

South Dakota Electronic Vital Records and Screening System

1. Name and Title of Submitter:

Kathlene A Mueller, Manager
Office of Data, Statistics and Vital Records/State Registrar
South Dakota Department of Health

2. Public Health System Name:

Electronic Vital Records and Screening System

3. Address:

600 East Capitol Avenue

4. City: Pierre

State: SD

Zip Code: 57501

5. Telephone: (605)773-5303

Fax: (605) 773-5683

6. E-mail: kathi.mueller@state.sd.us

Website: <http://www.state.sd.us/doh/>

8. Description of Community(ies) Served:

The Electronic Vital Records and Screening System (EVRSS) serves a vast community including: (1) the public who are requesting certified copies of birth, death, marriage, or divorce records; (2) hospitals, health care professionals, funeral directors, coroners, medical examiners, Registers of Deeds, and cemetery sextons who are required to report information to the South Dakota Department of Health; (3) state and federal agencies in implementing programs to improve the health of South Dakota citizens and in seeking to reduce benefits/identity fraud; (4) researchers who are studying the cause and effect of leading health indicators; and (5) national organizations seeking to calculate national statistics or reduce fraud.

9. Number of FTEs:

- **South Dakota Department of Health (SDDOH):**
 - Division of Administration – 132.5 FTE
 - Division of Health and Medical Services – 181.0 FTE
 - Division of Health Systems Development and Regulation – 63.5 FTE
 - Department of Health Total – 377.0 FTE
- **Directly involved in submission project:**
 - 8 FTE from SDDOH
 - 4 FTE from the Bureau of Information and Telecommunication (BIT)

10. Description of Public Health Program(s) Directly Affected by Submission:

- **Direct Impact**
 - Data, Statistics and Vital Records – This program is within the Division of Administration and is the office responsible for collecting, filing and preserving all vital records and using this data to develop leading health indicators for SDDOH.

- The Infant Immunization Program is within the Division of Health and Medical Services and is responsible for monitoring the infant immunization rate within South Dakota.
- The Metabolic Screening Program is within the Division of Health and Medical Services and is responsible for ensuring that all infants born in South Dakota receive the appropriate life saving metabolic screening.
- The Hearing Screening Program is also within the Division of Health and Medical Services and is responsible for monitoring the newborn hearing screening rate within South Dakota.
- In Direct Impact

The data gathered through EVRSS is used widely throughout the Department of Health. The following programs utilize the data most frequently.

 - The Maternal Child Health (MCH) Program is within the Division of Health and Medical Services and is responsible for the Maternal Child Health Population. The MCH uses the data gathered through EVRSS to monitor its programs.
 - The Women Infant and Children (WIC) Program is within the Division of Health and Medical Services and is responsible for the WIC program. Leading health indicators developed through the EVRSS are used to monitor its programs.
 - The SDDOH’s Health Promotion Programs (Tobacco, Cancer, Cardiovascular Health, etc.) are within the Division of Health and Medical Services and is responsible for reducing the burden of Chronic Disease. The Office of Health Promotion uses this data to monitor its programs and obtain funding for its activities.

11. Please list the names of the members of the Electronic Public Health System Team (who will all be considered authors of the application):

Kathlene A. Mueller
 Betsey DeLoache
 Terrence Kasuske
 Jammie Raske

Kayla Tinker
 Nancy Hoyme
 Lucy Fossen
 Theresa Disburg

BIT
 Shane Fanning
 Paul Sulze
 Carol Kelso
 Tom Wempe

The Organization

Behind many of the leading health indicators used by federal, state and local governments; national, state and local organizations; researchers and other individuals is the data gathered through the Vital Records Offices around the nation. Although this is a major data source, the vital records offices across the nation utilize some of the most antiquated processes to file, preserve and analyze the data gathered through the Vital Records System.

The Vital Records System gathers both legal and statistical data at certain points throughout the life of an individual including birth, death, marriage and divorce (vital events). Using this data, Departments of Health throughout the nation measure the health of their population and direct resources accordingly.

