

# A COLLABORATIVE APPROACH FOR THE IMPLEMENTATION OF ELASTOMERIC INFUSOR PUMPS IN CANCER CARE CLINIC

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## DESCRIPTION

Patients receiving cancer systemic therapy with chemotherapy drug Fluorouracil (5FU) have a portion of the treatment protocol administered as an intravenous (IV) continuous infusion in the home setting. Humber River Health (HRH) has been collaborating with Home and Community Care (HCC) for specialized oncology trained home care nurse to start and disconnect 5FU infusions using Continuous Ambulatory Drug Delivery (CADD) pumps. From January 2022 to May 2023, recurring challenges with supply and drug delivery, home care nurse staffing resources, and CADD pump infusion related issues resulted in 15 patient safety incident reports requiring follow-up investigation.

## OBJECTIVE

To use a collaborative approach to improve infusion safety with Elastomeric Infusor Pumps at HRH Cancer Care Clinic.

## ACTIONS TAKEN

The team completed the following:

1. Environmental scan and business case proposal to implement elastomeric infusor pumps at HRH Cancer Care Clinic.
2. Stakeholder meetings with program leaders, nursing, pharmacy, elastomeric infusor vendor, and HCC (to provide chemo drug spill kits and infusor disconnects).
3. Revision of treatment plan order sets by informatics analysts and stakeholder testing.
4. Pharmacy and nursing education.
5. Development of patient education and transition letter.
6. Communication plan to internal and external stakeholders (e.g., Emergency Department & HCC).
7. Policy update and continued monitoring post implementation.

## SUMMARY OF RESULTS

In October 2023, 525 elastomeric infusor pumps have been dispensed. Post four-month implementation of this change has eliminated the previously reported patient safety incidents related to supply and drug delivery, home care nursing staff resources, and CADD pumps. Two-infusor related patient safety incidents has led to reinforcement of nursing education/safety checks. Telephone calls are made to patients after their first infusor starts to review understanding of education received.

Figure 1. Baxter™ Elastomeric Infusor Pump used at HRH Cancer Care Clinic.



Fluorouracil 5,800 mg In Dextrose 5% Infusor @ 5 ml/hr IV AS DIRECTED SCH  
Current Rate: 5 ml/hr  
Bag Volume: 230 ml  
Duration: 46 hr  
Dosing Weight: 2.39 m2  
Trade: Adrucil Dextrose 5% Infusor Bottle  
Rx#: W8617653

**Label Comments:**  
# 3 to administer. Fluorouracil 2400 mg/m2 IV continuous infusion over 46 hours. Start Date: \_\_\_\_\_ Start Time: \_\_\_\_\_ Disconnect and discard after infusion completed on Day 3: \_\_\_\_\_  
\*\*Entire content of infusor to be administered.\*\*  
\*\*Antineoplastic material - Cytotoxic hazardous medication.\*\*

Source		Fluorouracil 5,800 mg In Dextrose 5% Infusor 114 ml @ 5 ml/hr IV AS DIRECTED SCH
<b>Assessments</b>		
MAR IDC Elastomeric Infusor Pump		
Independent Double Check		
**Included in the IDC process are the following:**		
1. Elastomeric infusor pump to be checked independently by 2 cancer systemic therapy certified RNs		
2. Cancer systemic therapy dose corresponds to order		
3. Cancer systemic therapy dose, volume, rate, and route on the label matches the order and check expiry date		
4. Check elastomeric infusor pump is correct type (colour top for appropriate rate), no air-in-line, no leaks, no cracks, and no particulates		
5. Check 2 drops of fluid comes out of the Luer Lock connector when cap taken off prior to connecting to the CVAD/IVAD		
6. Check clamps are open after connecting to the CVAD/IVAD and no kinks in infusor tubing		
7. Check flow restrictor is secured to patient's skin with transparent semi-permeable dressing.		
8. Check patient label has documented Start Date, Start Time, and Date of disconnect.		
Elastomeric Infusor Pump Verification		
Completed	Yes	
<b>Infusion/Titration</b>		
Infusion IV Comment		
Dose Rate	5	
Cumulative Medication (mg)		
Status/Increase/Decrease	Started	
Elapsed Time	0m	
<b>Intake</b>		
Volume	230	
IV Intake		
Total Intake		
Total Intake (RX)		
Volume Adjustment/Waste	0	
<b>Reason for Change/Adjustment</b>		
Reason for Pause		
Reason for Titration		

Figure 2. Medication Administration Record (MAR) view and Independent Double Checks (IDC) required for High Alert Medication & Elastomeric Infusor Pump

