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**Strategies for Improving Civil Registration and Vital Statistics Systems:  
The Canadian Experience<sup>1</sup>**

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<sup>1</sup> The text is presented without formal editing.

## **1.0 INTRODUCTION**

*The statistics of a nation are, in point of fact, the quantitative expression of the character and activities of the people, and hence are of the most profound significance.*

-Robert H. Coates, Canada's first Dominion Statistician, 1918

1. The cornerstone of Canada's national system of vital statistics is the cooperation and collaboration between the thirteen provincial and territorial vital statistics registrars and the federal government of Canada represented by Statistics Canada. This longstanding partnership was created in 1919 following two federal/provincial Conferences on the establishment of a national system of vital statistics wherein the principles of mandatory registration and national-provincial collaboration were affirmed. In 1945, the Vital Statistics Council for Canada (VSCC), comprised of representatives from all provinces and territories and Statistics Canada, was established as the formalised body responsible to ensure the uniform collection, compilation and dissemination of vital statistics across the country.
2. Within this paper, we will first briefly describe the Canadian model of civil registration and vital statistics and the role of the Vital Statistics Council for Canada. Secondly, we will outline key strategies used in Canada to improve civil registration and the vital statistics system with a focus on training, outreach, performance management, new information technologies, and the concept of service bundling. In conclusion, we will identify several important future priorities which are designed to improve civil registration and vital statistics both at a national level and within provinces and territories.

## **2.0 THE CANADIAN VITAL STATISTICS SYSTEM**

### **2.1 The Canadian Model**

3. The Canadian civil registration and vital statistics system operates within the context of Canadian federalism which includes two distinct jurisdictions of political authority: the federal government and the ten provincial governments. Canada also has three territorial governments in the north, which while technically subject to the federal government, are generally treated as provinces. The civil registration of births, stillbirths, death, and marriage is the responsibility of provincial/territorial governments while the registration of divorce is a federal responsibility. The collection and dissemination of statistics, including vital statistics, is a federal responsibility. As Canada's central statistical office, Statistics Canada is legislated under the federal Statistics Act to serve this function for the whole of Canada and each of the provinces and territories.
4. Statistics Canada's vital statistics program collects information on births, deaths, stillbirths and marriages that take place in Canada from the provincial and territorial vital statistics registrars. For divorce statistics, Statistics Canada receives information on divorces from the federal Department of Justice's Central Registry of Divorce Proceedings.

5. Based upon historical agreements dating back to the 1940s, Statistics Canada receives birth, stillbirth, death and marriage information from each of the provincial/territorial vital statistics registrars using a standardised payment formula. The registrars collect these data directly from

administrative data sources and rely on physicians, coroners, nurses, funeral directors, and other individuals who complete provincial/territorial forms after a vital event has occurred. The registrars verify the event registrations, integrate documents needed for each event and electronically record the details of the event. Data are sent to Statistics Canada in various formats (e.g., paper, microfilm, CD-ROM) using various methods (e.g., through an automated electronic system, via mail, manually through a secure portal).

6. Coding of the medical cause of death for death and stillbirth, based upon ICD-10, is a shared responsibility – the three largest provinces (Ontario, Quebec and British Columbia) code the cause of death for their vital events while Statistics Canada codes the cause of death for the remaining provinces and the territories.

## **2.2 The Role of the Vital Statistics Council for Canada**

7. Since 1945, the Vital Statistics Council for Canada has provided a forum for the development of common approaches for the collection of vital statistics in Canada. The VSCC is comprised of all thirteen provincial and territorial governments as well as Statistics Canada. The Vision of the VSCC is to develop and promote accurate and timely national foundation identity records and vital statistics while respecting the principles of confidentiality and privacy. Its mission is to:

- further the evolution of the Canadian System of Vital Statistics and Public Health Surveillance by making recommendations for improvements to the respective governments;
- support the federal-provincial agreements regarding the exchange (including electronic) of vital statistics between the federal and provincial / territorial governments, pursuant to the federal *Statistics Act*;
- assist jurisdictions to fulfill their legislated mandates effectively and with excellence by sharing ideas and innovations; and
- act as an agent for creativity to meet changing societal requirements.