The uses of the data gathered by the Vital Records System are far reaching and of utmost importance is timely and accurate reporting of these vital events. To address this issue, the South Dakota Department of Health (SDDOH) developed the Electronic Vital Records and Screening System (EVRSS). This system is a comprehensive web-accessible data system developed to allow the electronic collection of birth, death, marriage and divorce records as well as newborn metabolic and hearing screening data and immunizations administered at birth. In addition to the collection of data, this system handles the business functions of the State Vital Records office and local registrars including issuance of certified copies, accounting, document tracking, modifications and preservation of records.

The vital records system serves essentially three categories of customers – the public, professionals and data users. The primary purpose of the EVRSS was to improve the timeliness and quality of the vital event information reported to SDDOH. Timeliness and quality of data is especially important to the families of a newborn, couples getting married, families of the deceased, couples wishing to go their separate ways, and other individuals who may need a certified copy of a vital record at certain intervals throughout their lives. Timeliness and quality of vital events data is particularly important to babies with a hearing impairment who are able to receive treatment at an early age because of early detection; babies with a metabolic disorder whose life will be saved and babies receiving their first Hepatitis B shot in the hospital who will now have a complete listing of the immunizations received.

Secondary to improving customer service, was the goal to making the life of professionals easier by improving the way that information about the vital event is reported to the SDDOH. These professionals include physicians, physician assistants, nurse practitioners, nurses, audiologists, coroners, medical examiners, funeral directors, medical records clerks, cemetery sextons, Registers of Deed (local registrars), and Clerks of Courts.

Finally, the impact of the first two goals ripples down to the data users who receive higher quality data, faster. Data from the vital records system is used throughout the SDDOH including the Office of Health Promotion in its efforts to develop programs that impact the leading causes of death, the Office of Public Health Preparedness and Response in its efforts to identify and look for unusual causes of death, and the Office of Family Health in its effort to ensure that all babies born in South Dakota have received the appropriate metabolic and hearing screening.

Data is also used by other state agencies including the Department of Transportation to reduce identity fraud by matching motor vehicle records with death records, the Secretary of State's Office to reduce voter registration fraud, and the Department of Social Services to increase the number of fathers who pay child support. Throughout the year, legislators and lobbyists utilize the vital record data to determine what issues need to be addressed during the next legislative session. National, state and local organizations utilize the data to apply for applicable grant dollars and gauge the success of their programs. The federal government also uses the data from the vital records system to reduce benefits/identity fraud and to develop leading health indicators. There is simply no end to the way that data gathered and analyzed through the EVRSS is used.

The Reasons

The paper-based systems used previously in South Dakota to gather, file and preserve vital records data created a number of barriers to the timeliness and quality of data. Simply put, the vital records system within SDDOH was ripe for improvement. And while it was very easy to see many areas where improvements could be made, the large number of users, the available technology, and staff time required to implement such as project had held SDDOH back from implementing the changes. However, in 1998 the SDDOH felt it needed to take a closer look at what would be required to make the necessary improvements and outlined the following objectives:

- **Assuring the Health of Infants Born in South Dakota** – South Dakota Codified Law requires all infants born in South Dakota to receive a set of lifesaving metabolic screens. This data was previously held in a computer system and had to be matched and entered manually. Often times matching these records became a challenge because of name changes of the infant from time of blood draw to the filing of the birth certificate because of paternity establishment or the decision of the parents to name the child or give the baby a different name. This difficulty in matching the record delayed important follow-up. In addition, in the previous system records could not be match until they were filed, delaying the match by several days.

Although not required by law, hearing screening has become increasingly important in the state. When surveyed, it was discovered that only approximately 60% of all infants born in South Dakota were receiving hearing screening. SDDOH felt that it needed to do better and a program was needed to track hearing screening as well as the results of the screening and any follow-up that was done. In addition, the state's infant immunization system has been populated by the birth record system since its inception in 1996. However, because the first Hepatitis B immunization was usually given at the hospital, the SDDOH needed a way to record and share the immunization information with the South Dakota Immunization Information System (SDIIS).

