Changing Cultures: Overview & Implementation of the Subcutaneous Syringe Driver for Comfort Care Patients

Janet Batt MA, CNS, RN-BC
Hoag Hospital CARES/Palliative Care Team
Who Am I Then?

- Nursing for 25 years in London
- Medicine, surgery, pediatrics, community nursing
- Community Hospice CNS, Inpatient Hospice, Palliative Care CNS at London teaching Hospital.
- Oncology, HIV, teaching, certified
- Diploma Palliative Care.
- Certified Counselling, cultural issues. Pain and advanced symptom control
- Advance pain and symptom control – Oxford University and WHO
- Masters degree in Death and Society – Reading University
- Clinical Ethics training UW
- Case Management certified CSU
- Board Certified – Pain Management
- Southern California Cancer Pain Initiative Board member
OBJECTIVES

• Discuss the use of the subcutaneous syringe driver at end of life in the Hospital setting
• Promote excellence
• Discuss culture change and challenges in implementation of Evidence Based Practice
• Spread the word! Be the change.
The End of life patient?
History- Palliative Care is NOT New
But where are the drips?
Subcutaneous Syringe Driver
Palliation at End of Life

• Dying is still seen as a medical failure rather than a natural and normal process.
• We are still focused on technology, investigations and interventions, even at end of life.
• We need to move forward or is it backward (to palliation)
Cultural Issues

• Not good at talking about death and dying
• Families often have to make decisions in an emergency situation/ breathing machine/tube feeding
• No advance directives/POLST
• High technology – Life support
• Death is natural/normal and should not be viewed as a medical failure
• What we see as prolonging life is often prolonged dying
• Intravenous therapy driven (even if patients can swallow)
The “Good” Death

- Advance care planning
- Place of death choice – likely home
- Patient’s wishes/needs met
- Dignity
- Pain and symptom control
- Family supportive
- De-MEDICALIZED
Progress?

• Whilst we have made progress at end of life care, especially with Hospice, there is still much to do... in the acute Hospital setting
The IV Culture

• We still continue to give IV medications for all conditions (even if patients are able to swallow!)
• The need for speed
• We still find narcotics prescribed IV PRN rather than around the clock analgesia. This may be quicker, but it is shorter acting.
• ‘Chasing the pain’
The IV Culture (cont’d)

• IV is painful. Sometimes resisted in dying patients under USS
• Restraints often used if delirious/agitated
• Using different infusions for different meds.
  i.e. Morphine/Fentanyl/Midazolam
Advantages

• No case reports for complications of S/C meds/pumps
• Reduces costs significantly
• Ultimately patient comfort
• Takes away the medicalization of dying
• Loved ones can get near to patient (without IV poles/pumps/tubes) fear of touching
Other Advantages

• Noise/alarms of IV infusers
• Used worldwide for ambulatory cancer patients
• (anti-emetics) reduces length of stay and being stuck in bed on IV
• Ethical: Reduces excessive/quick titration of continuous Morphine drips
Indications For Use

• Typically used for those at the end of life where the oral route or rectal route is unacceptable. Indications also include intractable vomiting, bowel obstruction, difficulty in swallowing and coma.
Evidence Base


Absorption

• Morphine shown to have similar absorption characteristics when given by either SQ or IV infusion route

• Waldman.CS et al. Serum Morphine levels: a comparison between continuous SQ infusion and continuous IV infusion. Anesthesia 1984.39: 768-71
• ‘We need to practice with a consciousness that high tech does not always translate into quality of care’
• ‘There is undeniable evidence that IV opioid infusions ought generally to be abandoned in favor of SQ infusions in the management of chronic pain in terminal patients’
• Johanson. 1991
# 028 Subcutaneous Opioid Infusions, 2nd ed

**FAST FACTS AND CONCEPTS #028 PDF**

**Author(s):** David E Weissman MD

**Background** A parenteral opioid infusion is the standard of care for managing moderate-severe pain or dyspnea when the oral/rectal route is unavailable and/or frequent dose adjustments are needed. As death nears, the burden of maintaining intravenous (IV) access, especially in the home setting, can be enormous. An alternative delivery route is the subcutaneous (SQ) route for continuous infusions. Patient Controlled Analgesia (PCA), or intermittent bolus opioid injections.

