Mortality Statistics Branch
Division of Vital Statistics
National Center for Health Statistics
Centers for Disease Control and Prevention

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1. Overview of Mortality Component of the National Vital Statistics System

Mission
The mission of the Mortality Component of the National Vital Statistics System (NVSS) is the production and dissemination of high quality national mortality statistics.

Functions
The registration of deaths in the U.S. is not a Federal function, but resides with 57 independent vital registration areas (50 States, District of Columbia, New York City, Puerto Rico, U.S. Virgin Islands, Guam, American Samoa and the Commonwealth of the Northern Marianas). The production and dissemination of national mortality data and statistics are accomplished through the Vital Statistics Cooperative Program (VSCP). The VSCP is a data sharing partnership between the Federal government and the 57 registration areas. The Division of Vital Statistics of the Centers for Disease Control and Prevention's National Center for Health Statistics administers the VSCP and the NVSS. The major functions of the Division of Vital Statistics with regard to the mortality component of the NVSS are:

1. Production and dissemination of national mortality datasets
   One of the most important functions of the NVSS is the compilation of individual-record national mortality data sets suitable for the computation and analysis of mortality statistics across a broad range of variables. The mortality component of the NVSS provides death records that are compiled into two major data sets: 1) the multiple-cause mortality data set and 2) the linked birth-infant death data set (see section 4 for more detail on the content of the data files).

2. Publication of national mortality statistics
   National mortality statistics published by the Division of Vital Statistics are the official mortality statistics for the U.S. These statistics are published on the Internet (http://www.cdc.gov/nchs) and in the series *National Vital Statistics Reports* (NVSR). NVSR reports include (see section 4 for copies of the most recent reports):
   a. Monthly provisional mortality statistics – presents provisional monthly, year-to-date, and 12-months ending counts of registered deaths. Published monthly.
   b. Preliminary mortality statistics – presents preliminary mortality statistics based on a large proportion (80-99 percent) of the deaths occurring during the year. Published annually approximately 10-14 months after the end of the data year.
   c. Final mortality statistics – presents final mortality statistics and accompanies the release of the multiple cause mortality data set. Published annually approximately 20-24 months after the end of the data year.
   d. Infant mortality statistics (from the linked birth-infant death data) – presents final infant mortality statistics and accompanies the release of the linked birth-infant death and perinatal mortality data sets. Published annually approximately 20-24 months after the end of the data year.
   e. Reports on special topics – these include reports on life expectancy, leading causes of death, and injury mortality. Published annually after the release of final mortality statistics.

3. Dissemination of national standards
   Another important function is the dissemination of national standards for the collection, coding and processing of mortality data. This includes facilitating the development of a standard death certificate (see http://www.cdc.gov/nchs/data/series/sr_04/sr04_028.pdf regarding the 1989 revision and http://www.cdc.gov/nchs/vital_certs_rev.htm regarding the 2003 revision), development of standard specifications for the collection of mortality data (http://www.cdc.gov/nchs/data/dvs/Guidelinesbirthspecs1101acc.pdf and http://www.cdc.gov/nchs/data/dvs/FinalDeathSpecs2-22-05.pdf), and standard instructions for coding, editing and querying mortality data (http://www.cdc.gov/nchs/about/major/dvs/im.htm).

4. Training
   The Division of Vital Statistics also provides training for the providers of data and data users. Training materials and seminars have been developed for physicians (http://www.cdc.gov/nchs/data/misc/hb_cod.pdf) and medical examiners (http://www.cdc.gov/nchs/data/misc/hb_me.pdf) on proper cause of death certification and for funeral directors (http://www.cdc.gov/nchs/data/misc/hb_fun.pdf) on death registration procedures. Training courses are provided on the coding of cause of death, vital registration, and vital statistics (see section 4 for course descriptions). These courses are offered to both domestic and international students.

5. Research
   Staff of the Division of Vital Statistics also conduct mortality-related research. For example, research has been or is being pursued in the areas of data quality, methodology, disease classification, infant mortality, racial and ethnic disparities, cause-of-death risk and mortality forecasting. Current research projects and recent journal articles, special reports and presentations are listed in section 5. In addition, staff routinely serve as peer reviewers for professional journals.

Major Users of US Mortality Data

Federal Agencies:
Centers for Disease Control and Prevention (CDC)
      National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP)
      National Center for Injury Prevention and Control (NCIPC)
      National Center for Infectious Diseases (NCID)
      National Institute of Occupational Safety and Health (NIOSH)
      National Center for HIV, STD and TB Prevention (NCHSTP)
      National Center for Environmental Health (NCEH)
      Epidemiology Program Office (EPO)
Office of the Surgeon General
HHS Assistant Secretary for Planning and Evaluation (ASPE)
Government Accountability Office (GAO)
Bureau of the Census
Social Security Administration (SSA)
Food and Drug Administration (FDA)
Indian Health Service (IHS)
National Institutes of Health (NIH)
      National Cancer Institute (NCI)
      National Heart, Lung and Blood Institute (NHLBI)
      National Institute on Aging (NIA)
      National Institute on Drug Abuse (NIDA)
      National Institute of Nursing Research (NINR)
      National Library of Medicine (NLM)
National Highway Traffic Safety Administration (NHTSA)
Agency for Healthcare Research and Quality (AHRQ)
Substance Abuse and Mental Health Services Administration (SAMHSA)
Other Organizations:
United Nations
World Health Organization (WHO)
Pan American Health Organization (PAHO)
American Cancer Society
American Heart Association
American Lung Association
American Diabetes Association
American College of Surgeons
National Association of Medical Examiners (NAME)
National Bureau of Economic Research (NBER)
Max Planck Institute for Demographic Research
North American Association of Central Cancer Registries (NAACCR)
Population Reference Bureau
State and Local Departments of Health
Various Marketing, Investment, Insurance, Pharmaceutical, Healthcare and Law Firms
Independent researchers at various Colleges and Universities
March of Dimes

2. Budget and Organizational Structure

Budget

Fiscal Year 2006 Project Funding Proposals
Division of Vital Statistics (*note: these numbers represent the total DVS budget; not just the mortality component***)**

Project Category	Funding Request
On-going contractual support/maintenance of vital statistics operations	$ 2,881,370.00
State vital statistics funding (incl. VSCP, NDI, and NAPHSIS CA)	$ 19,332,952.00
Requested special projects to support mortality	$ 1,200,000.00
Requested special support for new birth certificate items	$ 1,000,000.00
Operating Budget (incl. travel, equipment, other services, etc.)	$ 247,154.00
DVS TOTAL for vital statistics	$ 24,661,476.00

Note: Funding for National Survey of Family Growth and

federal staff salaries not included in above total.

Organizational Structure

The production of national mortality data and statistics involves substantive contributions from each of the branches of the Division of Vital Statistics (DVS): the Data Acquisition and Evaluation Branch (DAEB), the Mortality Medical Classification Branch (MMCB), the Mortality Statistics Branch (MSB), the Reproductive Statistics Branch (RSB) (for the linked birth-infant death statistics) and the Systems Programming and Statistical Resources Branch (SPSRB). In addition, the Registration Methods staff (RMS) (part of the DVS Office of the Director) contributes by coordinating the development of materials and training in the area of registration standards. The functions and staff of each of the branches and the RMS are described in the following pages.

Data Acquisition and Evaluation Branch

Rajesh Virkar, Chief

The Data Acquisition and Evaluation Branch (1) serves as the NCHS focal point for communication between states and NCHS regarding data acquisition, quality control and procurement for both mortality and birth data; (2) promotes state participation in the Vital Statistics Cooperative Program and the National Death Index Program; (3) contributes to the specifications for coding, editing and management of vital statistics data by states and NCHS; (4) develops and administers the funding formulas and contracts used to obtain data for the VSCP and NDI programs from states and other organizations; (5) assures that monthly data files are delivered and completed on schedule using state, federal (NCHS – Research Triangle Park, NC), and contract resources to meet the needs of preliminary as well as final data files; (6) develops and operates a comprehensive quality assurance program to monitor the quality of data prepared by states and NCHS, and assures that national data are accurate, complete and consistent with specifications; (7) develops, installs, and maintains computer software and procedures needed to collect and process data in states and NCHS; (8) coordinates, through the state project directors, a comprehensive program of technical assistance to states including data files, training, processing and coding of data; and (9) designs and provides consultation on methodological and evaluation studies.

