

ACTIVITY LEVEL REPORTING METRIC METHODS



New ALR Metrics for Radiation Planning and Treatment Activities

June 8, 2022

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Background

Ontario Health - Cancer Care Ontario (OH-CCO) developed the Activity Level Reporting (ALR) data set in 1992 to collect data about patient-care activities that occur in the cancer centres (Integrated Cancer Programs). Over time, this reporting was also expanded to other facilities outside of the cancer centres. This data is used by OH-CCO to determine volume-based funding, to assess performance, to inform quality improvement initiatives and to populate the Ontario Cancer Registry. It is also a rich data set for cancer-related research conducted by OH-CCO and external researchers.

The primary scope of ALR data elements collected is systemic and radiation therapy services (for facilities where this is applicable) and outpatient oncology clinic visits. Each record conveys a key activity or event performed, as well as related dates and details. Records submitted are at a patient level (including personal health information), but are activity/event-centric rather than patient-centric.

Facilities submit a month-long batch of ALR records to OH-CCO every month. There is a one month lag between the month of submission and the month described in the data. For instance, July data is submitted in September and September data is submitted in November.

The data is submitted in a *.csv file format. The data is uploaded by the centre to a web based application that performs submission logging and error checking. If the file passes several stages of sequential error checking (at the file and record levels) it is retained by CCO for further processing. Otherwise, the centres are automatically notified that the file needs to be corrected and resubmitted.

1. Purpose of this Document

The purpose of this document is to explain how OH-CCO processes ALR data submissions to prepare the data for reporting and analysis. The first section below will provide details on key metrics that OH-CCO utilizes for reporting volume-based and performance metrics. An explanation of the logic flow and business rules applied by OH-CCO to each record to determine whether it should be included in these metrics is provided in section two.

2. Data submitted to OH-CCO and how it is used to calculate metrics

OH-CCO conducts regular reporting as well as ad-hoc analyses to manage and guide the cancer system’s performance. Business rules are automatically applied to the monthly ALR updates to calculate metrics for radiation volumes and wait times.

Radiation planning and treatment begins when a patient visits a hospital in preparation for radiation. Planning visits include preparations done in the Mould Room and for Simulation, Clinical Mark-up, and Dosimetry. Treatment visits include the type of radiation used, (i.e. Brachytherapy, Megavoltage, Superficial and Orthovoltage), including associated radiation fractions for each treatment. Radiation case level metrics include New, Total and previously treated patient case volumes.

The table below lists the key metrics generated and the table/entity they are based on. (Note: Following sections will explain how additional data elements submitted are used as criteria to determine which records should be included or excluded in performance metrics.)

| Metric | Title | Definition | Table/Entity Derived From |
|--------|--|--|---------------------------|
| C1R | New Radiation Case | A case is an instance of a patient with a specific diagnosis at a specific submitting facility. A new radiation case is counted when a patient has a first clinic visit with a physician (<i>see appendix 2</i>) for a specific diagnosis at a specific submitting facility. | Clinic Visit |
| C2R | Radiation Follow up Visits | All radiation clinic visits with a physician (<i>see appendix 2</i>) that are not New Radiation Case Visits. | Clinic Visit |
| C3R | Total number of radiation clinic visits | The sum of the new radiation case visits and the follow up radiation visits. $C3R = C1R + C2R$ | Clinic Visit |
| RV1 | Radiation Planning Visits - Mould Room | Mould/immobilization activity visits. | Radiation |
| RP1 | Radiation Planning Procedures - Mould Room | Total number of NHPIP codes for Mould/immobilization activity visits. | Radiation |
| RW1 | Radiation Planning Workload Minutes - Mould Room | The sum of activity minutes for Mould/immobilization activity visits. | Radiation |
| RV2 | Radiation Planning Visits - Simulation | Treatment simulation visits, this includes conventional simulation, CT simulation, and emerging imaging methods. | Radiation |

| Metric | Title | Definition | Table/Entity Derived From |
|--------|---|--|---------------------------|
| RP2 | Radiation Planning Procedures – Simulation | Total number of NHPIP codes for treatment simulation visits, this includes conventional simulation, CT simulation, and emerging imaging methods. | Radiation |
| RW2 | Radiation Planning Workload Minutes – Simulation | The sum of activity minutes for treatment simulation visits, this includes conventional simulation, CT simulation, and emerging imaging methods. | Radiation |
| RV3 | Radiation Planning Visits – Clinical Mark-up | Clinical mark-up visits that require mark-up activities only. | Radiation |
| RP3 | Radiation Planning Procedures – Clinical Mark-up | Total number of NHPIP codes counted for Clinical mark-up visits that require mark-up activities only. | Radiation |
| RW3 | Radiation Planning Workload Minutes – Clinical Mark-up | The sum of activity minutes for Clinical mark-up visits that require mark-up activities only. | Radiation |
| RV4 | Radiation Planning (excluding clinical mark-up) | Radiation visits that includes planning activities (excluding clinical mark-up). | Radiation |
| RP4 | Radiation Planning Procedures – Planning and Dosimetry (excluding clinical mark-up) | Total number of NHPIP codes dosimetry and planning activities (excluding clinical mark-up). | Radiation |
| RW4 | Radiation Planning Workload Minutes – Planning and Dosimetry (excluding clinical mark-up) | The sum of activity minutes for dosimetry and planning activities (excluding clinical mark-up). | Radiation |
| RV5 | Radiation Review Visits | A review visit with the radiation oncologist, usually occurring weekly during the period of treatment. A radiation review is counted only if it is not the first clinic visit with a radiation oncologist. | Clinic Visit |