8. The VSCC typically develops a multi-year strategic plan which identifies current and future priorities to improve civil registration and vital statistics. The current priorities include:

- Accuracy: It is important to continue to develop and implement standards for data elements and collection that maintain data accuracy and consistency and are complimentary with international standards (e.g., WHO). As such, the VSCC will:
  - Review existing data standards and develop an annual review process; and;
  - Develop a mechanism to audit the quality of the cause of death coding across the country.
- Confidentiality/Privacy: In order to maintain the integrity of the national Vital Statistics System and promote responsible data stewardship and information management practices among stakeholders, the VSCC will:
  - Finalize a set of National Security Standards; and
  - Create a permanent repository of historical milestone decisions.

- Relevance: The VSCC strives to ensure that the vital events system and statistical products meet the needs of society and governments. As such, the VSCC will:
  - Prepare an environmental scan of issues and impacts to ensure the data elements continue to be relevant.

9. The VSCC is co-chaired by Statistics Canada and a member elected from one of the provinces or territories.

10. Most provincial and territorial registries focus on the application of statutes and regulations as they apply to the registration of vital events and the production of certificates. The registries also ensure that their processes and laws balance security of the information in their care and personal privacy. The registries work collectively through the VSCC to identify common issues, recommend harmonized strategies where possible and proactively address social and legal challenges in the world of vital events.

11. Statistics Canada has a national perspective in terms of data uses and standards. By default, the registry focus is on the individual client or event, whereas Statistics Canada's interest is mainly on aggregate data used in health and demographic analysis. Consequently, Statistics Canada promotes the national standards that are crucial to the creation of national vital event databases that allow for comparability across the country and internationally.

### **3.0 TRAINING**

#### **3.1 Registry Training Programs**

12. Provincial and territorial registries work diligently to maintain accurate and complete training manuals for use by staff in the delivery of services and products to citizens. Training programs are developed by each jurisdiction to ensure the following best practices are met:

- full cross training of staff to allow for segregation of duties when dealing with issuance of identity documents;
- Segregation of application acceptance and issuance;
- Training guided by documented procedural manuals by transaction type; and
- Timely and accurate training information.

13. Not all jurisdictions are able to meet these objectives but they still benefit greatly from having access to processes fully documented by other jurisdictions which they can then tailor for their own needs. Increasingly, jurisdictions use technology to create online manuals fully searchable by keywords to facilitate staff finding the information. The manuals are used by management to train new hires and for staff to refer to as they carry out duties.

#### **3.2 Medical Coding Training**

14. One of the key data elements that are collected during the registration of deaths is the cause of death. This information is used extensively in health analysis and policy development. To

help ensure the quality and standards related to cause of death, Statistics Canada invests heavily in the training of mortality classification staff.

15. Health Statistics Division provides two ICD-10 cause of death coding courses to provincial and in-house mortality classification staff:

- Basic ICD-10 Underlying Cause of Death Classification - this course provides practical training designed to develop skill in applying ICD-10 definitions, rules and guidelines to code and select underlying cause of death.
- Basic ICD-10 Multiple Causes of Death Classification - this course provides practical training designed to develop skill in applying NCHS instructions to code multiple causes of death as input to the Automated Classification of Medical Entities (ACME) program.

16. Statistics Canada also makes extensive use of NCHS mortality classification training material. Trainees complete NCHS computer-based modules on anatomy, physiology and medical terminology and an introduction to ICD-10 as a pre-classroom component to both underlying and multiple causes training. And, there is an extensive computer based post-classroom component to the multiple causes of death (ACME) coding course.

