASE MIX ADEQUACY STUDY OF DIALYSIS (CMAS)

The objectives of this USRDS Special Study were to establish the relationship between the dose of delivered dialysis therapy and mortality, determine the strength of this relationship when data are adjusted for comorbidity, assess how this relationship changes with dialysis dose, assess how this relationship is affected by dialyzer reuse, and examine the impact of different dialysis membranes on patient morbidity and mortality.

The study consisted of two groups: an incident sample of ESRD patients who began hemodialysis in 1990, and a prevalent sample of hemodialysis patients whose ESRD began before 1990. A total of 7,096 patients from 523 dialysis units were included, with approximately 3,300 patients having both the pre- and post-BUN values needed to calculate delivered dialysis dose. Ninety-four percent of these cases were matched to the USRDS database. The ESRD networks collected these data in conjunction with their Medical Case Review data abstraction.

These datasets also include Medicare claims for participants in CMAS. Patients were followed through the reported claims year.

COMPREHENSIVE DIALYSIS STUDY (CDS)

This dataset contains information from the Comprehensive Dialysis Study (CDS), a USRDS special data collection study to assess rehabilitation/quality of life and nutrition issues in incident dialysis patients. The study was conducted between 2005 and 2008. All 1,678 participants answered questions on physical activity level, health-related quality of life, and work/disability status during the first six months after the initiation of ESRD therapy. In a subset of 400 participants, dietary intake and nutritional status were also assessed.

These datasets also include Medicare claims for participants in CDS. Patients were followed through the reported claims year.

CLINICAL PERFORMANCE MEASURES (CPM) DATA COLLECTION

The Clinical Performance Measures (CPM) data was a CMS project developed to collect information on the quality of care provided to the dialysis population. The data originated from yearly surveys of approximately 10,000 dialysis patients as completed by the primary care facilities; it was formerly known as the ESRD Core Indicators Project. This project resulted in a rich source of detailed information, useful in analyses of health care delivery in a sample of the dialysis population.

To further expand the value and use of the CPM data, we have linked patient data from the USRDS SAFs, enabling complete claims extraction from the SAFs for all identified patients. The resulting claims history has been combined with the CPM data to form a complete mini-set of the USRDS data products with supporting files. This enables researchers to add patient-level laboratory and dialysis prescription detail to a broad range of healthcare service event data over many years.

The USRDS Coordinating Center has made the CPM data available as SAFs. The dataset contains CPM data collected in surveys from 1994-2008. A listing of available files can be found in Table B, or you may contact the USRDS Coordinating Center for further information.

ACTIVE/ADIPOSE STUDY (AA)

Active/Adipose(AA) was a cohort study to investigate the value of exercise in ESRD. The study was designed to examine the paradox of obesity and survival in ESRD. The datasets include master file, body composition datasets, medical record datasets, medication datasets, patient questionnaire datasets, physical measures datasets and Spanish form datasets collected from 2009-2013. 771 patients participated in the study.

This dataset also contains Medicare claims for participants in AA. Patients were followed for the reported claims year.

TRANSITION OF CARE IN CHRONIC KIDNEY DISEASE (TC- CKD) KAISER PERMANENTE SOUTHERN CALIFORNIA

Although this study examines the transition of care for a national sample of Veterans, the data available through USRDS are only those from a sample of patient beneficiaries of Kaiser Permanente Southern California (KP-SC).

The Transition of Care in Chronic Kidney Disease (TC-CKD) Special Study Center examines the transition of care to renal replacement therapy (RRT; i.e. dialysis or transplantation) in patients with very-late-stage (advanced) non-dialysis dependent (NDD) CKD. These are often people with an estimated glomerular filtration rate (eGFR) <25 ml/min/1.73 m².

This database linked to the USRDS includes 5,778 CKD patients who transitioned to RRT in KP-SC between 01/01/2008 through 12/31/2012. The

datasets include patient master file, with patients' demographic and comorbidity information with vital signs and laboratory records.