**Drugs** Morphine, hydromorphone (Dilaudid), fentanyl, and sufentanil can all be safely administered as SQ bolus doses or continuous SQ infusion. Methadone infusions cause frequent skin irritation; one case series reported successful use of methadone with concurrent dexamethasone infusion and frequent site rotation.

**Dosing equivalents** Dose conversion ratios between the IV and SQ route for all the above listed opioids are not well established. For morphine, the ratio appears to be close to 1 mg IV = 1 mg SQ.

**Pharmacokinetics** SQ infusions can produce the same blood levels as chronic IV infusions. There is no data to suggest that cachectic, febrile or hypotensive patients have problems with drug absorption.

**Volume and Drug Choice** The limiting feature of a SQ infusion is the infusion rate; in general, SQ tissue can absorb up to 3 ml/hr. At low opioid requirements morphine is generally the drug of choice based on availability and cost; a switch to hydromorphone is indicated for a high opioid requirement due to its higher intrinsically potency (~6:1), thus the need for a smaller infusion volume.

**Administration** Use a 25 or 27 gauge butterfly needle—place on the upper arm, shoulder, abdomen or thigh. Avoid the chest wall to prevent iatrogenic pneumothorax during needle insertion. The needle can be left indefinitely without site change unless a local reaction develops—typically, patients can keep the same needle in place for up to one week at a time.

**Toxicity** Local skin irritation, itching, skin bleeding or infection can occur. Of these, skin irritation is the most common, managed by a needle site change.

**Patient acceptance** Patients readily appreciate the ease of SQ administration as an alternative to IV access.

**References**


**Fast Facts and Concepts** are edited by Drew A. Rosselle MD, Palliative Care Center, Medical College of Wisconsin. For more information write to: drossel@mcw.edu. More information, as well as the complete set of Fast Facts, are available at EPERC: www.eperc.mcw.edu.


**Disclaimer:** Fast Facts and Concepts provide educational information. This information is not medical advice. Health care providers should exercise their own independent clinical judgment. Some Fast Facts cite the use of a product in a dosage, for an indication, or in a manner other than that recommended in the product labeling. Accordingly, the official prescribing information should be consulted before any such product is used.

**ACGME Competencies:** Medical Knowledge, Patient Care

**Keyword(s):** Pain - Opioids
Evidence

• The evidence has been out there for decades. Many, many research articles. Some U.S.
• IV therapy has been deemed poor practice
• No new articles? – already proven
• What will it take?
Cost Savings

- IV versus SQ opioid infusions for cancer pain.
- Cost savings originally under $100 a week for delivery and maintenance of SQ (today's cost = $166.03)
- IV $450 week (today's cost = $747.13)
Comfort Care
Comfort care order set

• In most Hospital settings a pathway or specific order set is used for those in the last few days of life to ensure comfort and dignity

• We have this at Hoag:
  – Medication order set for symptom management
  – We stop interventions, routine labs, vitals
  – Remove monitors, tubes, oximetry, SCD’s etc.
  – Pet visitation, oral food/fluids
COMFORT CARE PATHWAY (formerly Supportive Care Pathway)

A THERAPEUTICALLY EQUIVALENT PRODUCT, WHICH HAS BEEN APPROVED BY THE PHARMACY AND THERAPEUTICS COMMITTEE OF THE MEDICAL STAFF MAY BE DISPENSED AND ADMINISTERED UNLESS OTHERWISE SPECIFIED. CROSS OUT ANY ORDERS THAT DO NOT APPLY. MARK CHECK BOXES FOR ORDERS THAT DO APPLY. DOCTOR, PLEASE STATE PERTINENT CLINICAL INFORMATION WHEN ORDERING RADIOLOGY PROCEDURES.

DATE
TIME

NUTRITION: □ Diet as tolerated (may bring food from home as tolerated) □ D/C Enteral/Parenteral feeding OR □ Continue at __________ ml/hr

LABORATORY: No routine labs, cultures, x-rays or blood gases

RESPIRATORY THERAPY: □ O₂ @ 2L/min N.C. PRN shortness of breath; titrate flow for comfort

