**ALR Metrics for Systemic Therapy**

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# 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). 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 radiation and systemic therapy services 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 submitted.

# 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 provides 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 the second section.

# 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 systemic volumes and wait times. The table below lists the key metrics generated and the table/entity they are based on. (Note: Following sections 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** |
| --- | --- | --- | --- |
| C1S | New Systemic Case | A case is an instance of a patient with a specific diagnosis at a specific submitting hospital. A new systemic case is counted when a patient has a first clinic visit with a medical oncologist for a specific diagnosis at a specific submitting hospital. | Clinic Visit |
| C2S | Systemic Follow up Visits | All systemic clinic visits with a medical oncologist that are not New Systemic Case Visits. | Clinic Visit |
| C3S | Total number of systemic clinic visits | The sum of the new systemic case visits and the follow up systemic visits. C3S = C1S + C2S | Clinic Visit |
| S1 | Systemic Suite Visits – Antineoplastic Parenteral Treatment | An Antineoplastic Parenteral Treatment Visit occurs when a patient is treated with antineoplastic agents. (However, oral administrations of antineoplastic agents are excluded here and counted in S17.)  Any number of agents may be given at each visit.  Parenteral treatment visits are needed to define systemic parenteral treated cases.  If a patient receives both supportive drugs and antineoplastic drugs, that visit will only be counted here (i.e. not in S5).  Only one S1 is counted per case per day, further only one S1, S17, S5, S3. | Systemic |
| S3 | Systemic Suite Visits – Arrived but not Treated | An arrived, but not-treated visit occurs when a patient is scheduled for a systemic treatment visit, arrives at the centre, but is too ill (e.g. low white blood cell count) to receive the treatment.  There are two ways that a visit will end up as an S3:  1) the arrived but not treated flag is set to ‘Y’  2) the not treated flag is set to ‘N’, but the dose is 0.  Only one S3 is counted per case per day. | Systemic |
| S5 | Systemic Suite Visits – Supportive Agents | These are visits in which a patient does not receive any antineoplastic agents (S1 & S17) but does receive a supportive agent (cytokine, IVIG etc.)  Only one S5 is counted per case per day. | Systemic |
| S7 | Systemic Suite Visits – Transfusion Therapy | These are visits in which a patient has received a transfusion and has not received any antineoplastic or supportive agents (S1, S5 & S17) in the same day and the visit is not treated as a S3. The types of transfusion may include blood or blood products such as platelets, packed cells, red blood cells etc.  Multiple S7 visits can be recognized each day. | Procedures |
| S9 | Systemic Suite Visits – Hydration | These are visits in which a patient does not receive any antineoplastic or supportive agents (S1, S5 & S17) but receives IV hydration (CCP code 706, IV electrolytes).  An S9 is counted only if no antineoplastic or supportive drugs (i.e. S1, S5 & S17) given in the same day and the visit is not treated as an S3  Multiple S9 visits can be recognized each day  Note: If the patient receives hydration and parenteral drugs in a visit, the hydration is not counted as a separate visit, but is included as part of the antineoplastic parenteral treatment regimen. | Procedures |
| S11 | Systemic Suite Visits – Venous Access Device and Line Care | These are visits in which a patient does not receive any antineoplastic or supportive agents (S1, S5 & S17) but a venous access device is connected or flushed.  An S11 is only registered if no antineoplastic or supportive drugs (i.e. S1, S5 & S17) given in the same day and the visit is not treated as an S3.  Multiple S11 visits can be recognized each day. | Procedures |
| S13 | Total Supportive/Adjunctive Therapy Visits | The sum of visits during which patients did not receive any antineoplastic agent, but received supportive agents (S5) or transfusions (S7) or hydrations (S9) or venous access device or line care therapy (S11) at a health care facility.  S13 = S5 + S7 + S9 + S11 | Systemic, Procedures |
| S15 | Total Systemic Suite Visits | The sum of visits during which patient received non-oral antineoplastic agents (S1), or came for antineoplastic treatment but were too ill to be treated (S3), or received only supportive agents (S5), or received transfusions (S7) or hydration therapy (S11) at a health care facility.  S15 = S1 + S3 +S13 (**S5 + S7 + S9 + S11**) | Systemic, Procedures |
| S17 | Systemic Suite Visits – Oral Antineoplastic Treatment | These are visits in which a patient does not receive a non-oral antineoplastic treatment (S1) and an oncologist writes a prescription for a systemic agent (cytotoxic, biologic, and hormonal) that is taken orally usually at home.  Only 1 S17 is counted per case per day. | Systemic |
| S19 | Total Antineoplastic Systemic Treatment Visits | The sum of non-oral antineoplastic treatment visits plus oral antineoplastic systemic treatment visits.  S19 = S1 + S17. | Systemic |
| S21 | Total Antineoplastic Systemic & Supportive/Adjunctive Therapy Visits | The sum of visits during which patient received non-oral antineoplastic agents (S1), or came for antineoplastic treatment but were too ill to be treated (S3), or received only supportive agents (S5), or received transfusions (S7) or hydration therapy (S11), or oral antineoplastic treatments (S17) at a health care facility.  S21 = S15 (**S1 + S3 + S5 + S7 + S9 + S11**) + S17 | Systemic, Procedures |
| S23 | Systemic Treated Cases – Systemic Suite, Antineoplastic Parenteral Treated Cases | Unique cases that received at least one antineoplastic parenteral systemic therapy treatment in the reporting period. | Systemic |
| S24 | Systemic Treated Cases – Oral Antineoplastic Treatment | Unique cases that received a prescription for oral antineoplastic systemic therapy (usually taken at home) and did not receive other antineoplastic parenteral systemic therapy in the reporting period.  S24 = S25 – S23 | Systemic |
| S25 | Total Antineoplastic Systemic Treated Cases | The total number of unique cases that received antineoplastic systemic therapy treatment (oral or non-oral) in the reporting period. If an ALR case receives both S1 and S17 in the specified period, the case is counted only once. | Systemic |
| S27 | New Antineoplastic Systemic Treated Cases | The total number of NEW cases which received antineoplastic systemic therapy treatment (S1 & S17) in the reporting period. This metric is used to identify ALR cases which received chemotherapy and the date when received chemo for the first time.  (The difference between C1S and an S27 is the C1S counts all new systemic clinic visits regardless of whether they ever receive systemic suite treatments. The S27 only counts the new systemic cases that receive treatments in the systemic suite. Note not all treatment cases are recorded as new clinic visits.) | Systemic |
| S28 | Previously Treated Antineoplastic Systemic Treated Cases | The total number of unique cases that received antineoplastic systemic therapy treatment that were ALREADY IN TREATMENT in the reporting period.  S28 = S25 - S27 | Systemic |