These datasets also include Medicare claims for participants in TC-CKD. Patients were followed through the reported claims year.

TRANSITION OF CARE IN CHRONIC KIDNEY DISEASE VETERANS HEALTH ADMINISTRATION (TC-CKD VHA)

This database includes 100,318 U.S. veteran patients across the nation who transitioned to renal replacement therapy between 10/1/2007 and 3/30/2015.

The database was created from the linkage between the national U.S. Renal Data System (USRDS) and the national Veterans Health Administration databases.

Vital signs and laboratory data are presented as quarterly (3 months) averaged values collected from 1 to 12 quarters prior to renal replacement therapy transition.

TRANSPLANT DATASETS

Due to changes in data collection sources over time, data related to transplants are now presented in several different files. The Core SAF includes the following transplant-related datasets:

- TX includes minimum details on all transplants from all sources.
- WAITLIST_KI and WAITLIST_KP contain one record for each patient in the USRDS database per waiting-list event for kidney and kidney-pancreas transplants.
- WAITSEQ_KI and WAITSEQ_KP contain condensed, center-specific, kidney and kidney-pancreas waiting list dates.

The Transplant SAF includes these

additional datasets:

- TXHCFA includes transplant information collected by CMS's Program Management and Medical Information System (PMMIS) system before 1994.
- TXUNOS_TRR_KI, TXUNOS_TRR_KP, TXUNOS_TCR_KI, TXUNOS_TCR_KP, TXUNOS_CDR, TXUNOS_LDR, TXUNOS_DHS, TXUNOS_RHS, TXUNOS_TRR_KP) include transplant information collected since 1987 by OPTN, who is currently the primary source of transplant data for the USRDS.
- TXIRUNOS includes information on immunosuppressive drugs collected by OPTN at the time of transplantation events.
- TXFUHCFA includes transplant follow-up reports collected by CMS before 1994; reports were completed at discharge, six months, each year post-transplant, and at graft failure.
- TXFUUNOS_KI and TXFUUNOS_KP include transplant follow-up reports collected by OPTN since 1988 for kidney and kidney-pancreas transplant recipients.
- TXIFUNOS includes information on immunosuppressive drugs, collected by OPTN at follow-up visits.

Please refer to the *Researcher's Guide* for more detail, and tables and diagrams illustrating the changes in data organization.

In July of 1994, CMS and the Health Resources Services Administration (HRSA) consolidated transplant data into a single collection by OPTN under its HRSA contract. Expanded transplant data are shared among HRSA, CMS, and the NIH, and are thus available to the USRDS. This has resulted in the addition of data on a substantial number of non-Medicare transplant patients, including children.

HOSPITALIZATION DATASET

Hospitalization inpatient data are a subset of the

data in the Institutional Claims file. No payment or cost variables are included in this dataset, which is intended for researchers who need data on hospital inpatient stays and diagnoses and procedures for those stays, but who do not require payment data.

MEDICARE PAYMENT DATA

Medicare payment data are available as institutional and physician/supplier claim datasets for the ESRD population. Available years can be found in Table B. These datasets are needed to use all other USRDS files. Please note that the Medicare payment and claims data lags behind the vital status information (e.g. death, graft loss) contained in the PATIENTS and TRANSPLANT files by about six to nine months.

Institutional claims consist of all inpatient/outpatient claims (inpatient, outpatient, skilled nursing facility, home health agency, and hospice), including outpatient dialysis claims. Physician/supplier claims account for 80% of claims but only 20% of dollars. The structure and content of the two types of claims differ, as do the files derived from them.

Institutional claims are provided in three types of files. The Institutional Claims file indicates claim type, dollar amounts, DRG code, type of dialysis involved (if any), and dates of service. The Institutional Claims Details file contains details such as diagnosis and procedure codes. The Revenue Center Details file contains revenue center details. Many analyses require only the Institutional Claims files.