NURSING CARE:
Activity: Transfer as appropriate to ________________
Treatment:
□ DNR / NO CODE (Complete Pre-Printed DNR order set)
□ Implement Comfort Care Pathway after patient/family discussion; notify all treating physicians
□ Oral care: Swab mouth with water and oral swab q 1 hr evdence of dry mouth. For secretions, avoid suctioning and instead refer to "Medications" on next page
□ Initiate Skin Care Protocol, including air mattress
□ Vital Signs: □ D/C Vital Signs, weights, I&O's. Assess for pain and respiratory distress every 4 hours. For secretions, avoid suctioning and instead refer to "Medications" on next page
□ Offer to remove Foley catheter and replace with condom catheter or incontinence pad

CONSULTS: □ Palliative Care Consultation to Advise on (check one or both below):
□ Goals of Care Clarification □ Addressing Uncontrolled Symptoms
(Clinical Coordinator: please enter computer order and text-page team at 203-1267)
□ No One Dies Alone Program: Page Coordinator at long range pager # 28273
□ Pastoral Care - page on-call chaplain □ Hospice Consult □ Pet visitation per protocol

IV THERAPY: □ D/C IV fluids OR □ Decrease IV fluids to □ 25 ml/hr, □ 40 ml/hr, □ __________ ml/hr
□ If IV access lost, do not replace if patient comfortable on SCI/FO meds

ICD ACTIVITY: □ If patient has an implantable cardiac defibrillator, contact Arrhythmia Center at Ext.48111 to disable

SKILLED VENTILATOR DISCONTINUATION:
1. Titration trial: Decrease rate and tidal volume / pressure support setting by 50% for 30 seconds.
2. Symptom Control: If patient showing sign of discomfort, refer to orders on page 2 for Morphine and Ativan boluses. When patient comfortable on 50% tidal volume / pressure support, go to step 3.
3. Extubation:
   □ Extubate patient to □ room air or □ __________% inspired oxygen
   □ T-piece on □ room air or □ __________% inspired oxygen
   □ Other respiratory care or ventilator orders:

CONTINUED ON NEXT PAGE...

PS 7600

PHYSICIAN ORDER

[1611]
The Subcutaneous Syringe Driver

Summary

• Is not new
• Is evidence based.
• Cost effective
• De-medicalizes the dying process
• Increases patient comfort
• Discrete and dignified
Not Indicated

• Terminal extubations in CCU; lines in situ and not expected to survive beyond a couple of hours
• If stable would transfer to med/surg and syringe driver would then be considered
• On comfort care and imminently dying or likely that day
• If being discharged to Hospice that day
McKinley T34 Syringe Driver

- Studied widely and found to be the most safe and reliable of all syringe pumps.
- Battery operated and portable
- Refilled every 24 hours- Holds 10-50ml syringes (up to 30ml with lockbox)
- Pump identifies type of syringe and size. Runs Mls per hour but can be set and locked to run over 24 hours only. No room for errors
- No bolus button. PRN’s SQ/sublingual
Why This Pump?

• Most commonly used around the world. Comparative studies from various countries have evaluated many drivers in terms of its safety, ease of use, availability and cost.
• The syringe driver has clear cost benefits over cartridge systems
• Many CADD pumps. Also used IV. Problems with different pumps (ml/hr, or ml/24hr) risk of error
Estimates

• McKinley pump = $1850 (includes lock box which is $200), syringe 10c, fine bore tubing/needle = $2.50

• CADD pump = $2900, cartridge/tubing $20-25
The Journey Begins

• Evidenced based and Best practice = Yes
• Are Hospices still using IV’s? = Some
• Plan: Set the bar for U.S Hospitals. What gives?
• Is everyone waiting for someone else to start?
• Culture change - You are the change – We are the change!
• Used since 1975 in U.K. In hospital and at home. Now used throughout the world including U.S (though still not in acute hospitals)
• 684 Hospices uses subcutaneous drivers- Usually CADD
• Major teaching Hospitals contacted by Dr. Selecky (East and west coast) No known use in Hospitals
• DME agencies contacted
• McKinley- CME America availability found 2010 – one company used around the world. No RFP needed.
Palliative care drugs, used out of license worldwide. Palliative Care Drug Formulary
www.palliativedrugs.com
Talking About It

- My first year at Hoag (team of one) 2007
- Presented use of syringe drivers to CEO of Hospital and Board members.
  “Loved the concept”
  “Go for it”. “Let’s get this going”.
- “We want best practices here and we support you”
- Met with all Pharmacists to introduce Palliative care CNS role, pain and symptom control, Palliative care formulary and concept of syringe drivers.
Where To Start?

