

# Subcutaneous Elastomeric Infusers in Palliative Care

Glen Maddison  
Medical Director St. Joseph's Hospice  
Sarnia



# Faculty/Presenter Disclosure

- **Faculty:** Dr. Glen Maddison
- **Relationships with financial sponsors:**
  - Grants/Research Support: none
  - Speakers Bureau/Honoraria: Previous Honorarium for speaking at a workshop from Bayer Pharmaceuticals
  - Consulting Fees: none
  - Patents: none
  - Other: none

# Disclosure of Financial Support

- This program has received financial support from Bayer Pharmaceuticals in the form of speaker honorarium and travel expenses.
- **Potential for conflict(s) of interest:**
  - Dr. Glen Maddison has received funding from Bayer Pharmaceuticals

# Mitigating Potential Bias

- I do not plan to mention the name of the manufacturing company of the devices unless asked. There is also no alternative manufacturer

# Objectives

- ▶ Describe the history of infusion devices
- ▶ Compare it to other subcutaneous infusion devices
- ▶ Explain the use of the elastomeric infuser in palliative/hospice care
- ▶ Discuss the pros and cons of the device
- ▶ Prescribing practices
- ▶ Case examples

# History

- ▶ Continuous Subcutaneous Infusers (CSCI)
  - ▶ Invented in Britain in 70's
  - ▶ Various formats - most common battery powered syringe drivers
  - ▶ Used extensively in the UK and Australia
  - ▶ More recently CADD and elastomeric infusers



# Nurse with Syringe Driver in India





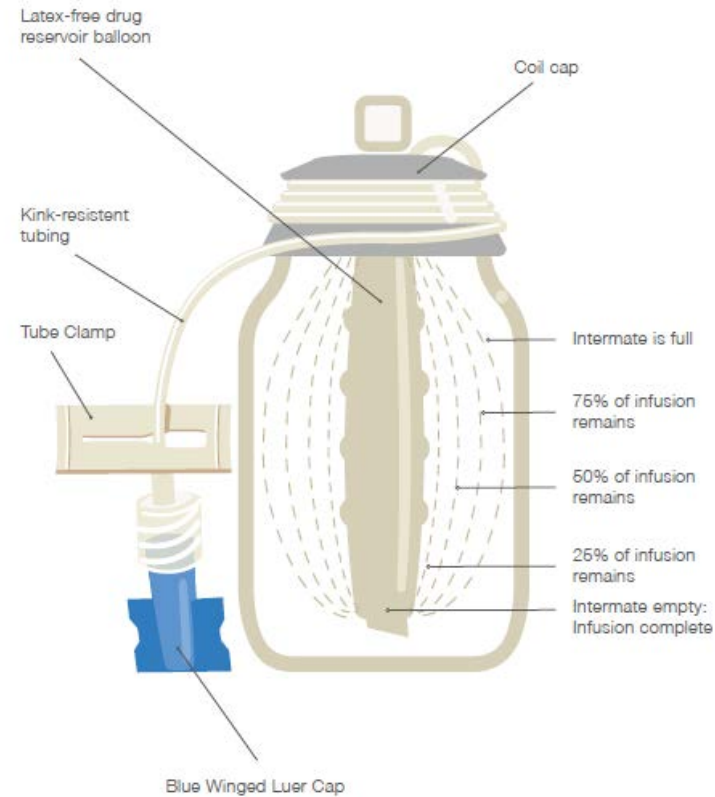
# Dr. Rajagopal





# What is an elastomeric infuser ?

- ▶ Elastomeric infusion devices have been manufactured for ~30 years in North America
- ▶ Common uses include: chemotherapy, antimicrobials, analgesics and palliative care
- ▶ Plastic non-mechanical device with a elastomeric balloon which is filled with drug and diluent
- ▶ Each elastomeric has an internal flow regulator eliminating the need for programming and reducing errors
- ▶ An elastomer is a polymer with viscoelasticity



# Key Features & Benefits



## Patient Benefits:

- Small device
- Light-weight
- Ergonomic design
- User-friendliness
- Minimal interference with daily activities
- Limited impact on sleep
- No technical issues

## Clinician Benefits:

- Improves patient safety (no programming required)
- Easy to use
- 24 Hour infusion
- Efficiencies with medication wastage

