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Canadian Cancer Registry Manuals

Death Clearance Overview

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Table of contents

	Page
1.0 Introduction	4
1.1 Background	4
2.0 Objectives and requirements of death clearance	5
2.1 Objectives.....	5
2.2 Operational requirements	5
3.0 Inputs into death clearance	5
3.1 Canadian cancer registry (CCR) database	5
3.2 Canadian mortality data base (CMDDB).....	6
3.3 Canadian vital statistics data base (CVSDB)	7
3.4 Alternate name file	8
3.5 Don't link cross reference file (DLXR File)	8
3.6 File of refusals.....	9
4.0 Death clearance process	9
4.1 Process overview	9
4.2 Pre-processing	10
4.2.1 Selection of the population.....	10
4.3 Direct match	11
4.4 Probabilistic record linkage.....	12
4.5 Post-processing	14
4.6 Refusal processing	14
5.0 Outputs from death clearance	15
5.1 Updated CCR patient record	15
5.2 Death clearance population file (DCPOP).....	16
5.3 Death confirmed patient record file.....	17
5.4 Updated don't link cross reference file	17
5.5 Feedback reports	18
6.0 Foreign deaths of Canadian residents	18
Appendix A - Death clearance system overview - Process flow	19

1.0 Introduction

The purpose of this document is to describe, in general terms, the Death Clearance module of the Canadian Cancer Registry (CCR); its structure, its function and its role in the operation of the national cancer registry. Inputs and outputs are listed and briefly described, as well as the different steps constituting the Death Clearance process. This report's intended audiences are Statistics Canada staff working on, or responsible for the CCR, and the technical contacts at the Provincial/Territorial Cancer Registries. It also serves as an introduction to the more technical documentation describing in detail the Death Clearance programs and procedures.

1.1 Background

The CCR is a dynamic database, maintained at Statistics Canada, of all Canadian residents diagnosed with cancer¹ from 1992 onwards. It replaced the National Cancer Incidence Reporting System (NCIRS) as Statistics Canada's vehicle for collecting information about cancer across the country. Data are fed into the CCR by the thirteen Provincial and Territorial Cancer Registries (PTCRs) who are principally responsible for the degree of coverage and the quality of the data. Unlike the NCIRS, that targeted and described each event of cancer diagnosed annually, the CCR is a patient-based system, that records the kind and number of primary cancers diagnosed for each person over a number of years until death. Consequently, in addition to cancer incidence, information is now available about the characteristics of patients with multiple tumours, as well as about the nature and frequency of these tumours. More importantly, since patients' records remain active on the CCR until confirmation of their death, survival rates for the various forms of cancer can now be calculated.

The CCR comprises three modules: Core Edit, Internal Record Linkage and Death Clearance. The Core Edit module builds and maintains the registry. It accepts and validates PTCR data submissions, and subsequently posts, updates or deletes information on the CCR database. The Internal Record Linkage module assures that the CCR is truly a person-based file, with only one patient record for each patient diagnosed with cancer from 1992 onwards. It identifies and eliminates any duplicate patient records that may have been loaded onto the database as a result of a name change, a subsequent diagnosis or a relocation to another community, province or territory. As a consequence, the Internal Record Linkage module also

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1. The Canadian Council of Cancer Registries (CCCCR) recommends that the following tumours should be reported to the CCR using the *International Classification of Diseases for Oncology – 2nd Edition or 3rd Edition*:
 - 1) All primary, malignant tumours (ICD-O-2/3, topography codes C00.0-C80.9) with behaviour codes of 3 {except squamous cell skin cancer (ICD-O-2/3 morphology codes 805_-808_) and basal cell skin cancer (ICD-O-2/3 morphology codes 809_-811_)} with topographies C44.0-C44.9;
 - 2) In situ/intraepithelial/non-infiltrating/non-invasive carcinomas (all topographies in ICD-O-2/3 with behaviour codes of 2);
 - 3) Primary, benign tumours of the brain and central nervous system (topographies C70.0-C72.9 with ICD-O-2/3 behaviour codes of 0); and,
 - 4) Borderline malignancies (all topographies in ICD-O-2/3 with behaviour codes of 1).

removes any duplicate tumour records on the CCR, that were submitted with the duplicate patient records. Finally, the Death Clearance module completes the information on cancer patients, by furnishing the official date and cause of their death. The latter function is done by direct match and probabilistic linkage of patient records to death registrations, at the national level.

