ashp MIDYEAR 2018
Clinical Meeting & Exhibition

(Management Case Study)
Titrating to Safety and Compliance: Management of Titration Orders in the Intensive Care Unit

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Disclosures

All planners, presenters, reviewers, and ASHP staff of this session report no financial relationships relevant to this activity.

Learning Objectives

- Identify key regulatory requirements related to titrated medications
- Describe an approach to medication order build in the electronic health record (EHR) to ensure regulatory compliance with orders
- Explain how a titration policy can be used to improve consistency in documentation and communication among providers

Self-Assessment Questions

- Titration medication orders must include dose range, start dose, titration parameters, goal (True or False)
- Use of specific order questions related to required order elements may improve regulatory compliance with orders in the electronic health record (True or False)
- Documentation of patient parameters is not necessary as medications are titrated (True or False)

Cedars-Sinai Medical Center

- Non-profit, acute, tertiary teaching hospital
- 886 licensed beds
- 120 intensive care unit beds including medical, surgical, cardiothoracic, neuroscience, cardiac, pediatric and neonatal units
- Level I Trauma Center
- Comprehensive Stroke Center
- Decentralized clinical pharmacy services include intensive care, medicine, surgery, pediatrics, oncology, solid organ transplant, emergency department and operating room services

Background

Medication Titration

- Titration orders allow the critical care nurse to adjust medications in patients with a rapidly changing clinical status
- Implementation of electronic health records (EHR) and smart infusion pumps in many institutions makes data more readily retrievable
- Process for management of titrations should include careful consideration of safety and regulatory risk
- Pharmacists are uniquely positioned for
  - Development of safe titration practices
  - Real-time assessment of titration orders and administration

Regulatory Requirements for Titrations

- The Joint Commission standard MM 04.01.01 mandates that medication orders are clear and accurate[1]
- Required elements of titration orders[2]
  - Medication name and route
  - Dose range including start dose
  - Incremental units for dose changes and frequency
  - Objective goal
- Goals to ensure safe administration
  - Achieving and sustaining patient response
  - Consistent administration and documentation that reflects changes
  - Nursing activity within scope of practice

1. The Joint Commission e-edition. https://e-dition.jcrinc.com/MainContent.aspx. Accessed Sept 13, 2018
2. The Joint Commission Standards FAQs Medication Administration – Titration Orders. https://www.jointcommission.org/standards_information/jcfaqdetails.aspx?StandardsFaqId=1432&ProgramId=46.. Accessed Sept 13, 2018.

Nursing Scope of Practice

- California Board of Registered Nursing recently clarified nursing scope[3]
  - Nurses authorized for "administration of medications and therapeutic agents necessary to implement a treatment, disease prevention, or rehabilitative regimen ordered by and within the scope of licensure of a physician, dentist, podiatrist, or clinical psychologist."
  - Physicians may diagnose and use drugs
- Vague or unclear titration orders may leave room for varied interpretation or broad decision making which is outside nursing scope

3. California Board of Registered Nursing. An explanation of the Scope of RN Practice Including Standardized Procedures. https://www.rn.ca.gov/pdfs/regulations/npr-b-03.pdf. Accessed 9.20.18

