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# Acute Pain Alternatives: The Impact of Avoiding Opioids on Hospital Delirium

March 21, 2023

Christine LaRocca, MD

Cathy Snapp, PT



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# Session Objectives

- Name the symptoms, causes and serious consequences of delirium
- Learn about the relationship between prescribing opioids and the development of delirium, particularly in older adults
- Explore alternatives to prescribing opioids for acute pain in the emergency department and hospital setting
- Learn from a real-world hospital project that prevented delirium in their hip fracture patients using nerve blocks instead of opioids

# Today's Speaker(s)



**Christine LaRocca, MD**

Medical Director  
Telligen



**Cathy Snapp, PT**

Orthopedic Program Administrator & Clinical Quality Coordinator  
for Rehab Services  
Norman Regional Health System



## > Delirium and Opioid Use in Older Adults

# Why Focus on Delirium?

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- **Common:** Affects as many as 17% of older emergency dept. (ED) patients (pts) and 50% of hospitalized pts
- **Often Unrecognized:** Rate of undetected delirium as high as 60%
- **Serious:** Often fatal, increases morbidity, functional decline, pt/family distress
- **Consequential:** Associated with increased length of stay, hospital readmission, emergency department (ED) visits and institutionalization
- **Important:** An important component of national patient safety agendas
- **Costly:** Results in over \$164 billion per year in total healthcare costs
- **Preventable:** In 30-40% of cases

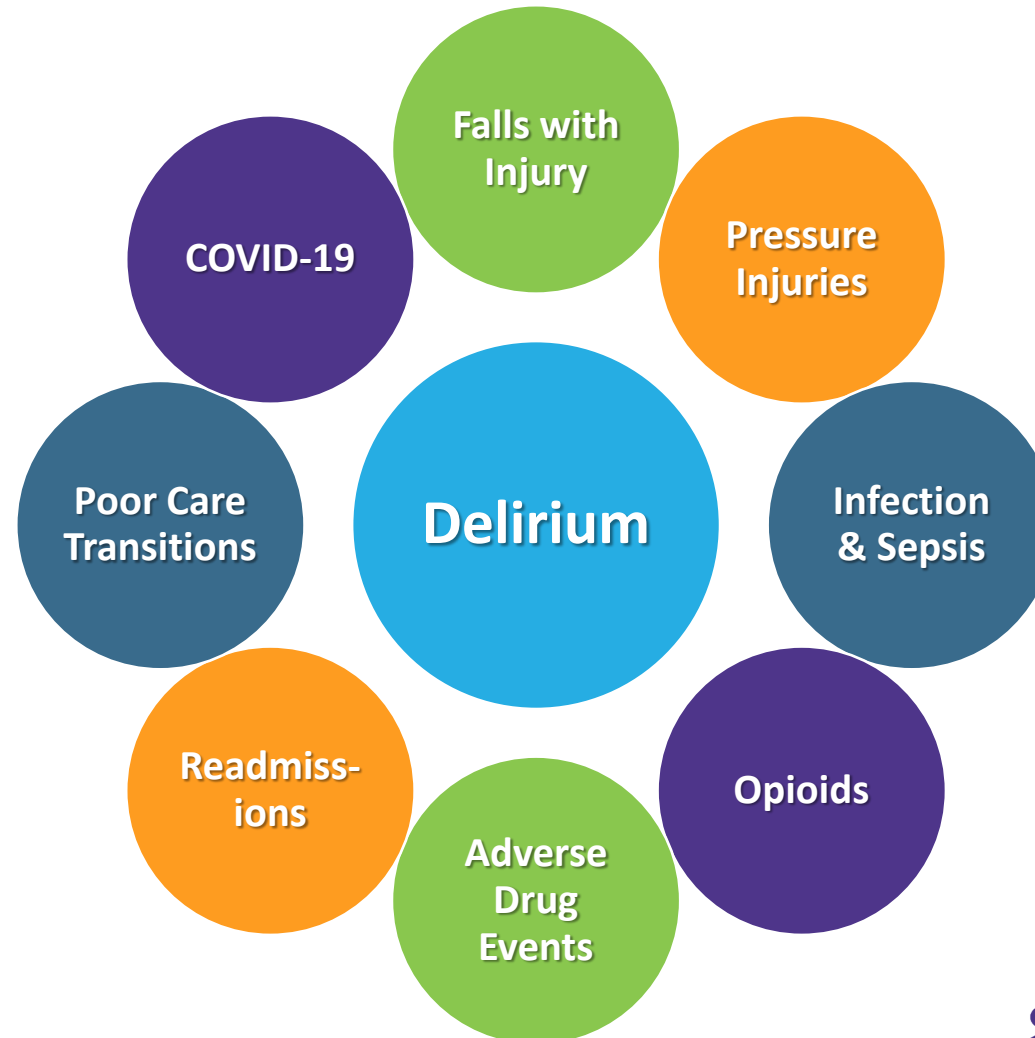
Han et al. J Am Geriatr Soc. 2017 Jun;65(6):1333-1338.