2.0 Objectives and requirements of death clearance

2.1 Objectives

A Death Clearance module has been included in the CCR in order to:

- permit the calculation of survival rates for patients diagnosed with cancer;
- facilitate epidemiological studies using information on the cause of death;
- increase coverage of the target population, that is, patients diagnosed with cancer from 1992 onwards;
- improve the completeness and quality of reported death and other demographic information, including date, location and cause of death, sex, and date and place of birth;
- assist PTCRs in performing active follow-up for research purposes; and
- facilitate the management of CCR and PTCR files.

2.2 Operational requirements

The Death Clearance module is required to:

- confirm the death of patients registered on the CCR by matching/linking² their patient records to death registrations on the Canadian Mortality Data Base (CMDB); and to
- confirm the death of patients using official sources other than the CMDB, such as foreign death certificates and other legal documents attesting to, or declaring death.

3.0 Inputs into death clearance

3.1 Canadian cancer registry (CCR) database

The CCR comprises patient and tumour records. For each person on the CCR, there is only one patient record, but as many tumour records as there are distinct, primary cancers diagnosed for that person. Patient records contain nominal, demographic and mortality information about the person (most data items needed to match with, or link to the appropriate death registration), while tumour records principally describe the characteristics of

2. Matching entails finding two or more records assigned with a unique identification number, thus identifying them as belonging to the same person. Linkage concludes that two or more records probably refer to the same person, because of the number of similar, personal characteristics found on them.

the cancer and its diagnosis. The Death Clearance process uses the following data items, from patient records in the CCR:

- Reporting Province/Territory
- Patient Identification Number (PIN)
- CCR Identification Number (CCRID)
- Current surname
- First given name (First 9 characters)
- Second given name (First 9 characters)
- Third given name (First 7 characters)
- Sex
- Date of birth (Year, Month and Day)
- Province/Territory/Country of birth
- Birth/Maiden surname
- Date of death (Year, Month and Day)
- Death registration number
- Province/Territory/Country of death
- Underlying cause of death - ICD-9 code
- Vital status indicator

In addition, data from the patient record are augmented with some fields from the tumour record (if there is more than one tumour, the tumour record describing the patient's most recently diagnosed tumour is chosen). Data items from the tumour record include:

- Reporting Province/Territory³
- Patient Identification Number (PIN)³
- Tumour reference number
- Alphabetic place of residence at time of diagnosis (First 10 characters)
- Coded place of residence at time of diagnosis (Province, CD⁴, CSD⁴)
- Date of diagnosis
- Tumour ICD-9/ICD-0-2/ICD-0-3 code
- Tumour sequence number

3.2 Canadian mortality data base (CMDB)

This file is created by Health Statistics Division's Occupational and Environmental Health Research Section, from the annual files of the Canadian Vital Statistics Data Base (see section 3.3). Rather than going directly to the vital statistics file, the Death Clearance module uses the CMDB as the principal information source about all deaths in Canada since improvements were done to make it a better tool for Record Linkage. On the

-
3. The Reporting Province/Territory and the PIN from the tumour record are probably, but not necessarily, the same as the ones found on the patient record. Because of different operational durations among the PTCRs, an earlier diagnosed tumour can be reported later to the CCR. The PTCR reporting this earlier tumour will be the Reporting Province/Territory on the patient record and it will assign the PIN.
 4. CD refers to the Census Division of residence and is equivalent to counties and regional municipalities in some provinces. CSD is the Census Sub-division of residence and generally follows municipal boundaries.

CMDB, a separate record exists for every unique surname on each vital statistics record; for example, the deceased's surname, birth/maiden surname, and each component of a hyphenated surname (e.g., Gérin-Lajoie, Gérin and Lajoie). Additionally, all the surnames and the deceased's Father's Surname have been transformed into a NYSIIS⁵ code. The CMDB data fields needed to match/link with the CCR are:

- Year of death
- Province/Territory of death
- Death registration number
- Surname/Birth/Maiden surname of deceased (First 10 characters)
- First given name (First 9 characters)
- Second given name (First 7 characters)
- Date of birth of deceased (Year, Month and Day)
- Sex of deceased
- Surname of father of deceased (First 10 characters)
- CD of residence at time of death
- CSD of residence at time of death
- Month of death
- Day of death
- Underlying cause of death - ICD-9/ICD-10 code
- CD of place of death
- CSD of place of death
- Alphabetic place of death (First 10 characters)
- Surname - NYSIIS code
- Father's surname - NYSIIS code

The Canadian Vital Statistics Data Base contains, however, some necessary information that is currently not found in the required code on the CMDB. Consequently, until the process creating the CMDB is updated to generate the necessary detail for these data fields, the information on the CMDB is supplemented with data from the Canadian Vital Statistics Data Base, for CCR Death Clearance purposes.

