

## Moxifloxacin IV Shortage

### Suppliers of injectable moxifloxacin in Canada<sup>1</sup>:

DIN	Brand Name	Manufacturer	Concentration
02246414	Avelox I.V.	BAY	400 mg/ 250 ml

### Health Canada-approved indications for IV moxifloxacin<sup>2</sup>:

- Treatment of the following infections due to susceptible bacteria when the intravenous route of administration is advantageous to the patient:
  - respiratory tract
  - complicated intra-abdominal
  - complicated skin and skin structure

### Alternative moxifloxacin formulations:

- **Oral moxifloxacin is ~ 90 % bioavailable.<sup>3</sup> Reserve stock of IV moxifloxacin for situations in which there is a compelling indication for the injectable formulation e.g., patients who are strictly NPO and no effective alternative available.<sup>4</sup> Step down to oral moxifloxacin as soon as possible.<sup>4</sup>**
- **Moxifloxacin is not listed as the drug of choice for any commonly treated infections,<sup>4-6</sup> but may be useful in high-risk acute exacerbation of chronic obstructive pulmonary disease (AECOPD), when there are contraindications to other therapies (e.g. true penicillin allergies) and in infections resistant or likely to be resistant to other therapies.<sup>6</sup>**
- Bugs and Drugs<sup>5</sup> does not list moxifloxacin as an option for treatment of community-acquired pneumonia (CAP) since:
  - the anaerobic coverage provided by moxifloxacin is not required for CAP
  - there is an increased risk of *C. difficile* infection associated with moxifloxacin compared to levofloxacin
- there are no studies on short-course moxifloxacin therapy in CAP
- If tablets cannot be swallowed, an oral liquid can be compounded:

### Moxifloxacin 20mg/ml Oral Suspension<sup>7</sup>

For 100 ml:

Moxifloxacin*	2 g
Ora-Plus	50 ml
Ora-Sweet or Ora-Sweet SF qs	100 ml

\*powder or crushed tablets

#### Directions:

- Add ~ 20 ml of Ora-Plus to moxifloxacin and mix until a smooth paste is formed.
- Add the remainder of the Ora-Plus and mix well.
- Add either the Ora-Sweet or the Ora-Sweet SF to volume and mix well.
- Package in a tight, light-resistant container.
- Shake well before use.
- Beyond-use date: up to 90 days when stored at room temperature.

- If the IV formulation is absolutely necessary, a parenteral product can be compounded:

### Moxifloxacin 400 mg/250 ml Intravenous Injection<sup>8</sup>

For 250 ml:

Moxifloxacin HCl		400 mg
Sodium Chloride		2 g
Sodium hydroxide/hydrochloric acid	qs	pH 4.1 to 4.6
Sterile Water for Injection	qs	250 ml

#### Directions:

- Prepare in laminar airflow hood using strict aseptic procedures.
- Dissolve the moxifloxacin and sodium chloride in about 225 mL of sterile water for injection.
- Adjust the pH to the range of 4.1 to 4.6 with either sodium hydroxide or hydrochloric acid.
- Add sufficient sterile water for injection to final volume and mix well.
- Sterile filter into appropriate tight, light-resistant sterile containers. Solution should be yellow in colour and clear.<sup>9</sup>
- Do not refrigerate – precipitation may occur.
- If no sterility test performed, a beyond-use date of 24 hours at room temperature should be applied.<sup>10</sup>

### Therapeutic Alternatives<sup>3-5</sup>

Infection Type	IV Alternatives
<b>Respiratory Tract</b>  <i>Dosing, duration and choice depend on indication and severity. Consult references.</i>	<ul style="list-style-type: none"> <li>• [ampicillin OR cefuroxime] + azithromycin</li> <li>• ceftriaxone +/- azithromycin</li> <li>• piperacillin/tazobactam</li> <li>• vancomycin if suspected MRSA</li> </ul>
<b>Complicated Intra-Abdominal</b>  <i>Dosing, duration and choice depend on indication and severity. Consult references.</i>	<ul style="list-style-type: none"> <li>• levofloxacin- <i>reserve for patients without alternative options</i></li> <li>• ampicillin + gentamicin + metronidazole</li> <li>• ceftriaxone +/- metronidazole</li> <li>• ciprofloxacin + metronidazole +/- vancomycin</li> <li>• imipenem-cilastin</li> </ul>
<b>Complicated Skin and Skin Structure</b>  <i>Dosing, duration and choice depend on indication and severity. Consult references.</i>	<ul style="list-style-type: none"> <li>• cefazolin</li> <li>• ceftriaxone</li> <li>• clindamycin</li> <li>• penicillins (ampicillin, cloxacillin, penicillin G)</li> <li>• piperacillin/tazobactam + clindamycin</li> <li>• vancomycin if suspected MRSA</li> </ul>

## References:

1. Health Canada. Drug Product Database Online Query. Ottawa, ON: Health Canada; [cited 23 Jul 2017]. Available from: <http://webprod5.hc-sc.gc.ca/dpd-bdpp/index-eng.jsp>
2. Product monograph for Avelox I.V. Bayer Inc. Mississauga, ON L4W 5R6. May 2017.
3. Moxifloxacin. In: DRUGDEX System (Micromedex 2.0). Greenwood Village, CO: Truven Health Analytics; Available by subscription at <http://www.micromedexsolutions.com>. Accessed July, 2017.
4. NB Anti-infective Stewardship Committee. Antimicrobial treatment guidelines for common infections. [Jun 2016; cited 24 Jul 2017]. Available at [http://www.vitalitenb.ca/sites/default/files/documents/medecins/antimicrobial\\_treatment\\_guidelines\\_for\\_common\\_infections\\_-\\_jun2016.pdf](http://www.vitalitenb.ca/sites/default/files/documents/medecins/antimicrobial_treatment_guidelines_for_common_infections_-_jun2016.pdf)
5. Blondel-Hill E, Fryters S. Bugs and Drugs app. Edmonton: Alberta Health Services; c2017. [updated 27 Apr 2017; cited July 2017].
6. RxFiles. 11th ed. Saskatoon, SK: Saskatoon Health Region; 2017. [cited 23 Jul 2017] Available from: [www.RxFiles.ca](http://www.RxFiles.ca).
7. Loyd A. Moxifloxacin 20-mg/mL oral liquid. IJPC. 2009;13(4), 337.
8. Loyd A. Moxifloxacin hydrochloride 1.6-mg/ml intravenous injection. IJPC 2015; 19(4): 329.
9. Handbook of Injectable Drugs BOOK ONLINE. Jackson, WY, Teton Data Systems, 2017. Based on: Trissel LA, editor. Handbook of Injectable Drugs 2017. 19th ed. Bethesda, MD: American Society of Health-System Pharmacists; 2015. STAT!Ref Medical Reference Library. Accessed 2017 Jul 21.
10. Second Supplement to U.S. Pharmacopeia 31/National Formulary 26. Rockville, MD: U.S. Pharmacopeial Convention, Inc; 2008:3705.