Vital Statistics Specialists - For assigned states, the Vital Statistics Specialists are responsible for acquiring timely data files, processing data files, reviewing state procedures/documentation, serving as Vital Statistics Cooperative Program (VSCP) contract project officers.

Chrissy Jarman – Team Leader
        Assigned Jurisdictions:

Connecticut	Florida
Maryland	Pennsylvania
South Carolina	

Connie Gentry
        Assigned Jurisdictions:

American Samoa	Arizona
Kentucky	Michigan
Missouri	Nebraska
New Hampshire	New Mexico
Ohio	Oklahoma
Texas	Vermont
Wyoming	

Pam Stephenson
        Assigned Jurisdictions:

Alabama	Alaska
Arkansas	Delaware

District of Columbia	Hawaii
Idaho	Indiana
Maine	Mississippi
New York	Virgin Islands
Virginia	

Millie Johnson
Assigned Jurisdictions:

Colorado	Guam
Illinois	Iowa
Kansas	Massachusetts
Minnesota	Montana
North Carolina	North Dakota
Oregon	South Dakota
Utah	

Susan McBroom
Assigned Jurisdictions:

California	Georgia
Louisiana	Nevada
New Jersey	New York City
Northern Mariana Islands	Puerto Rico
Rhode Island	Tennessee
Washington	West Virginia
Wisconsin	

Statisticians - For assigned states, the Statisticians are responsible for assuring data are of the highest quality possible for release to subject matter branches in Hyattsville, MD, routinely reviewing trend analysis tables and reports, producing/reviewing ad hoc tables (using Beyond 20/20) as needed to analyze data using multiple dimensions, reviewing quality of monthly counts, communicating problems and anomalies to states.

David Justice
Assigned Jurisdictions:

California	Florida
Georgia	Maryland
Montana	New York City
Texas	

Jenny Justice – Team Leader
Assigned Jurisdictions:

American Samoa	Arizona
Delaware	Guam
Maine	Massachusetts
New Hampshire	Northern Mariana Islands
Ohio	Oklahoma

Virgin Islands

Adrienne Rouse
Assigned Jurisdictions:

Colorado	District of Columbia
Hawaii	Idaho
Kansas	Missouri
Oregon	South Dakota
Utah	Vermont
Washington	Wisconsin

Brenda Green
Assigned Jurisdictions:

Arkansas	Illinois
Iowa	Kentucky
Michigan	Minnesota
Mississippi	Nebraska
North Dakota	Puerto Rico
West Virginia	Wyoming

Chuck Sirc
Assigned Jurisdictions:

Alabama	Alaska
Indiana	Louisiana
Nevada	New Mexico
Rhode Island	Virginia

Kryn Krautheim
Assigned Jurisdictions:

Connecticut	New York
New Jersey	North Carolina
Pennsylvania	South Carolina
Tennessee	

Statistical Assistants (Jenny Justice – Team Leader)

Faye Cavalchire – mortality unit record quality control (coding and adjudication), coding of non-VSCP fetal deaths, special projects (such as Industry/Occupation (I&O)), prepares weekly graphs on status of data receipts

Receipt and Control   (Chrissy Jarman – Team Leader)

Amy Estoup – responsible for receipt and control of all microfilm, hard copies, CD ROMs, etc. used by staff for coding and quality control, works as a backup for Secure Data Network (SDN) activities

Kathy Holiday – manages SDN file transfers, acquires monthly counts from all the jurisdictions, works as a backup for receipt and control activities

VSCP Contracts (Chrissy Jarman – Team Leader)

Denise Little – responsible for processing all VSCP and National Death Index (NDI) vouchers as well as other administrative duties for the branch such as preparing travel, maintaining supplies, etc.

Industry and Occupation (Chrissy Jarman – Team Leader)

Celia Dickens – Standardized Occupation and Industry Codes (SOIC) benchmark work, NCHS I&O instruction manuals, I&O training

Mortality Medical Classification Branch
Donna Glenn, Chief
Lawanda Champion, Deputy Chief

The Mortality Medical Classification Branch (1) develops the Mortality Medical Data System (MMDS) medical classification software and procedures for collecting and processing of mortality medical data in states and at NCHS; (2) provides leadership to the international community in the use and adoption of the MMDS; (3) directs a comprehensive program of technical assistance and consultation related to medical mortality data classification to states, local areas, other countries, and private organizations; (4) tests, refines, and updates the MMDS; (5) provides nosological assistance and training, both nationally and internationally, in regard to International Classification of Diseases (ICD) information for mortality and new revisions of the ICD; (6) classifies, codes, keys, and verifies medical information from the death certificate, including rejects from the MMDS; (7) develops and implements training programs for cause-of-death coding and provides technical assistance to international, federal, state, and local government and non-government agencies.

Training Team: This team is responsible for providing general nosological assistance and training; for the MMDS instruction manuals including 2a, 2b, 2c; the training for state and international staff in underlying and multiple cause of death coding and the maintenance of all training material; the updating of the MICAR, ACME, TRANSAX decision tables (see section 3 for explanation of the MMDS and its components). They provide technical assistance to the specialists related to coding questions. This team is also responsible for providing programming specification for the MICAR system and international collaboration with WHO for updating the ICD and the MMDS software.

Julia Raynor	Nosologist
Tyringa Ambrose	Nosologist
Dawn King	Team Manager
Shaluanda Johns	Medical Records Control Technician

Contractors: 3 Nosologists

Mortality Medical Data Specialists - For assigned jurisdictions, the Mortality Medical Data Specialists are responsible for reviewing state certificates, preparing special coding/processing rules for each jurisdiction, maintenance of the annual SuperMICAR (see section 3 for a description of SuperMICAR) data file for each jurisdiction, the over-all quality of each jurisdiction's data which includes reviewing and correcting records based upon the edits, entering and processing all missing records, adjudicating the quality control (QC) listings for each month, verifying the inclusion of rare cause of death on the data file, etc. The specialists are also responsible for providing technical assistance to their jurisdictions related to underlying and multiple cause-of-death coding and training in the use of the SuperMICAR software. This team is also responsible for the updating of the 2s instruction manual.

Leslie Stewart - team leader
  Assigned Jurisdictions:

Arkansas	Hawaii
California	New York City
Georgia	Tennessee

Barbara Porterfield
  Assigned Jurisdictions:

Illinois	New York State
Iowa	North Dakota
Kansas	Oregon
Louisiana	Puerto Rico
New Jersey	Vermont

Cynthia Harris
  Assigned Jurisdictions:

Alabama	Colorado
Delaware	Maryland
Florida	Missouri

Eldora Shuler-Smith
  Assigned Jurisdictions:

Massachusetts	Virgin Islands
Minnesota	West Virginia
North Carolina	Wisconsin
South Carolina	Wyoming
Utah	

Lorena Bobbitt
  Assigned Jurisdictions:

Alaska	Maine
Arizona	Nevada
District of Columbia	Pennsylvania

Rosalyn Anderson
  Assigned Jurisdictions:

American Samoa	Nebraska
Guam	New Mexico
Idaho	South Dakota
Mississippi	Texas
N. Mariana Islands	Virginia

Shirley Clayton-Carter
  Assigned Jurisdictions:

Connecticut	New Hampshire
Indiana	Ohio
Kentucky	Oklahoma
Michigan	Rhode Island
Montana	Washington

<u>Mortality Medical Records Technicians</u> - The technicians are responsible for coding the MMDS system rejects for selected jurisdictions and providing the QC sample file for each jurisdiction (54) on a monthly basis. Technicians are divided into two teams but help each other out when coding is in danger of being delayed due to unexpected receipt of large amounts of data.