3.3 Canadian vital statistics data base (CVSDB)

The Canadian Vital Statistics Data Base includes information from death registrations obtained annually from the thirteen provincial and territorial vital statistics registrars. (Vital statistics consist of births, stillbirths, deaths and marriages.) Each annual file contains data describing all deaths that occurred in Canada for that specific year. Data from this file are used to construct the CMDB. The CVSDB file provides geographic information in a code that is not retained on the CMDB. Two data fields from the Canadian Vital Statistics Data Base are added for the CCR Death Clearance process:

- Province/Territory/Country of birth of deceased

5. NYSIIS (New York State Identification & Intelligence System) assigns the same codes to names that are phonetically similar. It is used to group like-sounding names and thus takes into account, during Record Linkage, variations (and errors) in spelling, for example, Burke and Bourque, Jensen and Jonson, Smith and Smythe.

- Province/Territory/Country of residence of deceased

Special note: *The Vital Statistics Registrars from some American states, such as Florida, provide to Statistics Canada the death records of Canadian residents who died in their jurisdictions. These data records are edited by Statistics Canada, and included in the Canadian Vital Statistics Data Base and consequently are on the CMDB.*

3.4 Alternate name file

This file is maintained by the CCR Core Edit module. When patient records are updated and new surnames are reported for the same patients, all previous surnames are kept on this file. The CCR ID number is used to relate the alternate name records to the appropriate CCR patient records. Each record on this file has only two fields:

- CCR Identification Number (CCRID)
- Alternate surname

For any patient, there can be as many alternate name records as there were name changes for that person. In addition to keeping track of name changes, the Alternate Name File records the variations of spelling reported for a given surname over time. A person who has never changed his/her surname won't have any record on this file.

3.5 Don't link cross reference file (DLXR file)

This file is created in the refusal processing phase of the first Death Clearance cycle and is updated in all subsequent cycles. Records are added to this file when, after reviewing record linkage results, PTCRs conclude that certain linked pairs of records do not refer to the same person, despite the similarity in their personal characteristics. DLXR File records will prevent the patient records from ever linking again to these specific CMDB records. They comprise the following data items:

- Reporting Province/Territory (CCR patient record)
- PIN (CCR patient record)
- CCRID (CCR patient record)
- Date of death (CMDB)
- Province/Territory of death (CMDB)
- Death registration number (CMDB)
- Refusal date

Once posted to the DLXR File, the records can be neither changed nor deleted. If it is later discovered that some of the rejected, linked, record pairs did refer to the same person, then death confirmation of the affected patients can be achieved only by means of a direct match, in a subsequent Death Clearance cycle. To accomplish this, the PTCRs owning the patient records

must submit updates to the CCR, posting the responses from the CMDDB record, for all of the following fields:

- Date of death (Year, Month, Day)
- Province/Territory of death
- Death registration number
- Sex
- Date of birth (Year, Month)

If information is missing for any of these fields on the CMDDB record, the Death Clearance module will never permit a direct match with a CCR patient record (see section 4.3 below).

3.6 File of refusals

This file is an input into the refusal processing phase. It contains records created earlier in the post-processing phase of the Death Clearance process, that were reviewed by the PTCR. (See section 5.3 below - Death Confirmed Patient Record File, to obtain the list of data items on this file.) These records constitute rejections of the specific matches/linkages by the PTCR, and are returned to the CCR.

4.0 Death clearance process

4.1 Process overview

Although Death Clearance can be run at any time on the CCR, this operation is most efficient and effective when performed just after the completion of the Internal Record Linkage module. At this point, duplicate patient records found on the CCR database will have been identified and removed.