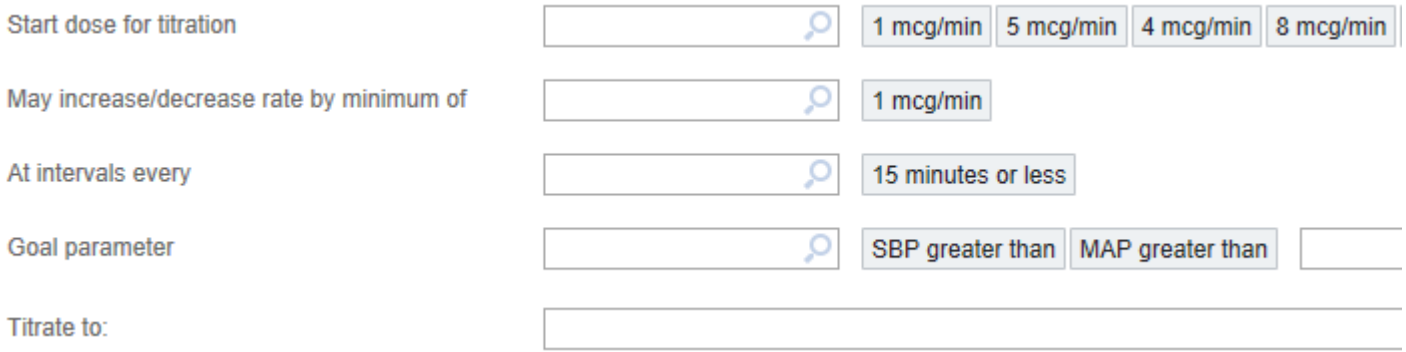
Historical Management of Titrations at CSMC

- Titration guidelines in place
  - Used to educate nurses and guide practice
  - Per approved policy, pharmacists could clarify orders with missing titration parameters

Nitroprusside[1,4,6]	50mg/250 mL 100mg/250 mL	Default in D_5W	Usual starting dose 0.3-0.5mcg/kg/min; Increase/decrease rate by minimum of 0.5mcg/kg/min at intervals no longer than Q 15 minutes to goal. (Max infusion rate: 10 mcg/kg/min).
Norepinephrine[1,4,6]	4mg/250 mL 8mg/250 mL	Default in D_5W	Usual starting dose 1-10 mcg/min; Increase/decrease rate by minimum of 2mcg/min at intervals no longer than Q 15 minutes to goal. (Max infusion rate: 40 mcg/min).
Phenylephrine[1,4,5,6,8]	50mg/ 250 mL 100mg/250mL	Default in D_5W	Usual starting dose 50-100 mcg/min; Increase/decrease rate by minimum of 10 mcg/min at intervals no longer than Q 15 minutes to goal. (Max infusion rate: 400 mcg/min).

EHR Orders

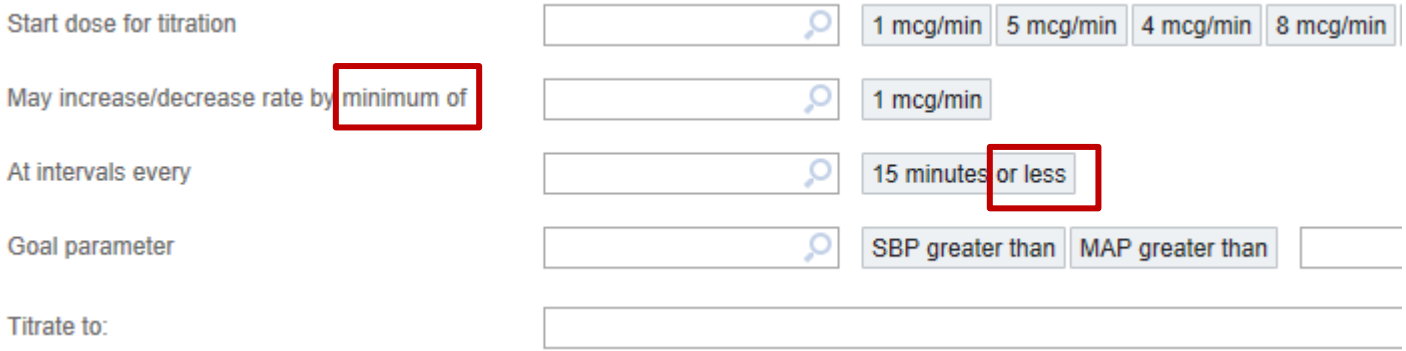
- With implementation of computerized prescriber order entry (CPOE), standardization of orders did improve
- Order questions created to define how to titrate for each patient