Hshieh et al. Psychiatric Clinics of North America, 2018, 41,(1) 1-17.

Fong et al. Lancet Neuro. 2015 Aug;14(8):823-832.

# HQIC Harm Areas and Relevance to Delirium

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# Delirium: A Medical Emergency

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## What is delirium?

- A syndrome characterized by an acute disturbance in attention and cognition with a fluctuating course of symptoms

Delirium is often the only sign of a serious underlying medical condition (e.g., sepsis)

- “If you’re told somebody has altered mental status or agitation, assume it is delirium until proven otherwise.” Rosanne M. Leipzig, MD, PhD



# Diagnostic and Statistical Manual of Mental Disorders, 5th ed. (DSM-5) Criteria for Delirium

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1. Disturbance in attention and awareness
2. The disturbance develops abruptly (usually hours to days), is a change from baseline attention and awareness, and fluctuates in severity over the day
3. There's at least one additional disturbance in cognition (e.g., memory deficit, disorientation, language, visuospatial ability or perception)
4. Criteria 1 and 2 are not better explained by other preexisting, established or evolving neurocognitive disorders (e.g., Alzheimer's) and do not occur in the context of a severely reduced level of arousal or coma
5. Evidence from the history, exam or labs that the disturbance is caused by an underlying medical condition, substance intoxication or withdrawal, medication or toxin exposure, or because of multiple etiologies

# Signs and Symptoms



## Reduced awareness and attention

- Reduced ability to direct, focus, sustain and shift attention
  - “Can’t stay focused on the task at hand”
- Easily distracted; trouble maintaining a conversation
- Reduced orientation to the environment

## Cognitive impairment may manifest as:

- Poor memory of recent events
- Disorientation to person, place, time
- Disorganized thought; incoherent, rambling speech
- Difficulty reading or writing

## Signs and Symptoms (cont.)

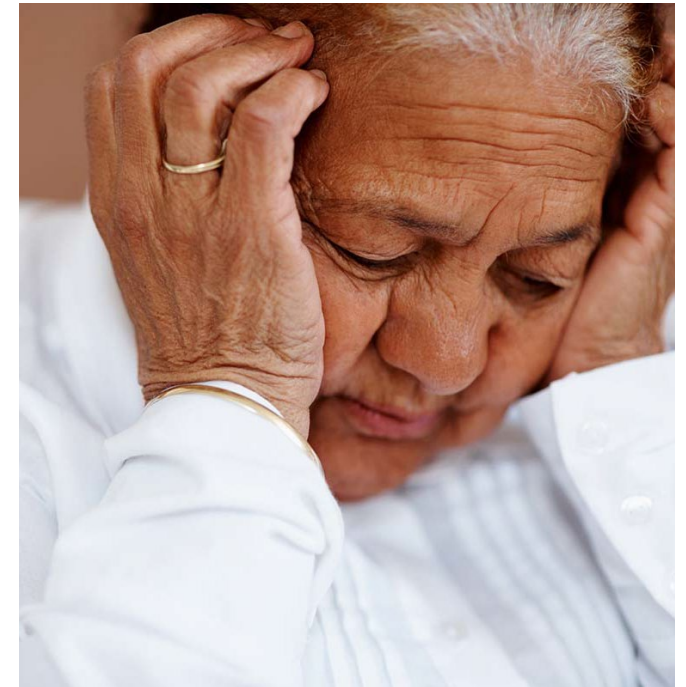
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Altered consciousness and behavior changes may include:

- Hallucinations, illusions
- Hyperactivity: Restlessness, agitation, combative behavior
- Hypoactivity: Being withdrawn, slowed movements, lethargic
- Altered or reversed sleep-wake cycle

Emotional disturbances such as:

- Anxiety, fear, paranoid delusions
- Irritability, anger
- Rapid erratic mood shifts
- Apathy



# Causes of Delirium

**D**rugs (may be intoxication, adverse effect or withdrawal)

**E**lectrolyte abnormalities (causes include dehydration)

**L**ow oxygen

**I**nfection

**R**educed sensory input (e.g., vision, hearing)

**I**ntracranial events (e.g., stroke, subdural)

**U**rinary retention and fecal impaction

**M**yocardial or metabolic problems

Often, the cause is a combination of several of the above.