From the patient records on the CCR, the Death Clearance system searches on the CMDDB for the official death record of these patients, in order to confirm their death. Confirmations of death occur only when the death records are found, whether or not the PTCR had previously reported the patient as deceased. Once death confirmed, patient records will not participate in subsequent Death Clearance cycles unless they become de-confirmed⁶, either later in the same Death Clearance process or during a regular PTCR data submission (see sections 4.4 and 4.6 for more information on the subject).

6. De-confirmation involves changing the status of a patient record, from being confirmed as dead to death cleared **but no longer confirmed as dead**. Flags and codes are updated on the patient record reflecting this change, along with the date and context of the de-confirmation.

Before death confirmations are finalised for each cycle, the PTCRs owning⁷ the patient records have the opportunity to review the results and, if applicable, to overturn the death confirmation decisions.

For any one cycle, the Death Clearance module can reference up to five consecutive years of death information from the CMDB.

The Death Clearance process is divided into five phases:

- Pre-processing
- Direct match
- Record linkage
- Post-processing
- Refusal processing

(See Appendix A for a flowchart presenting the Death Clearance System Overview.)

4.2 Pre-processing

In this phase, the input data files for Death Clearance are verified and prepared for the subsequent processing steps. The specific years of CMDB data available to this Death Clearance cycle are entered into the system. Based on these years, the system selects the cancer patient population from the CCR, and the mortality records from the CMDB.

4.2.1 Selection of the population

The Cutoff Date, for a Death Clearance cycle, is December 31st of the latest year of death information to be referenced during the cycle. For Death Clearance, the cancer patients population includes all patients registered on the CCR, whose deaths were not confirmed, and who have had at least one tumour diagnosed on or before the Cutoff Date. All deaths on the CMDB for the year(s) being referenced are used for Death Clearance, except the death records already used to confirm the deaths of CCR patients in previous cycles. Their removal prevents the same CMDB mortality record from being used to confirm the death of more than one cancer patient - a situation theoretically possible with probabilistic linkage.

Example:

Two Death Clearance cycles have already been conducted on the CCR; cycle 2 having referenced mortality records from 1992 to 1997. Cycle 3 will now reference seven years of mortality data, for the years 1992 to 1998.

7. Ownership of a patient record refers to the PTCR, identified in the Reporting Province field on the patient record, that had submitted the information found on it. For patients with multiple tumours diagnosed in more than one province/territory, the PTCR who owns the patient record is always the one who reported the most recent tumour.

If cycle 3 references mortality data from 1992 to 1998, then:

- (1) all cancer patients, currently not death confirmed, with tumours diagnosed from 1992 (the first year of the CCR) to 1998 inclusive will be selected to participate;
- (2) the 1992 and 1997 mortality records responsible for the death confirmation of CCR patients in previous cycles will be **excluded** from the CMDB file; and,
- (3) all 1992 to 1998 mortality records, excluding those that have been used to confirm the death of a patient in the previous cycle, will then constitute the CMDB population. (**All** the 1998 CMDB records will be part of the CMDB population, since no 1998 deaths were as yet used in the previous Death Clearance cycles.)

Among the population of patient records selected for Death Clearance, one group does not participate in the module's match/linkage functions. This group comprises of patients that have had at least one tumour diagnosed on or before the Cutoff Date and at least another one diagnosed after the Cutoff Date. It can be generally assumed that such patients were still alive at the Cutoff Date.⁸ Their removal eliminates the risk of these records linking incorrectly to CMDB records. These patient records still form part of the Death Clearance population, but move directly to the post-processing phase. There, they are considered as records having gone through a Death Clearance cycle, but that have not been confirmed as dead.

4.3 Direct match

The unique key to all the death registrations on the CMDB is a combination of three data fields:

- Year of death
- Province/Territory/Country of death
- Death registration number

These three fields are also found on the CCR patient record. PTCRs generally obtain this information by doing their own Death Clearance process, using local provincial/territorial files of death registrations. Deaths occurring out-of-province are not usually available to them. These three key data items are then included in their patient records submission to the CCR, either as new patient records or as updates to existing patient records. Even though these patients are reported as deceased, they are not regarded as death confirmed in the CCR. In order to be confirmed as dead, these records must

8. In fact, the CCR does permit Dates of Diagnosis to be as much as three months later than the Date of Death. However, the frequency of such a situation, among deaths occurring from October to December, should not be very significant. In any case, these deaths will be confirmed during the next of Death Clearance cycle, when the Cutoff Date shifts to a later year.

pass through CCR Death Clearance process and be matched or linked to a CMDB record.