Physician/supplier claims are provided in three types of files — claim-level file (CLM in the file name), multiple trailers for line item details of the claim

(LINE in the file name), and multiple trailers for diagnoses and procedure details of the claim (DX in the file name).

MEDICARE CLAIMS CLINICAL DATA

Medicare Claims Clinical Data include the revenue center details, diagnoses, and procedures on each claim that specifically indicate dialysis claims. These are extracted from Institutional SAF claims files (Outpatient, Inpatient, Home Health, Skilled Nursing, Hospice). Billing details are summarized and merged back with the claim-level file — one record per claim — in the Medicare Claims Clinical Data SAF.

CROWNWEB CLINICAL DATA

CROWNWeb Clinical Data are monthly clinical data collected from the CMS Consolidated Renal Operations in a Web-enabled Network. This includes clinical data for hemodialysis adequacy, peritoneal dialysis adequacy, anemia management, iron, mineral metabolism, and vascular access.

CKD 5% GENERAL MEDICARE PAYMENT DATA

The CKD cohort datasets are built from the 5% general Medicare Claims SAFs and contain a patient master file, a payer sequence file, and a set of comorbidity files. We no longer produce datasets for diabetes and congestive heart failure based on the 5% Medicare claims.

Separately, a 5% general Medicare Hospitalization SAF, Inpatient, Outpatient, Skilled Nursing Facility, Home Health, Hospice, Part B, and Durable Medical Equipment claims for the CKD cohort are also available. Data are derived from the 5% claims SAF files.

PRE-ESRD MEDICARE CLAIMS

The pre-ESRD claims (also known as the back-casted claims) are a collection of Medicare Institutional, and Physician/Supplier billing records and Prescription Drug events incurred before the

onset of ESRD. The USRDS has made the pre-ESRD data available as SAFs (2010 and prior year's pre-ESRD claims files). The structure of the files is identical to the ESRD claims files and organized by calendar year. In the 2011 and later pre-ESRD claim files, the variable list is identical to the ESRD claims files but is organized by incident year and includes claims that occurred before the first ESRD service date of the incident year and the four prior calendar years. Also, a pre-ESRD payer sequence is provided for researchers to determine Medicare enrollment for the periods before the first ESRD service date. A listing of available files can be found in Table B.

PART D DATA

Section 101 of the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 amended Title XVIII of the Social Security Act by establishing the Voluntary Prescription Drug Benefit Program (Part D). Effective January 1, 2006, Part D is an optional prescription drug benefit for individuals who are entitled to Medicare benefits under Part A or enrolled in Medicare benefits under Part B. The data from the first few months of 2006 when the benefit was very new may be incomplete and should be interpreted in that context.

The Part D data is obtained from CMS annually, with finder files provided by the USRDS. The Part D data are divided into two separate files: an annual enrollment file containing monthly indicators of enrollment in Part D, and a prescription drug event file (PDE) containing details of prescriptions filled by Part D beneficiaries.

As Part D is voluntary, not all Medicare beneficiaries are enrolled. The annual enrollment file contains 12 monthly indicators that detail whether the beneficiary is enrolled in Part D, and if so, the type of plan. There are also monthly indicators for dual eligibility (Medicare and Medicaid), the Retiree Drug Subsidy, and the Low-Income Subsidy (LIS).