- **Improving the Timeliness of Vital Events Data** – The process for filing vital events in South Dakota especially the death, marriage and divorce records contained significant duplication of effort. As a paper based system, these vital records required the SDDOH to enter the record into a data entry system for the purpose of pulling statistics. In general, the creator of the record (i.e., funeral director, local registrar or Clerk of Courts) had already

entered the data into a computer system or typed the record to create a paper record that was submitted to SDDOH. It was also observed, that although it was entered into a computer system for the purpose of pulling statistics, these computer systems were not used to issue certified copies. The SDDOH went back to the paper version of the record to issue certified copies. In addition, with a local registrar system, the record was being filed once at the local registrars and once by the state. And although sometimes this filing process helped customers get certified copies quicker because they could access their local level, it was sometimes weeks and months before this information was reported to the state and entered into our computer system to be shared with our partners.

- **Evaluating the Health of South Dakotans** – South Dakota has been nationally recognized for the timeliness and quality of the data provided to the National Center for Health Statistics. However, when it came to closing and analyzing statistical files, SDDOH experienced significant delays. This was largely due to the lack of control over the files. Download files for statistical purposes were pulled as time allowed sometimes much later than the file was ready. As a result, final data was not available to apply for grants and often times data published was not put out until the January following the closing date.
- **Integrating and Updating the Technology of Vital Records** – Prior to EVRSS, Vital Records used a patchwork of computer systems to try to address their timeliness and quality needs. The system met only the most basic needs and was difficult to support and change. Frequently multiple systems were used to accomplish the tasks related to one vital record. For example, in 1995, SDDOH moved South Dakota to filing birth records using an Electronic Birth Certificate System. The data was entered by the hospitals, sent via modem to the SDDOH, reviewed, numbered, exported to a mainframe system to allow local registrars to issue the records and data to be sent to NCHS. A computer system written in Fox Pro was used to enter marriage and divorces, and then the records were loaded to Mainframe. Supporting these multiple systems was time consuming and expensive. The electronic birth certificate system was archaic and SDDOH was unable to change the code to make changes to the system as needed. In 2000, the National Center for Health Statistics indicated that new standard certificates would be forthcoming. The SDDOH was forced to look at new technologies to address the need.
- **Supporting a Statewide Vital Records System** – Under the previous system, an individual to receive a copy of a vital records had to either contact the actual county where the vital event was recorded or contact the State Vital Records Office. In addition, throughout the life of any given vital record, it has the propensity to be changed for a number of reasons (i.e., adoption, paternity actions, amendments, queries to improve the quality of the data). In the previous paper-based system, change required the original paper record to be pulled from microfilm, the changes noted on the record and in many cases a new record typed. These changes then needed to be shared with the local registrar so that the local copy of the record could be changed. This process was time consuming, but the practice of trying to keep two sets of the same records up to date and accurate was extremely problematic. It was not uncommon to find the records differ at the local and state level. There are legal implications for this issue in the case of adoptions and other changes that require the creation of a new record.

- **Improving Security and Reducing Fraud** – In the face of a society where identity fraud is on the rise, it is important to improve the security of the certified copies issued through by the System. Prior to EVRSS, certified copies of Vital Records were either issued on plain paper or a security paper with only limited security features opening the records to fraud.

In addition, the number of requests from state and federal agencies wishing to use the Vital Records System to match with their files to reduce fraud was increasing. Under the current network of systems, it was cumbersome to share data with other state and federal agencies because changes were hard to make. SDDOH system needed a system that would allow interfaces as necessary in order to reduce benefits and identity fraud.

The Team

The core team for the EVRSS project included the following:

- Manager of the Office of Data, Statistics and Vital Records/ State Registrar is responsible for developing project concepts, monitoring the core deliverables, obtaining participant buy-in, and acquiring funding. Overall accountability for the success of this program falls with this position.
- EVRSS Coordinator/Deputy State Registrar is responsible for developing timelines, providing training, coordinating bug fixes with technical staff, and managing the technical staff.
- EVRSS Technical Coordinator is responsible for system changes, imports and exports, database changes, user support and the Technical Coordination of the project with the Bureau of Information and Telecommunications (BIT).
- EVRSS Technical Assistant is responsible for the development of reports, table changes, security setup and user support.
- Manager of the Office of Family Health who was responsible for monitoring the implementation of the metabolic and hearing screening modules.
- Management Analyst with the Office of Family Health who assisted the Manager in monitoring the implementation of the the metabolic and hearing screening modules.
- Management Analyst with the Office of Family Health who was responsible for implementing the hearing screening program.
- Management Analyst with the Office of Family Health who was responsible for implementing the metabolic screening program.
- Bureau of Information and Telecommunication (BIT) staff including the Database Administrator, the Network Administrator, and the Communications Administrator. BIT is a central state office that provides support to all state agencies in South Dakota.
- BIT Project Liaison is responsible for serving as the liaison between BIT and SDDOH.

