**Activity Level Reporting**

**Metric Methods**



**ALR Metrics for Radiation Therapy**

January 2020

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| V0.9 | Cristian Preda | April 28, 2014 | Initial draft |
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| V.10 | Ann Marie Legaspi | Jan. 10, 2020 | Modified to account for NHPIP code updates in 2017 and 2019, including removal of NHPIP code tables (within this document) that were replaced with reference to Appendix 1.14 (activity types) based on the latest online data book. |

# Background

Cancer Care Ontario (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 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 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 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.

# Purpose of this Document

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

# Data submitted to CCO and how it is used to calculate metrics

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 hospital. A new radiation case is counted when a patient has a first clinic visit with a physician (*see appendix 2 for complete list*) for a specific diagnosis at a specific submitting hospital. | Clinic Visit |
| C2R | Radiation Follow up Visits | All radiation clinic visits with a physician (*see appendix 2 for complete list*) 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 |
| R1 | Radiation Planning Visits - Mould Room | Mould/immobilization activity visits. | Radiation |
| R2 | Radiation Planning Visits - Simulation | Treatment simulation visits, this includes conventional simulation, CT simulation, and emerging imaging methods. | Radiation |
| R3 | Radiation Planning Visits – Clinical Mark-up | Clinical mark-up visits that require mark-up activities only. | Radiation |
| R4 | Radiation Planning Visits – Planning and Dosimetry | Radiation visits including dosimetry and planning activities that occur outside of Mould Room, Simulation, Clinical Mark-up and Treatment visits. | Radiation |
| R5 | 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 |
| R6\* | Total Radiation Planning & Review Visits | The sum of Mould Room, Simulation, Clinical Markup, Planning and Dosimetry and Patient Radiation Review Visits (R1 + R2 + R3 + R4 + R5) | Radiation |
| R23 | Radiation Treatment Visits - Cobalt | A treatment visit where radiation treatment is given with a Cobalt treatment unit. | Radiation |
| R24 | Radiation Treatment Visits – Linear Accelerator | A treatment visit where radiation treatment is given with a Linear Accelerator treatment unit. | Radiation |
| R25 | 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.(R25 = R23 + R24) | Radiation |
| R26 | Radiation Treatment Visits – Superficial & Orthovoltage | A treatment visit where radiation treatment is given with a Superficial/Orthovoltage treatment unit. | Radiation |
| R14 | Radiation Treatment Visits – Brachytherapy | A treatment visit where radiation treatment includes interstitial, intra-cavitary and treatment moulds/applicators. | Radiation |
| R15 | Total Radiation Treatment Visits | The total Radiation Treatment Visits includes the sum of Megavoltage, Superficial/Orthovoltage and Brachytherapy treatment visits.(R15 = R25 + R26 + R14) | Radiation |
| R16\* | 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.(R16 = R6 + R15) | Radiation |
| R7 | Radiation Fractions – Cobalt | Radiation fractions delivered with a cobalt treatment unit. | Radiation |
| R8 | Radiation Fractions – Linear Accelerator | Radiation fractions delivered with a linear accelerator (linac) treatment unit. | Radiation |
| R9 | Radiation Fractions – High-Energy (Cobalt & Linac) | Radiation fractions delivered using a Megavoltage treatment unit. This is a sum of the Cobalt and Linear Accelerator fractions. | Radiation |
| R10 | High Energy NHPIP Minutes | Sum of activity minutes for HIGH energy treatment NHPIP CODES | Radiation |
| R11 | Radiation Fractions – Superficial & Orthovoltage | Radiation fractions delivered using superficial/orthovoltage treatment units. | Radiation |
| RLE | Radiation Fractions – Low-Energy (Superficial & Orthovoltage) | Sum of activity minutes for LOW energy treatment NHPIP CODES | Radiation |
| BRACHY FRACTIONS | Radiation Fractions – Brachytherapy | Radiation fractions delivered using brachytherapy (includes interstitial, intra-cavitary and treatment moulds/applicators.) | Radiation |
| R12 | Total Radiation Fractions | Radiation fractions delivered using a Megavoltage treatment units and Low Energy treatment units.(R12 = R7+R8+R11+BRACHY FRACTIONS) | Radiation |
| R13 | Total Treatments NHPIP Minutes | Sum of activity minutes for all treatment NHPIP CODES includes Megavoltage, Superficial/Orthovoltage. | Radiation |
| R17 | 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 |
| R18 | Radiation Treated Cases – Linear Accelerator | Unique cases that received at least one linac radiation therapy treatment in the reporting period. Treatment in other programs may also have been administered. | Radiation |
| R19 | 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 |
| R20 | 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 |
| R21 | 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 |
| R30 | New Radiation Treated Cases | The number of NEW cases which received the first radiation treatment, of any type, in the reporting period. | Radiation |
| R31\* | 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

# The ALR process

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 healthcare facility. |

An ALR case is defined by 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 containing the HCP codes for fiscal year 2014) .