Problems

Order Clarity

- Baseline assessment confirmed 97% of orders contained titration and frequency parameters
- Standard titration order template in electronic health record not clear



- Titration guidelines posted in patient care areas may not match individual orders leading to confusion

Baseline Assessment of Titration Practice

Titration Medication Audit	Compliance Rate
Started at the ordered rate	**65 %**
Titrated according to the frequency parameters	**62 %**
Parameter documentation coincides with dose change	**43 %**

Other identified issues:

- Lack of consistency in titration off and subsequent order discontinuation
- Multiple orders with the same titration goal

The Plan

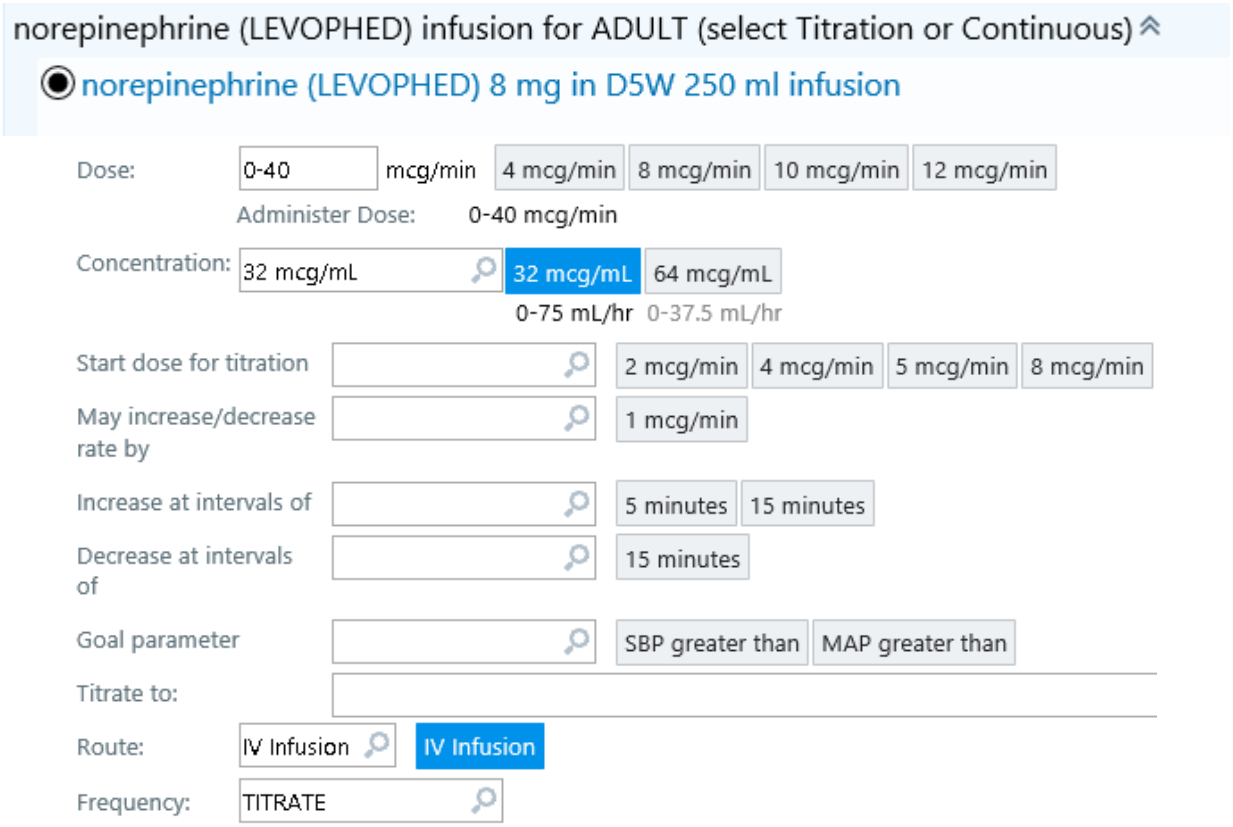
- Multidisciplinary task force convened with pharmacy and nursing representatives
- Goals identified
    1. Enhance clarity of medication orders
    2. Improve consistency in patient management
    3. Improve consistency and timing of documentation
    4. Create workflow that enables clinical staff to meet patient care needs without unnecessary burden