Functionality

The primary area of computerization was the Office of Data, Statistics and Vital Records. EVRSS also computerized the newborn metabolic and hearing screening programs within the Office of Family Health and provided a linkage to the South Dakota Immunization Information System (SDIIS).

EVRSS allows for data entry of vital events data and newborn screening data into one system. The look and feel of the modules was similar making it easy for users to learn new modules. Once the information is saved, it is stored in the central database for use by the appropriate individuals. Some examples of how the EVRSS is used as a data entry system include:

- Hospitals enter birth record information into the system. At this same time, a unique number to match the metabolic screening results is entered into the system as well as hearing screening information and the Hepatitis B immunization. This information is reviewed by the State and assigned a State File Number.
- Primary care providers and audiologists enter results of infant hearing screens that are done after hospital discharge.
- Register of Deeds enter marriage records into the system. The signature of the bride and groom are gathered through an electronic signature pad and stored in the system. Once the marriage is solemnized, the Register of Deeds enters the information about the wedding ceremony and assigns a state file number to the marriage.
- Funeral Directors and Certifiers enter both the Fact of Death Record and the Medical Certificate through the EVRSS. This information is reviewed by the State and assigned a State File Number.
- Clerks of Courts submit divorce abstracts to the Department of Health and they are entered into the system by DOH staff. Eventually, this information will be imported.
- Other state Vital Records Offices submit births and deaths which occur in their state to South Dakota residents to SDDOH.
- For every request for a vital record submitted to the SDDOH, information about the applicant, the request and the payment are entered into the system and information about the action taken by the Department of Health including the safety paper numbers used to issue the record are recorded in the system.

The EVRSS has the ability to export data easily through the EVRSS. On a weekly basis, the SDDOH submits a load of all birth and death records filed during the week to the National Center for Health Statistics for use in calculating national statistics. Birth records are submitted on a weekly basis to the Social Security Administration (SSA) to facilitate the issuance of social security numbers to infants. The SDDOH also submits death data to SSA on a weekly basis, soon to be a daily, to remove the individuals from SSA enumeration roles and discontinue benefits. Birth record data and immunizations provided to the infant prior to hospital discharge is exported on a regular basis to SDIIS to ensure an accurate accounting for all immunizations.

In addition to exports, the EVRSS is also capable of importing data. Funeral Homes frequently use funeral home industry software to perform many of the functions of their office. The EVRSS allows funeral directors to export information from their Funeral Home Industry Software into the EVRSS. The import function is also used to convert other electronic data (i.e., old births, marriages, deaths and divorces) into EVRSS. Finally, the SDDOH imports metabolic screening results into the system from the designated laboratory.

The EVRSS has a built in electronic match system which allows the system to match two vital events and store information from each record on the other. For instance, the Metabolic Birth Match uses data imported from the lab and matches the results to the birth certificate which

allows the SDDOH to ensure that each newborn has received the appropriate metabolic screening. The Birth-Death Match matches the death record to the birth record and flags the birth record as deceased to prevent the identity theft.

The EVRSS has a report builder which allows the SDDOH to create reports as needed. Some of the most powerful time savers are the reports generated to pull certificates for the interstate exchange agreement. Rather than photocopying each record, the EVRSS prints out each record in state order.

The appropriate SDDOH staff have access to the system to pull download files as necessary to run statistics.

The Technology

The EVRSS was developed by QS Technologies in South Carolina. The EVRSS is a Commercial Off the Shelf Product that is table driven and fully customizable from the vital event modules in the system to the fields, edits, imports and exports. It is easily maintained by SDDOH. The core system is written in Delphi and was developed to be a client server system. However, SDDOH used Citrix Metaframe to deploy the software giving it the robust functionality of a client server system with the feel of a thin client system. A typical Vital Events system has large tables used to populate portions of the records. Citrix allows users to be able to use these tables without the slowness usually associated with passing large tables through HTML.