Mary Susan Lippincott - team leader

Team A:
Bernice Judd
Betsy Thompson
Mia Jones

Assigned Jurisdictions Coding Rejects:

California	Puerto Rico
Florida	South Dakota
Idaho	Utah
Missouri	Virginia
North Dakota	Vermont
New Jersey	Wyoming
New Mexico	Guam
New York City	Illinois
Oregon	West Virginia

Quality Control File:

Georgia	Delaware
Indiana	District of Columbia
Maryland	Florida
Michigan	Hawaii
Montana	Kentucky
New York City	Maine
Pennsylvania	Nevada
Washington	New Hampshire
Alabama	Ohio
Alaska	Oklahoma
Arkansas	Rhode Island
Colorado	Tennessee
Connecticut	

Team B:
Lillian Clark
Terry Harned
James Herndon
Ida Delaney

Assigned Jurisdictions Coding Rejects:

Alabama	Kentucky
Alaska	Maine
Arkansas	Nevada
California	New Hampshire
Colorado	Ohio
Connecticut	Oklahoma
Delaware	Rhode Island
District of Columbia	American Samoa
Florida	Northern Marianna
Hawaii	Virgin Islands

Quality Control File:

Arizona	New York
California	North Carolina
Idaho	North Dakota
Illinois	Oregon
Iowa	Puerto Rico
Kansas	South Carolina
Louisiana	South Dakota
Massachusetts	Texas
Minnesota	Utah
Mississippi	Vermont
Missouri	Virginia
Nebraska	West Virginia
New Jersey	Wisconsin
New Mexico	Wyoming

Contract: 1 full-time and 2 part-time Medical Records Technicians

File Development Staff   This team is responsible for receipt and processing of the mainframe data files, generating all software used on the mainframe; monitoring the rare cause listings; providing out-of-state medical records as requested by each jurisdiction; coordinating the data files stored on the network with the data files on the mainframe; reviewing files for possible errors identified by statisticians and other users.

Dora Wilkerson
Faye Webster

Steve Rushing: While a member of the file development team, Steve's responsibilities include: Technical support for in-house and state office users; creation and distribution of MMDS releases; database administrator; creating and maintaining databases for file tracking, batch control, quality assurance and customer response; off site training in MMDS use and implementation for state offices; documenting processes; handling exceptional batches.

Contractor: Processes the in-coming SuperMICAR files and moves them to the appropriate space for the medical records technicians to select for coding. Also processes mainframe files.

SuperMICAR Data Entry Team: This team consist of 4 contract staff who are responsible for entering the cause of death data into SuperMICAR for all non-VSCP jurisdictions (those that provide microfilm records) and for certain jurisdictions which require additional assistance with entering records which have additional information.

Software Development Team: This team consist of 6 programmers/database administrators and 1 manager who are responsible for the MMDS software (SuperMICAR, MICAR100/200, ACME, and TRANSAX); the decision tables; the training software; tracking programs, system documentation and help files; determining the quality of the data processed through the system.

Systems, Programming and Statistical Resources Branch
Nicholas Pace, Chief

Branch Mission and Responsibilities:

(1) Conducts research into the design, development, and administration of vital statistics information technology systems; (2) performs systems analysis and computer programming of vital registration data; (3) develops technologies, data architectures, security infrastructure, and database management related to vital records, record linkage, and sample surveys consistent with Center and Agency information technology requirements; (4) develops, maintains, and employs state-of-the-art information technologies (e.g., relational data bases, Web-enabled applications, applications development and dissemination activities) associated with vital statistics; (5) develops and maintains systems and databases to support the National Death Index program; (6) provides consultation and expert technical assistance to the Division concerning mainframe, client-server, and networking applications; (7) prepares and maintains population databases as well as conducts studies on statistical computation and data quality; (8) designs and implements information technology applications to produce final edited and imputed vital statistics and survey data; (9) produces and distributes a wide variety of vital statistics reports and tabulations in multiple formats; (10) provides consultation, policy guidance and expert technical assistance NCHSwide as well as to a broad range of agencies, institutions, federal, local, and international governments, researchers, and individuals, in regard to vital statistics systems design, administration, and usage; and (11) manages national vital statistics data files and databases and the DVS vital statistics data request program.

Staff Duties:

Nicholas F. Pace, B.S., Branch Chief
Directs activities in the analysis, programming and implementation of computer processing systems that process, compute, impute, store, retrieve and tabulate national Vital Statistics data. The scope of the branch's systems and programming functions includes several continuing complex national statistical functional areas: Mortality, Natality, Fetal Death, Linked Birth-Infant Death; National Death Index, and Marriage and divorces. Performs special programming projects and serves as divisional mainframe RACF Administrator.

David Johnson, B.S., Statistician
Responsible for analysis, programming, and implementation of computer processing systems involving the editing and creation of the national Mortality Historic Final and Preliminary files. Also responsible for developing and maintaining the Race Coding software engine, VSCP server administration and applications, developing statistical software models and sampling programs, data transmission and encryption software, and Vital Records Exchange applications.

Steven Steimel, B.S., Lead IT Specialist
Responsible for analysis, programming, and implementation of computer processing systems involving the editing and creation of the Natality Final, Preliminary file, Fetal Death file, and Linked-Birth Infant Death file. Also serves as database administrator of vital statistics databases and develops computer applications.

Thomas Dunn, PhD., Statistician
Manages the DVS data request program. Creates SETS and ASCII data CD products. Creates and maintains population tables. Performs statistical validation and quality review activities.

Candace Cosgrove, M.S., IT Specialist
Responsible for analysis, programming, and implementation of computer processing systems involving the editing and creation of the Linked File, Linked Birth-Cohort file, Multiple Birth file, and programming for the Fertility Cohort Study. Also provides programming for a variety of the division's major statistical reports and serves as a consultant in the use of SAS software.

Jordan Sacks, B.S., IT Specialist
Serves as DVS Intranet Web Master and provides programming for a variety of the division's major statistical reports.

Manju Sharma, B.S., IT Specialist
Provides programming for a variety of the division's major statistical reports.

John Birken, M.S., IT Specialist
Provides programming for a variety of the division's major statistical reports.

Bonita Gross, IT Specialist
Responsible for the development and maintenance of the Provisional Data Reporting system. Provides database administration and programming for vital statistics computer applications.

Vanetta Harrington, Statistical Assistant
Performs data compilations and verifies statistical tabulations. Also, maintains public use documentation and serves as branch documentation librarian.

Jaleh Mousavi, B.S., IT Specialist
Provides database administration and programming for vital statistics computer applications, including the National Death Index (NDI).

Joyce Arbertha, IT Specialist
Serves as Systems Administrator for the National Death Index (NDI).

Annie Liu, M.P.A., (contractor - NG/NOVA) Senior Computer Programmer
Provides programming for a variety of the division's major statistical reports, including Vital Statistics of the United States, Natality. Also serves as a consultant in the use of SAS software.

Charles Royer, B.S., (Professional Services Contract) Senior Computer Programmer
Responsible for the programming and maintenance of Instruction Manuals Part 8 and 8. Also, provides programming for a variety of the division's major statistical reports and is responsible for a project to convert mainframe PL/I programs to the SAS language.

Mortality Statistics Branch

Robert N. Anderson, PhD, Chief

The Mortality Statistics Branch (1) establishes the research agenda for mortality statistics in response to public health priorities; (2) converts identified data needs into statistical and research programs to obtain, evaluate, analyze, and disseminate mortality statistics data; (3) conducts research to improve data collection of vital records, record linkage, and sample survey methodologies related to mortality statistics; (4) performs theoretical and experimental research that improves the content of the mortality statistics data collection effort and the timeliness, availability, and quality of mortality statistics data; (5) conducts research into life tables methodology and produces annual and decennial U.S. and State life tables; (6) recommends content of U.S. Standard Certificates; (7) assesses disclosure risk and develops optimal data release strategies that improve policy analysis and decision-making; (8) prepares and publishes descriptive analyses as well as sophisticated multivariate analyses that integrate data across multiple surveys or data sets; (9) conducts research related to the International Classification of Diseases (ICD) and cause of death classification; (10) conducts national and state-specific comparability studies of cause of death classification to facilitate the study of mortality trends across ICD revisions; (11) designs and conducts methodological research to improve the collection, production, use, and interpretation of mortality-related data; (12) collaborates with other agencies and organizations in the design, implementation, and analysis of vital records surveys; and (13) develops and promotes training activities related to the collection, production, use and interpretation of mortality statistics.

Lead authorship of the annual statistical reports presenting preliminary and final mortality data is rotated among branch staff. For research or special projects, teams are formed on an ad hoc basis according to expertise and usually interest.

Evangeline Adams – Statistical Assistant
Provides statistical support, responds to data requests, creates tables, and manages time and attendance and travel approval and reimbursement for the branch.

Elizabeth Arias, PhD – Health Scientist
Duties are to provide consultation, expertise, and guidance in the areas of life expectancy, old age mortality, mortality forecasting, and evaluation of data quality and to lead the planning, implementation and evaluation of research activities in these areas. Manages the production of annual and decennial life table reports.