Solutions

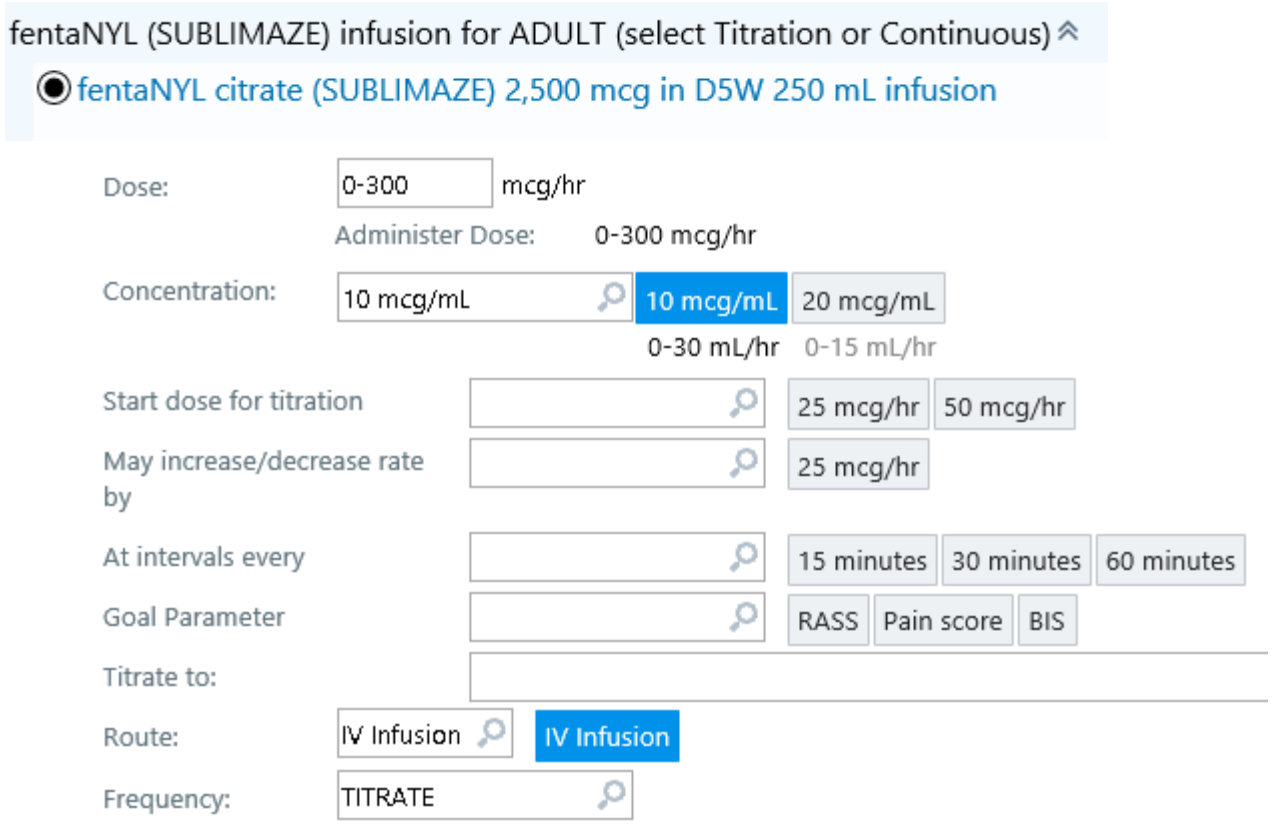
Scope: Titratable Medications

Vasoactives	Sedation, Analgesics, Paralytics
Diltiazem	Cisatracurium
Dopamine	Dexmedetomidine
Epinephrine	Fentanyl
Esmolol	Hydromorphone
Labetalol	Lorazepam
Nicardipine	Midazolam
Nitroglycerin	Morphine
Nitroprusside	Propofol
Norepinephrine	Vecuronium
Phenylephrine	