| Metric | Title | Definition | Table/Entity Derived From |
|---------------|---|--|----------------------------------|
| RV6* | Total Radiation Planning Visits | The sum of Mould Room, Simulation, Clinical Markup, Planning Visits (RV1 + RV2 + RV3 + RV4) | Radiation |
| RP6 | Total Radiation Planning Procedures | Total number of NHPIP codes from the sum of Mould Room, Simulation, Clinical Markup, Planning and Dosimetry NHPIP Codes. | Radiation |
| RW6 | Total Radiation Planning Workload Minutes | The sum of activity minutes from the sum of Mould Room, Simulation, Clinical Markup, Planning and Dosimetry Visits Workload Minutes. | Radiation |
| RV23 | Radiation Treatment Visits - Cobalt | A treatment visit where radiation treatment is given with a Cobalt treatment unit. | Radiation |
| RP23 | Radiation Treatment Procedures – Cobalt Fractions | Total number of NHPIP codes counted for a treatment visit where radiation treatment is given with a Cobalt treatment unit. | Radiation |
| RW23 | Radiation Treatment Workload Minutes - Cobalt | The sum of activity minutes for a treatment visit where radiation treatment is given with a Cobalt treatment unit. | Radiation |
| RV24 | Radiation Treatment Visits – Linear Accelerator | A treatment visit where radiation treatment is given with a Linear Accelerator treatment unit. | Radiation |
| RP24 | Radiation Treatment Procedures – Linear Accelerator Fractions | Total number of NHPIP codes counted for a treatment visit where radiation treatment is given with a Linear Accelerator treatment unit. | Radiation |
| RW24 | Radiation Treatment Workload Minutes – Linear Accelerator | The sum of activity minutes for a treatment visit where radiation treatment is given with a Linear Accelerator treatment unit. | Radiation |
| RV25 | Radiation Treatment Visits – Megavoltage | A treatment visit where radiation treatment is given with a Megavoltage treatment unit. This is the sum of the Cobalt and Linear Accelerator treatments. (RT25 = RT23 + RT24) | Radiation |

| Metric | Title | Definition | Table/Entity Derived From |
|---------------|---|--|----------------------------------|
| RP25 | Radiation Treatment Procedures – Megavoltage Fractions | Total number of NHPIP codes counted for a treatment visit where radiation treatment is given with a Megavoltage treatment unit. This is the sum of the Cobalt and Linear Accelerator treatments. | Radiation |
| RW25 | Radiation Treatment Workload Minutes – Megavoltage | The sum of activity minutes for a treatment visit where radiation treatment is given with a Megavoltage treatment unit. This is the sum of the Cobalt and Linear Accelerator treatments. | Radiation |
| RV26 | Radiation Treatment Visits – Superficial & Orthovoltage | A treatment visit where radiation treatment is given with a Superficial/Orthovoltage treatment unit. | Radiation |
| RP26 | Radiation Treatment Procedures – Superficial & Orthovoltage Fractions | Total number of NHPIP codes counted for a treatment visit where radiation treatment is given with a Superficial/Orthovoltage treatment unit. | Radiation |
| RW26 | Radiation Treatment Workload Minutes – Superficial & Orthovoltage | The sum of activity minutes for a treatment visit where radiation treatment is given with a Superficial/Orthovoltage treatment unit. | Radiation |
| RV14 | Radiation Treatment Visits – Brachytherapy | A treatment visit where radiation treatment includes interstitial, intra-cavitary and treatment moulds/applicators. | Radiation |
| RP14 | Radiation Treatment Procedures – Brachytherapy Fractions | Total number of NHPIP codes counted for a treatment visit where radiation treatment includes interstitial, intra-cavitary and treatment moulds/applicators. | Radiation |
| RW14 | Radiation Treatment Workload Minutes – Brachytherapy | The sum of activity minutes for a treatment visit where radiation treatment includes interstitial, intra-cavitary and treatment moulds/applicators. | Radiation |

| Metric | Title | Definition | Table/Entity Derived From |
|--------|---|---|---------------------------|
| RV15 | Total Radiation Treatment Visits | The total Radiation Treatment Visits includes the sum of Megavoltage, Superficial/Orthovoltage and Brachytherapy treatment visits. (RT15 = RT25 + RT26 + RT14) | Radiation |
| RP15 | Total Radiation Treatment Procedures | The total number of NHPIP codes counted for Radiation Treatment Visits, which includes the sum of Megavoltage, Superficial/Orthovoltage and Brachytherapy treatment visits. | Radiation |
| RW15 | Total Radiation Treatment Workload Minutes | The sum of activity minutes for Radiation Treatment Visits, which includes the sum of Megavoltage, Superficial/Orthovoltage and Brachytherapy treatment visits. | Radiation |
| RV16* | Total Radiation Treatment & Planning Visits | The sum of Mould Room, Simulation, Clinical Markup, Planning and Dosimetry and Patient Radiation Review Visits (Planning/Review visits) and the Radiation Treatment Visits. (RT16 = RT6 +RV5 + RT15) | Radiation |
| RP16 | Total Radiation Treatment & Planning Procedures | The total number of NHPIP codes counted for the sum of Mould Room, Simulation, Clinical Markup, Planning and Dosimetry and Patient Radiation Review Visits (Planning/Review visits) and the Radiation Treatment Visits. | Radiation |
| RW16 | Total Radiation Treatment & Planning Workload Minutes | The sum of activity minutes for Mould Room, Simulation, Clinical Markup, Planning and Dosimetry and Patient Radiation Review Visits (Planning/Review visits) and the Radiation Treatment Visits. | Radiation |
| RT17 | Radiation Treated Cases – Cobalt | Unique cases that received at least one cobalt radiation therapy treatment in the reporting period. Treatment in other programs may also have been administered. | Radiation |
| RT18 | Radiation Treated Cases – Linear Accelerator | Unique cases that received at least one linac radiation therapy treatment in the reporting period. | Radiation |