17. Canada has eight (8) trained and experienced underlying and multiple cause coders – one in British Columbia, three in Ontario, two in Quebec and two at Statistics Canada. At Statistics Canada, there is also one coder-in-training.

18. Canada uses two automated mortality classification systems. The NCHS product, Medical Mortality Data System (MMDS), is used in British Columbia, Ontario and Statistics Canada. STYX, a French language system developed by INSERM (France), is used in Quebec.

19. For new coders, the process is generally to double code 100% of cases in the beginning and then follow a progressively reduced monitoring process until discrepancies are at an acceptable level.

#### **4.0 OUTREACH: PASSPORT CANADA EXAMPLE**

20. In Canada, passports are only issued by the federal government through Passport Canada. Recently, Passport Canada attended the Annual General Meeting of the VSCC in order to consult the Council on proposed changes under consideration for passport issuance. To enhance the security and integrity of Canadian travel documents, Passport Canada suggested limiting what constitutes acceptable proof of citizenship for a general passport application to a birth certificate issued by a provincial or territorial vital statistics agency or a certificate of citizenship. The proposed changes would significantly impact upon the vital statistics registrars given that a substantial number of citizens would now require a birth certificate in order to apply for a passport.

21. The Passport Canada presentation highlighted the changes under consideration and registrars were able to provide feedback during the meeting. Passport Canada was then able to incorporate the feedback and forward a discussion paper to the registrars for more formal input.

Additional discussions were held with individual jurisdictions to allow for differences in provincial/territorial legislation. One of the main findings was the need for outreach materials for vital registrars to explain the new changes to Canadians.

22. Negotiations between Passport Canada and the registrars ensued on the appropriate timing for implementation of the proposed changes. A communications strategy and accompanying outreach materials (press release, posters, etc.) were developed collaboratively. Ultimately, the initiative was successful and there were no significant issues with such substantial changes across thirteen individual jurisdictions.

## **5.0 MEDICAL CODING PERFORMANCE MONITORING**

23. There are a number of best practices currently being used within Canada to ensure that the medical cause of death coding is of high quality. Firstly, the three large provinces regularly query death certifiers in order to clarify coding issues. For example, Ontario sends an average of 3,100 queries per year while British Columbia can send up to 2,400 in a given year. Statistics Canada is in the process of formalizing a querying process in order to follow this best practice.

24. Current quality assurance measures focus on a pre-release review of selected causes of death. This review is in addition to processing edits that flag invalid causes of death, and correlate age with cause of death and sex with cause of death. Causes of death known to present a coding challenge are reviewed for accurate classification after the master file is produced but before the cause of death data are released. Any errors detected are corrected for inclusion in the data released. This process involves communication with the cause of death coders and the list of causes reviewed changes to reflect improvement in the quality of coding as well as the discovery of new challenges.

## **6.0 NEW INFORMATION TECHNOLOGIES**

### **6.1 National Routing System**

25. The National Routing System (NRS) was developed as a joint partnership between Statistics Canada, Canada Revenue Agency (CRA) and Service Canada (SC). It enables provincial vital statistics registries to use a single method for providing information to all three federal departments by establishing common technical and data standards that ensure interoperability between systems. The collaborative approach to the development of NRS ensured that the diverse needs of each department and registry were met and that expertise and resources were used effectively.

26. The genesis of NRS arose from the needs of different federal departments to gather information related to vital events (birth and death) and from the desire of provincial registries to reduce the number of solutions required to service federal needs. A network of data exchanges had evolved over time in an uncoordinated manner, resulting in a variety of processes, standards and timelines for information exchange. Many of the systems pre-dated the technological solutions that allowed for interoperability. As a result, typical “stovepipe” systems were

developed to transfer information between organizations with little or no integration. Inherent in this uncoordinated approach were the inefficiencies that result from different standards and from duplication of effort. NRS overcomes these inefficiencies by creating a single standard for the exchange of information and has been adopted by the Vital Statistics Council for Canada as the de facto standard for the distribution of vital event data to federal departments.