# Elastomeric Pump

- ▶ Non-electronic infusion pump
- ▶ Continuous infusion over 24 hours
- ▶ One time use
- ▶ Elastomeric balloon consistently deflates infusing medication to the patient at fixed rate (flow restrictor)
- ▶ Subcutaneous or Intravenous
- ▶ Up to 6 drugs mixed together (avoids multiple administration sites)
- ▶ Well accepted by patients and family
- ▶ Nurse controlled - less opioid toxicity compared to electronic pumps (CADD)



# Sarnia History

- ▶ Approximately 14 years of use in the hospital and hospice
- ▶ Increasingly used in the home and Long Term Care centres
- ▶ Our team uses more than 1000 devices per year



**HOSPICE**

# Pros and Cons

## ▶ Pros

- ▶ Able to adjust and customize drug combination daily
- ▶ Non-electronic, no additional sounds or alerts during infusion
- ▶ Light-weight and portable

## ▶ Cons

- ▶ Cost
- ▶ Has to be made daily by pharmacy under sterile conditions (hood)
- ▶ Volume (65ml)

# Frequent Medications

- ▶ Haloperidol
- ▶ Metoclopropamide
- ▶ Methotrimeprazine
- ▶ Opioids (Morphine, Hydromorphone, Fentanyl, Sufentanil)
- ▶ Dexamethasone
- ▶ Midazolam



# Less Frequent Medications

- ▶ Octreotide
- ▶ Scopolamine/Glycopyrrolate
- ▶ Ranitidine
- ▶ Ketamine
- ▶ Ketorolac
- ▶ Phenobarbital
- ▶ Magnesium

# Nursing

- ▶ Prefer over q4h ATC dosing (avoid peaks and valleys)
- ▶ Breakthrough given using side port of subcutaneous device
- ▶ Easier to manage one site rather than multiple
- ▶ Don't have to wake patient looking for subcutaneous site for intermittent dosing



# Siting

- ▶ Preferred sites
  - ▶ Ant. Chest wall, anterolat upper arms, supra or interscapular area
- ▶ Alternative sites
  - ▶ Ant. Abdominal wall, ant. Surface of thigh
- ▶ Areas to avoid
  - ▶ Edema, skin folds, breasts, broken inflamed or infected skin, irradiated areas, over bones or joints, scarring

# Malignant Bowel Obstruction



- ▶ 64 year old - metastatic ovarian cancer
- ▶ Presents with non-surgical MBO
- ▶ Wants to go home
- ▶ CSCI initiated with  
Dexamethasone  
8mg, Haloperidol 4mg, Morphine  
20mg, Octreotide 300mcg,  
Ranitidine 100mg

# Pain Crisis



- ▶ 55 year old male
  - ▶ NSCLC - RUL mass
  - ▶ Severe pain right arm
- ▶ CRF Creat 300
- ▶ RX HM Contin 30 mg bid, HM BT 8mg x 10
- ▶ Increased agitation and jerky movements
- ▶ Dx Neuropathic pain and Opioid tx
- ▶ RX - hydration and CSCI
  - ▶ Sufentanil 20mcg, Midazolam 5mg, Ketamine 100mg
  - ▶ +Methadone 5mg po bid

# Creutzfeldt Jacob Disease



- ▶ 60 year old male transferred from ICU with severe agitation
- ▶ CSCI - Methotrimeprazine 150mg, Midazolam 20mg
- ▶ After a week on PCU transferred home on daily CSCI
- ▶ Died 1 week later - very comfortable



# Palliative Sedation



- ▶ 62 year old - ALS on continuous BIPAP
- ▶ Increasing complications and decreasing quality of life
- ▶ Patient decides to stop Bipap
- ▶ After saying goodbye, give HM 2mg sc and Midazolam 5mg sc then removed BiPap initiating CSCI with HM 20 mg and Midazolam 20mg
- ▶ Patient dies comfortable 4 hours later

# Other situations

- ▶ Status epilepticus
- ▶ Patients who need meds but can't swallow e.g steroids, antiepileptic meds
- ▶ Terminal delirium - e.g midazolam, methotrimeprazine

# Conclusion

- ▶ CSCI with the use of elastomeric pumps is a simple, easy and practical method that can offer significant benefit to the care of the terminally ill



Questions