- Find the ideal pump (research safety/most used in other countries/many comparative studies worldwide)
- Find the manufacturer
- Is it available in the US?
- Find the SQ infusion set
- Find the money
Buy In

• How many committees in the Hospital did I present to and then re-present to?

• **Answer** = absolutely lost count. Didn’t know there were so many. Examples:
  • Multiple Administration/Board
  • Nursing councils/education/research/
  • Multiple Medical staff/ onc, critical care, general med
  • Education Dept/educators
  • Pharmacy management
  • Medical supplies/bio med/tech/vendor/supplies
  • Safety councils
  • Value committees
Pharmacy

- Educated on palliativedrugs.com
- Syringe driver drug compatibility book and resources
- Initially they wanted standardization pump like PCA, so a lot of education needed. Order set negotiated
- Already bought them formulary
- Use of filter for Levsin
- Many, many meetings/changes of staff, etc.
- 20ml syringe use/diluent
The Syringe Driver
CONTINUOUS SUBCUTANEOUS INFUSIONS IN PALLIATIVE CARE
THIRD EDITION
ANDREW DICKMAN | JENNIFER SCHNEIDER
Morphine sulphate (A), Clonazepam (B), and Hyoscine butylbromide (C)

Summary: no problems with physical stability encountered. Loss of clonazepam observed when infused via PVC tubing. Minimize loss by using non-PVC tubing.

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose in syringe (mg)</th>
<th>Volume in syringe (mL)</th>
<th>Concentration (mg/mL)</th>
<th>Diluent</th>
<th>Outcome (24 hours)</th>
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Morphine sulphate (A), Clonazepam (B), and Levomepromazine (C)

Summary: no problems with physical stability encountered. Loss of clonazepam observed when infused via PVC tubing. Minimize loss by using non-PVC tubing. To reduce irritation at the site of infusion, levomepromazine may be given as a subcutaneous bolus injection at doses below 50mg (=2mL).

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<th>Drug</th>
<th>Dose in syringe (mg)</th>
<th>Volume in syringe (mL)</th>
<th>Concentration (mg/mL)</th>
<th>Diluent</th>
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<td>6.00</td>
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</table>
Compatibilities

- Morphine
- Hydromorphone
- Midazolam
- Anti-emetics (Haloperidol, Reglan)
- Anticholinergic (Levsin)

- Max 3 drug combinations above initially (for generalist use)
  - Dexamethasone
  - Octreotide
  - Ketorolac
Negotiations

• Meetings with CME Director (lived on East coast, but came to meet me here on a few occasions)
• Asked for 2 pumps on loan for a ‘few months’
• Discussed use of locking drivers, so they can only run over 24 hours and not be tampered with
• Needed lockbox as opioids would be used.
• Negotiations done!
Trial

- Two units for pilot (oncology and med/surg)
- Made it clear it wasn’t a research project, but implementation on 2 units to introduce concept, start education and to allow feedback from Physicians, nurses, patients and families.
Education

• All nurses initially educated one to one on pilot units
• Assessment tool used/competency checklist
• Practical demonstration
• Written information given and distributed (background, rationale, studies, order set etc.)
• Patient and family handout
• Policy and procedure
• Pharmacy policy and procedure
Fine Bore Tubing Set
Safety Subcutaneous Tissue Infusion Set
Syringe Driver Information for Patients and Families

A syringe driver is a small, lightweight, battery operated portable pump that delivers your medication slowly and steadily over a period of time.

The syringe is filled with medication depending on your symptoms and doctor’s orders.

Syringe drivers use very small needles which provide better comfort for patients.

The nurse or doctor will insert the very small needle just under the skin (no vein access needed) and they will place a clear dressing over the needle to keep it in place. It can stay in place for several days. The needle is usually inserted into your chest or upper arm although other parts of the body may be chosen for comfort or convenience.

Syringe drivers commonly use the following types of medications: analgesics, anti sickness. For example: Morphine, Dilaudid, Reglan or Compazine. All of these (and many other medications) can be mixed together safely in one syringe.

Syringe drivers are used for several reasons: it is a simpler and more comfortable way to receive medication for people who would otherwise need repeated injections.

Some people find it difficult to swallow medication in tablet or syrup form. Some people may have frequent nausea/vomiting and be unable to absorb medications. Some symptoms are difficult to control by tablets alone.