# 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.

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/treatments performed by health care professionals flagged as physicians (see Appendix: 2).

## The Clinic Visit Entity

There are 2 main metrics based on systemic clinic visits: C1S and C2S. The third metric (C3S) is a derived metric: C3S = C1S + C2S.

### C1S - New Systemic Case

A **new systemic case (C1S)** is counted when *a patient has a first systemic clinic visit with a medical oncologist (physician) for a specific diagnosis at a specific submitting hospital.*

We flag a clinic visit as C1S if all following conditions are true:

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

Note: An ALR case will not have any C1S visits if the case was flagged as “historical case” and a record for program SYS 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”.

### C2S - Systemic Follow up Visits

We flag a clinic visit as C2S if all following conditions are true:

1. Visit Program Code = ‘SYS’
2. The visit is face-to-face: Visit Type (in Clinic Visit entity) has one of the following values: ‘C’, ‘V’, ‘VT’ (legacy OPIS), 'OC', ‘VC’ and NULL
3. If an Oral antineoplastic treatment didn’t happen on the same day. Such treatment can be identified in the systemic entity by following attributes:
   1. The drug (CCO Drug Code/DIN) is an antineoplastic (see antineoplastic drugs from appendix 1)
   2. Route = ’PO ’
   3. Dose Administered > 0
   4. Arrived But Not Treated = ’N’
   5. CCO Program Code for HCP Number is known
4. HCP is a physician (see appendix 2)
5. Clinic visit was not already identified and flagged as a C1S (new systemic case)

## The Systemic Entity

To determine the types of visits performed, business rules are applied to each record to set flags that identify which Systemic entity metrics it should be included in. The table below describes these flags. A description of the ALR process in which the flags are applied follows the table.