Titration Order Standard Build: Vasoactive



Titration Order Build: Sedation/Analgesia



Titration Management: Nurse Practice

- Administration: Increased clarity in orders will result in more standardized management of patients
- Documentation: Requirements specified in new policy
  - Goal parameter to be documented with each dose change
  - Once goal achieved at lowest effective dose, goal parameter assessment per nursing protocol
    - Vasoactive: Every 15 min x 1 hour then hourly
    - Sedation, Analgesia, Paralytics: hourly
  - If goal no longer met, follow titration order for adjustments and associated documentation
  - Nursing protocol link to appear in each titration medication order

Titration Off

- Standard titration orders include “zero” rate to allow titration off
- Allows nurse to stop medication but also restart if patient becomes unstable again
- Recommended that nurse discuss with provider to discontinue therapy if patient stable after off for 2 hours
- Pharmacists participate in discussion about order discontinuation

Multiple Titrated Medications

- Some patients may be ordered more than one titration medication for the same indication
  - Orders must be clear to ensure safe & consistent practice
  - When possible, one infusion to be continuous dose with changes managed by prescriber only
- In scenario with two medications titrated by nurse to same goal:
  - Prescriber order required to define which medication to titrate first
  - Required language: Titrate medication A to max dose and then start titrating medication B if goal not achieved after timeframe specified in order

Implementation

- Multidisciplinary task force developed and agreed upon changes
- Policy & nursing protocol developed and approved by medical staff leadership, pharmacy and therapeutics committee
- Nursing staff completed mandatory competency
- Critical care providers educated about order changes and increased engagement in process
- Final implementation in Fall 2017

Results

Audit Results: Vasoactives

Audit	Compliance Rate
Started at the ordered rate	**90 %**
Order has titration and frequency parameters	**98 %**
Titrated according to the frequency parameters	**89 %**
Once goal parameter met, parameter documented according to protocol	**97 %**
Parameter documentation coincides with dose change	**94 %**
Only one medication titrated with same parameter	**96 %**
No harm to the patient	**100 %**

Audit Results: Sedation, Analgesic, Paralytics

Audit	Compliance Rate
Started at the ordered rate	**88 %**
Order has titration and frequency parameters	**98 %**
Titrated according to the frequency parameters	**86 %**
Once goal parameter met, parameter documented according to protocol	**91 %**
Parameter documentation coincides with dose change	**90 %**
Only one medication titrated with same parameter	**94 %**
No harm to the patient	**100 %**

Ongoing Efforts

- Continued audits and reinforcing of required nursing documentation
- Nursing practice for titration in a very unstable patient who may suddenly need more frequent titration than order allows
- Management of multiple titratable medications
- Orders to wean off titratable medications in post operative patients

Self-Assessment Question 1

- Titration medication orders must include dose range, start dose, titration parameters, goal (True or False)

Self-Assessment Answer 1

- True

Self-Assessment Question 2

- Use of specific order questions related to required order elements may improve regulatory compliance with orders in the electronic health record (True or False)

Self-Assessment Answer 2

- True

Self-Assessment Question 3

- Documentation of patient parameters is not necessary as medications are titrated (True or False)

Self-Assessment Answer 3

- False

KEY TAKEAWAYS

1) Multidisciplinary engagement in all areas with titration medications is critical to ensure success in improving management

2) Clear medication orders ensure nurse can manage medications within scope of practice

3) Audits and ongoing real-time education to reinforce documentation will improve compliance over time