The syringe driver is strong but can needs to be handled with care.

The syringe driver must not get wet. Ask your nurse for advice about washing and bathing.

Things to watch out for:

Sometimes the medication can cause a reaction on the skin; your nurse will check your needle site regularly. If you notice any redness or swelling, please report it to your nurse.
ALLERGIES:

ORDERS
1. ☑ Contact the CARES Team via Perfect Serve *8688. For questions related to medications in this syringe (such as side effects or compatibility), contact the Pharmacy. For technical questions related to the McKinley Syringe Driver, please call OME America technical support at 877-263-0111.

2. ☑ Subcutaneous (SC) Syringe Driver to be placed on Date: ________ Time: __________

3. Nursing Care:
   - ☑ Place SC site on left or right arm, left or right thigh, chest, abdomen, or other SC site as directed per orders.
   - Document site placement as appropriate.
   - ☑ Change SC site every 5 days or every _______ days, or if signs or redness, irritation, or SC injection site reactions are present.
   - ☑ Check and document subcutaneous site every 4 hours.
   - Other: __________________________

4. ☑ Subcutaneous Syringe: Infuse each syringe via a Syringe Driver with a 20mL syringe size limit. Each syringe expires in 24 hours. Request refills from Pharmacy, at least 1 hour in advance as needed daily.

5. Set rate for each syringe at:
   - ☑ 0.5 mL/hr x 24 hours = Total Infuse Volume 12 mL. (Pharmacy to dispense in a 20 mL luer-lock syringe with 1 mL overfill to equal a final volume of 13 mL.)

6. MEDICATION(S) for Subcutaneous Syringe Driver:

   Standard Syringe
   - ☑ Morphine Sulfate 24 mg
   - ☑ Midazolam (Versed) 12 mg
   - ☑ Hyoscine (Levsin) 1 mg

   Custom Syringe Option 1
   - ☑ Morphine Sulfate 24 mg or ________
   - ☑ Midazolam (Versed) 12 mg or ________
   - ☑ Hyoscine (Levsin) 1 mg or ________
   - ☑ Haloperidol (Haldol) 6 mg or ________
   - Additives: _______________________

   Custom Syringe Option 2
   - ☑ Hydromorphone (Dilaudid) 6 mg or ________
   - ☑ Midazolam (Versed) 12 mg or ________
   - ☑ Hyoscine (Levsin) 1 mg or ________
   - ☑ Haloperidol (Haldol) 6 mg or ________
   - Additives: _______________________

*Every syringe to total volume 13 mL with 0.9% Normal Saline

7. ☑ Pharmacy to assess medication compatibility in same syringe.

DATE TIME VOLUME SIGNATURE
DATE TIME PHARMACY DICTATION

PS 7791
COMPETENCY: McKinley T34 Syringe Driver Competency

<table>
<thead>
<tr>
<th>Name:</th>
<th>Employee #:</th>
<th>Title:</th>
<th>Unit:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital: HHNBB/HHIOI (Circle One)</td>
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</table>

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Method of Validation</th>
<th>Initial</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. State two reasons for continuous subcutaneous infusion via a syringe driver as opposed to intravenous medications.</td>
<td>V</td>
<td></td>
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<tr>
<td>- Poor venous access</td>
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<tr>
<td>- Decrease medicalization of the dying process in the hospital</td>
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<tr>
<td>- Reduce agitation and need for restraints</td>
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<tr>
<td>2. Obtains physician order for syringe driver.</td>
<td>V/D</td>
<td></td>
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</tr>
<tr>
<td>- Patient must be on comfort care pathway.</td>
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<tr>
<td>3. States three possible sites for a subcutaneous infusion needle and three types of tissue to avoid.</td>
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<td></td>
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</tr>
<tr>
<td>- Possible sites: chest, abdomen, anterior upper arm, anterior upper thigh.</td>
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<tr>
<td>- Tissue to avoid: folds, breast, directly over a tumor, edema, ascites, bony prominence, previously irradiated, near joints, ecchymotic, broken, infected.</td>
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</tr>
<tr>
<td>- If patient agitated, site near scapula recommended.</td>
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</tr>
<tr>
<td>4. Procedure: Initiating Infusion, Subcutaneous Site, Changing the Syringe, Discontinuing Infusion, and Changing the Battery</td>
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</tbody>
</table>

