

## Regimen Monograph

[Regimen Name](#) | [Drug Regimen](#) | [Cycle Frequency](#) | [Premedication and Supportive Measures](#) | [Dose Modifications](#) | [Adverse Effects](#) | [Interactions](#) | [Drug Administration and Special Precautions](#) | [Recommended Clinical Monitoring](#) | [Administrative Information](#) | [References](#) | [Other Notes](#) | [Disclaimer](#)

## A - Regimen Name

# NIVL(MNT) Regimen

nivolumab

**Disease Site**      Genitourinary  
Renal Cell / Kidney

**Intent**              Palliative

**Regimen Category**      **Evidence-Informed :**

Regimen is considered appropriate as part of the standard care of patients; meaningfully improves outcomes (survival, quality of life), tolerability or costs compared to alternatives (recommended by the Disease Site Team and national consensus body e.g. pan-Canadian Oncology Drug Review, pCODR). Recommendation is based on an appropriately conducted phase III clinical trial relevant to the Canadian context OR (where phase III trials are not feasible) an appropriately sized phase II trial. Regimens where one or more drugs are not approved by Health Canada for any indication will be identified under Rationale and Use.

**Rationale and Uses**      As maintenance treatment in patients who received 4 cycles of NIVL+IPIL for previously untreated intermediate or poor-risk advanced renal cell carcinoma

**Supplementary Public Funding**      [nivolumab](#)  
New Drug Funding Program (Nivolumab plus Ipilimumab - Metastatic Renal Cell Carcinoma) ([NDFP Website](#) )

[back to top](#)

**B - Drug Regimen**

After 4 cycles of NIVL+IPIL, give nivolumab as maintenance treatment:

<a href="#">nivolumab</a> <sup>1</sup>	3 mg /kg	IV (up to 240 mg maximum)	Day 1
--	----------	---------------------------	-------

OR

<a href="#">nivolumab</a> <sup>1</sup>	6 mg /kg	IV (up to 480 mg maximum)	Day 1
--	----------	---------------------------	-------

<sup>1</sup> Dosing based on NDFP funding criteria

[back to top](#)

**C - Cycle Frequency**

Nivolumab **3 mg/kg** dosing: **REPEAT EVERY 14 DAYS**

Nivolumab **6 mg/kg** dosing: **REPEAT EVERY 28 DAYS**

Until disease progression or unacceptable toxicity.

[back to top](#)

**D - Premedication and Supportive Measures**

**Antiemetic Regimen:** Minimal

- Also refer to [CCO Antiemetic Recommendations](#).

**Pre-medications (prophylaxis for infusion reaction):**

- Routine pre-medication is not recommended.
- May consider pre-medication with antipyretics and H1-receptor antagonists if an IR has occurred in the past.

[back to top](#)

---

**E - Dose Modifications**

---

Doses should be modified according to the protocol by which the patient is being treated.

**Dosage with toxicity**

- Health care professionals should also consult the most recent nivolumab product monograph for additional information.
- Do not restart nivolumab while the patient is receiving immunosuppressive doses of corticosteroids or other immunosuppressive drugs. Prophylactic antibiotics should be used to prevent opportunistic infections in patients receiving immunosuppressive medications (e.g. high-dose corticosteroids).

**Summary of Principles of Management**

- Immune-related adverse effects (irAEs) are different in their presentation, onset and duration compared to conventional chemotherapy. Patient and provider education is essential.
- Initial irAE presentation can occur months after completion of treatment and affect multiple organs.
- Dose escalation or reduction is not recommended.
- If no other cause can be identified (such as infection), any new symptom should be considered immune-related and prompt treatment initiated.
- Organ-specific system-based toxicity management is recommended.
- Refer to the CCO guideline for detailed description of [Immune-mediated toxicities and their management](#).

**Management of Infusion-related reactions:**

Also refer to the CCO guideline for detailed description of [Management of Cancer Medication-Related Infusion Reactions](#).