Patient records having responses for all three key fields first pass through a direct match with the CMDB, in an attempt to find mortality records with identical Year, Province/Territory and Registration Number of Death. If none is found, they then pass through the probabilistic record linkage phase, along with the patient records missing data in one or more of the key match fields. Failure to find a match is most often due to transcription and keying errors.

For the records that do match, the following data items, common to both the patient records and the CMDB records, are compared:

- Sex
- Day of death
- Month of death
- Year of birth
- Month of birth

On both the CCR patient records and the matched CMDB records, the responses must be non-missing and identical. If they are not, both the patient records and the mortality records then participate in the probabilistic record linkage, where they may (or may not) link together. Matched pairs that pass the comparison successfully are considered to represent the same person; they then will move on to the post-processing phase.

4.4 Probabilistic record linkage

In order to maximise the possibility of successfully linking to the CMDB file, the file of unmatched CCR patient records is "exploded". For every person, a separate patient record is created for each unique surname, each part of a hyphenated surname, and the birth/maiden surname. (This process is similar to the one used to create the CMDB, previously described in section 3.2.) At this time, the Alternate Name File is also referenced to furnish additional surnames for patients. Furthermore, NYSIIS codes are generated for all the names.

The two files are then treated by the Generalised Record Linkage System (GRLS) and the following fields are compared:

- Sex
- Day, Month & Year of birth
- Province/Territory/Country of death
- Day, Month & Year of death
- Surname
- Initials of first & second given names
- First given name
- Second given name
- NYSIIS surname

- Coded place of residence at time of diagnosis (CCR) vs place of death (CMDB)
- Coded place of residence at time of diagnosis (CCR) vs residence at time of death (CMDB)
- Place name of residence at time of diagnosis (CCR) vs place name of death (CMDB)
- Province/Territory/Country of birth
- Death registration number
- Underlying cause of death
- Tumour code (CCR) vs underlying cause of death (CMDB)
- Third given name (CCR) vs first & second given names (CMDB)
- Date of diagnosis (CCR) vs date of death (CMDB)

Based on the degree of similarity found in the comparisons, weights are assigned and the CCR-CMDB record pairs with weights above the pre-established threshold are considered to be linked. Any linked pairs having entries on the DLXR File (see section 3.5) is immediately discarded. When patient records link to more than one mortality record, the link with the highest weight is taken; the other records are released to link with other patients. The threshold weight has been set at such a level that the probability of the linked pairs describing the same person is reasonably high (and manual review is not a necessary step in the linkage phase). However, the threshold is set at a reasonably low level, to avoid discarding too many valid links, which would reduce the effectiveness of the Record Linkage process.

The Province/Territory of Death, Year of Death and Death Registration Number of the linked CMDB records are posted onto the CCR patient records, overwriting any previously reported data in these three fields. This is an important function, because these three fields constitute the key that ties the two linked records together and facilitate, among other things, the removal of these CMDB records from the Death Clearance cycles in subsequent years. They will be posted onto the CCR database patient record during the next step of the Death Clearance process, the post-processing.

Special note: *If one or more of these three key fields on the CCR database patient record are later deleted or changed through the normal update process, thus destroying the tie to the death-confirming CMDB record, then the confirmation of death is immediately reversed. All Death Clearance flags and codes are set to reflect this change and both the CCR and CMDB records are free to participate in the next Death Clearance cycle. PTCRs may use this process to de-confirm records that were incorrectly accepted during a previous Death Clearance cycle. However, no entry is made on the DLXR File.*

The linked pairs and unlinked CCR patient records join the matched pairs and still alive patients, in proceeding to the post-processing phase of Death Clearance.

4.5 Post-processing

This phase consists of updating the CCR database with the results from the match and linkage phases, and then producing feedback of the Death Clearance results to the PTCRs for review and for input into their own databases. Before this can be done, two correlation edits must be performed on the linked pairs.