| Metric | Title | Definition | Table/Entity Derived From |
|--------|--|---|---------------------------|
| | | Treatment in other programs may also have been administered. | |
| RT19 | Radiation Treated Cases – Superficial & Orthovoltage | Unique cases that received at least one superficial/orthovoltage radiation therapy treatment in the reporting period. Treatment in other programs may also have been administered. | Radiation |
| RT20 | Radiation Treated Cases – Brachytherapy | Unique cases that received at least one Brachytherapy treatment in the reporting period. Treatment in other programs may also have been administered. | Radiation |
| RT21 | Total Radiation Treated Cases | The number of unique cases which received at least one type of radiation therapy treatment in the reporting period. (Note: Since a case can have more than one type of radiation treatment in a reporting period, this may not be the sum of the Cobalt Cases + Linear Accelerator Cases + Superficial/Orthovoltage Cases + Brachytherapy Cases.) | Radiation |
| RT30 | New Radiation Treated Cases | The number of NEW cases which received the first radiation treatment, of any type, in the reporting period. | Radiation |
| RT31* | Previously Treated Radiation Cases | The number of cases who received at least one type of radiation therapy treatment in the current reporting period, and who's first treatment case occurred in a previous reporting period. | Radiation |

*Derived Metrics not available in the activity table

3. The ALR process I

CCO utilizes the data for determining case volumes for the purposes of funding and assessing performance against several quality metrics.

ALR attribute names in **blue highlight** coincide with attribute names in Databook.

We are using the following attributes submitted in DataBook:

| # | DataBook Entity | DataBook Attribute | Attribute Description |
|---|-------------------------|----------------------------|--|
| 1 | Patient | Patient Chart Number | Patient identifier code that is unique within the healthcare facility. |
| 2 | Disease | Disease Sequence Number | The numeric sequence assigned to a primary cancer for a patient at a specific healthcare facility. |
| 3 | Patient | Submitting Hospital Number | The MOHLTC healthcare facility that submits activity to CCO. |
| 4 | Clinic Visit | Visit Program Code | Primary cancer programs for clinic, planning and treatment activity. Includes; Radiation (RAD), Systemic (SYS), Surgical (SUR), Research (RE), Palliative (PA), or Preventive oncology (PO). |
| 5 | Clinic Visit | Visit Type | Identifies the method of contact for clinic visits. (example: Face to face, Telephone), by flagging Telephone Visits. Face to face includes visits that allow both parties to see each other (ie. includes video conferencing). Telephone visits include modes such as teleconference and email. |
| 6 | Clinic Visit | Radiation Review Flag | Identifies physician reviews that occur in the radiation therapy area during a patient’s course of treatment. |
| 7 | Radiation | NHPIP Code | National Health Productivity Improvement Program activity code for radiation therapy workload. Define different radiation tasks. Identifies ALR activity and allows calculation of fractions |
| 8 | Healthcare Professional | HCP Number | Healthcare professional identifier code for the physician or non-physician who is most responsible for the patient. This code is unique to the submitting facility. |

An ALR case is defined by OH-CCO as an instance of a patient (identified by **patient chart number**) with a specific diagnosis (identified by **disease sequence number**) at a specific facility (identified by **submitting hospital number**).

ALR metrics are generated only for visits or radiation treatments performed by health care professionals flagged as physicians (see appendix 2 for reference to “physician” HCP Specialties).

ALR Metrics - Clinic Visit Entity

There are 2 main metrics based on radiation clinic visits: C1R and C2R. The third metric (C3R) is a derived metric: $C3R=C1R + C2R$.

C1R Metric - New Radiation Case

A **new radiation case (C1R)** is counted when *a patient has a first radiation clinic visit with a physician (see appendix 2) for a specific diagnosis at a specific submitting facility.*

We flag a clinic visit as C1R if all following conditions are true:

- 1) Visit Program Code = 'RAD'
- 2) The visit is face-to-face: Visit Type (in Clinic Visit entity) has one of the following values: 'OC', 'VC', NULL
- 3) HCP is a physician (see appendix 2)
- 4) The ALR case was not reported under program=RAD as “historical case” (in so called one time submission called “ALR baseline”).
- 5) Is the first radiation clinic visit.

Note: An ALR case will not have any C1R visits if the case was flagged as “historical case” and a record for program RAD exists in the ALR Baseline for that ALR case. If your organization didn't submit an ALR Baseline, please ignore all paragraphs referring to “ALR Baseline”.

C2R Metric – Radiation Follow up Visits

We flag a clinic visit as C2R if all following conditions are true:

- 1) Visit Program Code = 'RAD'
- 2) The visit is face-to-face: Visit Type (in Clinic Visit entity) has one of the following values: 'OC','VC',NULL
- 3) HCP is a physician (see appendix 2)
- 4) Clinic visit was not already identified and flagged as a C1R (new radiation case)

RV5 Metric - Radiation Review Visits

Range of Possible Values: 0 or greater

Definition: A review visit (Visit Program Code = 'RAD' and Radiation Review Flag='R') with the radiation oncologist, usually occurring weekly during the period of treatment. The visit should be face-to-face: Visit Type (in Clinic Visit entity) has one of the following values: 'OC','VC',NULL

A radiation review is counted only if it is not the first clinic visit with a radiation oncologist.

Method: If the first visit with a radiation oncologist is for a radiation review visit, it is reclassified as a new case visit and is not counted as a radiation review. Subsequent visits as long as they occur on separate days are considered for review and are counted in RV5.

ALR Metrics - Radiation Entity

The ALR metrics are based on NHIIP codes.

- **Radiation Planning Visits**

RV1 Metric - Radiation Planning Visits - Mould Room

Range of Possible Values: 0 or greater

Definition: Mould/immobilization activity visits.