Grade	Management	Re-challenge
1 or 2	<ul style="list-style-type: none"> <li>Stop or slow the infusion rate.</li> <li>Manage the symptoms.</li> </ul> <p>Restart:</p> <ul style="list-style-type: none"> <li>Once symptoms have resolved, the infusion may be restarted with close monitoring.</li> </ul>	<ul style="list-style-type: none"> <li>Re-challenge with close monitoring and pre-medication.</li> </ul>
3 or 4	<ul style="list-style-type: none"> <li>Stop treatment</li> <li>Aggressively manage symptoms.</li> </ul>	<ul style="list-style-type: none"> <li>Discontinue permanently (do not re-challenge).</li> </ul>

**Hepatic Impairment**

Hepatic Impairment	Nivolumab Dose
Mild (bilirubin $>1 - 1.5 \times \text{ULN}$ or $\text{AST} > \text{ULN}$ )	No dose adjustment needed
Moderate (bilirubin $>1.5 - 3 \times \text{ULN}$ and any AST) or Severe (bilirubin $>3 \times \text{ULN}$ and any AST)	No data. Not been studied.

**Renal Impairment**

Renal Impairment	Nivolumab Dose
Mild to Moderate	No dose adjustment needed.
Severe	Insufficient data available.

**Dosage in the Elderly**

No overall differences in safety or efficacy were reported for patients aged  $\geq 65$  years compared to younger patients.

[back to top](#)

## F - Adverse Effects

Refer to [nivolumab](#) drug monograph(s) for additional details of adverse effects.

The presentation of immune-mediated adverse effects may be different compared to other anti-cancer agents and early diagnosis and appropriate management is critical.

Common (25-49%)	Less common (10-24%)	Uncommon (< 10%), but may be severe or life-threatening
<ul style="list-style-type: none"> <li>• Fatigue</li> <li>• Rash (may be severe)</li> </ul>	<ul style="list-style-type: none"> <li>• Diarrhea (may be severe)</li> <li>• Electrolyte imbalances (including potassium, calcium, magnesium, sodium)</li> <li>• Nausea, vomiting</li> <li>• Musculoskeletal pain</li> <li>• Headache</li> </ul>	<ul style="list-style-type: none"> <li>• Rhabdomyolysis</li> <li>• Hypo / hyperthyroidism</li> <li>• Hypopituitarism (also hypophysitis)</li> <li>• Hypoparathyroidism</li> <li>• Adrenal insufficiency</li> <li>• Hyperglycemia (including diabetes and DKA)</li> <li>• Infusion related reaction</li> <li>• Peripheral neuropathy</li> <li>• Immunosuppression +/- Infection (may be severe, including CMV infection / reactivation in corticosteroid-refractory colitis)</li> <li>• Arrhythmia</li> <li>• Cardiotoxicity (including myocarditis, pericarditis)</li> <li>• Venous thromboembolism</li> <li>• Hemolysis (immune-mediated, also thrombocytopenia)</li> <li>• Hemophagocytic lymphohistiocytosis</li> <li>• Sarcoidosis</li> <li>• Encephalitis/meningitis</li> <li>• Cholestasis</li> <li>• Pancreatitis</li> <li>• Pneumonitis</li> <li>• Guillain-Barre syndrome</li> <li>• Solid organ transplant rejection</li> <li>• Vogt-Koyanagi-Harada syndrome</li> <li>• Uveitis</li> <li>• Myasthenia gravis, myositis</li> <li>• Nephrotoxicity, nephritis</li> <li>• Vasculitis</li> <li>• Histiocytic necrotizing lymphadenitis</li> </ul>

---

[back to top](#)

## G - Interactions

Refer to [nivolumab](#) drug monograph(s) for additional details.

No formal drug interaction studies have been conducted. Nivolumab is unlikely to affect the pharmacokinetics of other drugs.