**Equipment for Initiating Infusion and Site:**
- Syringe pump – McKinley T34 in locker
- Key – Obtain from Pyxis
- 9 volt battery as needed
- Prefilled medication syringe from pharmacy (20 ml syringe filled with 10 ml med)
- 0.2micrometer filter (comes attached to syringe)
- Subcutaneous Infusion Set – 27 gauge x 8mm needle with 106 cm tubing
- Transparent dressing (i.e. Tegaderm) – is longer than the one provided
- Tubing label (indicating when to change infusion set)
- Sticker: ‘For Subcutaneous Use Only’
- Sticker indicate date and time infusion set inserted
- Alcohol swabs
- Gloves

**Procedure: Initiating Infusion**

a. Match syringe to order and patient.
   - Verify patient name, medical record number, medication(s), dosage(s), rate.

b. Attach syringe and prime tubing with 1 ml of medication. **Amount remaining should be 12 ml. Do not attach to patient yet.**

c. Turn syringe driver on.

d. Check battery level.
   - Press INFO button. Replace battery if 40% or less.

f. Load the syringe.

f. Press START/YES button to confirm syringe size and type shown on screen.

g. Press START/YES to confirm volume, duration, and rate shown on screen.
   - Volume and rate are automatically calculated by the syringe driver and must match the physician's order. Rate should be at or about 0.5 ml/hr.
   - Duration should always be 24 hours.
# Medication and Assessment Monitoring Tool for Syringe Driver

<table>
<thead>
<tr>
<th>Date/Time:</th>
<th>Flow rate in ml/hr</th>
<th>Battery life % (min 25, max 40)</th>
</tr>
</thead>
</table>

**Syringe #:**

**Drug Name and Dosages:**

1) [Details]
2) [Details]
3) [Details]

**Site used and appearance:**

**Site appearance** e.g., "OK"

**Flow rate setting** (do not alter)

**Volume**

**To Be Infused**

**Volume Infused** (total)

**Battery life %** (change if < 40%)

**RN Signature**

**RN Witness:**

---

**If infusion is discarded note volume remaining and sign:**

**Volume Disposed:**

**Date and Time:**

**Sign:**

- [ ] Syringe pump has been removed from patient (check and initial)

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**DAILY SET UP**

**MONITORING**

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**RN Witness:**

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**RN Witness:**

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**DAILY SET UP**

**MONITORING**

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**RN Witness:**

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Pilot

- Pilot deferred for a few months on numerous occasions by Nurse Educators due to:
  - New IV pump Alaris Hospital implementation
  - DNV surveys
  - Aftermath of DNV surveys
  - Housewide mandates
Once Started

• Trial on two units planned initially for a couple of months.
• Feedback from Physicians, RN’s and family members extremely positive.
• Ease of use, comfort, symptom control
• Pilot stopped after 4 weeks as instantly successful and quickly accepted
Funds

• Presentation to donors for purchase of pumps and lock boxes
• Medical supply Department negotiations on prices with supplier. CME America
• Availability of giving sets and cost
• Drivers purchased- 12
Marketing

• Hoag Intranet /Hoag newsletter
• Emails to all RN’s of impending rollout and need for training.
• Emails to Medical staff
• Written information given out on evidence base, rationale and best practices
• Rounding to educate staff personally
• All information on Palliative care/CARES website
**SYRINGE DRIVER HIGHLIGHTS**

*** For patients on Comfort Care Pathway ***

*This is Best Practice! ... IVs are Poor Practice*

- Maintains stable blood serum level of medication
- Minimizes sticks for patients with difficult venous access
- De-medicalizes the dying process
- Reduces agitation and restraint usage
- So ... **ADVOCATE** for your patients
  - For now, paper order set (PS 7791) separate from Comfort Care in CPOE