Because the Year of Death is systematically posted on the CCR patient records from the linked CMDB records, it is possible that this date could conflict with either the Date of Diagnosis of the latest tumour, or the patient's Date of Birth. For example, indicating that the patient had died before being born, or significantly before the diagnosis of that latest tumour (Correlation Edits Nos. 7 and 30 from the CCR Input Data Dictionary). Such errors on linked CCR records call into question the accuracy of the Dates of Diagnosis and Birth on the patient records, as well as the validity of the linkages themselves.⁹ Linked pairs failing one or both of these correlations will no longer be death confirmed and descriptions of the linkages and the resulting errors are sent to the PTCRs owning the patient records in question.

The remaining matched/linked patient records are considered to be death confirmed and the patient records on CCR database are updated to reflect this. Before being updated, copies are made of the patient records from the database. This makes it possible to restore them to their pre-death confirmed state, should the matches/linkages later be judged to be incorrect by the PTCRs.

The patient records that neither matched nor linked, those whose linkage with the CMDB generated correlation errors, or those who were diagnosed with a tumour after the Cutoff Date (still alive), also have to be updated on the CCR database. It will be recorded that they were "death cleared"; meaning that they have gone through a Death Clearance cycle, but that they were not death confirmed. Feedback reports and files are provided to the PTCRs for review of the accuracy of the matches and linkages and to update their own database with new information from the CMDB.

4.6 Refusal processing

Refusals are PTCR decisions on specific matches and linkages which they deemed to be incorrect. The persons described on the CCR patient records are not the same as the ones whose death registrations they matched or linked to. These decisions are taken after the PTCR have reviewed the feedback reports and files generated in the post-processing phase. Refusals are sent to the CCR in the form of data records extracted from the Death Confirmed Patient Record File, which is generated in the Death Clearance post-processing phase. This file contains patient records for all persons

9. This problem can only arise with linked records, since the direct match assures that the Dates of Death are identical on both the CCR patient record and the CMDB mortality record. No patient record can be posted to the CCR, unless the Date of Death (when reported) is consistent with the reported Date of Birth and the Date(s) of Diagnosis.

whose deaths were confirmed during this Death Clearance cycle. The return of any of these records to the CCR constitutes a PTCR rejection of the matches and linkages, and of the resulting death confirmations.

During the refusal processing phase, the CCR database patient records whose matches and linkages were rejected, are returned to their pre-death clearance state. If the death was confirmed as the result of a linkage, the original content of the three death fields overlaid with CMDDB data - Date of Death, Province/Territory/Country of Death and Death Registration Number - is re-instated during this phase. All the appropriate flags and codes are set to indicate that the records were death cleared, but not death confirmed during this cycle. When the PTCRs reject the validity of the probabilistic record linkage, entries are made onto the DLXR File¹⁰ preventing these same two records from ever linking again.

There is a four-week interval between the distribution of the Death Clearance feedback reports/data files to the PTCRs and the processing of refusals. During that time, regular PTCR data submissions to the CCR continue and they may update or even delete patient records that were recently death confirmed. When updates change the value of any one of the three key death fields, the Core Edit system de-confirms these records (see section 4.4 - Probabilistic Record Linkage). Refusals will not return CCR patient records to their pre-death clearance state if they have already been either deleted or de-confirmed during the Core Edit module.

5.0 Outputs from death clearance

5.1 Updated CCR patient record

All patient records constituting the population of the Death Clearance cycle are updated with new information. Even for patients whose deaths were not confirmed, the information is posted to indicate that the record participated in the Death Clearance cycle, but that the death was not confirmed, along with control information defining the Death Clearance cycle. Patient records death confirmed by direct match are updated with similar information along with the death confirmation information. Patient records death confirmed by record linkage will also receive the three key death fields from the CMDDB records. Furthermore, if the PTCRs had originally reported these patients on the CCR as being alive, then the Autopsy Code is set to "unknown", the Underlying Cause of Death is given the CMDDB value and the Vital Status is set to "dead".

The CCR database is first updated during the post-processing phase, with the initial results of Death Clearance. It is updated again in the refusal processing phase, to return records to their pre-death clearance state and to set the

10. Direct matches that are refused do not generate entries on the DLXR File. In order to stop the same two pairs from matching in subsequent Death Clearance cycles, PTCRs must amend their CCR database patient records, through the normal data submission process. At least one of the three death fields constituting the match key, or one of the five fields compared after successful matches, must be changed (see section 4.3 - Direct Match).

Death Clearance flags and codes to show that they are no longer death confirmed.