The Vital Records Office is responsible for maintaining the software including the imports, exports, edits, help and hint text and fields. The SDDOH also coordinates with BIT to manage the database and Citrix Software.

The Integration

In addition to sharing data through exports, the EVRSS is integrated with 4 pieces of software.

- **Online Verification Software**

The first piece of software is the Online Verification Software used to access the enumeration roles at the Social Security Administration Office to determine if the decedent's information matches information on the SSA. The system is essentially behind the scenes and works as follows. A Funeral Director enters the Decedent's name, date of birth, social security number, date of death and gender. Upon the first save, an XML message is sent to SSA and the SSA enumeration roles are searched. In return an XML message is used to send back the results of the search to SDDOH. A Funeral Director can try to verify the decedent's information up to 5 times. If the case received a passed result, benefits will be terminated.

- **Department of Social Services**

There are two methods that the EVRSS interfaces with the Department of Social Services (Office of Child Support Enforcement). The first includes real time on-line interface which is initiated by the Child Support worker. Both the birth and death records are accessed. If a successful match is found, selected data elements are then stored on the Child Support computer database. If a match is not found, an appropriate message is displayed to the

terminal operator. Search keys include SSN, DOB, and last name. The interface used for this integration is mainframe with visual basic interface. The second interface includes a weekly batch interface which is initiated by Child Support. The same search keys as noted above are used for this match. If a match is found, the information is loaded into the Child Support Enforcement computer database and a computer notice is generated to the worker to review the data.

- **Vital Chek**

Vital Chek is a program that the Vital Records office uses to process credit card orders. The DLL for Vital Chek is integrated within the EVRSS. This interface allows the SDDOH to enter applicant and request information into EVRSS and indicate that the customer would like to use a credit card to purchase the records. At this time the EVRSS calls the Vital Chek DLL and where credit card information is entered and verified.

- **Help America Vote Act**

As part of the Help America Vote Act passed by the Federal Government, the EVRSS is integrated with Voter Registration System in the Secretary of State's Office. This system works in two ways. At the end of each day, the EVRSS system is used to ensure that all individuals who register to vote during a given day are not deceased. In addition, on Tuesday, a batch file is sent to the Voter Registration System to remove all deceased voters from the Voter Registration records.

The Security

EVRSS protects the privacy of individual data and ensures security of the system in a variety of ways. Users are given access to the system via user id and password. The user id and password are encrypted. When a user types in their user id and password the values are encrypted and sent to the database for verification. As a result of the encrypted user id and passwords they cannot be used with another third party tool to update or access the database.

Deploying EVRSS through Citrix has also added an additional layer of security. The software runs on the Citrix server and the users connect via an industry standard browser (or a Citrix Icon on their desktop) to the application. With Citrix only small packets of information are sent back and forth from the user's terminal. This helps with network traffic and lowers the possibility of intercepting meaningful information from the telephone/internet lines. Citrix can also automatically encrypt the transmission. Because the application runs on a set of servers, nobody has a true database login. The true database user id and password is encrypted and hidden on the Citrix server so that the user id and password that users enter, just gains them access to EVRSS.

EVRSS operates on a role system where each user is assigned a specific role that determines which functions the user can perform as well as what fields or records each user can see. This is the principal means of preventing unauthorized users from performing tasks that they do not have permission to do. Only authorized persons have access to make amendments, modifications or changes to records. The system stores the original and the changed record. Only authorized people can see sealed records on the system.

EVRSS also protect the information once it has been printed. EVRSS has a very complete document tracking system. After the paper is securely shipped to the Vital Records office, the EVRSS tracks the inventory and distribution of each sheet of paper. For each document printed, it details the user, the time, the location, and the type of document printed. When a record is printed on safety paper, the system displays the number that should be pre-printed on the form so that the operator can verify that the correct sheet of paper is being used to issue the certified copy. If the number is out of sequence, EVRSS has process void the document tracking record.