The use of systemic corticosteroids and other immunosuppressants before starting nivolumab should be avoided because of their potential interference with its activity; however, they can be used after starting nivolumab to treat immune-related adverse reactions.

[back to top](#)

## H - Drug Administration and Special Precautions

Refer to [nivolumab](#) drug monograph(s) for additional details.

### Administration

- Withdraw the required volume of nivolumab 10 mg/mL injection and aseptically transfer into a sterile IV container (PVC container, non-PVC container, or glass bottle).
- Nivolumab may be administered undiluted or diluted with either 0.9% Sodium Chloride Injection, USP or 5% Dextrose Injection, USP.
- If diluted, the final infusion concentration should range between 1 to 10 mg/mL. Final volume of infusion must not exceed 160 mL.
- For patients < 40 kg, the total volume of infusion must not be > 4 mL/kg of patient weight.
- Mix diluted solution by gentle inversion. Do not shake.
- Discard if solution is cloudy, if there is pronounced discolouration or if there is foreign particulate matter.
- Administer by IV infusion over 30 minutes via a sterile, non-pyrogenic, low protein binding in-line filter (pore size 0.2 to 1.2 micrometer).
- Do not infuse concomitantly with other agents.

- Flush the line with normal saline or D5W after each dose.
- If a dose is missed, it should be administered as soon as possible. Adjust administration schedule to maintain the prescribed dosing interval.
- Store unopened nivolumab vials in original packaging between 2°C to 8°C. Protect from light.

Also refer to the CCO guideline for detailed description of [Management of Cancer Medication-Related Infusion Reactions](#).

### Contraindications

- Patients who have a hypersensitivity to this drug or any of its components.

### Other Warnings/Precautions

- Use with caution in patients on a controlled sodium diet. Each 10 mg (=1 mL) of nivolumab contains 0.1 mmol (2.3 mg) sodium.
- Use of a PD-1 blocking antibody with a thalidomide analogue plus dexamethasone is not recommended outside of controlled clinical trials, due to increased mortality reported.
- Use with caution in patients with:
  - autoimmune disease
  - history of pneumonitis or interstitial lung disease or recent chest radiation
  - prior or planned allogeneic stem cell transplant
  - infection with HIV, or active coinfection with HBV/HCV or HBV/HDV as these patients were excluded from clinical trials

### Pregnancy/Lactation

- This regimen is not recommended for use in pregnancy. Adequate contraception should be used by patients and their partners while on treatment and after the last treatment dose. Recommended methods and duration of contraception may differ depending on the treatment. Refer to the drug monograph(s) for more information.
- Breastfeeding is not recommended during this treatment and after the last treatment dose. Refer to the drug monograph(s) for recommendations after the last treatment dose (if available).
- Fertility effects: Unknown

---

[back to top](#)

## I - Recommended Clinical Monitoring

Treating physicians may decide to monitor more or less frequently for individual patients but should always consider recommendations from the product monograph.

Refer to the [hepatitis B virus screening and management](#) guideline for monitoring during and after treatment.

### Recommended Clinical Monitoring

- CBC; Baseline and Q3-6 weeks, or as clinically indicated, for at least up to 5 months after the last dose
- Liver function tests; Baseline and Q3-6 weeks, or as clinically indicated, for at least up to 5 months after the last dose
- Renal function tests, urine protein, electrolytes; Baseline and Q3-6 weeks, or as clinically indicated, for at least up to 5 months after the last dose
- Thyroid function tests; Baseline, and as clinically indicated, for at least up to 5 months after the last dose
- Blood glucose; Baseline, and as clinically indicated, for at least up to 5 months after the last dose
- Pituitary and adrenal function tests; Baseline, and as clinically indicated, especially when on physiologic replacement therapy and for at least up to 5 months after the last dose
- GVHD or solid organ transplant rejection (if applicable); As clinically indicated
- Clinical toxicity assessment for infusion reactions, fatigue, immune-mediated reactions, including diarrhea, rash, endocrine, respiratory, musculoskeletal, neurologic, cardiac and ophthalmic effects; At each visit and for at least up to 5 months after the last dose
- Grade toxicity using the current [NCI-CTCAE \(Common Terminology Criteria for Adverse Events\) version](#)