Table C. USRDS Core Standard Analysis Files

Patient	One record for each ESRD patient, including incidence, prevalence, and patient survival data. This file is required to use any of the other Standard Analysis Files. Most other files will need to be linked to this file using the encrypted patient ID.
Residence	For each patient, one record for each period in a different residence. Regional analyses.
Treatment History	One record for each period a patient is treated with a specific modality. Modality distribution and treatment patterns.
Payer History	One record for each period a patient is covered by one payer; each patient can have many records. The impact of insurance payers on clinical outcomes.
Medical Evidence	One record for each 2728 form filed for 1987, 1995, 2005, and 2015 versions. ESRD first service date, initial treatment modality, comorbid conditions, patient status at the start of ESRD.
Death	Data from the 1976, 1994, and 2004 Death Notification forms for ESRD patients (CMS 2746). Date of Death, cause of death.
Census	U.S. and state-level population counts by race by year. Standard population for adjustment.
Transplant	One record for each transplant event; patients can have multiple events. Transplant and transplant outcome analyses.
Transplant Waiting List	One or more records for each patient ever wait-listed. Comparison of transplanted patients to dialysis patients who are transplant candidates. Patient selection to a waiting list.
Case Mix Severity (Special Study)	5,255 patients. Comorbid conditions, adequacy of dialysis, dialysis prescription and other treatment parameters, laboratory values.
Pediatric Growth and Development (Special Study)	3,067 patients. Growth, development, and other issues relating to pediatric ESRD patients.
CAPD Peritonitis (Special Study)	3,385 patients. Continuous Ambulatory Peritoneal Dialysis (CAPD) and peritonitis.
Facility	One record for each year facility has operated. Merge with the treatment history, transplant, or annual summary SAFs for analyses involving provider characteristics by encrypted ID.
Facility Cost Reports	One record per facility per year (1989-1995). Costs and staffing of dialysis facilities.
Dialyzers	Information on dialyzer characteristics; to be matched to patient dialyzer information in other files in this SAF. Relation of dialyzer characteristics to patient outcomes.
Formats	All USRDS-defined SAS formats used by SAFs. Format library used to format values of categorical variables.

LINKAGES TO THE USRDS DATABASE

The USRDS provides the service of linking population cohorts to the USRDS dataset to determine ESRD status and outcomes for epidemiological research.

Please contact the USRDS Coordinating Center for more information on the application process, or see <https://www.usrds.org/request.aspx>.

FILE FORMATS

SAFs are provided as SAS files. The SAS format is widely used, easily transported, and largely self-documenting. SAS is a commercially available data management and statistical analysis software system that runs on most computers and is almost universally available on university computer systems. The SAFs take full advantage of the program's ability to incorporate detailed documentation into the file. Researchers needing another format must arrange for the conversion.

DOCUMENTATION

The *Researcher's Guide to the USRDS Database* provides most of the SAF documentation. It includes a codebook of variables, copies of data collection forms used by CMS, OPTN, and the USRDS Special Studies, and a chapter on using the SAFs in SAS. The guide may be downloaded from the USRDS website and is included with the Core SAF.

Data Use Acknowledgement

Publications using USRDS data should include an acknowledgment and this notice:

The data reported here have been supplied by the United States Renal Data System (USRDS). The interpretation and reporting of these data are the responsibility of the author(s) and in no way should be seen as an official policy or interpretation of the U.S. government.

Including this disclaimer will assist in the review process when investigators submit manuscripts to NIDDK for approval to publish.

Data Release Policy

Since the SAFs and custom data files contain confidential, patient-specific data, their release requires the approval process described here. Investigators may contact the USRDS Project Officer at the NIDDK to discuss requests before preparing a proposal. To request and use USRDS data files, investigators must provide the Project Officer with a detailed description of the proposed investigation (see Table D). The summary must include goals, background data, an in-depth description of study design and methodology, and resources available for completing the project; this may be the description from a grant proposal or other funding application. The project must comply with HIPAA privacy regulations, and the summary should provide enough information to enable assessment of compliance. Guidelines for adherence to HIPAA privacy regulations are found in the data user agreements found on the [USRDS website](#): Agreement for Release of Data and Merged Dataset Agreement for Release of Data. With your completed research proposal, please include a signed agreement for the release of information.

Investigators must also specify the requested

USRDS SAFs by name. If these files are not sufficient to meet the requirements of the proposed research, investigators must specify precisely which data elements are needed.