## 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 complete list) for a specific diagnosis at a specific submitting hospital.*

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',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',NULL
3. HCP is a physician (see appendix 2)
4. Clinic visit was not already identified and flagged as a C1R (new radiation case)

### R5 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',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 R5.

## ALR Metrics - Radiation Entity

The ALR metrics are based on NHPIP codes.

## Radiation Planning Visits

### R1 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 (R1) if the NHPIP codes have an activity type “M”. 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 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 R1.

For instances where multiple visits on the same day for the same diagnosis and activity occur, the visit with the most senior physician (determined by using the lowest HCP number among the physicians visited) is the only one counted towards R1.

### R2 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 (R2) if the NHPIP codes have an activity type “S”. 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’), that have a suffix of X, which are codes that do not involve a patient who is present and are not counted towards R2.

### R3 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 (R3) 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 (R3)

For instances where multiple visits on the same day for the same diagnosis and activity occur, the visit with the most senior physician (determined by using the lowest HCP number among the physicians visited) is the only one counted towards R3.

### R4 Metric - Radiation Planning Visits – Planning and Dosimetry

**Range of Possible Values:** 0 or greater

**Definition:** Radiation visits including dosimetry and planning activities that occur outside of Mould Room, Simulation, Clinical Mark-up and Treatment visits.

**Method:** A visit is considered a Planning and Dosimetry visit (R4) if the NHPIP codes have an activity type “P” or “D” (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’ or ‘D’), that have a suffix of X, which are codes that do not involve a patient who is present and are not counted towards R4.

Planning and Dosimetry activities are counted as R4 if only if NO clinical mark‑up, mould, simulation, or treatment activity is occurring at the same moment (same day/hour/minute).

In other words, if the same (patient/disease/submitting hospital/visiting hospital/visit date & time) received any clinical mark-up, mould, simulation, or treatment activity at the same moment as another Planning & Dosimetry visit, no R4 visit will be counted at all.

### R6 Metric - Total Radiation Planning & Review Visits

**Range of Possible Values:** 0 or greater

**Definition:** The sum of Mould Room, Simulation, Clinical Markup, Planning and Dosimetry and Patient Radiation Review Visits.

**Method:** To obtain the number of Total Radiation Planning & Review Visits, the ALR Metrics R1 (Mould Room), R2 (Simulation), R3 (Clinical Markup), R4 (Planning and Dosimetry) and R5 (Patient Radiation Review Visits) are first calculated and then those totals are summed to derive R6.

R6 = R1 + R2 + R3 + R4 + R5

## Radiation Treatment Visits

### R23 Metric - Radiation Treatment Visits - Cobalt

**Range of Possible Values:** 0 or greater

**Definition:** A treatment visit where radiation treatment is given with a Cobalt treatment unit.

**Method:** A visit is considered a Radiation Treatment Visit – Cobalt (R23) 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.

For instances where multiple visits on the same day for the same diagnosis and activity occur, the visit with the most senior physician (determined by using the lowest HCP number among the physicians visited) is the only one counted towards R23.

### R24 Metric - Radiation Treatment Visits – Linear Accelerator

**Range of Possible Values:** 0 or greater

**Definition:** A treatment visit where radiation treatment is given with a Linear Accelerator treatment unit.

**Method:** A visit is considered a Radiation Treatment Visit – Linear Accelerator (R24) 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.

For instances where multiple visits on the same day for the same diagnosis and activity occur, the visit with the most senior physician (determined by using the lowest HCP number among the physicians visited) is the only one counted towards R24.

### R25 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 R23 (Radiation Treatment Visits - Cobalt) and R24 (Radiation Treatment Visits - Linear Accelerator) are first calculated and then those totals are summed to derive R25.

R25 = R23 + R24

### R26 Metric - Radiation Treatment Visits – Superficial & Orthovoltage

**Range of Possible Values:** 0 or greater

**Definition:** A treatment visit where radiation treatment is given with a Superficial/Orthovoltage treatment unit.

**Method:** A visit is considered a Radiation Treatment – Superficial & Orthovoltage (R26) visit 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.

For instances where multiple visits on the same day for the same diagnosis and activity occur, the visit with the most senior physician (determined by using the lowest HCP number among the physicians visited) is the only one counted towards R26.

### R14 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 visit is considered a Radiation Treatment – Brachytherapy (R14) visit if the NHPIP codes have an activity type “TT”(interstitial), “TV” (intercavitary) or “TM” (mould). 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 instances where multiple visits on the same day for the same diagnosis and activity occur, the visit with the most senior physician (determined by using the lowest HCP number among the physicians visited) is the only one counted towards R14.