# Delirium: Serious Complications and Consequences

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- Two-fold increased mortality
- Long-term cognitive impairment
- Emotional distress
- Aspiration pneumonia
- Pressure injury
- Weakness, decreased mobility, long-term functional impairment
- Falls with fractures and other injuries
- Malnutrition, fluid and electrolyte abnormalities
- Prolonged hospital length of stay
- Unsuccessful care transitions
- Readmissions
- The need for long-term nursing home care

Hshieh et al. *Am J Geriatr Psychiatry*. 2018 October ; 26(10): 1015–1033. doi:10.1016/j.jagp.2018.06.007.

Escheverria et al. (2021, January 26). Delirium. *StatPearls*. <https://www.ncbi.nlm.nih.gov/books/NBK470399/>

Rieck et al. *Hosp Pract* (1995). 2020 Mar;48(sup1):3-16. doi: 10.1080/21548331.2019.1709359.

# Opioid Use and Delirium in Older Adults

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- Untreated acute severe pain can itself trigger delirium
- “Opioid therapy has an important role for acute pain related to:
  - Severe traumatic injuries (including crush injuries and burns), invasive surgeries typically associated with moderate to severe postoperative pain, and other severe acute pain when NSAIDs and other therapies are contraindicated or likely to be ineffective.”
  - ‘All patients with pain should receive treatment that provides the greatest benefits relative to risks.’ 2022 CDC Clinical Practice Guideline

Clegg et al. Which medications to avoid in people at risk of delirium: a systematic review, *Age and Ageing*, Volume 40, Issue 1, January 2011, Pages 23–29, <https://doi.org/10.1093/ageing/afq140>

CDC Clinical Practice Guideline for Prescribing Opioids for Pain — United States, 2022 | MMWR and <https://www.nejm.org/doi/full/10.1056/NEJMp2211040>

# Opioid Use and Delirium in Older Adults

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- Opioid use is associated with the development of delirium in the older adult
  - No convincing data that the risk of delirium in elderly patients depends on the type of opioid
  - More research on the relationship between opioids and delirium is needed
- Risk is increased with polypharmacy
  - Being prescribed five or more drugs increases the risk of adverse drug reactions by 50%
  - Example: Avoid use of opioids with benzodiazepines due to the increased risk of overdose and severe sedation-related adverse events such as respiratory depression and death

Clegg et al. Which medications to avoid in people at risk of delirium: a systematic review, *Age and Ageing*, Volume 40, Issue 1, January 2011, Pages 23–29, <https://doi.org/10.1093/ageing/afq140>

Swart et al. The Comparative Risk of Delirium with Different Opioids: A Systematic Review. *Drugs Aging*. 2017 Jun;34(6):437-443. doi: 10.1007/s40266-017-0455-9.

CDC Clinical Practice Guideline for Prescribing Opioids for Pain — United States, 2022 | *MMWR* and <https://www.nejm.org/doi/full/10.1056/NEJMp2211040>

Rochon PA, **Drug prescribing for older adults. UpToDate®**



# Opioid Use and Delirium in Older Adults

- Physiologic changes related to aging increase risks associated with opioid use, including
  - Increased body fat and decreased muscle mass
  - Decreases in plasma volume and intracellular water by as much as 20-30%
  - Changes in liver and kidneys; decreased reserve
- If opioids are prescribed:
  - Dose reduction of 25-50% is generally recommended
  - Use the lowest effective dose for the shortest duration possible



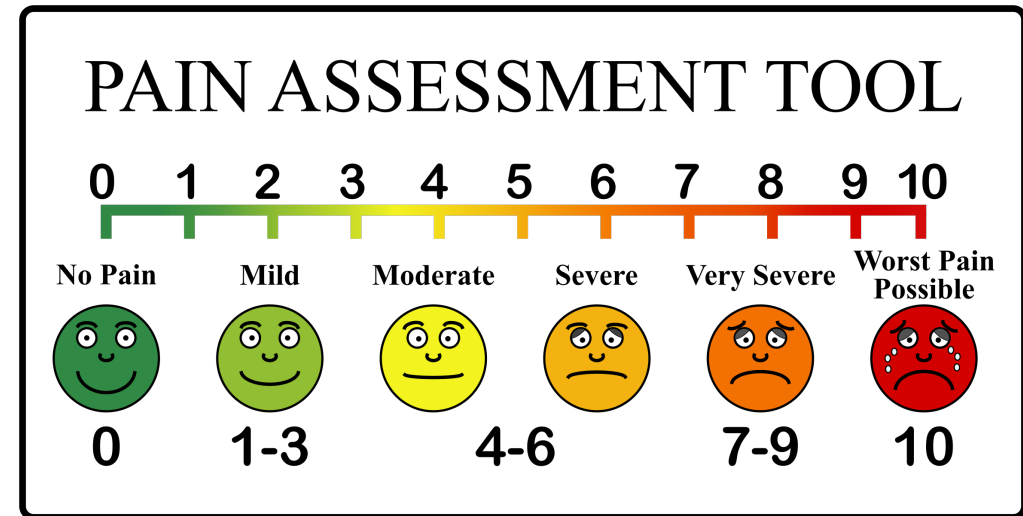
Rajan et al. *Anesthesiol Clin*. 2019 Sep;37(3):507-520.

