BC Cancer Agency
CARE + RESEARCH
An agency of the Provincial Health Services Authority

DEATH CLEARANCE - Design and implementation of an interface to automate vital statistics data collection in a population-based cancer registry.

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The Plan

To build an HL7 interface to allow for the automated upload and validation of provincial monthly death lists from BC Vital Statistics Agency (VSA) to the BC Cancer Registry (BCCR).

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Health Level 7 – a standard series of pre-defined logical formats for packaging healthcare data in the form of a message to be transmitted among computer systems.

Who We Are

We are British Columbia's provincial cancer registry.

- established in 1969.
- we register ~ 21,000 new cancer cases annually.
- our case ascertainment is through attendance at BC Cancer Centre or by pathology, diagnostic reports from hospital labs.
- the death lists are received monthly from the BC Vital Statistics Agency in Victoria, BC.
- our six cancer centres are located across the province. *(Vancouver, Victoria, Fraser Valley, Abbotsford, Kelowna and Prince George opening in 2012)*
- the province land size is 936,492 km² (361,581 mi²).

What is Death Clearance?

Death clearance is a critical component of cancer registration, allowing for:

- linkage of vital statistics data
- ascertainment of new cases from death certificates
- more accurate survival analyses

Funding

Funding from the **C**anadian **P**artnership **A**gainst **C**ancer's **N**ational **S**taging **I**nitiative permitted the design and construction of an automated vital statistics interface.

Thank You CPAC

History

Until September 2010, death clearance at the BC Cancer Registry was carried out using a series of complex, labour intensive, manual processes shared by staff in two geographically separate departments; Population Oncology and Data Quality & Registry.

Numbers

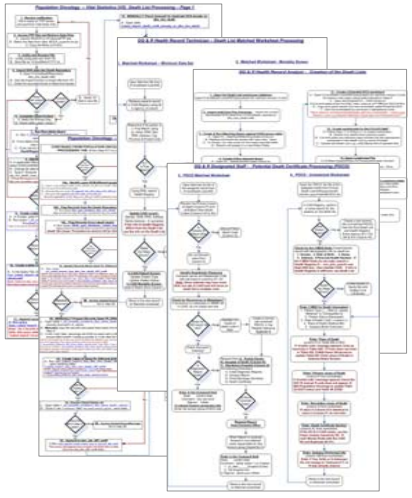
The approximate annual statistics are as follows:

- 34,500 total death records received from BC Vital Statistics Agency
- 17,000 matched records in Cancer Agency Information System (CAIS)
- 1,650 unmatched records but with cause of death listed as cancer
- 230 duplicate records in CAIS that require manual review

What We Did Before

1. BC Vital Statistics Agency sent a monthly encrypted data file of all deaths occurring in BC to a secure File Transfer Protocol (FTP) server accessible to the Population Oncology (PO) analyst team.
2. PO analyst received file and generated a monthly cancer death listing for manual checking of duplicates, new records and updates.
3. Listing was sent to Data Quality & Registry (DQ&R) analysts who manually compared death listing to the registry database (in CAIS) and generated death clearance reports.
4. DQ&R staff created new registry records from Death Certificate Only (DCO) cases.

- MANUAL -
Too Many Steps

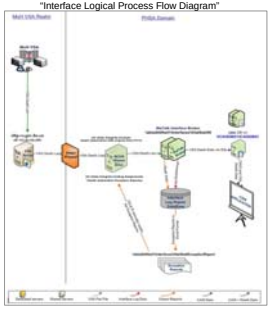


What We Do Now

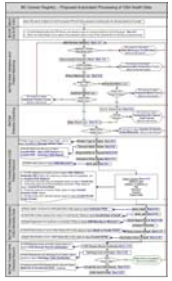
A detailed current state business analysis of the procedures for accomplishing death clearance was undertaken, including process owner, subject matter experts, workflows, data flows, volumes, frequencies, complexities and outcomes.

Based on the requirements document, a technical strategy to automate the process was developed, culminating in the design implementation of an HL7 integration broker type interface.

"Interface Logical Process Flow Diagram"



- AUTOMATED -
Way Less Steps



"Exception Reports"

1. Invalid Record Length
2. Missing or Invalid Data
3. Unprocessible Characters Found
4. Duplicate Patients
5. Potential Match
6. Unmatched No Cancer Code Found
7. Gender and Cancer Code Mismatch
8. Invalid or Missing Patient Type
9. Invalid PHN - New CAIS Record
10. Invalid PHN - Existing CAIS Record
11. Date of Birth Mismatch
12. VSA Address Unknown
13. Invalid City
14. Invalid Province or State
15. Invalid Country Code
16. Invalid Postal Code Format
17. Unknown Place of Death (POD)
18. Death Registration # Missing or Mismatch
19. Autopsy Mismatch
20. Blank or Invalid Primary COD
21. Invalid Secondary COD
22. Invalid Date of Death
23. CAIS Disease Record Verification
24. Histology Code Verification
25. Matched and UnMatched DCO
26. Matched – Mortality Only

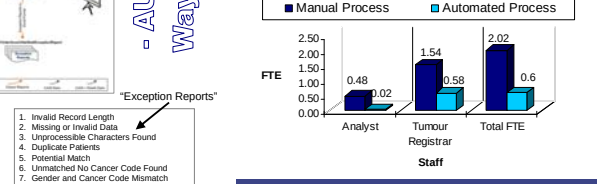
Amazing Results

User acceptance testing confirmed that development efforts were consistent with business requirements. In initial processing of 1 year of retrospective vital statistics data, 94.3% of records were automatically processed and 5.7% of records generated exception reports requiring manual processing. Analysis of automated record handling over next 4 month period showed that 96.1% of records were automatically processed and 3.9% of records generated exception reports.

Action	*Records
*records received from BC Vital Statistics Agency	3100 (100%)
*records with no match to cancer patient or with no cancer cause of death (no work to be done)	1750 (56.5%)
*records automatically matched, updating registry database with death information	1000 (32.3%)
new *records automatically created for new patient and/or new tumour record	230 (7.4%)
*records requiring manual handling: - match to existing record needs evaluation - potential duplicate - blank or invalid field values	120 (3.9%)

***records are per month and averaged over a 4 month period**

Staffing - Full Time Employees (FTE)



Exciting Conclusions

Automating the death clearance process has resulted in a significant increased efficiency of processing vital statistics data in terms of time and staff resources resulting in a vast improvement in complete, timely and accurate vital statistics data in the BC Cancer Registry.

• automated death clearance is a very good thing •