Melonie Heron, PhD – Statistician (Demography)
Duties are to review table specifications and plans for general data dissemination; review quality and content of tables; tabulate and analyze mortality data; prepare statistical reports; and conduct research on special topics related to health and mortality. Manages the production of the annual report of leading causes of death.

Donna L. Hoyert, PhD. – Health Scientist
Duties are to provide consultation, expertise, and guidance in medical certification of death, the international statistical classification of diseases and other causes of death, and fetal and perinatal mortality and to lead the planning, implementation and evaluation of research activities in these

areas.   With regard to international classification activities, coordinates the actions of WHO's Mortality Reference Group and represents the North American Collaborating Centre for the Family of International Classifications on WHO's Update and Revision Committee. Other duties include: serves as the lead author of "Deaths: Final data for 2003," provides review and guidance on revised State death certificates and fetal death reports, manages the content of NCHS mortality Web pages, updates instruction manuals (e.g., Instruction manual part 20, cause-of-death querying) and manages the fetal cause-of-death project.

Kenneth D. Kochanek, MA – Statistician (Demography)
Duties involve management of activities related to the Multiple Cause of Death data set, including yearly review of documentation, data set specifications, file specifications, control total tables and overall coordination of public use CD-ROM's and the development, evaluation and analysis of data related to multiple cause of death. Other duties include responsibility for managing ICD-10 cause of death tabulation lists, including updates; responding to data and information requests pertaining to all aspects of mortality data; yearly table and worktable review; technical appendix review and updates; preparing table plans for published and unpublished tables; reviewing final report tables; and responsibility for life table partitioning analysis for each yearly report. Also serves on the planning committee of the International Collaborative Effort (ICE) on Automating Mortality Statistics.

Hsiang-Ching Kung, PhD – Survey Statistician
Duties are to review table specifications and plans for general data dissemination; review quality and content of tables; tabulate and analyze mortality data; prepare statistical reports; provide technical assistance and respond to questions regarding the National Mortality Followback Survey (NMFS); and conduct research on special topics related to health, mortality and the NMFS.

Arialdi M. Miniño, MPH – Statistician (Demography)
Duties are to review table specifications and plans for general data dissemination; review quality and content of tables; tabulate and analyze mortality data; prepare statistical reports; and provide technical assistance. Other duties include conducting periodic comparability studies in response to changes or revision of the International Classification of Diseases, primary responsibility for the annual report on injury mortality and responsibility for updates to Instruction Manual Part 11 which details mortality-related computer edits. In addition, has lead authorship of the 2004 preliminary and final mortality reports. Also provides staff support for the planning committee of the International Collaborative Effort (ICE) on Automating Mortality Statistics.

Sherry L. Murphy, BS – Statistician (Demography)
Duties involve management of the main mortality file. This includes performing a detailed review of demographic and medical data; ascertaining the quality and completeness of the data; identifying and documenting data problems; reviewing edits and file specifications; recommending edit changes; reviewing and researching deaths from rare causes; assessing and developing improved methods of data evaluation; serving as primary point of contact for issues pertaining to the processing requirements of final mortality data; and organizing and directing team efforts related to specific tasks for managing the main mortality file, including table development, table review and development of technical documentation. Other duties include preparing and submitting to the Census Bureau the annual request for special populations; reviewing data file documentation and submitting recommendations for change; reviewing

manuscripts for accuracy of analysis and interpretation of mortality data; and responding to questions requiring technical expertise in the analysis and interpretation of mortality data.

Chester Scott, MS – Survey Statistician
Duties are to review table specifications and plans for general data dissemination; review quality and content of tables; tabulate and analyze mortality data; prepare statistical reports; provide technical assistance and respond to questions regarding the National Mortality Followback Survey (NMFS); and conduct research on special topics related to health, mortality and the NMFS.

Betty L. Smith, BSEd – Statistician (Demography)
Duties are to review table specifications and plans for general data dissemination; review quality and content of tables; tabulate and analyze mortality data; prepare statistical reports; and provide technical assistance. Coordinates table review and development of technical documentation for the preliminary reports and assists in the production of the leading cause reports. Provides review for the mortality component of the monthly provisional data.

Jiaquan Xu, MD, MS – Epidemiologist
Duties include assisting in the management of the main mortality file, including review of demographic and medical data; ascertaining the quality and completeness of the data; identifying and documenting data problems; reviewing edits and file specifications; reviewing and researching deaths from rare causes; assessing and developing improved methods of data evaluation. Other duties include tabulation and analysis of mortality data; preparation of statistical reports; and conducting research on special topics related to health and mortality.

Reproductive Statistics Branch

Stephanie Ventura, MA, Chief

With regard to mortality, the Reproductive Statistics Branch (RSB) takes the lead in the production and analysis of the Linked Birth-Infant Death data set. RSB staff also are responsible for the creation of the perinatal mortality data set and the matched multiple birth data set. The perinatal mortality data set includes live births, fetal deaths, and infant deaths. The matched multiple birth file includes matched sets of twins, triplets, and quadruplets in live births and fetal deaths; live births are linked to the corresponding infant death records for babies who died. Because of concerns for confidentiality with respect to small numbers for multiple births, some data fields are suppressed; no geographic identifiers are shown. Staff involved in these activities include:

Joyce Martin, MPH. - Lead Statistician, Birth and Infant Health team
Duties are to coordinate and oversee development and analysis of the birth, fetal death, and the linked birth/infant death data set. Also lead developer of the Matched multiple birth files which link sets of births and fetal deaths and corresponding infant deaths in multiple deliveries. Also co-author of reports utilizing infant mortality data such by mortality rates by plurality and explaining the 2001-2002 rise in infant mortality. Also a member of the DVS perinatal team which is developing analytic reports based on perinatal data for release in 2006.

TJ Mathews - Statistician (Demography)
Primary responsibility is coordinating the twelve annual linked birth/infant death data files (six each for the Period and Cohort linked files). This includes detailed review of annual analysis tables, documentation tables, final report tables, and in the case of the Cohort file additional file review. He is lead author of the annual linked birth/infant death data final report, participated on the team which analyzed the 2001/2002 increase in the infant mortality rate, and coauthor of a future publication on infant mortality due to birth defects.

Marian F. MacDorman, PhD - Social Scientist
Duties are to manage the cause of death portion of the linked birth/infant death data set, including yearly review of documentation, underlying and multiple cause of death data released on CD-ROM, and analysis, documentation and final report tables. Other duties include participating with T.J. Mathews in the annual review of the linked file data for publication and data release, and participating in writing the annual linked file report. Led the team analyzing the unexpected increase in infant mortality from 2001-2002, and devotes a portion of her time to research on infant mortality, particularly pertaining to Sudden infant death syndrome and other causes of death; and to the effect of medical interventions (such as Cesarean section and induction of labor) on infant mortality, preterm birth, and other adverse pregnancy outcomes. She also represents NCHS on CDC-wide panels reviewing SIDS and State infant mortality issues.

Registration Methods staff

Delton Atkinson, Team Leader

The Registration Methods Staff is a four-person staff located within the Office of the Director, Division of Vital Statistics (DVS) with three broad functions. These are: 1) provide program, statistical, and IT consultation and technical assistance to state and local registration personnel and to subject matter experts within DVS with respect to the development, production, analysis and/or dissemination of vital statistics; 2) manage the IT capital planning process for the National Vital Statistics System (NVSS); and 3) manage the development and the subsequent implementation of vital statistics standards and regulations in response to the recently approved Terrorism and Prevention Act of 2004.