27. The NRS is not a single piece of software, central database or repository of data. It is a messaging platform that allows NRS partners to connect using the software that best suits their IT environments while ensuring interoperability between different legacy systems. By using a common specification and a common data standard, NRS enables organizations to overcome integration barriers that would normally occur when exchanging information.

28. NRS represents a fundamental change in the way administrative data are collected. The traditional bulk data exchanges are replaced with a real-time messaging system that greatly enhances the timeliness of the information. As soon as an event is registered by the provincial vital statistics agency, database triggers automatically transform, encrypt and transmit information related to that single event to federal clients. Data no longer “linger” in batches before being sent, so that federal departments have the most up-to-date information possible. This timeliness helps federal organizations improve service delivery and program administration.

29. For Statistics Canada, NRS improves health and demographic databases by providing data quickly and in a standard, secure manner. It reduces processing times and opens up new opportunities in areas such as mortality surveillance and real-time editing by delivering vital event information on a record-by-record basis.

30. The technical interoperability challenges, while difficult, were overcome. Key to the success of the project was the ability of diverse departments and agencies with different cultures, standards and requirements to work cooperatively to achieve a common goal. The three federal departments, along with their provincial counterparts, recognized the value of the NRS and worked together in a joint partnership to ensure the success of the project. They shared their knowledge and expertise through active participation in various working groups where they built consensus on data and technical standards. They also provided funding and in-kind resources for the project management office and provincial implementations. By working together, they were able to reduce the financial and resource burden on any one department and allowed the NRS to become a national system for vital event information.

31. Success of the NRS approach is evident in the re-use of the solution. Provincial registries are using their NRS solutions to service other non-federal clients and several federal organizations (e.g. Public Health Agency of Canada, Citizenship and Immigration Canada, Canadian Food Inspection Agency) have expressed interest in the NRS model for their information needs. As well, registries are using the NRS to communicate with other registries to confirm out of province deaths, an important tool in helping registries prevent fraud.

32. The NRS began in 2005 as a pilot project that included two provincial registries (representing 25 percent of births and deaths) and three federal departments. Since then, the NRS has moved beyond the pilot stage and expanded to cover 92 percent of all birth and death events in Canada, and has become established as a production system for three federal

departments. Lessons learned during the pilot have resulted in numerous changes to the project including an overhaul of the data exchange standards, schema, and routing infrastructure.

33. NRS has succeeded despite the lack of long term funding or central governance. This is largely due to the willingness and ability of federal departments and registries to work together, share resources and accommodate each jurisdiction's confidentiality, privacy and information requirements.

## **6.2 Online Application**

34. Increasingly, registries are moving to online application as a means of facilitating service delivery to citizens. Applicants can apply and pay online and receive their certificate in the mail or by courier. The take up rate on this service has clearly demonstrated that customers welcome electronic means of service delivery.

35. For registries, online application offers many benefits. Online application forms can:

- provide drop-down menus to facilitate the options available for the field to be completed;
- ensure all fields are completed before forms can be submitted;
- verify applicant address and credit card information;
- ensure accuracy of the information (barring errors by the applicant);
- reduce paper consumption and storage; and
- reduce staff time in processing applications.

36. Electronic Birth Registration (EBR) and Electronic Death Registration are still in their infancy in Canada, but are seen as a goal for all jurisdictions. Ontario has implemented EBR and Nova Scotia is in the process of developing both EBR and EDR for 2012.

37. The British Columbia Vital Statistics Agency is currently undertaking a project to supplement the existing paper-based birth registration process with an electronic registration over the Internet. This will replace certified copies of birth registrations with electronic extracts and services will be entirely paperless making use of electronic signatures.

## **7.0 SERVICE BUNDLING**

38. When looking at ways of streamlining processes, cutting red tape and improving services to citizens, governments are seeking opportunities to collaborate with all levels of government in the provision of services to the public.