EVRSS has an extensive audit system. The system administrator can turn on the audit feature for individual users which tracks when a user displays, updates, or prints a record. This system will generate reports to track activity by user and determine if additional securities need to be added to a specific user. In addition the system contains a Change file. This can be turned on to track literally every single change made to any event field in the system.

Implementation

The SDDOH began the critical process of evaluating the current business processes used to file Vital Records in 1998. After completing this task, SDDOH began initial discussions with groups such as the South Dakota Association of County Officials, South Dakota Funeral Director's Association and the South Dakota State Medical Association regarding implementation of new electronic Vital Records System. This was critical to gaining their buy-in and support.

In July 2000, the SDDOH formed an EVRSS Steering Committee made up of experts in the vital records field such as hospitals, funeral directors, coroner and physicians as well as their associations. This group has been used to guide development, write legislation, pilot the system and act as experts when necessary.

In September 2000, the SDDOH issued a Request for Proposal for an Electronic Vital Records and Screening System. SDDOH staff and EVRSS Steering Committee members evaluated and chose the vendor. The contract was awarded to QS Technologies in March of 2001 and system development began with the birth, metabolic and hearing screening modules, the marriage module and the Correspondence Accounting Module.

Hospitals were trained in September of 2001 to use the birth, metabolic and hearing screening modules and the pilots began in three hospitals in October of that year. The combined electronic birth registration and newborn metabolic screening modules and hospital portion of the newborn hearing screening module were implemented in February of 2002.

Each Register of Deeds was provided a computer and printer. From December 2001 to June 2002, computers were installed at 64 local registrar offices. The local registrars were trained from January to March of 2002. This training included instruction on the issuance and filing of marriage licenses, the issuance certified copies of birth and marriage records, using the accounting and document tracking systems.

During the months of May 2002, SDDOH piloted the electronic marriage registration module and business function module at 5 local registrar offices and from July through December 2002 one on one training continued at the local registrar offices.

In October 2002, SDDOH implemented the electronic marriage registration and the business function module at the Central Vital Records office. SDDOH also began the implementation of the marriage registration module and the business function modules as the local registrars using a staggered schedule. The implementation of all 64 counties was complete by January 2003

EVRSS team began to work on developing the Electronic Death Registration January of 2003. Meanwhile, training started for screeners, clinics and audiologists to enter newborn hearing screening information and follow up information into the hearing screening module of the EVRSS.

SDDOH went through two rounds of testing with the users one which occurred in April and on in May. QS Technologies delivered an EVRSS death module to the SDDOH in August.

Funeral Directors and Coroners were trained in October and November. The system was implemented on January 1, 2004.

Physician training was begun in May of 2003 and will continue through the summer.

The Users

The EVRSS is being used by 29 hospitals to submit birth certificates. This represents 97% of all birth records filed. The EVRSS metabolic and hearing screening modules are being used by these same 29 hospitals as well as 35 clinics and six Audiologists.

The EVRSS is being used by all 64 county Registers of Deeds representing 100% of the marriage records filed. This group also uses the system to process requests and issue records.

The EVRSS is being used by 100 of the 105 funeral homes representing approximately 300 users and 96% of all Fact of Death Records Filed. In addition, 35 County Coroners Offices have begun using the system to complete the Medical Certificate.

SDDOH is using the system to send data to the National Center for Health Statistics, the Social Security Administration, SDIIS, and to calculate statistics.

The Value

SDDOH has made progress to each of its objectives. The most dramatic are noted below.

- **Assuring the Health of Infants Born in South Dakota** –EVRSS makes it easier to ensure that all infants born in South Dakota have received the appropriate metabolic screening test. Each birth certificate filed contains the unique number from the lab requisition. Then using a match program, the EVRSS automatically matches birth record to metabolic screening result as the results come in. The unique number from the lab requisition was placed on the birth certificate as well as the metabolic results allowing the SDDOH to match the metabolic screening results with the birth certificate 100% of the time. In addition, the EVRSS allows the record to be matched as soon as the record is entered for the first time rather than when the record is filed. The results are dramatic. In

the previous system, matching took approximately 4 to 6 hours. With EVRSS, the match takes less than an hour a day. In addition, the metabolic results are matched to the record approximately 1 -2 weeks earlier allowing SDDOH to follow-up on records quicker.