Major responsibilities by staff are as follows:
a. **IT Project Management** (Delton Atkinson): Responsible for the production of the OMB-required Exhibit 300 capital planning document for the NVSS and the monthly Earned Value Management Report. Track the performance (both cost and schedule) of all design, enhancement and modernization projects for the NVSS and assist the staff in improving their ability to monitor performance.
b. **Standards and Regulations for Vital Statistics** (Delton Atkinson and Julie Kowaleski): In response to the Terrorism and Prevention Act of 2004, DVS has been tasked with the lead to develop the regulations associated with the Act. Through the lead of Delton and Julie, the Registration Methods Staff is working with a partnership of federal agencies in the development of the regulations and in their subsequent implementation.
c. **Training** (Julie Kowaleski and Judy Barnes): This staff is responsible for planning, organizing conducting, and evaluating training programs for state and local vital registration personnel. Standalone courses are planned and delivered each year on topics ranging from records administration to statistics. In addition, these persons assist the planning and implementation of other NCHS-wide and DVS-affiliated training courses or conferences such as the VSCP Workshop, the Data Users Conference, and the Joint NAPHSIS/NCHS Conference.
d. **Technical Assistance to States and Local Registration Personnel** (Julie Kowaleski, George Tolson, and Judy Barnes). These persons provide assistance and general information to meet the needs and demands of state and local registrations staff.   This assistance can include the organization and delivery of onsite audits/evaluations to assist the states in improving their operations. Through this technical assistance effort, the Staff is working with states to encourage them to use the U.S. Standard Certificates and the Model Law. Finally, this staff maintains electronic mailing lists of state personnel for use throughout the Division.
e. **Publications** (Julie Kowaleski and George Tolson): This staff is responsible for the publication of newsletters and technical manuals to assist the states in the daily management of their programs. Examples are the NCHS Vital News and the NCHS Field Staff Manual.

3.   Collection and Processing of Mortality Data

Data collection and processing

As noted in section 1, mortality statistics for the U.S. are collected and published through a decentralized, cooperative system. The degree of uniformity necessary for the NVSS has been achieved by periodic issuance of recommended standards from the responsible national agency and the cooperative adoption of these standards by the individual registration areas. These standards take the form of recommended laws and regulations (Model State Vital Statistics Act and Regulations - http://www.cdc.gov/nchs/data/misc/mvsact92b.pdf), definitions and reporting requirements, and reporting forms (U.S. Standard Certificates and Reports) – in the case of mortality, the U.S. Standard Certificate of Death (see http://www.cdc.gov/nchs/data/dvs/std-dcrt.pdf for the 1989 revision and http://www.cdc.gov/nchs/data/dvs/DEATH11-03final-ACC.pdf for the 2003 revision). To ensure that the standard certificates and reports meet current data needs, it is essential that they be reviewed and revised periodically, the most recent revision being scheduled for implementation in 2003. Beginning in 2003, 5 registration areas adopted the 2003 revision of the standard death certificate, and as of 2006, 31 registration areas will have adopted the new certificate.

All 57 registration areas, with one exception, provide coded vital events data to Data Acquisition and Evaluation Branch (DAEB) in the Division of Vital Statistics (DVS) in electronic form over the CDC secure data network (SDN) in a standard format (see http://www.cdc.gov/nchs/data/dvs/4manual.pdf for the specifications related to the 1989 revision of the standard certificate and http://www.cdc.gov/nchs/data/dvs/Guidelinesbirthspecs1101acc.pdf and http://www.cdc.gov/nchs/data/dvs/FinalDeathSpecs2-22-05.pdf for the 2003 specifications). These files include all of the deaths registered within their jurisdiction for each calendar year. Transmittals take place at regular intervals and contain any and all records received and initially processed in the state office since the last transmittal. For purposes of improved quality for full utilization and release of the data, states are expected to transmit the majority of records within the schedule provided in the Vital Statistics Cooperative Program (VSCP) contract. The demographic portion of the death certificates is processed by DAEB, while the medical portion of the death certificates is handed over to the Mortality Medical Classification Branch (MMCB) for further processing.

As the files are received by DAEB, they are automatically checked for completeness, individual item code validity, and unacceptable inconsistencies between data items. The registration area is notified of any problems. In addition, the DAEB staff review the files on an ongoing basis to detect problems in overall quality such as inadequate reporting of certain items, failure to follow NCHS coding rules, and systems and software errors. Traditionally, quality assurance procedures have been limited to review and analysis of differences between the NCHS and registration area code assignments for a small sample of records. This procedure has now been augmented by analyses of year to year and area to area variations in the data. All differences that are judged to have consequences for quality and completeness are investigated by NCHS. Follow-up with the registration areas is then conducted in order to resolve these differences.

The files are closed (one registration area at a time) once DAEB has received all records from the registration areas, and no significant issues remain to be resolved. At this point files are made available to the Mortality Statistics Branch (MSB) for end-of-the-year analyses.

Standards and procedures for cause of death coding and tabulation

Mortality statistics published as part of the NVSS are coded in accordance with World Health Organization (WHO) regulations, which specify that member nations classify and code causes of death in accordance with the current revision of the *International Classification of Diseases* (ICD). The ICD provides the basic guidance used in virtually all countries to classify and code causes of death. Effective with deaths occurring in 1999, the United States began using the Tenth Revision of this classification (ICD-10).

The ICD not only details disease classification but also provides definitions, tabulation lists, the format of the cause of death section of the death certificate, and the rules for coding cause of death. The WHO has provided a mechanism for updating the classification from time to time through the Update and Revision Committee (URC) and the Mortality Reference Group (MRG). DVS staff are represented on both of these groups. As a result of the periodic updates (minor changes are made annually and major changes every three years), NCHS publishes updated versions of the ICD-10 tabular list (Instruction Manual Part 2e, volume 1 - http://www.cdc.gov/nchs/data/dvs/Volume-1-2005.pdf) and index (Part 2e, volume 3 - http://www.cdc.gov/nchs/data/dvs/Volume-3-2005.pdf) on an annual basis.

Cause-of-death data presented in NVSS publications are coded by procedures generally outlined in Volume 2 of the ICD-10 and described in more detail in Instruction Manuals 2a (http://www.cdc.gov/nchs/data/dvs/2a2005a.pdf) and 2b (http://www.cdc.gov/nchs/data/dvs/2b2005a.pdf). These include rules for selecting the underlying cause of death for tabulation purposes, definitions, tabulation lists, and regulations on the use of the ICD.

These procedures and coding rules are incorporated into the Mortality Medical Data System (MMDS) software which automatically codes cause of death and selects the underlying cause of death for most deaths occurring in the U.S. The MMDS is described below.

Tabulation lists used in NVSS publications are shown in Instruction Manual Part 9 (http://www.cdc.gov/nchs/data/dvs/im9_2002.pdf.pdf). Part 9 includes tabulation lists consistent with the WHO requirements as well as lists intended solely for use with U.S. data. The list of 113 selected causes of death, the most commonly-used tabulation list for U.S. mortality data, is one such list.

Description of the automated coding systems (MMDS)

Since 1968, NCHS has used computer software to carry out some of the coding of causes-of-death in its mortality statistics program. Currently, in the U.S. a suite of software developed by NCHS and named the Mortality Medical Data System (MMDS) is used to code cause of death for most of the death records registered in the U.S.

There are three main software applications that comprise the MMDS suite. A description of each of them follows:

SuperMICAR

SuperMICAR automates data-entry and medical cause-of-death data processing. This includes reporting procedures, full-screen data entry and editing, and additional information processing (see Instruction manual Part 2s (http://www.cdc.gov/nchs/data/dvs/2s2005.pdf)). SuperMICAR is designed to automatically encode medical cause-of-death data into numeric entity reference numbers (ERNs). SuperMICAR output is used by later programs to classify causes of death to their International Classification of Death (ICD-10) codes.

MICAR200

Automates the multiple cause coding rules (see Instruction manual Part 2b (http://www.cdc.gov/nchs/data/dvs/2b2005a.pdf)) and assigns ICD codes to each entity.

ACME/TRANSAX

Applies World Health Organization (WHO) rules to the ICD codes determined by MICAR200 and selects an underlying cause of death (see Instruction Manuals Part 2a (http://www.cdc.gov/nchs/data/dvs/2a2005a.pdf) and 2c (http://www.cdc.gov/nchs/data/dvs/2c2005.pdf)). It also facilitates the tabulation and use of multiple cause-of-death data. Through the application of the ICD linkage and modification rules, the TRANSAX part of the software translates the axis of classification from an entity to a record base – a format more suitable for statistical analysis.

DVS staff in the Mortality Medical Classification Branch (MMCB) currently maintain the MMDS and provide updates and technical support to domestic and international users of the software.