39. Increasingly, registries are asked to expand the reach of their service activities into areas such as service bundling. Service bundling enables various federal and provincial departments to improve service to clients by delivering programs without developing completely separate systems for each program. For example, when a parent fills out a birth registration form, they can indicate whether or not they would like to apply for a social insurance number for the newborn and for federal benefit programs to which they may be entitled. This information is captured by the provincial registry as part of their registration process and then automatically distributed to the appropriate federal government department through the NRS.

40. This integrated service has proven popular with parents as they only have to provide the information once in order to register their child's birth and access key federal services. Both federal departments enjoy cost savings and are assured of the integrity of the information as it is provided directly by the provincial issuing authority.

41. The CRA and Service Canada also receive timely death notifications through the NRS. Both organisations rely upon this data for the integrity of their programs. For CRA, this data helps to reduce overpayments of benefits. Similarly, for Service Canada, the integrity of the data that is maintained in the Social Insurance Register is enhanced to reduce overpayments by programs that rely upon SIR data, such as the Canada Pension Plan. Receipt of death data also provides a springboard for survivor benefits.

42. Service Canada also uses the NRS to validate Birth Certificate information submitted in support of a Social Insurance Number application. This reduces the potential for fraud as the information that is on the Birth Certificate must match the information in the provincial vital statistics registries.

## **7.1 The Nova Scotia Experience**

43. The Nova Scotia registry has received funding from the Province to implement a number of initiatives focused on streamlining processes and integrating "life event" services for citizens. The design and implementation of these initiatives is called the Life Event Bundling project. Within the scope of this project, "life event" citizen services will be bundled into two categories: Birth and bereavement.

- The "birth bundle" will be an expansion of the current Integrated Birth Bundle and include electronic submission of birth registration information by the hospitals and the automatic activation of child's medical card where consent is given. It will also allow a parent to order the child's birth certificate. At the end of this project, Parents will be able to register the child's birth electronically, apply for the child tax benefits, SIN number, birth certificate and activate the child's health card all before they leave the hospital. This requires coordination and electronic partnership with all Nova Scotia Hospitals, CRA, Service Canada, and Medavie - Nova Scotia's medical care insurance company.
- The "bereavement bundle" will allow funeral directors to electronically submit death registrations to Vital Statistics; this will reduce paperwork and will streamline the death registration process.

44. Additionally, a communication package will be provided to citizens to outline the services being provided by Government.

## **8.0 CONCLUSION: FUTURE PLANS**

45. In Canada, several additional priorities are underway to improve the vital statistics system. These activities fall under the general themes of access to data, timeliness and quality.

- Access: A pilot project has been started to place births and deaths data in Statistics Canada's Research Data Centers (which are satellite offices within universities wherein academics and others can access confidential microdata). In addition, work is underway to make historical birth and death data available electronically on the Statistics Canada website. Finally, improvements are being made to the website so that information is easier to find and free of charge.
  - Timeliness: Currently, vital statistics are released nationally in Canada almost 3 years after the reference period (i.e., 2008 data are released in late 2011). In order to capitalise on the strength of NRS, Statistics Canada is developing options to release preliminary data 6 to 9 months after the end of the reference period and develop a revision policy for final data. In order for this new process to work well, the goal is to ensure that 100% of vital events are eventually received by Statistics Canada through NRS.
  - Quality: There are plans to review existing data standards in Canada and develop an annual review process in order to ensure the relevance of vital statistics. In addition, Canada is working on developing a mechanism to audit the quality of the cause of death coding across the country. Work is also underway to renegotiate agreements between Statistics Canada and the provinces/territories which will specify service standards in order to improve the quality and timeliness of data.
46. Though Canada is a mosaic of cultural backgrounds, with two languages, a vast geographical domain, small population and many jurisdictions, the VSCC and its members overcome challenges to make their operations successful, innovative and ultimately reliable sources of identity and information.