[back to top](#)



**J - Administrative Information**

Approximate Patient Visit	1 hour
Pharmacy Workload (average time per visit)	18.700 minutes
Nursing Workload (average time per visit)	40.750 minutes

[back to top](#)

**K - References**

Motzer RJ, Tannir NM, McDermott DF et al. Nivolumab plus ipilimumab versus sunitinib in advanced renal-cell carcinoma. *N Engl J Med* 2018;378:1277-90. DOI: .1056/NEJMoa1712126

Nivolumab drug monograph, Ontario Health (Cancer Care Ontario).

**August 2024** Updated Dosing, Pregnancy/Lactation, and Monitoring sections

[back to top](#)

**M - Disclaimer****Regimen Abstracts**

*A Regimen Abstract is an abbreviated version of a Regimen Monograph and contains only top level information on usage, dosing, schedule, cycle length and special notes (if available). It is intended for healthcare providers and is to be used for informational purposes only. It is not intended to constitute or be a substitute for medical advice, and all uses of the Regimen Abstract are subject to clinical judgment. Such information is provided on an "as-is" basis, without any representation, warranty, or condition, whether express, or implied, statutory or otherwise, as to the information's quality, accuracy, currency, completeness, or reliability, and Cancer Care Ontario disclaims all liability for the use of this information, and for any claims, actions, demands or suits that arise from such use.*

*Information in regimen abstracts is accurate to the extent of the ST-QBP regimen master listings, and has not undergone the full review process of a regimen monograph. Full regimen monographs will be published for each ST-QBP regimen as they are developed.*

**Regimen Monographs**

Refer to the [New Drug Funding Program](#) or [Ontario Public Drug Programs](#) websites for the most up-to-date public funding information.

*The information set out in the drug monographs, regimen monographs, appendices and symptom management information (for health professionals) contained in the Drug Formulary (the "Formulary") is intended for healthcare providers and is to be used for informational purposes only. The information is not intended to cover all possible uses,*

---

*directions, precautions, drug interactions or adverse effects of a particular drug, nor should it be construed to indicate that use of a particular drug is safe, appropriate or effective for a given condition. The information in the Formulary is not intended to constitute or be a substitute for medical advice and should not be relied upon in any such regard. All uses of the Formulary are subject to clinical judgment and actual prescribing patterns may not follow the information provided in the Formulary.*

*The format and content of the drug monographs, regimen monographs, appendices and symptom management information contained in the Formulary will change as they are reviewed and revised on a periodic basis. The date of last revision will be visible on each page of the monograph and regimen. Since standards of usage are constantly evolving, it is advised that the Formulary not be used as the sole source of information. It is strongly recommended that original references or product monograph be consulted prior to using a chemotherapy regimen for the first time.*

*Some Formulary documents, such as the medication information sheets, regimen information sheets and symptom management information (for patients), are intended for patients. Patients should always consult with their healthcare provider if they have questions regarding any information set out in the Formulary documents.*

*While care has been taken in the preparation of the information contained in the Formulary, such information is provided on an "as-is" basis, without any representation, warranty, or condition, whether express, or implied, statutory or otherwise, as to the information's quality, accuracy, currency, completeness, or reliability.*

*CCO and the Formulary's content providers shall have no liability, whether direct, indirect, consequential, contingent, special, or incidental, related to or arising from the information in the Formulary or its use thereof, whether based on breach of contract or tort (including negligence), and even if advised of the possibility thereof. Anyone using the information in the Formulary does so at his or her own risk, and by using such information, agrees to indemnify CCO and its content providers from any and all liability, loss, damages, costs and expenses (including legal fees and expenses) arising from such person's use of the information in the Formulary.*

[back to top](#)