Method: A visit is considered a Mould Room Planning visit (RV1) if the NHIIP codes have an activity type “M”. Please see the list of active NHIIP codes* and corresponding “NHIIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

*Note, there are codes that constitute an Activity Type of Mould Room (‘M’), that have a suffix of X, which are codes that do not involve a patient who is present and are not counted towards RV1.

RP1 Metric - Radiation Planning Procedures - Mould Room

Range of Possible Values: 0 or greater

Definition: Total number of NHIIP codes for Mould/immobilization activity visits.

Method: The total number of NHIIP codes counted for a Mould Room Planning visit (RV1) if the NHIIP codes have an activity type “M”. Please see the list of active NHIIP codes* and corresponding “NHIIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

*Note, there are codes that constitute an Activity Type of Mould Room (‘M’), that have a suffix of X, which are codes that do not involve a patient who is present and are not counted towards RP1.

For example: If 5 mould room procedure codes are submitted and counted under RV1 = 1, then RP1 = 5.

RW1 Metric - Radiation Planning Workload Minutes - Mould Room

Range of Possible Values: 0 or greater

Definition: The sum of activity minutes for Mould/immobilization activity visits.

Method: The sum of NHIIP_DURATION_UNIT minutes captured if the NHIIP codes have an activity type “M”. Please see the list of active NHIIP codes* and corresponding “NHIIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

For example: If 5 mould room procedures (@ 10 minutes/procedure) are submitted and counted under RV1 = 1, then RW1 = 50 minutes.

RV2 Metric - Radiation Planning Visits – Simulation

Range of Possible Values: 0 or greater

Definition: Treatment simulation visits, this includes conventional simulation, CT simulation, and emerging imaging methods.

Method: A visit is considered a Planning visit (RV2) if the NHPIP codes have an activity type “S” and “BS”. Please see the list of active NHPIP codes* and corresponding “NHPIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

*Note, there are codes that constitute an Activity Type of Simulation (‘S’ or ‘BS’), that have a suffix of X, which are codes that do not involve a patient who is present and are not counted towards RV2.

RP2 Metric - Radiation Planning Procedures – Simulation

Range of Possible Values: 0 or greater

Definition: Total number of NHPIP codes for treatment simulation visits, this includes conventional simulation, CT simulation, and emerging imaging methods.

Method: The total number of NHPIP codes counted for a Planning visit (RV2) if the NHPIP codes have an activity type “S” and “BS”. Please see the list of active NHPIP codes* and corresponding “NHPIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

*Note, there are codes that constitute an Activity Type of Simulation (‘S’ or ‘BS’), that have a suffix of X, which are codes that do not involve a patient who is present and are not counted towards RP2.

For example: If 2 simulation procedure codes are submitted and counted under RV2 = 1, then RP2 = 2.

RW2 Metric - Radiation Planning Workload Minutes – Simulation

Range of Possible Values: 0 or greater

Definition: The sum of activity minutes for treatment simulation visits, this includes conventional simulation, CT simulation, and emerging imaging methods.

Method: The sum of NHPIP_DURATION_UNIT minutes captured if the NHPIP codes have an activity type “S”, “SW” and “BS”. Please see the list of active NHPIP codes* and corresponding “NHPIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

For example: If 2 simulation procedures (@ 30 minutes/procedure) are submitted and counted under RV2 = 1, then RW2 = 60 minutes.

RV3 Metric - Radiation Planning Visits – Clinical Mark-up

Range of Possible Values: 0 or greater

Definition: Clinical mark-up visits that require mark-up activities only.

Method: A visit is considered a Clinical Mark-up (RV3) if the following NHPIP code is entered for the activity:

| NHPIP_ACT_CD | NHPIP_ACT_DESC |
|--------------|------------------|
| 305 | CLINICAL MARK UP |

*Note: If the NHPIP code = 305, this radiation activity record becomes a Clinical Mark-Up visit (RV3)

RP3 Metric - Radiation Planning Procedures – Clinical Mark-up

Range of Possible Values: 0 or greater

Definition: Total number of NHPIP codes counted for a Clinical mark-up visit that require mark-up activities only.

Method: The total number of NHPIP codes counted for a Clinical Mark-up visit (RV3) if the following NHPIP code is entered for the activity:

| NHPIP_ACT_CD | NHPIP_ACT_DESC |
|--------------|------------------|
| 305 | CLINICAL MARK UP |

*Note: If the NHPIP code = 305, this radiation activity record becomes a Clinical Mark-Up visit (RV3)

For example: If 2 clinical mark-up procedure codes are submitted and counted under RV3 = 1, then RP3 = 2.

RW3 Metric - Radiation Planning Workload Minutes – Clinical Mark-up

Range of Possible Values: 0 or greater

Definition: The sum of activity minutes for Clinical mark-up visits that require mark-up activities only.

Method: The sum of NHPIP_DURATION_UNIT minutes captured if the following NHPIP code is entered for the activity:

| NHPIP_ACT_CD | NHPIP_ACT_DESC |
|--------------|------------------|
| 305 | CLINICAL MARK UP |

*Note: If the NHPIP code = 305, this radiation activity record becomes a Clinical Mark-Up visit (RT3)

For example: If 2 clinical mark-up procedures (@ 20 minutes/procedure) are submitted and counted under RV3 = 1, then RW3 = 40 minutes.

RV4 Metric - Radiation Planning Visits (excluding clinical mark-up)

Range of Possible Values: 0 or greater

Definition: Radiation visits that include planning activities (excluding clinical mark-up).

Method: A Radiation Planning Visit is counted once per Visit Date, per patient disease site (ie. ALR case), for NHPIP codes that have an NHPIP activity type “P” (excluding NHPIP code 305), for RV4 metric. Please see the list of active NHPIP codes* and corresponding “NHPIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

*Note, there are codes that constitute an Activity Type of Planning ('P'), that have a suffix of X, which are codes that do not involve a patient who is present and are not counted towards RV4.