### R15 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 R14 (Radiation Treatment Visits - Brachytherapy), R25 (Radiation Treatment Visits - Megavoltage) and R26 (Radiation Treatment Visits - Superficial & Orthovoltage) are first calculated and then those totals are summed to derive R15.

**Derivation Logic:**

R15 = R25 + R26 + R14

### R16 Metric - Total Radiation Treatment & Planning Visits

**Range of Possible Values:** 0 or greater

**Definition:** The sum of Mould Room, Simulation, Clinical Markup, Planning and Dosimetry 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 R6 (Total Radiation Planning & Review Visits) and R15 (Total Radiation Treatment Visits) are first calculated and then those totals are summed to derive R16.

**Derivation Logic:**

R16 = R6 + R15

## Radiation Fraction Activities

### R7 Metric - Radiation Fractions – Cobalt

**Range of Possible Values:** 0 or greater

**Definition:** Radiation fractions delivered with a cobalt treatment unit.

**Method:** A visit is considered a Radiation – Cobalt visit for the purposes of calculating R7 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.

The Radiation Fractions for these visits are then added to R7. For instances where multiple visits on the same day for the same diagnosis and activity occur, the fractions for each of the instances will be counted towards R7.

### R8 Metric - Radiation Fractions – Linear Accelerator

**Range of Possible Values:** 0 or greater

**Definition:** Radiation fractions delivered with a linear accelerator (linac) treatment unit.

**Method:** A visit is considered a Radiation– Linear accelerator visit for the purposes of calculating R8 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.

The Radiation Fractions for these visits are then added to R8. For instances where multiple visits on the same day for the same diagnosis and activity occur, the fractions for each of the instances will be counted towards R8.

### R9 Metric - Radiation Fractions – High-Energy (Cobalt & Linac)

**Range of Possible Values:** 0 or greater

**Definition:** Radiation fractions delivered using a Megavoltage treatment unit. This is a sum of the Cobalt and Linear Accelerator fractions.

**Method:** To obtain the number of Radiation Fractions - High-Energy, the ALR Metrics R7 (Radiation Fractions - Cobalt) and R8 (Radiation Fractions - Linear Accelerator) are first calculated and then those totals are summed to derive R9.

**Derivation Logic:**

R9 = R7 + R8

### R10 Metric - High Energy NHPIP Minutes

**Range of Possible Values:** 0 or greater

**Definition:** Sum of activity minutes for HIGH energy treatment NHPIP CODES.

**Method:** The sum of NHPIP\_DURATION\_UNIT minutes from NHPIP codes captured in Cobalt ([R7](http://www.cancercare.on.ca/ext/datadictionary_internal/DataDictionary/ALR_Phase_2/Radiation_Fractions_-_Cobalt_R7.htm)) and Linac ([R8](http://www.cancercare.on.ca/ext/datadictionary_internal/DataDictionary/ALR_Phase_2/Radiation_Fractions_-_Linear_Accelerator_R8.htm)) fraction visits for a given period. Real duration is not captured in Data Book.

### R11 Metric - Radiation Fractions – Superficial & Orthovoltage

**Range of Possible Values:** 0 or greater

**Definition:** Radiation fractions delivered using superficial/orthovoltage treatment units.

**Method:** A visit is considered a Radiation– Superficial & Orthovoltage visit for the purposes of calculating R11 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.

The Radiation Fractions for these visits are then added to R11. For instances where multiple visits on the same day for the same diagnosis and activity occur, the fractions for each of the instances will be counted towards R11.

### RLE Metric - Radiation Low Energy NHPIP Minutes – Superficial & Orthovoltage

**Range of Possible Values:** 0 or greater

**Definition:** Sum of activity minutes for LOW energy treatment NHPIP CODES.

**Method:** The sum of NHPIP\_DURATION\_UNIT minutes from NHPIP codes captured in Superficial & Orthovoltage ([R](http://www.cancercare.on.ca/ext/datadictionary_internal/DataDictionary/ALR_Phase_2/Radiation_Fractions_-_Linear_Accelerator_R8.htm)11) fraction visits for a given period. Real duration is not captured in Data Book.

### BRACHY FRACTIONS Metric - Radiation Fractions – Brachytherapy

**Range of Possible Values:** 0 or greater

**Definition:** Radiation fractions delivered using brachytherapy.

**Method:** A visit is considered a Radiation– brachytherapy visit for the purposes of calculating BRACHY FRACTIONS if the NHPIP codes have an activity type “TT”(interstitial), “TV” (intercavitary) or “TM” (mould). 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.

The Radiation Fractions for these visits are then added to BRACHY FRACTIONS. For instances where multiple visits on the same day for the same diagnosis and activity occur, the fractions for each of the instances will be counted towards BRACHY FRACTIONS.