Incidences	CADD Pumps Initiated by Home and Community Care
Supplies & Drug Delivery	<ol style="list-style-type: none"> <li>1. No supplies or drug delivered to patient home (2 cases).</li> <li>2. Patient received another patient's supplies and 5FU drug (2 cases).</li> <li>3. 5FU drug delivered to patient's doorstep and found frozen.</li> </ol>
Home Care Nurse Staffing Resources	<ol style="list-style-type: none"> <li>1. No home care nurse available/assigned to go to the patient home to start 5FU infusion (3 cases).</li> </ol>
CADD pump	<ol style="list-style-type: none"> <li>1. CADD pump 5FU infusion completed in 24 hours instead of 46 hours resulting in symptoms and hospital admission.</li> <li>2. CADD pump reported to have stopped working, estimated 50% of 5FU drug volume still in the medication bag.</li> <li>3. At time of disconnect of CADD pump, 5FU drug volume found 50%-75% full in the medication bag (4 cases).</li> <li>4. CADD pump finished 4 hours earlier than expected time.</li> </ol>

Table 1. Incident Reports from January 2022-May 2023.

## LESSONS LEARNED

Collaboration and commitment among stakeholders to implement elastomeric infusor pumps has eliminated previously reported patient safety incidents.



**Humber River Health**  
HUMBER RIVER HOSPITAL  
CANCER CARE CLINIC

**YOUR HOME CHEMOTHERAPY INFUSION USING ELASTOMERIC INFUSOR™ PUMP**

You will receive part of your chemotherapy medication (Fluorouracil (5FU)) through an infusion device called an **Elastomeric Infusor™ pump**. Your Cancer Care Clinic nurse will start this Infusor™. When the Infusor™ is complete, it will be disconnected at a home care clinic (see instructions provided by your Home & Community Care Support Services care coordinator).

The following provides you information on how to care for your infusion device:

	<b>Flow Regulator/Connector:</b> Your nurse will tape the connector to your skin so that it stays at skin temperature. The connector should be close to the same level as your Infusor™ so that the chemotherapy flows at the proper rate. Keep the Infusor™ in the carrying pouch.
	<b>Check the Infusor™ balloon:</b> The chemotherapy will be infusing at a slow rate, by gently pushing the medication through the tubing. Check in the morning and evening using the progression lines on the Infusor™ as your guide that the balloon is deflating. Check that the tubing is not kinked or twisted, and that the connector is taped to your skin.
	<b>Temperature:</b> Keep the Infusor™ at room temperature. If the Infusor™ gets too hot or too cold, it will change the rate of the flow. Keep it away from direct sunlight.
	<b>Bathing/Showering:</b> Do not get the Infusor™ wet. You can take a sponge bath when the Infusor™ is connected.
	<b>Sleep or Exercise:</b> At bedtime, place the Infusor™ at the same level to where the device connects to your PICC line or Port. It can be placed on its side and next to your pillow. When exercising, ensure the Infusor™ is kept at room temperature and does not get wet.

**Contact the Cancer Care Clinic or your Home & Community Care Support Services if:**

- The Infusor™ balloon is not shrinking/deflating or if it has burst.
- The Infusor™ is finished many hours before completion due date (balloon deflated too fast).
- The Infusor™ is leaking: Use the spill kit provided, wear gloves, stop the infusion by clamping your venous access device e.g. PICC line or PORT, and place the Infusor™ in a plastic bag.
  - If the medication gets in contact with your skin, wash the area with warm soapy water
- Refer to "Chemotherapy Safety and You: What to do at Home" for safe handling instructions.
- You have the following symptoms: fever (temperature 38°C or higher by mouth), redness, swelling, discharge, pain, numbness/tingling at the PICC line or Port site, blood in the tubing.

<b>During Business Hours</b> (Monday-Friday 8am – 4pm)	<b>After Hours/Weekends/ Holidays</b> (Any questions or concerns about the Infusor)
Call Cancer Care Clinic 416-242-1000 ext. 21518	Call Home & Community Care Support Services at 310-2222 (no area code required) ; Available 24/7

If you have additional questions, speak with your nurse or doctor.

June 2023      Cancer Care Clinic      416-242-1000 ext. 21500

Figure 3. HRH Elastomeric Infusor Pump Patient Education handout.

Incidences	Elastomeric Infusor Pumps Initiated in Cancer Care Clinic
Elastomeric Infusor pump	<ol style="list-style-type: none"> <li>1. At time of disconnect of elastomeric infusor pump, IV port in which the infusor is connected found clamped, 5FU drug volume found 100% full in infusor.</li> <li>2. At time of disconnect of elastomeric infusor, 5FU drug volume found 75% full in the infusor. Patient stated they received education for positioning and monitoring of the elastomeric infusor but did not notice not infusing.</li> </ol>

Table 2. Incident Reports from June 2023-September 2023.