4.   NVSS Products

Information from the National Vital Statistics System is disseminated through a variety of mechanisms, including the NCHS website, other electronic media, hard-copy reports, and courses and presentations. Examples of NVSS products include:

Data files
Multiple cause of death mortality file
The multiple cause of death mortality file is an individual-record data file that includes all deaths occurring within the United States in a given year. Deaths of U.S. citizens and deaths of members of the Armed Forces occurring outside the United States are not included. Data items on the file for 2002, for example, include:

- Data year
- Residence of decedent:
    - State
    - County
    - City
- Population size
- Standard metropolitan statistical area
- Metropolitan and nonmetropolitan counties
- Age at death:
    - Infants under 1 year (hours, days, months)
    - Infants ages 1 year and over (single years)
- Day of week
- Education (single years, 0-17)
- Hispanic origin
- Hospital (including status of decedent) and other type of place of death
- Industry or business
- Injury at work
- Month of death
- Marital status
- Occupation (usual)
- Place of birth (State and eight categories outside of the United States)
- Place of death (State, county)
- Race (nine categories)
- Sex
- State of birth
- Manner of death
- Activity code
- Place of injury
- Underlying cause of death
- Multiple condition codes
    - Entity axis
    - Record axis

Linked birth-infant death file

The Linked Birth/Infant Death Data Set is an individual-records data file containing linkage of nearly all infant deaths occurring in the U.S. with their corresponding birth records. The linked data set contains both numerator and denominator files for the U.S. These files can be used to calculate infant mortality rates by selected infant and maternal characteristics. The numerator file contains statistical data from linked birth and infant death records. The denominator file is the NCHS natality file in a compressed format. Data items for 2002, for example, include:

Numerator file
Year of birth
Residence of mother:
   State
   County (250,000 persons or more)
   City (250,000 persons or more)
Place of birth:
   State
   County (250,000 persons or more)
Abnormal conditions of the newborn
Age of mother and father
Alcohol use
Apgar score
Attendant at birth
Birth weight (in grams)
Complications of labor/delivery
Congenital anomalies
Day of week of birth/death
Education of mother (single years, 0-17)
Gestation period (single weeks, 17-47)
Hispanic origin of mother and father
Interval since last live birth (1983-91)
Live-birth order
Marital status
Medical risk factors
Method of delivery
Month of pregnancy prenatal care began
Month of year of birth/death
Nativity of mother
Number of prenatal visits
Place of delivery
Plurality
Race of:
   Child (nine categories 1983-91)
   Mother (10 categories)
Father (10 categories)
Sex of child
Tobacco use
Total birth order
Weight gain

Year of death
Residence of decedent:
   State
   County (250,000 persons or more)
   City (250,000 persons or more)
Place of death:
   State
   County (250,000 persons or more)
Age at death
Hospital and status of decedent
Whether autopsy performed
Place of accident
Cause of death
    Underlying cause
    Multiple conditions

Denominator file
Year of birth
Residence of mother:
   State
   County (250,000 persons or more)
   City (250,000 persons or more)
Place of birth:
   State
   County (250,000 persons or more)
Abnormal conditions of the newborn
Age of mother and father
Alcohol use
Apgar score
Attendant at birth
Birth weight (in grams)
Complications of labor/delivery
Congenital anomalies
Day of week of birth/death
Education of mother (single years, 0-17)
Gestation period(single weeks, 17-47)
Hispanic origin of mother and father
Interval since last live birth (1983-91)
Live-birth order
Marital status
Medical risk factors
Method of delivery
Month of pregnancy prenatal care began
Month of year of birth /death

Nativity of mother
Number of prenatal visits
Place of delivery
Plurality
Race of:
   Child (9 categories 1983-91)
   Mother (10 categories)
Sex of child
Tobacco use
Total birth order
Weight gain

Courses

Vital Statistics Records and their Administration
This course focuses on the proper management and administration of a vital statistics records system. Topics include techniques for collecting, editing, querying, and completing vital records; processing and managing a vital records information system; certification and verification procedures; maintenance of a records system and guidelines for storage and retrieval; protecting confidentiality of vital records; controlling fraudulent use of vital records; interaction with the public; legislative and regulatory policies (duration 4 1/2 days).

Vital Statistics: Measurement and Production
This course provides an introduction to basic vital statistics measures including rate construction, standardization, and confidence intervals. It also discusses the U.S. Vital Statistics System, the International Classification of Diseases (ICD), data quality control and assessment, and dealing with the media (duration 4 1/2 days).

Advanced Topics in Mortality Statistics
This course is designed to provide the conceptual basis for topics including stochastic variation and small numbers, age standardization, life table construction, multiple cause-of-death analysis, and comparability of cause of death (duration 3 days).

Cause-of-Death Classification and Coding: ICD-10 Course for Statisticians
This course is geared toward statisticians who wish to become acquainted with cause-of-death classification and with coding medical data using the Tenth Revision of the International Classification of Diseases (ICD-10) (duration 2 days). The instructors discuss the history and uses of the international classification, as well as its content, arrangement and conventions. Special attention focused on the principles used to assign the correct codes for diseases and external causes of injury, and the role that modern automated systems play in processing cause-of-death information. The instructors also discuss issues that affect the analysis of cause-of-death data, in particular multiple-cause data and comparability across revisions of the ICD.

Seminar for PC Managers
This course is designed to instruct pc managers for each State on how to manage mortality medical data entry and coding. The pc manager should be able to solve most problems with ACME, MICAR, and SuperMICAR in-house after completing the course (duration 3 days). This course is also made available to international students with emphasis on how the software could be modified for other languages.

SuperMICAR Data Entry
This course provides intensive practical training using personal computers and the SuperMICAR software package. Trainees learn to recognize medical entities found on death certificates and key/enter these following MICAR rules. This input, when processed by MICAR software routines, produces input for ACME (duration 2.5 days).

Basic Underlying Cause of Death
This course provides intensive practical training to develop skill in coding the underlying cause-of-death according to the ICD system of classification (duration 10 days).

Basic Multiple Causes of Death
This course provides intensive practical training in multiple cause-of-death coding in accordance with rules for use with the Automated Classification of Medical Entities (ACME) System (duration 10 days).

Advanced Underlying Cause of Death Classification
This is a refresher course for coders with at least one year of experience in using ICD-10 to code underlying cause of death (duration of 5 days).

Advanced Multiple Causes of Death Classification
This is a refresher course for experienced coders who have attended the Basic Multiple Causes of Death coding course (duration of 5 days).

International Underlying Cause of Death
This course is a "train the trainer" course. It provides intensive practical training to develop skill in coding the underlying cause-of-death according to the ICD system of classification (duration 15 days). All training materials are provided to the students so they can provide training in their respective countries.

International Multiple Causes of Death
This course is a "train the trainer" course. It provides intensive practical training in multiple cause-of-death coding in accordance with rules for use with the Automated Classification of Medical Entities (ACME) System (duration 15 days).   All training materials are provided to the students so they can provide training in their respective countries.

Statistical reports

Copies of the following reports are included:

Births, Marriages, Divorces, and Deaths: Provisional Data for April 2005

Deaths: Preliminary Data for 2003

Deaths: Final Data for 2002

Infant Mortality Statistics from the 2002 Period Linked Birth/Infant Death Data Set

Deaths: Leading Causes for 2002

Deaths: Injuries, 2001

United States Life Tables, 2002

5.   Research

Selected current research projects

Below is a list of selected major research projects related to the NVSS and the investigators involved from the Division of Vital Statistics.

Evaluation of the quality of race and Hispanic origin reporting on death certificates in the US
This study involves the evaluation the quality of race and Hispanic origin reporting on death certificates by comparing self-reported race and Hispanic origin to what is reported on death certificates using the National Longitudinal Mortality Study (NLMS) – a linkage between the Current Population Survey and the national mortality file.

Investigator(s): Elizabeth Arias

Evaluation of NHIS - NDI linkage algorithm for the Hispanic population
This study uses a linkage between the National Health Interview Survey and the national mortality file to evaluate the record linkage algorithm to determine whether there is a difference by Hispanic origin in quality of linkage between survey record and the National Death Index.

Investigator(s): Elizabeth Arias

Forecasting mortality
Currently, the mortality component of the NVSS does not include projections of future mortality. We would like to develop such a capability. A summary and overview of forecasting methods has already been completed. Plans are to hold a workshop on forecasting methods to which would be invited experts and leaders in the field.

Investigator(s): Elizabeth Arias, Jiaquan Xu

Poisoning mortality
Research on poisoning mortality involves both examination of toxicology reports collected as part of the National Mortality Followback Survey and the development of a poisoning database exploiting the literal text from SuperMICAR data entry. This would supplement the ICD-10 coded data, which generally lacks detail with regard to the substance involved.