EVRSS became the first system in South Dakota to track hearing screening prior to hospital discharge. Since the implementation of the system, hearing screening has improved dramatically. In 2000, 65.5% of infants were screened prior to hospital discharge. This number improved to 84.8% in 2003 with an addition 5.3% being screened after discharge for a total of 90%.

EVRSS is used to gather immunizations given at the hospital. Birth certificate data from EVRSS is used to populate the infant immunization system and at the same time provides the immunizations given in the hospital so that SDIIS is more complete.

- **Improving the Timeliness of Vital Events Data** – All duplication of effort has been removed from the Vital Records System. This has dramatically improved the time that records reach the State Office. This process has effectively cut one month of the process to file death and marriage records. As a result, the data are more available for issuing certified copies, analyzing data for statistical purposes and sharing files with our partners to reduce identity and benefits fraud.
- **Evaluating the Health of South Dakotans** – The download files for 2003 were pulled on May 1, 2004. Statisticians are working with preliminary data and the SDDOH fully expects to release its 2003 report in October a full three months earlier than 2002 data which was released one month earlier than 2001 data. In addition, the statisticians have more data available to them. All data from every record is available to the statisticians for analysis at any time throughout the year. With the combined birth, metabolic and hearing screening system, the SDDOH is able analyze all three data sets in one string of data making it much easier to analyze these data sets.
- **Integrating and Updating the Technology of Vital Records** – EVRSS has combined all of the data and computer systems used to file Vital Records into one system. This system is web enabled using Citrix and users can submit data from any computer hooked to the internet. EVRSS becomes the initial entry system or allows the import of information into the system. With this entry, the information necessary to issue a certified copy, create the statistical file and export or share information with partners is available to all users with the appropriate access.
- **Supporting a Statewide Vital Records System** – South Dakota has effectively moved to a Statewide Vital Records System. When a record is saved in the system all users with the appropriate role have access to issue a certified copy of the system. There is only one version of the vital records and the system easily supports all types of changes to the record. The system stores every version of the record electronically but only makes the latest version of the record available for issuance. In addition, individuals needing certified copies of a vital record can now go to any Register of Deeds office in the state to get a copy.

- **Improving Security** – The SDDOH purchased new security paper. One of the security features is that the paper contains a control number. EVRSS tracks the record that is printed on each individual sheet of paper by the control number as well as who requests the record.

As indicated above, EVRSS is integrated with the OVS software which allows SSA to remove decedents from their enumeration roles within days of the death rather than weeks. South Dakota was the first state to successfully integrate the OVS software into their Vital Records System. The OVS also helps to improve the death data submitted to the Department of Health. When the cases does not received a “Passed” result, the funeral director can review the information and submit the case again. This saves many amendments to the name, date of birth and Social Security Number.

The Costs

The over arching goal of EVRSS was not to reduce staff or to reduce the costs of the program. It was done to increase the functionality of the system and free up staff time to work on tasks such as off ongoing training programs, conducting chart audits to ensure the accuracy of data, improve the filing time of providers, and improving data linkages and data analysis programs. The financial costs of implementing this program are as follows:

Software Development – \$545,000

- Birth, Marriage, Business Functions - \$285,000
- Hearing and Metabolic Screening - \$15,000
- Death and Fetal Death - \$170,000
- Divorce - \$75,000

Onsite Technical Support – \$403,027

At the outset of the project, SDDOH had one on-site technical support person. This person was in charge of handling the system implementation, security, installations and system changes. As a result of the workload, a second on-site technical support person was added to support the system. The above dollar amount includes both positions for the 5 year project.

Hardware/ Software – \$231,383

SDDOH purchased the following equipment for each of the 64 local registrars:

- Pentium III Gateway computers with ethernet cards;
- Hewlett Packard Laserjet 4100 printers that included an extra feeder and paper tray; and
- Topaz Electronic Signature Capture Devices.

In addition to the equipment purchased, 200 licenses for Citrix were purchased and provided to BIT as well as dollars to purchase a new Citrix Server

Grants – \$250,000

SDDOH provided each funeral home that was willing to use the system by January 1, 2004 a grant of \$2,500 to help purchase computers or upgrade computer equipment in the funeral

homes throughout South Dakota. Additional implementation dollars from the Social Security Administration allowed the SDDOH to fund these grants.