RP4 Metric - Radiation Planning Procedures – Planning and Dosimetry (excluding clinical mark-up)

Range of Possible Values: 0 or greater

Definition: Total number of NHPIP codes counted for dosimetry and planning activities (excluding clinical mark-up).

Method: The total number of NHPIP codes counted for a Planning and Dosimetry activities if the NHPIP codes have an activity type "P", "D" or "BD" (excluding NHPIP code 305). Please see the list of active NHPIP codes* and corresponding "NHPIP_ACT_TYPE" in **Appendix 1.14** on the latest version of the online data book.

*Note, there are codes that constitute an Activity Type of Planning or Dosimetry ('P', 'D' or "BD"), that have a suffix of X, which are codes that do not involve a patient who is present and are not counted towards RP4.

For example: If 5 planning and dosimetry procedure codes are submitted, then RP4 = 5.

RW4 Metric - Radiation Planning Workload Minutes – Planning and Dosimetry (excluding clinical mark-up)

Range of Possible Values: 0 or greater

Definition: The sum of activity minutes for radiation visits including dosimetry and planning activities (excluding clinical mark-up).

Method: The sum of NHPIP_DURATION_UNIT minutes captured if the NHPIP codes have an activity type "P", "PQ", "PW", "D" or "BD" (excluding NHPIP code 305). Please see the list of active NHPIP codes* and corresponding "NHPIP_ACT_TYPE" in **Appendix 1.14** on the latest version of the online data book.

For example: If 5 planning and dosimetry procedures (@ 10 minutes/procedure) are submitted, then RW4 = 50 minutes.

RV6 Metric - Total Radiation Planning Visits

Range of Possible Values: 0 or greater

Definition: The sum of Mould Room, Simulation, Clinical Markup, Planning Visits.

Method: To obtain the number of Total Radiation Planning Visits, the ALR Metrics RV1 (Mould Room), RV2 (Simulation), RV3 (Clinical Markup) and RV4 (Planning) are first calculated and then those totals are summed to derive RV6.

$$RV6 = RV1 + RV2 + RV3 + RV4$$

RP6 Metric - Total Radiation Planning Procedures

Range of Possible Values: 0 or greater

Definition: Total number of NHPIP codes from the sum of Mould Room, Simulation, Clinical Markup, Planning and Dosimetry Procedure NHPIP Codes.

Method: The total number of NHPIP codes counted from, Mould Room (RP1), Simulation (RP2), Clinical Markup (RP3), Planning and Dosimetry (RP4) procedures are first calculated and then those totals are summed to derive RP6.

$$RP6 = RP1 + RP2 + RP3 + RP4$$

RW6 Metric - Total Radiation Planning Workload Minutes

Range of Possible Values: 0 or greater

Definition: The sum of activity minutes from the sum of Mould Room, Simulation, Clinical Markup, Planning and Dosimetry Visits Workload Minutes.

Method: The sum of NHPIP_DURATION_UNIT minutes captured in, Radiation Planning Workload Minutes metrics for Mould Room (RW1), Simulation (RW2), Clinical Markup (RW3), Planning and Dosimetry (RW4) are first calculated and then those totals are summed to derive RW6.

$$RW6 = RW1 + RW2 + RW3 + RW4$$

- **Radiation Treatment Visits**

RV23 Metric - Radiation Treatment Visits - Cobalt

Range of Possible Values: 0 or greater

Definition: A visit where radiation treatment is delivered using Cobalt as the treatment modality.

Method: A Radiation Treatment Visit – Cobalt is counted once per Visit Date, per patient disease site (ie. ALR case), for NHPIP codes that have an activity type “TC”, for RV23 metric. Please see the list of active NHPIP codes and corresponding “NHPIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

Note: In order for the RV23 metric to be counted more than once (for the same Visit Date, same patient disease site (ie. ALR case)) with NHPIP code of activity type “TC”, there must be at least 4 hours between the Visit Times submitted.

RP23 Metric - Radiation Treatment Procedures – Cobalt Fractions

Range of Possible Values: 0 or greater

Definition: Total number of NHPIP codes with activity type “TC”, counting the number of fractions delivered using Cobalt as a treatment modality.

Method: The total number of NHPIP codes if the NHPIP codes have an activity type “TC”. Please see the list of active NHPIP codes and corresponding “NHPIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

RW23 Metric - Radiation Treatment Workload Minutes – Cobalt

Range of Possible Values: 0 or greater

Definition: The sum of activity minutes for radiation fractions delivered using Cobalt as a treatment modality.

Method: The sum of NHPIP_DURATION_UNIT minutes captured if the NHPIP codes have an activity type “TC”. Please see the list of active NHPIP codes and corresponding “NHPIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

RV24 Metric - Radiation Treatment Visits – Linear Accelerator

Range of Possible Values: 0 or greater

Definition: A visit where radiation treatment is delivered using a Linear Accelerator.

Method: A Radiation Treatment Visit – Linear Accelerator is counted once per Visit Date, per patient disease site (ie. ALR case), for NHPIP codes that have an activity type “TL”, for RV24 metric. Please see the list of active NHPIP codes and corresponding “NHPIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

Note: In order for the RV24 metric to be counted more than once (for the same Visit Date, same patient disease site (ie. ALR case)) with NHPIP code of activity type “TL”, there must be at least 4 hours between the Visit Times submitted.

RP24 Metric - Radiation Treatment Procedures – Linear Accelerator Fractions

Range of Possible Values: 0 or greater

Definition: Total number of NHPIP codes with activity type “TL”, counting the number of fractions delivered using a Linear Accelerator.

Method: The total number NHPIP codes if the NHPIP codes have an activity type “TL”. Please see the list of active NHPIP codes and corresponding “NHPIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

RW24 Metric - Radiation Treatment Workload Minutes – Linear Accelerator

Range of Possible Values: 0 or greater

Definition: The sum of activity minutes for radiation fractions delivered using a Linear Accelerator.