Investigator(s): Hsiang-Ching Kung, Arialdi Miniño

SIDS and related conditions
Research on SIDS and related conditions is currently focused on explaining recent trends in SIDS (2 journal articles have been completed on this topic – 1 published recently in *Pediatrics* and another accepted for publication in the *American Journal of Epidemiology*) and in examining certification practices related to SIDS. With regard to certification practices, we are pursuing the development of a special database for SIDS and related conditions that would exploit the literal text from SuperMICAR data entry.

Investigator(s): Marian MacDorman, Robert Anderson, Donna Hoyert

Measuring diabetes mortality
This study assesses a) the impact on cause-of-death data of implementation by Kentucky of 2 diabetes-related check box questions on the death certificate and b) discrepancies between self-reports of diabetes on social surveys and subsequent reports of diabetes as a cause of death on death certificates. Part a is accomplished using check box data provided by Kentucky linked to the NVSS mortality file. Part b relies on linkage between the NVSS mortality data and the National Health Interview Survey.

Investigator(s): Melonie Heron, Robert Anderson

Obesity and life expectancy
This study involves the application of life table methodologies and a linkage between the National Health and Nutrition Examination Survey and the national mortality file to study the effects of obesity on life expectancy.

Investigator(s): Melonie Heron, Robert Anderson

Comparability of cause of death between and within revisions of the ICD
This study involves assessment of the comparability of mortality data across revisions of the ICD (ICD-9 to ICD-10) and within revisions in response to periodic updates of ICD-10. The between-revisions study involved the dual coding of a single year of mortality data (1996) by both ICD-9 and ICD-10. Preliminary results were published in 2001 and a data file released in 2003. Work is ongoing to understand discontinuities in trends by cause of death. Within-ICD-10 studies beginning with major updates for 2003 will involve examination of a benchmark file classified by the previous and updated versions of the automated coding software.

Investigator(s): Arialdi Miniño, Chester Scott, Robert Anderson

Recent journal articles and special reports (2001-present)

Shapiro-Mendoza C, Tomashek KM, **Anderson RN,** Wingo J. Recent National Trends in Sudden, Unexpected Infant Deaths: More Evidence Supporting a Change in Classification or Reporting. *American Journal of Epidemiology* (forthcoming).

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Sahyoun NR, Lentzner H, **Hoyert DL**, Robinson KN. Trends in causes of death among the elderly. *Aging Trends*, vol 1. 2001.

Hoyert DL. The autopsy, medicine, and mortality statistics. *Vital and Health Statistics* vol 3 no 32. 2001.

Recent presentations (2003-present)

Hoyert DL, Johansson LA. "Annual Report of the Mortality Reference Group, 2004-5." *WHO-FIC Network Meeting.* Tokyo, Japan. October, 2005.

Johansson LA, Pavillon G, **Anderson RN, Glenn D,** Griffiths C, **Hoyert DL,** Jackson G, Notzon FC, Rooney C, Rosenberg HM, Walker S, Weber S. 2005. "Reply to 'Estimating Data Quality.'" *WHO-FIC Network Meeting.* Tokyo, Japan. October, 2005.

Arias E. "Quality of Race and Hispanic Origin Reporting on Death Certificates in the United States: A Special Focus on the American Indian Alaska Native Population." International Network of Indigenous Health Knowledge and Development, Vancouver, Canada. October, 2005.

Buescher P, Callaghan W, Gilbert C, **Hoyert DL,** Rosenberg D, Shapiro-Mendoza C, Simpson P, Sollers D, Suellentrop K, and Tomashek K. "State Assessment of Cause and Timing of Death." *State Infant Mortality Toolkit Meeting.* Atlanta, Georgia. September, 2005.

Arias E. "Quality of Race and Hispanic Origin Reporting on Death Certificates in the United States." Seminar at the Centers for Demography and Ecology, University of Wisconsin-Madison. August, 2005.

Sappenfield B, Gladders B, **MacDorman MF** et.al. State assessment of vital records reporting. Paper presented at the State Infant Mortality Collaborative meetings, Atlanta. July 2005.

MacDorman MF, Martin JA, Mathews TJ, Hoyert DL, Ventura SJ. Explaining the 2001-2002 infant mortality increase. NAPHSIS and VSCP Project Directors Joint Meeting, Cincinnati, OH, June 2005.

Hoyert DL. "ICD Revision Process: Moving Toward ICD-11." NAPHSIS and VSCP Project Directors Joint Meeting, Cincinnati, OH, June 2005.

Hoyert DL. "Revised Death Data: 5 and 52 to 1." NAPHSIS and VSCP Project Directors Joint Meeting, Cincinnati, OH, June 2005.

Arias E. "Quality of Race and Hispanic Origin Reporting on Death Certificates." NAPHSIS and VSCP Project Directors Joint Meeting, Cincinnati, OH, June 2005.

Anderson RN, Heron M. "Diabetes Reporting on Death Certificates in Kentucky." NAPHSIS and VSCP Project Directors Joint Meeting, Cincinnati, OH, June 2005.

Anderson RN. "Checking Out the Checkboxes: Diabetes Mortality in Kentucky, 2002-2003." CDC Diabetes Translation Conference 2005, Miami FL, May 2005.

Arias E. "Quality of Race and Hispanic Origin Reporting on Death Certificates in the US." Ad hoc meeting on the analysis of Hispanic Mortality, University of Maryland Population Research Center, University Park, MD, May 2005.

Arias E. "Evaluation of NHIS-NDI Linkage by Hispanic Origin." Ad hoc meeting on the analysis of Hispanic Mortality, University of Maryland Population Research Center, University Park, MD, May 2005.

Spittel ML. "A test of the social causation hypothesis and the SES gradient: The utility of wealth, self-reported health, and unmeasured heterogeneity." Annual meeting of the Population Association of America, Philadelphia, PA, March 2005.

Anderson RN. "Mortality Reporting and Public Health in the United States and Jordan." 3rd Conference on Mortality Reporting in Jordan, Amman, Jordan, March 2005.

Arias E. "The US National Vital Statistics System" Public Health Surveillance Work Group Meeting, Hyattsville, MD, March 2005.

Arias E. "Quality of Race and Hispanic Origin Reporting on Death Certificates in the US" Meeting of NLMS Scientific Working Group, Bethesda, MD, February 2005.

Arias E. "Quality of Race and Hispanic Origin Reporting on Death Certificates in the US." Seminar at the Centers for Demography and Ecology, University of Wisconsin, Madison, WI, February 2005.

Anderson RN. "Deaths Attributable to Obesity: Making Sense of the Numbers." Meeting of the NCHS Board of Scientific Counselors, Hyattsville, MD, January 2005.

Arias E. "Paradox Lost: Explaining the Hispanic Adult Mortality Advantage." Special Seminar at the School of Public Health, University of Maryland, University Park, MD, January 2005.

Fingerhut LA, **Anderson RN**. "How do we and how should we define and count poisoning deaths in the United States?" American Public Health Association meeting, Washington, DC, November 2004.

Anderson RN, Rosenberg HM. "Leading Causes of Death: A Tool for Health Assessment." WHO Family of International Classifications Network Meeting. Reykjavik, Iceland, October 2004.

Anderson RN, Miniño AM, Fingerhut LA, Warner M. "Presenting and Analyzing Injury Mortality Data in the United States." WHO Family of International Classifications Network Meeting. Reykjavik, Iceland, October 2004.

Hoyert DL, Martin JA, MacDorman M. "Explaining Recent Trends in Infant Mortality in the United States." WHO Family of International Classifications Network Meeting. Reykjavik, Iceland, October 2004.

Hoyert DL, Barfield W, **Martin JA**. "Recent Trends in Fetal Mortality in the United States." WHO Family of International Classifications Network Meeting. Reykjavik, Iceland, October 2004.

Martin, JA, MacDorman M, Hoyert DL, Kochanek KD. "US Trends in Infant and Fetal Mortality." State Infant Mortality Collaborative Meeting. Atlanta, GA, September 2004.

Hoyert DL, Johansson LA. "WHO Mortality Reference Group: Annual Report, 2003-2004." WHO Family of International Classifications Network Meeting. Reykjavik, Iceland, October 2004.

Martin JA, Wilkins K, **Hoyert DL, Kochanek KD**, Rothwell CJ. "US and Canadian Trends in Infant and Fetal Mortality." Statistics Canada Interchange, Ottawa, Canada, October 2004.