Infrastructure Building – \$12,000

SDDOH divided the cost of pulling Wide Area Network lines to each of the 64 local registrar offices.

Physician Buy-in and Training - \$100,000

SDDOH contracted with the University of South Dakota School Of Medicine's Office of Continuing Medical Education to obtain buy-in and train the physicians on how to complete the cause of death statement and use the electronic registration system to file certificates.

Connectivity – \$16,000

SDDOH pays a monthly fee to connect each user this user fee includes database management and the support of the BIT Integration Team to support the use of Citrix.

Training – \$10,000

Includes payment for computer lab and travel time to do training.

Although SDDOH has budgeted to fund the project out of Vital Records fees, this was not the primary sources of funds. In addition to Vital Records fees, the following fund sources were used.

- Maternal Child Health Title V Block Grant was used to fund portions of the birth, metabolic and hearing screening system as well as the match programs. This data is source of data for the MCH grant and so support was provided to improve the data.
- CDC Early Hearing Detection Intervention Newborn screening grant was used to fund the hearing screening program. It was justified as a mechanism to improve the percent of infants screened prior to hospital discharge.
- Vital Records Fees were used to fund the Marriage and Correspondence Accounting Systems. These systems were vital to improving the business functions of the office.
- Social Security Administration was used to fund the implementation of an Electronic Death Registration System. The EDR is integrated with the OVS software to improve accuracy of death data and help SSA terminate benefits sooner.
- Preventive Health and Health Services Block Grant dollars were used to fund the development of the EDR and the Fetal Death Registration System.
- Bioterrorism dollars were used to fund the training of physicians. The hope is that with better training, data on bioterrorism events may show up more clearly on death records.

The Keys

The success of the EVRSS can be attributed to many factors, however the following were critical to its success:

- **Senior Management Support** – The support of SDDOH Executive Management has been critical to the success of EVRSS. The implementation of this program required financial

resources, legislative changes and constant travel on behalf of the Vital Records Staff. By lending support in these areas, Management helped ensure the success of the project.

- **Financial Support** – The EVRSS was funded through a wide variety of sources. These sources came from a number of offices throughout the SDDOH and the federal government. Although at the outset, it was anticipated that most of the project would be funded from fees, less than half of the project to date has been funded through Vital Records Fees. The addition of these fees allowed the SDDOH to be creative in its implementation approaches thus improving the success of the project.
- **Participant Buy-In** – The SDDOH began participant buy-in for the project in 1998. Even with this leeway, some groups came along easier than others. However, without the significant work the SDDOH did in participant buy-in, this project would not have succeeded.
- **Hard Work** – The EVRSS is the culmination of five years of hard work and teamwork by the EVRSS team. Simply put, hours of staff time were poured into this project and without the dedication of the team, this project would still be back at electronic marriage registration.

The Lessons

Although this project has been tremendously successful, it has not come without a few lessons learned. The most important of these is the initial impact that a reengineering project such as this can have on your staff. When a project such as this is conceived, one looks at the problems and develops the solutions to fix them. However the solution or improvement is not always seen immediately and sometimes it can even be felt a year later.

SDDOH struggled to keep staff afloat during the transition period. In a busy office, where staffing shortages were prevalent all throughout the implementation phase, it was difficult to take staff away from daily office responsibility to provide training due to the resulting stress that it placed on the remaining staff. SDDOH also found it difficult to practice the new way of business. When work was prioritized, the incoming requests for record or changes took priority over practicing the new system. Often new procedures were implemented on the fly and developed as the system was learned.

This project also required staff to process records in two different ways effectively doubling the workload. For example, death data was processed using a weekly batch process in 2003, but in 2004 we moved to a daily process. In order to complete filing the 2003 records, both processes needed to be done.

The impact of the EVRSS included every business process of the Vital Records Office. The procedures used were in a constant state of fluctuation for three years. This became stressful for our staff.

Lastly, communication can make or break any IT project. SDDOH set up a number of methods to communicate including weekly or daily meetings as needed. When we communicated well the project went smoothly. We seemed to hit the bumps when we were not taking the time to communicate.