The investigator and the Coordinating Center will resolve any technical questions. The NIH will review the project for technical merit and conformity with HIPAA privacy regulations. The Project Officer will notify the investigator(s) in writing of the outcome, and if the project is not approved, will discuss reasons for the decision. The Project Officer will send a copy of the approval letters to the Coordinating Center. The Coordinating Center will then prepare the files and documentation and send them to the investigator.

Any reports or articles resulting from the use of USRDS data must be submitted to the Project Officer before submission for publication to assure adherence to HIPAA privacy regulations. The Project Officer must respond within 30 days. If a report or article is determined not to adhere to the Privacy Act, it shall not be published until compliance is achieved. Assessment of compliance will not depend on the opinions and conclusions expressed by the investigators, nor will the Project Officer's approval indicate government endorsement of the investigator's opinions and conclusions.

All publications using released data must contain the standard acknowledgment and disclaimer presented above. Investigators are requested to send copies of all final publications resulting from this research to both the Project Officer and the Coordinating Center.

Table D. Outline for Research Proposals Using USRDS Data

A data request applies only to the project stated in the proposal; a new proposal must be submitted for each additional use.

Outline for research proposals using USRDS data	Outline for research proposals linking USRDS data with another data set
<ul style="list-style-type: none"> I. Research topic title and submission date. II. Background information. III. Study design <ul style="list-style-type: none"> a. Objective b. Hypotheses c. Analytical methods. IV. Data being requested: <ul style="list-style-type: none"> a. List of Standard Analytical Files needed (please specify years required); include a brief justification for each dataset b. Description of data security: responsible party, computer access, etc. c. The timeframe for the project d. A statement that data will be returned to the USRDS or destroyed at the end of the project. V. IRB clearance or waiver (REQUIRED) VI. Agreement for Release of Data, signed by all researchers VII. Investigator information for principal investigator and coauthors, supply: <ul style="list-style-type: none"> a. Name b. Affiliation c. Business address d. Business phone number e. Business fax number f. Email address 	<ul style="list-style-type: none"> I. Research topic and submission date II. Background information III. Study design <ul style="list-style-type: none"> a. Objectives b. Hypotheses c. Description of data linkage — variables to be used in linkage d. Analytical methods IV. Privacy Issues <ul style="list-style-type: none"> a. A statement describing that patient consent allows such a merge or a statement why patient consent could not be obtained. b. IRB clearance (REQUIRED) V. Data being requested <ul style="list-style-type: none"> a. List of Standard Analytical Files needed (please specify years required; include a brief justification for each dataset b. Description of data security: responsible party, computer access, etc. c. The timeframe for the project d. A statement that data will be returned to the USRDS or destroyed at the end of the project. VI. Agreement for Release of Data, signed by all researchers VII. Investigator information for principal investigator and co- authors, supply: <ul style="list-style-type: none"> a. Name b. Affiliation c. Business address d. Business phone number e. Business fax number f. Email address

Submit to:**USRDS Coordinating Center**

701 Park Avenue, S2.100

Minneapolis, MN 55415

1-888-998-7737

usrds@usrds.org

Please indicate “USRDS DUA Request” in the subject line of the email for these requests.

Caveats

This policy establishes conditions and procedures for the release of data from the USRDS and is intended to ensure that data are made available to investigators in the pursuit of legitimate biomedical, cost-effectiveness, or other economic research.

The USRDS will not release data that identify individual patients. Since it may be possible, however, to infer identity from SAF data, these data are considered confidential. The USRDS data use agreements (Agreement for Release of Data and Agreement for Release of Data) contain general and specific restrictions on the use of USRDS data, and

investigators are expected to abide by these restrictions. If individually identifiable data are needed, the request should be submitted directly to CMS. Use of these data to identify and/or contact patients, facilities, or providers is prohibited by USRDS policy and HIPAA privacy regulations.

The USRDS Coordinating Center will provide data files only. Analytical services other than review of the proposal and preparation of the data file are not provided under the USRDS contract, although Coordinating Center personnel may participate in analyses funded by other sources.