Method: The sum of NHPIP_DURATION_UNIT minutes captured if the NHPIP codes have an activity type “TL”. Please see the list of active NHPIP codes and corresponding “NHPIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

RV25 Metric - Radiation Treatment Visits – Megavoltage

Range of Possible Values: 0 or greater

Definition: A treatment visit where radiation treatment is given with a Megavoltage treatment unit. This is the sum of the Cobalt and Linear Accelerator treatments.

Method: To obtain the number of Radiation Treatment Visits – Megavoltage, the ALR Metrics RV23 (Radiation Treatment Visits - Cobalt) and RV24 (Radiation Treatment Visits - Linear Accelerator) are first calculated and then those totals are summed to derive RV25.

$$RV25 = RV23 + RV24$$

RP25 Metric - Radiation Treatment Procedures – Megavoltage Fractions

Range of Possible Values: 0 or greater

Definition: Total number of NHPIP codes counted for a treatment visit where radiation treatment is given with a Megavoltage treatment unit. This is the sum of the Cobalt and Linear Accelerator treatments.

Method: The total number NHPIP codes counted for Radiation Procedures – Cobalt Fractions (RP23) and Radiation Procedures - Linear Accelerator Fractions (RP24) are first calculated and then those totals are summed to derive RP25.

$$RP25 = RP23 + RP24$$

RW25 Metric - Radiation Treatment Workload Minutes – Megavoltage

Range of Possible Values: 0 or greater

Definition: The sum of activity minutes for a treatment visit where radiation treatment is given with a Megavoltage treatment unit. This is the sum of the Cobalt and Linear Accelerator treatments.

Method: The sum of NHPIP_DURATION_UNIT minutes captured in, Radiation Treatment Workload Minutes – Cobalt (RW23) and Radiation Treatment Workload Minutes - Linear Accelerator (RW24) are first calculated and then those totals are summed to derive RW25.

$$RW25 = RW23 + RW24$$

RV26 Metric - Radiation Treatment Visits – Superficial & Orthovoltage

Range of Possible Values: 0 or greater

Definition: A visit where radiation treatment is delivered using a Superficial or Orthovoltage unit.

Method: A Radiation Treatment Visit – Superficial & Orthovoltage is counted once per Visit Date, per patient disease site (ie. ALR case), for NHPIP codes that have an activity type “TS” (superficial), or “TD” (orthovoltage), for RV26 metric. Please see the list of active NHPIP codes and corresponding “NHPIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

Note: In order for the RV26 metric to be counted more than once (for the same Visit Date, same patient disease site (ie. ALR case)) with NHPIP code of activity type “TS” (superficial), or “TD” (orthovoltage), there must be at least 4 hours between the Visit Times submitted.

RP26 Metric - Radiation Treatment Procedures – Superficial & Orthovoltage Fractions

Range of Possible Values: 0 or greater

Definition: Total number of NHPIP codes with activity type “TS” (superficial), “TD” (orthovoltage) counting the number of fractions delivered using a Superficial or Orthovoltage unit.

Method: The total number NHPIP codes counted if the NHPIP codes have an activity type “TS” (superficial), or “TD” (orthovoltage). Please see the list of active NHPIP codes and corresponding “NHPIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

RW26 Metric - Radiation Treatment Workload Minutes – Superficial & Orthovoltage

Range of Possible Values: 0 or greater

Definition: The sum of activity minutes for radiation fractions delivered using a Superficial or Orthovoltage unit.

Method: The sum of NHPIP_DURATION_UNIT minutes captured if the NHPIP codes have an activity type “TS” (superficial), or “TD” (orthovoltage). Please see the list of active NHPIP codes and corresponding “NHPIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

RV14 Metric - Radiation Treatment Visits – Brachytherapy

Range of Possible Values: 0 or greater

Definition: A treatment visit where radiation treatment includes interstitial, intra-cavitary and treatment moulds/applicators.

Method: A Radiation Treatment Visit – Brachytherapy is counted once per Visit Date, per patient disease site (ie. ALR case), for NHPIP codes that have an activity type “TT”(interstitial), “TV” (intra-cavitary), “TM” (mould) or “TI” (radionuclide), for RV14 metric. Please see the list of active NHPIP codes and corresponding “NHPIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

Note: In order for the RV14 metric to be counted more than once (for the same Visit Date, same patient disease site (ie. ALR case)) with NHPIP code of activity type “TT”(interstitial), “TV” (intra-cavitary), “TM” (mould) or “TI” (radionuclide), there must be at least 4 hours between the Visit Times submitted.

RP14 Metric - Radiation Treatment Procedures – Brachytherapy Fractions

Range of Possible Values: 0 or greater

Definition: Total number of NHPIP codes counted for a treatment visit where radiation treatment includes interstitial, intra-cavitary and treatment moulds/applicators.

Method: The total number NHPIP codes if the NHPIP codes have an activity type “TT”(interstitial), “TV” (intra-cavitary), “TM” (mould) or “TI” (radionuclide). Please see the list of active NHPIP codes and corresponding “NHPIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

RW14 Metric - Radiation Treatment Workload Minutes – Brachytherapy

Range of Possible Values: 0 or greater

Definition: The sum of activity minutes associated with brachytherapy treatments.

Method: The sum of NHPIP_DURATION_UNIT minutes captured if the NHPIP codes have an activity type “TT”(interstitial), “TV” (intra-cavitary), “TM” (mould), “TI” (radionuclide), or “BO” (Brachytherapy Other). Please see the list of active NHPIP codes and corresponding “NHPIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

RV15 Metric - Total Radiation Treatment Visits

Range of Possible Values: 0 or greater

Definition: The total Radiation Treatment Visits includes the sum of Megavoltage, Superficial/Orthovoltage and Brachytherapy treatment visits.