Martin JA, Hoyert DL, Kochanek KD. "US Trends in Infant Health." March of Dimes' Florida Prematurity Leadership Summit. Tampa, FL, October 2004.

Arias E. "Quality of Race and Hispanic Origin Reporting on the Death Certificates in the US." CDC Community Initiative Conference. Atlanta, GA, September 2004.

Arias E. "Revised Race/Ethnicity Standards: Implementation in Vital Statistics." CDC Community Initiative Conference. Atlanta, GA, September 2004.

Arias E. "Quality of Race and Hispanic Origin Reporting on the Death Certificates in the US." Indian Health Service Tribal Epi Centers Annual meeting. Seattle, Washington. August 2004.

Anderson RN. "The ICD-9/ICD-10 Comparability Study: Background and Rationale." NCHS Data Users Conference, Washington DC, July 2004.

Anderson RN. "Analyzing Injury Mortality Data for the U.S." NCHS Data Users Conference, Washington DC, July 2004.

Arias E. "Quality of Race and Hispanic Origin Reporting on the US Death Certificate." NCHS Data Users Conference, Washington DC, July 2004.

Miniño AM.   "Initial Results from the Final ICD-10 / ICD-9 Comparability Study." NCHS Data Users Conference, Washington DC, July 2004.

Kochanek KD. "National Mortality Data Set." NCHS Data Users Conference, Washington DC, July 2004.

Anderson RN. "The Importance of Mortality Statistics as a Health Indicator." Seminar – Automated coding systems for mortality data: An overview of system design, implementation, and benefits of automation. Prague, Czech Republic, June 2004.

Anderson RN. "Analyzing Injury Mortality Data for the U.S." NAPHSIS and VSCP Project Directors Joint Meeting, Portland, OR, June 2004.

Arias E. "Quality of Race and Hispanic Origin Reporting on the US Death Certificate." NAPHSIS and VSCP Project Directors Joint Meeting, Portland, OR, June 2004.

Hoyert DL. "The Rest of the Story: 2002 Preliminary Mortality Data." NAPHSIS and VSCP Project Directors Joint Meeting, Portland, OR, June 2004.

Miniño AM. "Initial results from the ICD-10 and ICD-9 Comparability Study." NAPHSIS and VSCP Project Directors Joint Meeting, Portland, OR, June 2004.

Martin JA, Kochanek KD, Sutton PD, Hoyert DL, Rothwell CJ, Ventura SJ, Justice DW, Steimel SJ. "Supplemental Analysis of Recent Trends in Infant Mortality." NAPHSIS and VSCP Project Directors Joint Meeting, Portland, OR, June 2004.

Kung HC, Wei R. "Gender differences in substance abuse." Society for Epidemiologic Research 37th Annual Meeting. Salt Lake City, UT, June 2004.

Rothwell CJ, Martin JA, Sutton PD, Hoyert DL, Kochanek KD. "Explaining Recent Trends in Infant Mortality." Meeting of the Secretary of Department of Health and Human Service's Advisory Committee on Infant Mortality, Washington, DC, May 2004.

Anderson RN, Miniño AM, Warner M. "The ICD-9/ICD-10 U.S. Comparability File: What is it good for and why should you care?" NCIPC/CDC Special Seminar, Atlanta, GA, May 2004.

Malloy MH, **MacDorman MF**. Changes in the Classification of Sudden Unexpected Infant Deaths: United States: 1992-2001. Paper presented at the Pediatric Academic Societies Meeting. May 2004.

Anderson RN. "Integrating the SUIDIRF into an Electronic Death Registration System." Second Workshop to Revise the 1996 Guidelines for Death Scene Investigation of Sudden, Unexplained Infant Deaths. Atlanta, GA, May 2004.

Johansson LA, **Hoyert DL.** "Mortality Issues Related to a New Revision." ICD Revision Planning Meeting, Helsinki, Finland, April 2004.

Kochanek KD, "ICD-10 and Anaphylaxis: Methodological Issues Related to Mortality Data." Symposium on the Definition and Management of Anaphylaxis. Bethesda, MD, April 2004.

Kung HC, Hwang RJ, Li J, **Scott C. "**The Validity of Surrogate Reporting of Substance Use." 56th Annual Meeting of the American Academy of Forensic Sciences. March 2004.

Anderson RN. "The Classification and Coding of Sudden Infant Death Syndrome for Use in U.S. Mortality Statistics." Workshop to Revise the 1996 Guidelines for Death Scene Investigation of Sudden Unexplained Infant Deaths, Atlanta, GA, January 2004.

Anderson RN, Notzon FC, **Kochanek KD, Miniño AM**. "The International Collaborative Effort on Automating Mortality Statistics: Report of the Third Plenary Meeting." Annual meeting of Heads of WHO Collaborating Centers for the Family of International Classifications, Cologne, Germany, October 2003.

Anderson RN, Miniño AM. "Comparability of Cause of Death between ICD-9 and ICD-10: Results from Mortality Data in the United States." Annual meeting of Heads of WHO

Collaborating Centers for the Family of International Classifications, Cologne, Germany, October 2003.

Hoyert DL, Johansson LA. "Annual Report of the Mortality Reference Group, 2002-3." Annual meeting of Heads of WHO Collaborating Centers for the Family of International Classifications, Cologne, Germany, October 2003.

Anderson RN. "The Implications of Multiple Race Classification for Cancer Mortality Statistics in the US." Presented at the CDC Cancer Conference. Atlanta, GA, September 2003.

Arias E. "Death Certificate and National Vital Statistics." Seminar on missclassification of race and its impact on the health and mortality of Native Americans in Oklahoma, sponsored by the Choctow Nation and Oklahoma's Vital Statistics Office. Oklahoma City, OK, September 2003.

Wei R, Curtin LR, **Anderson RN**. "Modeling US Mortality Data for Building Life Tables and Further Studies." Annual meeting of the American Statistical Association. San Francisco, CA, August 2003.

Anderson RN. "Activities of the Subcommittee on Reports, Files and Outputs." Presented at the NAPHSIS annual meeting. New York City, NY, June 2003.

Anderson RN, Hoyert DL. "New Challenges in Creating a National Mortality Data Set". Presented at the NAPHSIS annual meeting. New York City, NY, June 2003.

Arias, Elizabeth. "National Mortality Statistics Data." College of Medicine, University of California-Irvine, Irvine, California. June 2003.

Arias E, Palloni A. "A Re-examination of the Hispanic Mortality Paradox." Annual Meeting of the Population Association of America. Minneapolis, Minnesota, May 2003.

Santo AH, Wellington A, Jackson G, **Hoyert DL**, Jordani MS, Pinheiro CE. "Diabetes mellitus: Differential multiple causes of death mortality among the states of Rio de Janeiro and Sao Paulo (Brazil), Australia, England and Wales, Scotland, and United States of America." Meeting of the International Collaborative Effort on Automating Mortality Statistics. Washington, DC , April 2003.

Santo, AH, **Hoyert DL**, Pinheiro CE. "Comparative study of the multiple cause-of-death mortality related to HIV disease in Brazil (2000) and United States of America (1999)." Meeting of the International Collaborative Effort on Automating Mortality Statistics. Washington, DC , April 2003.

Hoyert DL, Lima A. "Querying in the United States." Meeting of the International Collaborative Effort on Automating Mortality Statistics. Washington, DC , April 2003.

Miniño AM, Anderson RN. "Measuring comparability between ICD-9 and ICD-10 in the United States." Meeting of the International Collaborative Effort on Automating Mortality Statistics. Washington, DC , April 2003.

Anderson RN. "Considerations in Fielding a New National Mortality Followback Program." Institute of Medicine Workshop, "Describing Death in America: What We Need to Know". Washington, DC, April 2003.

Anderson RN. "Quality of Cause of Death on the Death Certificate" Institute of Medicine workshop on the Medicolegal Death Investigation System, Washington, DC, March 2003.

Anderson RN. "The Classification and Coding of Sudden Infant Death Syndrome for Use in US Mortality Statistics". Meeting of the Association of SIDS and Infant Mortality. Washington, DC, March 2003.

Minino AM. "ICD-10/ICD-9 Comparability Ratios: Concepts, Analysis Plan, and Status Update." Core States Injury Surveillance and Program Development 2003 Grantees Meeting. Atlanta, Georgia, February 2003.