### R12 Metric - Total Radiation Fractions

**Range of Possible Values:** 0 or greater

**Definition:** Radiation fractions delivered using a Megavoltage treatment units and Low Energy treatment units.

**Method:** To obtain the number of Total Radiation Fractions, the ALR Metrics R7 (Radiation Fractions - Cobalt), R8 (Radiation Fractions - Linear Accelerator), R11 (Radiation Fractions - Superficial & Orthovoltage) and BRACHY FRACTIONS are first calculated and then those totals are summed to derive R12.

**Derivation Logic:**

R12 = (R7+R8+R11+ BRACHY FRACTIONS)

### R13 Metric - Total Treatments NHPIP Minutes

**Range of Possible Values:** 0 or greater

**Definition:** The sum of NHPIP\_DURATION\_UNIT minutes from NHPIP codes captured in Cobalt (R7), Linac (R8) and Superfical & Orthovoltage (R11) fraction visits for a given period.

**Method:** The sum of NHPIP\_DURATION\_UNIT minutes from NHPIP codes captured in Cobalt(R7), Linac (R8), Superficial & Orthovoltage ([R](http://www.cancercare.on.ca/ext/datadictionary_internal/DataDictionary/ALR_Phase_2/Radiation_Fractions_-_Linear_Accelerator_R8.htm)11) fraction visits for a given period. Real duration is not captured in Data Book.

## Radiation Treated Cases

### R17 Metric - Radiation Treated Cases – Cobalt

**Range of Possible Values:** 0 or greater

**Definition:** Unique cases that received at least one cobalt radiation therapy treatment in the reporting period. Treatment in other programs may also have been administered.

**Method:** A case is considered a Radiation Treated Case – Cobalt for the purposes of calculating R17 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.

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

**Example 1:** Two separate institutions submit information regarding patient X with disease A, how many cases will this situation create for R17?

Answer: 2, since there were 2 different submitting hospitals

**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 institution. How many cases will this situation create for R17?

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

### R18 Metric - Radiation Treated Cases – Linear Accelerator

**Range of Possible Values:** 0 or greater

**Definition:** Unique cases that received at least one linac radiation therapy treatment in the reporting period. Treatment in other programs may also have been administered.

**Method:** A case is considered a Radiation Treated Case – Linear Accelerator for the purposes of calculating R18 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.

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

**Example 1:** Two separate institutions submit information regarding patient X with disease A, how many cases will this situation create for R18?

Answer: 2, since there were 2 different submitting hospitals

**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 institution. How many cases will this situation create for R18?

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

### R19 Metric - Radiation Treated Cases – Superficial & Orthovoltage

**Range of Possible Values:** 0 or greater

**Definition:** 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.

**Method:** A case is considered a Radiation Treated Case – Superficial & Orthovoltage for the purposes of calculating R19 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.

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

**Example 1:** Two separate institutions submit information regarding patient X with disease A, how many cases will this situation create for R19?

Answer: 2, since there were 2 different submitting hospitals

**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 institution. How many cases will this situation create for R19?

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

### R20 Metric - Radiation Treated Cases – Brachytherapy

**Range of Possible Values:** 0 or greater

**Definition:** Unique cases that received at least one Brachytherapy treatment in the reporting period. Treatment in other programs may also have been administered.

**Method:** A case is considered a Radiation Treated Case – Brachytherapy for the purposes of calculating R20 if the NHPIP codes have an activity type “TT”(interstitial), “TV” (intercavitary) or “TM” (mould). 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 institution are counted as a single case.

**Example 1:** Two separate institutions submit information regarding patient X with disease A, how many cases will this situation create for R20?

Answer: 2, since there were 2 different submitting hospitals

**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 institution. How many cases will this situation create for R20?

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

### R21 Metric - Total Radiation Treated Cases

**Range of Possible Values:** 0 or greater

**Definition:** 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.)

**Method:** To obtain the number of Total Radiation Treated Cases, the ALR Metrics R17 (Radiation Treated Cases - Cobalt), R18 (Radiation Treated Cases - Linear Accelerator), R19 (Radiation Treated Cases - Superficial & Orthovoltage) and R20 (Radiation Treated Cases - Brachytherapy) are first calculated and then those totals are summed to derive R21.

**Derivation Logic:**

1) R21 = R17 + R18 + R19 + R20 **🡨** this will result in double counts. It is not the sum it is the distinct count.

2) Count of the distinct/unique combination of a patient and the disease number in a specific submitting organization.

### R30 Metric - New Radiation Treated Cases

**Range of Possible Values:** 0 or greater

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

**Method:** The number of cases who received for the first time at least one type of radiation therapy treatment in the current reporting period.

**Derivation Logic:** First radiation treatment flagged as R21 is also flagged as R30

### R31 Metric - Previously Treated Radiation Cases

**Range of Possible Values:** 0 or greater

**Definition:** 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.

**Method:** R31 = R21 - R30

### 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>