**KEY POINTS:**

- Each syringe infuses over 24 hrs; expires after 24 hrs even if not empty
- Change SC site Q5 days and PRN (site symptomatic, change in medication, or occlusion alarm when tubing not kinked)
- SC site must be on chest, abdomen, anterior upper arm, or anterior thigh; see Procedure for specific areas to avoid and recommended areas for specific patients
- Monitor & document: 1 hr after insertion/initial infusion, then Q4hrs (for now, paper: Medication & Assessment Monitoring Tool for Syringe Driver (PS 2904))
- 20 mL syringes
  - Total Infuse Volume is 12 mL/24 hrs = 0.5 mL/hr (nice math)
  - Received from pharmacy with a volume of 13 mL
  - 1 mL of overfill for priming (1 mL waste if not first syringe)
- Standard Syringe: morphine 24 mg
  - With/without midazolam 12 mg, with/without hyoscyamine 1 mg
- Custom: morphine, hydromorphone, midazolam, hyoscyamine, and/or haloperidol
- No boluses / PRN doses via Syringe Driver
  - Give PRN SC injections based on orders you already have in the Comfort Care Order Set (morphine, hyoscyamine, midazolam, or haloperidol)
  - Request adjusted dosing in next syringe based on total PRN injections required over the past 24-hour period
- Press & hold INFO to lock/unlock keypad (keep locked when not programming)
- Just press INFO to check battery level: >40% ok, replace if 40% or less (can replace battery without removing lockbox)

**Gathering What You Need:**

- Order
  - From Pharmacy: Prefilled Syringe, Filter, & “Subcutaneous Use Only” Sticker
  - From Central (HHNB), On Unit (HHI): Syringe Driver
  - From Central: Subcutaneous Infusion Set (or “End of Life Infusion Set”)
  - From Pyxis: Key
  - On Unit: Large Tegaderm w/ Date & Time Sticker, Tubing Label, Alcohol Swabs, Gloves
- Print out the Procedure from the Wave for Reference: “Subcutaneous Infusion Therapy for Comfort Care”
Education

- Nurse Educators competency
- Nurse Educators disseminate to Charge Nurses
- Charge Nurse disseminates to RN’s
- Hands on training with pump includes checklists and competencies
- With the help of CARES CNS
- Policy, procedure, patient information on Hospital Intranet.
- Future date given with start date
Numbers/Data

Implemented

• Syringe drivers **implemented** since June 2013
• 23 patients ( 17 died in Hospital, 6 discharged home on Hospice)

Not implemented

• 86 patients (39 terminally extubated with imminent death, 22 discharged same day as consult to Hospice
• 25 patients (not known/ or Physician used IV)
Cons?

• Not for patients in acute pain or symptoms crisis
• (another reason for earlier palliative care referral and not just last stages of dying)
• ‘Need for speed’ culture
• Lack of education/knowledge of new protocol
• Some Physicians wanting to continue titrating Morphine IV to comfort.
• Palliative care does not always follow comfort care patients
Case Study

• 75 year old man
• 2 Cardiac arrests- Prolonged resus time.
• Intubated and ventilated in Critical care
• Tachypneic, tachycardic, grimacing, audible secretions.
• Comfort pathway initiated after extubation and syringe driver explained to family
• Had been receiving PRN IV medications when showing signs of discomfort
• **Standard syringe combination:**
  • Morphine 24mg over 24 hours
  • Midazolam 12mg over 24 hours
  • Hyoscyamine (Levsin) 1mg over 24 hours

• Only one PRN dose of SC Morphine required for breakthrough the following day. Worked with effect for accessory muscle use
• Family feedback:
• He has been so uncomfortable for the past 4 days. Nurses always in and out giving IV’s and constant noises and alarm has been distressing on IV pump
• Technology overload. ‘He doesn’t look human’ Had been upset by the need for so many IV insertions and re-sites
• Constant bruising /skin issues
• IV removed. Grateful that driver was discrete and out of site. They could finally get near him without fear of pulling at tubes/drips/
• They stated that prior to syringe driver Nurses responded to his symptoms only when he was in distress and now he was ‘comfortable and peaceful at last’
• Son “Dad actually looks like Dad again”
• RIP peacefully 2 days later
Preventative Symptom Management

• As the family stated to IV injections ‘At least we are not waiting until the symptoms occur now or when Dad is obviously very uncomfortable and waiting for the nurse to give him something.

• We hear the term chasing the pain. We should include chasing the symptoms.

• Why wait for pain, restlessness and secretion problems when we can prevent them and reduce ‘peaks and troughs’
All in good time........

• Reflections:
• Frustrated that it has taken so much time, resources and energy.
• Difficulty understanding and working with a different mindset and culture
• “As with Palliative care education, remember ‘One patient at a time, one Doctor at a time’”
  Slow and steady. Don’t give up...(my Mom)
“We must become the change we want to see”

Mahatma Gandhi 1869-1948
Thank you. Any questions?