5.2 Death clearance population file (DCPOP)

This file, produced in the post-processing phase, contains a record for each patient included in the population for this Death Clearance cycle and describes, for each patient, the results of Death Clearance. The records contain all the essential CCR patient and tumour data, a number of Death Clearance fields and flags and, for those that matched or linked, essential fields from the CMDB records. This file is produced for the PTCRs, who use it to review Death Clearance results, and to verify and update their own information with CMDB demographic data (Sex, Date and Province/Territory/Country of Birth).

- Reporting Province/Territory
- Patient Identification Number (PIN)
- CCR Identification Number (CCRID)
- Patient record type = 2 (Update record)
- Type of current surname
- Current surname
- First given name
- Second given name
- Third given name
- Sex
- Date of birth
- Province/Territory/Country of eirth
- Birth/Maiden surname
- Date of death
- Province/Territory/Country of death
- Death registration number
- Underlying cause of death
- Autopsy confirming cause of death
- Date of transmission
- Death clearance cutoff date
- Death clearance status
- Date of death (De-)confirmation
- Reporting province/Territory of latest tumour
- PIN of latest tumour
- Tumour reference number of latest tumour
- Date of diagnosis of latest tumour
- CMDB Date of death
- CMDB Province/Territory/Country of death
- CMDB Death registration number
- CMDB Underlying cause of death
- CMDB Sex
- CMDB Date of birth
- CMDB Province/Territory/Country of birth
- CMDB Surname
- CMDB First given name

- CMDB Father's surname
- Death clearance correlation error
- Method of death confirmation (this cycle)
- Death clearance cutoff date (this cycle)
- Death clearance status (this cycle)
- Death clearance result

5.3 Death confirmed patient record file

The purpose of this file is to easily identify, for each PTCR, the patients whose deaths have been successfully confirmed. The file is provided to the PTCRs after the post-processing phase. It comprises updated patient records, in CCR input format (as defined in the CCR Input Data Dictionary) for each death confirmed patient. Two Death Clearance fields have been appended to the records. The input patient record format was used to facilitate update of PTCR databases.

- Reporting Province/Territory
- Patient Identification Number (PIN)
- CCR Identification Number (CCRID)
- Patient record type = 2 (Update record)
- Type of current surname
- Current surname
- First given name
- Second given name
- Third given name
- Sex
- Date of birth
- Province/Territory/Country of birth
- Birth/Maiden surname
- Date of death
- Province/Territory/Country of death
- Death registration number
- Underlying cause of death
- Autopsy confirming cause of death
- Date of transmission
- Method of death confirmation (this cycle)
- Death clearance cutoff date (this cycle)

5.4 Updated don't link cross reference file

The DLXR file (see section 3.5) is updated with refused linked pairs of CCR-CMDB records during the refusal processing phase of Death Clearance. It will be referenced in the probabilistic record linkage phase of any future CCR Death Clearance cycles.

5.5 Feedback reports

Several feedback reports are printed, volume permitting, to provide a variety of information to the PTCRs. Some reports are also available in electronic format. These reports include:

- an overall description of the performance of a PTCR's patient records in the Death Clearance cycle;
- a listing of their records whose deaths were confirmed from direct matches and from probabilistic linkages;
- a listing of their records whose linkages resulted in the replacement of PTCR-reported key death fields, by those on the CMDB records;
- a listing of their linked records whose death confirmation was overturned because of correlation error(s);
- an overall summary of the results of processing their match/linkage refusals (if any); and
- a listing of the results after the CCR processed their refusal records.

These feedback reports are designed to give the PTCRs detailed information of Death Clearance results of their respective records on the CCR. Furthermore, they may point to possible problems with the data, as found, for example, in correlation errors, which will help improve the quality of the next Death Clearance cycle.

6.0 Foreign deaths of canadian residents

Currently, only some data on the deaths of Canadian residents occurring in the United States are loaded on a regular basis on the CMDB. If other official, foreign death information on Canadian residents become available to Statistics Canada, it can be posted onto the CMDB in a similar manner. With a date and country of death, names and demographic characteristics, "death registration numbers" can be created and the records formatted according to CMDB specifications. These records can then participate in CCR the Death Clearance cycle, by means of Record Linkage.

Appendix A - Death clearance system overview – Process flow