Method: To obtain the number of Total Radiation Treatment Visits, the ALR Metrics RV14 (Radiation Treatment Visits - Brachytherapy), RV25 (Radiation Treatment Visits - Megavoltage) and RV26 (Radiation Treatment Visits - Superficial & Orthovoltage) are first calculated and then those totals are summed to derive RV15.

Derivation Logic:

$$RV15 = RV25 + RV26 + RV14$$

RP15 Metric - Total Radiation Treatment Procedures

Range of Possible Values: 0 or greater

Definition: The total number of NHPIP codes counted for Radiation Treatment Visits, which includes the sum of Megavoltage, Superficial/Orthovoltage and Brachytherapy treatment visits.

Method: The total number NHPIP codes counted for, Radiation Treatment Procedures – Brachytherapy Fractions (RP14), Radiation Treatment Procedures – Megavoltage Fractions (RP25) and Radiation Treatment Procedures - Superficial & Orthovoltage Fractions (RP26) are first calculated and then those totals are summed to derive RP15.

Derivation Logic:

$$RP15 = RP25 + RP26 + RP14$$

RW15 Metric - Total Radiation Treatment Workload Minutes

Range of Possible Values: 0 or greater

Definition: The sum of activity minutes for Radiation Treatment Visits, which includes the sum of Megavoltage, Superficial/Orthovoltage and Brachytherapy treatment visits.

Method: The sum of NHPIP_DURATION_UNIT minutes captured in, Radiation Treatment Workload Minutes – Brachytherapy (RW14), Radiation Treatment Workload Minutes – Megavoltage (RW25) and Radiation Treatment Workload Minutes - Superficial & Orthovoltage (RW26) are first calculated and then those totals are summed to derive RW15.

Derivation Logic:

$$RW15 = RW25 + RW26 + RW14$$

RV16 Metric - Total Radiation Treatment & Planning Visits

Range of Possible Values: 0 or greater

Definition: The sum of Mould Room, Simulation, Clinical Markup, Planning and Patient Radiation Review Visits (Planning/Review visits) and the Radiation Treatment Visits.

Method: To obtain the number of Total Radiation Treatment & Planning Visits, the ALR Metrics [RV5 \(Radiation Review Visits\)](#), RV6 (Total Radiation Planning Visits) and RV15 (Total Radiation Treatment Visits) are first calculated and then those totals are summed to derive RV16.

Derivation Logic:

$$RV16 = RV5 + RV6 + RV15$$

RP16 Metric - Total Radiation Treatment & Planning Procedures

Range of Possible Values: 0 or greater

Definition: The total number of NHPIP codes counted for the sum of Mould Room, Simulation, Clinical Markup, Planning and Dosimetry and the Radiation Treatment Visits.

Method: The total number NHPIP codes counted for, Total Radiation Planning Procedures (RP6) and Total Radiation Treatment Procedures (RP15) are first calculated and then those totals are summed to derive RP16.

Derivation Logic:

$$RP16 = RP6 + RP15$$

RW16 Metric - Total Radiation Treatment & Planning Workload Minutes

Range of Possible Values: 0 or greater

Definition: The sum of activity minutes for Mould Room, Simulation, Clinical Markup, Planning and Dosimetry and the Radiation Treatment Visits.

Method: The sum of NHPIP_DURATION_UNIT minutes captured in, Total Radiation Planning Workload Minutes (RW6) and Total Radiation Treatment Workload Minutes RW15) are first calculated and then those totals are summed to derive RW16.

Derivation Logic:

$RW16 = RW6 + RW15$

- **Radiation Treated Cases**

RT17 Metric - Radiation Treated Cases – Cobalt

Range of Possible Values: 0 or greater

Definition: Unique cases (ie. patient disease site) that received at least one cobalt radiation therapy treatment in the reporting period. Radiation treatment delivered using other modalities (ie. Brachytherapy, Linear Accelerator, Superficial & Orthovoltage) would be counted in other RT metrics as appropriate.

Method: A Radiation Treated Case – Cobalt is counted once per reporting period, per patient disease site (ie. ALR case), for NHPIP codes that have an activity type “TC”, for RT17 metric. Please see the list of active NHPIP codes and corresponding “NHPIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

All instances of a patient with a particular disease at a particular submitting facility are counted as a single case.

RT18 Metric - Radiation Treated Cases – Linear Accelerator

Range of Possible Values: 0 or greater

Definition: Unique cases (ie. patient disease site) that received at least one linac radiation therapy treatment in the reporting period. Radiation treatment delivered using other modalities (ie. Brachytherapy, Cobalt, Superficial & Orthovoltage) would be counted in other RT metrics as appropriate.

Method: A case is considered a Radiation Treated Case – Linear Accelerator for the purposes of calculating RT18 if the NHPIP codes have an activity type “TL”.

A Radiation Treated Case – Linear Accelerator is counted once per reporting period, per patient disease site (ie. ALR case), for NHPIP codes that have an activity type “TL”, for RT18 metric. Please see the list of active NHPIP codes and corresponding “NHPIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

All instances of a patient with a particular disease at a particular submitting facility are counted as a single case.

RT19 Metric - Radiation Treated Cases – Superficial & Orthovoltage

Range of Possible Values: 0 or greater

Definition: Unique cases (ie. patient disease site) that received at least one superficial/orthovoltage radiation therapy treatment in the reporting period. Radiation treatment delivered using other modalities (ie. Brachytherapy, Cobalt, Linear Accelerator) would be counted in other RT metrics as appropriate.