| # | Flag Name | Flag Description | Inclusion Criteria for: |
| --- | --- | --- | --- |
| 1 | ANTINEO | Flag indicating an antineoplastic drug was given | This flag is used later to derive S1 and S17 metrics |
| 2 | ORAL | Flag indicating that an oral drug was administrated | This flag is used later to derive S17 metrics |
| 3 | SCHD\_NOT\_TRT\_1 | Flag indicating the patient arrived but was not treated. | This flag is used later to derive S3 metrics |
| 4 | SCHD\_NOT\_TRT\_2 | Flag indicating the patient arrived but was not treated . Dose administrated is 0 (zero) | This flag is used later to derive S3 metrics |
| 5 | SUPPORTIVE | Flag indicating that a supportive drug was administrated | This flag is used later to derive S5 metrics |

The following paragraphs explain how systemic treatment metrics are calculated:

#### 

### S3 Metric - Systemic Suite Visits – Arrived but not Treated

1. For each record in Systemic entity, set the flag schd\_not\_trt\_1 = 'Y' for all records in Systemic Table when Arrived But Not Treated = ’Y’ AND CCO Program Code for HCP Number is known.

**NOTE:** If CCO Program Code (in Healthcare Professional entity) is unknown, the visit may not be flagged correctly as a S3 activity.

### S1 Metric - Systemic Suite Visits – Antineoplastic Parenteral Treatment

1. For each record in Systemic entity, set the flag ANTINEO = 'Y' if all following conditions are met:
   1. The drug (CCO Drug Code/DIN) is an antineoplastic (see antineoplastic drugs in Appendix: 1)
   2. Drug Route is not MC and is not PO (MC = Miscellaneous; PO = Oral)
   3. Dose Administered > 0
   4. Arrived But Not Treated = ’N’
   5. CCO Program Code for HCP Number is known

**NOTE:** If any element used above is unknown, the treatment is not counted in S1/S17 metric.

### S17 Metric - Systemic Suite Visits – Oral Antineoplastic Treatment

1. For each record in Systemic entity, set the flag ORAL = 'Y' if all following conditions are met:
   1. The drug (CCO Drug Code/DIN) is an antineoplastic (see antineoplastic drugs from appendix 1)
   2. Drug Route is PO (PO = Oral)
   3. Dose Administered > 0
   4. Arrived But Not Treated = ’N’
   5. CCO Program Code for HCP Number is known

***Comment: If any element used above is unknown, the treatment is not counted in S17 metric.***

### S3 Metric - Systemic Suite Visits – Arrived but not Treated ( second step)

For each record in Systemic entity, set the flag schd\_not\_trt\_2 = 'Y' if all following conditions are met:

* 1. Drug Route is not MC (MC = Miscellaneous)
  2. The drug (CCO Drug Code/DIN) is an antineoplastic (see antineoplastic drugs in Appendix: 1)
  3. Dose Administered = 0
  4. Arrived But Not Treated = ’N’
  5. CCO Program Code for HCP Number is known

### S5 metric - Systemic Suite Visits – Supportive Agents

1. For each record in Systemic entity, set the flag SUPPORTIVE = 'Y' if all following conditions are met:
   1. The drug (CCO Drug Code/DIN) has the classification ‘S’ (see supportive drugs from Appendix: 1)
   2. Dose Administered > 0
   3. Arrived But Not Treated = ’N’
   4. CCO Program Code for HCP Number is known

### 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
* The flag Arrived But Not Treated is not set (Y or N)
* The drug is not provided (CCO Drug Code/DIN)
* Dose Administered is unknown (Empty is not the same thing as 0)
* Drug Route is unknown

# Appendix 1: Antineoplastic and Supportive Drugs

The list of antineoplastic and supportive drugs is updated on monthly basis. Please refer to Appendix 1.43 from the on-line Data Book to access the most up-to-date file. All questions pertinent to this item should be directed to [informatics@cancercare.on.ca](mailto:informatics@cancercare.on.ca)

# Appendix 2: Health Care Provider (HCP) Specialty Codes

Please note that **only HCP Specialty Codes between 00\* to 01\*** are included in the ALR metrics described above. The most-up-to-date code list can be accessed via Appendix 1.17 found in the on-line Data Book. All questions pertinent to this topic should be send to [informatics@cancercare.on.ca](mailto:informatics@cancercare.on.ca)