

## Background

Cancer and its treatment frequently impair a patient's immune system function and make them vulnerable to risk of infection.

Therefore during the COVID-19 pandemic, prescribed treatments for cancer patients should aim to reduce the patient's inherent risk of infection (e.g., less immunosuppressive therapy) and to reduce the patient's risk of SARS-CoV-2 viral exposure (e.g., less clinic visits and associated travel).

Although standard cancer treatments may fulfil these mitigating strategies, some cancer patients require non-standard treatments to minimize their risk of infection.

## Objectives

Describe the non-standard treatments prescribed to mitigate the risk of COVID-19 infection in cancer patients treated at six BC Cancer regional centres.

## Methods

A retrospective chart review of cancer patients was performed.

## Study population

Patients were identified if the prescriber included COVID-19 as part of the rationale for requesting the use of non-standard treatments.

Patients were eligible if they were initiated with non-standard treatments for their cancers from 20 March 2020 through 29 March 2021.

## Outcome and analysis

The prescribed non-standard treatment are categorized by the rationales to prescribe non-standard treatments and the types of mitigating strategies (reduced inherent risk of infection, reduced viral exposure).

The non-standard treatments are considered as acceptable to the patients if they completed at least 3 months of planned treatment.

Treatments are compared between the early phase (first 6 months) and the late phase (last 6 months) of the study period.

## Results

A total of 157 patients were prescribed non-standard treatments during the study period, with 91 patients receiving non-standard treatments due to COVID-19 pandemic.

### Patient demographics

The mean age of the patients was 64.5 years ( $\pm$  13.5), with 53.3% being male. The most common cancer types were multiple myeloma (36%), lymphoma (18%), malignant melanoma (13%) and breast cancer (12%). A total of 161 drugs were used. Oral, subcutaneous and intravenous drugs were used in 51%, 16% and 33%, respectively.

### Rationales and mitigating strategies

Rationale for Non-Standard Treatments	Definition	Occurrence* (N = 91)
Safer Choice	Less immunosuppression/toxicities	36 (38.3%)
Treatment Extension	Additional treatment cycles required (e.g. to delay stem cell transplant)	30 (31.9%)
No or Short Outpatient Admission	Oral or subcutaneous route of administration	14 (14.9%)
Decrease Hospital Visits	Use of treatment with longer cycle lengths	11 (11.7%)
Out of Province	Receiving treatment outside BC	2 (2.1%)
Delay Supportive Care	Delay initiation of supportive care	1 (1.1%)
Delay Maintenance	Maintenance portion of treatment delayed as patient had a good response to induction	0
Earlier Completion	Non-standard treatment completes earlier than standard treatment	0
Shorter Inpatient Admission	Accelerated administration of treatment medications during inpatient visit	0

\*A treatment may have more than one rationale

### Acceptance of non-standard treatments

Treatments were planned for at least 3 months in 78 patients, with 46 patients (59%) completed at least 3 months of treatment.

Reason for Discontinuation	Definition	Occurrence (N = 15)
Clinical Decision	Clinician pursued an alternative treatment plan	4 (27%)
Deceased	Discontinued treatment due to passing away	3 (20%)
Disease Progression	Discontinued treatment due to cancer progression	3 (20%)
Patient Request	Discontinued treatment as per patient request	3 (20%)
Adverse Drug Reactions	Discontinued treatment due to side effect(s) or hypersensitivity reaction of treatment drugs	2 (13%)
Comorbidities	Discontinued treatment due to pre-existing or new medical condition not related to treatment drugs	0
Other	Reason for discontinuation other than any of the above categories	0

## Early phase vs. late phase

Oral treatments (64% vs. 47%) and reducing inherent risk to infection (75% vs. 49%) were more common in the late phase of the pandemic. Acceptance seems lower in the late phase (64% vs. 78%) but the patient numbers were small (early 50 vs. late 11).

Routes of administration	Drugs used in early phase (N=125)	Drugs used in late phase (N=36)
Oral	47%	64%
Subcutaneous	16%	17%
Intravenous	37%	19%

Rationale for Non-Standard Treatments	Early Phase (n = 70)	Late Phase (n = 21)
Safer Choice	30.5%	66.6%
Treatment Extension	34.7%	19.0%
No or Short Outpatient Admission	16.6%	9.5%
Decrease Hospital Visits	13.8%	4.7%
Out of Province	2.7%	0
Delay Supportive Care	1.3%	0
Delay Maintenance	0	0
Earlier Completion	0	0
Shorter Inpatient Admission	0	0

## Discussion

Oral and subcutaneous treatments were frequently used and their used was increased in the late phase of the pandemic.

The main mitigating strategies appeared to be more focused on reducing the patient's inherent risk to infection, rather than reducing their risk of viral exposure. This was probably because selecting less immunosuppressive treatments would reduce the risk of infection without the need to change the patient's lifestyle (e.g., visiting grocery stores, going for walks, meeting people).

This is consistent with having patients with multiple myeloma and lymphoma comprising a large proportion of the requested non-standard treatment, despite these cancer types being a small proportion of the general cancer populations. Patients with multiple myeloma and lymphoma have greater inherent risk of infection because of their malignancies. Therefore, their physicians were more likely to prescribe non-standard treatments to mitigate their risk of infection.

## Conclusion

Oral and subcutaneous treatments were utilized frequently as non-standard treatments during the COVID-19 pandemic.

Most clinicians seemed to focus on reducing the patient's inherent risk of infection as the major mitigating strategy. Patients with greater inherent risk of infection were more likely to be prescribed non-standard treatments.

The prescribed non-standard treatments seemed acceptable by most patients.