Method: A case is considered a Radiation Treated Case – Superficial & Orthovoltage for the purposes of calculating RT19 if the NHPIP codes have an activity type “TS” (superficial), “TD” (orthovoltage). Please see the list of active NHPIP codes and corresponding “NHPIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

All instances of a patient with a particular disease at a particular submitting facility are counted as a single case.

RT20 Metric - Radiation Treated Cases – Brachytherapy

Range of Possible Values: 0 or greater

Definition: Unique cases (ie. ALR case) that received at least one Brachytherapy treatment in the reporting period. Radiation treatment delivered using other modalities (ie. Superficial & Orthovoltage, Cobalt, Linear Accelerator) would be counted in other RT metrics as appropriate.

Method: A case is considered a Radiation Treated Case – Brachytherapy for the purposes of calculating RT20 if the NHPIP codes have an activity type “TT” (interstitial), “TV” (inter-cavitary), “TM” (mould) or “TI” (radionuclide). Please see the list of active NHPIP codes and corresponding “NHPIP_ACT_TYPE” in **Appendix 1.14** on the latest version of the online data book.

All instances of a patient with a particular disease at a particular submitting facility are counted as a single case.

RT21 Metric - Total Radiation Treated Cases

Range of Possible Values: 0 or greater

Definition: This is a distinct count of unique cases treated at least once in the reporting period, using any of the radiation treatment modalities.

Method: The Total Radiation Treated Cases – RT21 is calculated using a distinct count of unique patient disease sites (ie. ALR case) associated with any of the NHPIP Codes with NHPIP activity type of “TI”, “TM”, “TT”, “TV”, “TC”, “TL”, “TD”, or “TS” for the reporting period.

Derivation Logic:

1) $RT21 \neq RT17 + RT18 + RT19 + RT20$

2) Count of the distinct/unique combination of a patient disease site (ie. ALR case) and the disease number in a specific submitting facility, that received radiation treatment.

RT30 Metric - New Radiation Treated Cases

Range of Possible Values: 0 or greater

Definition: The number of distinct NEW cases which received the first radiation treatment, of any type, in the reporting period, at the submitting facility.

Method: The New Radiation Treated Cases – R30 is calculated using a distinct count of unique patient disease sites (ie. ALR case) that received radiation treatment associated with any of the NHPIP Codes with NHPIP activity type of “TI”, “TM”, “TT”, “TV”, “TC”, “TL”, “TD”, or “TS”, for the **first time**, for the reporting period.

Derivation Logic: Count of the distinct/unique combination of a patient disease site (ie. ALR case) and the disease number in a specific submitting facility, that received radiation treatment, for the first time, for the reporting period are counted in RT30.

RT31 Metric - Previously Treated Radiation Cases

Range of Possible Values: 0 or greater

Definition: The number of distinct cases which received at least one type of radiation therapy treatment in the current reporting period, and who’s first treatment case occurred in a previous reporting period, at the submitting facility.

Method: $RT31 = RT21 - RT30$

Possible data quality issues that may have an impact on the ALR metrics

Each flag is set only if ALL conditions are met. Here are examples when the flag may not be set properly (treatment is not counted in the right ALR metric):

- The Physician HCP Number or Specialty for physician is unknown
- For clinic visits, Visit Type is not set (Y or N)
- NHPIP Code is unknown

Appendix 1 – NHPIP Codes (including inactive codes)

National Hospital Productivity Improvement Program (NHPIP) is a listing of radiotherapy procedures with their respective measures of output (workload). Thereby, radiotherapy workload can be measured by specific procedure performed. The list of NHPIP codes can be found in **Appendix 1.14** of the latest data book version online. <https://www.cancercareontario.ca/en/data-book-reporting-standards>

Appendix 2: Health Care Provider (HCP) Specialty Codes

The list of Specialty codes (ie. all specialty codes under the **Physician Group 00000**, and under the **Dentistry Group 01000**) that are included in the metrics described above can be found in **Appendix 1.17** of the latest data book version online. <https://www.cancercareontario.ca/en/data-book-reporting-standards>

Appendix 3: Radiation Treated Cases metric examples

RT17 - Metric - Radiation Treated Cases – Cobalt

Example 1: Two separate institutions submit information regarding patient X with disease A, how many cases will this situation create for RT17?

Answer: 2, since there were 2 different submitting facility

Example 2: 5 records are found for the same patient in the month of January 2005. All of the records are for the same disease and are from the same submitting facility. How many cases will this situation create for RT17?

Answer: 1, since the records were all for the same patient with the same disease and the same submitting facility

RT18 – Metric - Radiation Treated Cases – Linear Accelerator

Example 1: Two separate institutions submit information regarding patient X with disease A, how many cases will this situation create for RT18?

Answer: 2, since there were 2 different submitting facilities

Example 2: 5 records are found for the same patient in the month of January 2005. All of the records are for the same disease and are from the same submitting facility. How many cases will this situation create for RT18?

Answer: 1, since the records were all for the same patient with the same disease and the same submitting facility

RT19 – Metric - Radiation Treated Cases – Superficial & Orthovoltage

Example 1: Two separate facilities submit information regarding patient X with disease A, how many cases will this situation create for RT19?

Answer: 2, since there were 2 different submitting facility

Example 2: 5 records are found for the same patient in the month of January 2005. All of the records are for the same disease and are from the same submitting facility. How many cases will this situation create for RT19?

Answer: 1, since the records were all for the same patient with the same disease and the same submitting facility

RT20 - Metric - Radiation Treated Cases – Brachytherapy

Example 1: Two separate facilities submit information regarding patient X with disease A, how many cases will this situation create for RT20?

Answer: One RT20 case for each submitting facility 2, since there were 2 different submitting facilities

Example 2: 5 records are found for the same patient in the month of January 2005. All of the records are for the same disease and are from the same submitting facility. How many cases will this situation create for RT20?

Answer: One, since the records were all for the same patient with the same disease and the same submitting facility