Davies PS. *Nurse Pract*. 2017 Feb 12;42(2):20-26.

Sampson et al. Pain and delirium: mechanisms, assessment, and management. *Eur Geriatr Med* 11, 45–52 (2020). <https://doi.org/10.1007/s41999-019-00281-2>

# A Thorough Assessment is Key to Treatment

- Both over and undertreatment of pain in the older adult can contribute to the development of delirium
- Assessment considerations
  - Etiology of the pain
  - Pain severity
  - Cognitive function
  - Appropriateness of oral administration
  - Allergies
  - Renal and hepatic function



Kennedy et al. The agitated older adult in the emergency department: a narrative review of common causes and management strategies. J Am Coll Emerg Physicians Open. 2020 Jun 11;1(5):812-823. doi: 10.1002/emp2.12110. PMID: 33145525; PMCID: PMC7593470.

Swart et al. The Comparative Risk of Delirium with Different Opioids: A Systematic Review. Drugs Aging. 2017 Jun;34(6):437-443. doi: 10.1007/s40266-017-0455-9.

# Examples of Alternatives to Opioids in Older Adults

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- Multimodal analgesia
  - The use of two or more agents that employ different mechanisms for pain management
  - Ideally non-opioids
  - May improve pain management, reduce opioid consumption and reduce opioid-related side effects
    - Ex. Scheduled acetaminophen has been shown to reduce opioid requirements
  - Interventional approaches
    - Regional anesthesia, including peripheral nerve blocks, for management of acute pain
    - Provide pain control without centrally acting side effects
  - Topical
    - Lidocaine patch 4-5%

# Examples of Alternatives to Opioids in Older Adults

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- “**Nonopioid therapies** are at least as effective as opioids for many common acute pain conditions, including low back pain, neck pain, pain related to other musculoskeletal injuries (e.g., sprains, strains, tendonitis, and bursitis), pain related to minor surgeries typically associated with minimal tissue injury and mild postoperative pain (e.g., simple dental extraction), dental pain, kidney stone pain, and headaches including episodic migraine
  - Clinicians should maximize use of nonopioid pharmacologic (e.g., topical or oral NSAIDs, acetaminophen) and nonpharmacologic (e.g., ice, heat, elevation, rest, immobilization, or exercise) therapies as appropriate for the specific condition.”
    - 2022 CDC Clinical Practice Guideline



## > Hospital Story

# Reducing Hip Fracture Delirium by Utilizing ED Pain Blocks

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Cathy Snapp, Orthopedic Program  
Administrator  
Orthopedic Center of Excellence  
Norman Regional Health System  
Norman, Oklahoma



# Norman Regional Health Systems- Hip Fracture Care Program

- Hip fracture is one of the most common and disabling injury in adults over the age of 65.
- Up to 60% of patients who suffer a hip fracture are unable to return to their prior level of activity. This decreases even further if they develop a major complication while in the hospital.
- The average hip fracture complication rate varies from 12-18% nationally.  
MIDAS Data Vision 2022 for 200-399 bed size hospitals
- Delirium is one of the most common complications after hip fracture surgery.  
Halsam-Larmer et al. BMC Geriatrics doi.org/10.1186/s12877-021-02083-3
- Hip fracture patients are at increased risk for delirium.
- In hip fracture patients who developed delirium in the hospital, delirium has been found to be an independent predictor of 6 month mortality.

Bellelli et al. J AM Geriatr Soc. doi:10.1111/jgs.12885



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NORMAN REGIONAL HEALTH SYSTEM

**ORTHOPEDICS**

# The Challenge

- At end of FY18, hip fracture complications increased to a 6-yr high of 17%
- Hip fracture program decreased from a 5-star to a 2-star rating by Healthgrades;
- Review of complications indicated 25% due to delirium;
  - Hip fracture pts who developed delirium had an average 26 hour time to surgery;
  - Despite the timely surgery, 45% of the patients who developed delirium actually developed delirium prior to their surgery.



# The Data

% of patients who developed delirium prior to surgery	% of patients who developed delirium overall	MME given prior to surgery	Daily MME prior to surgery
3.5%	6%	38	34



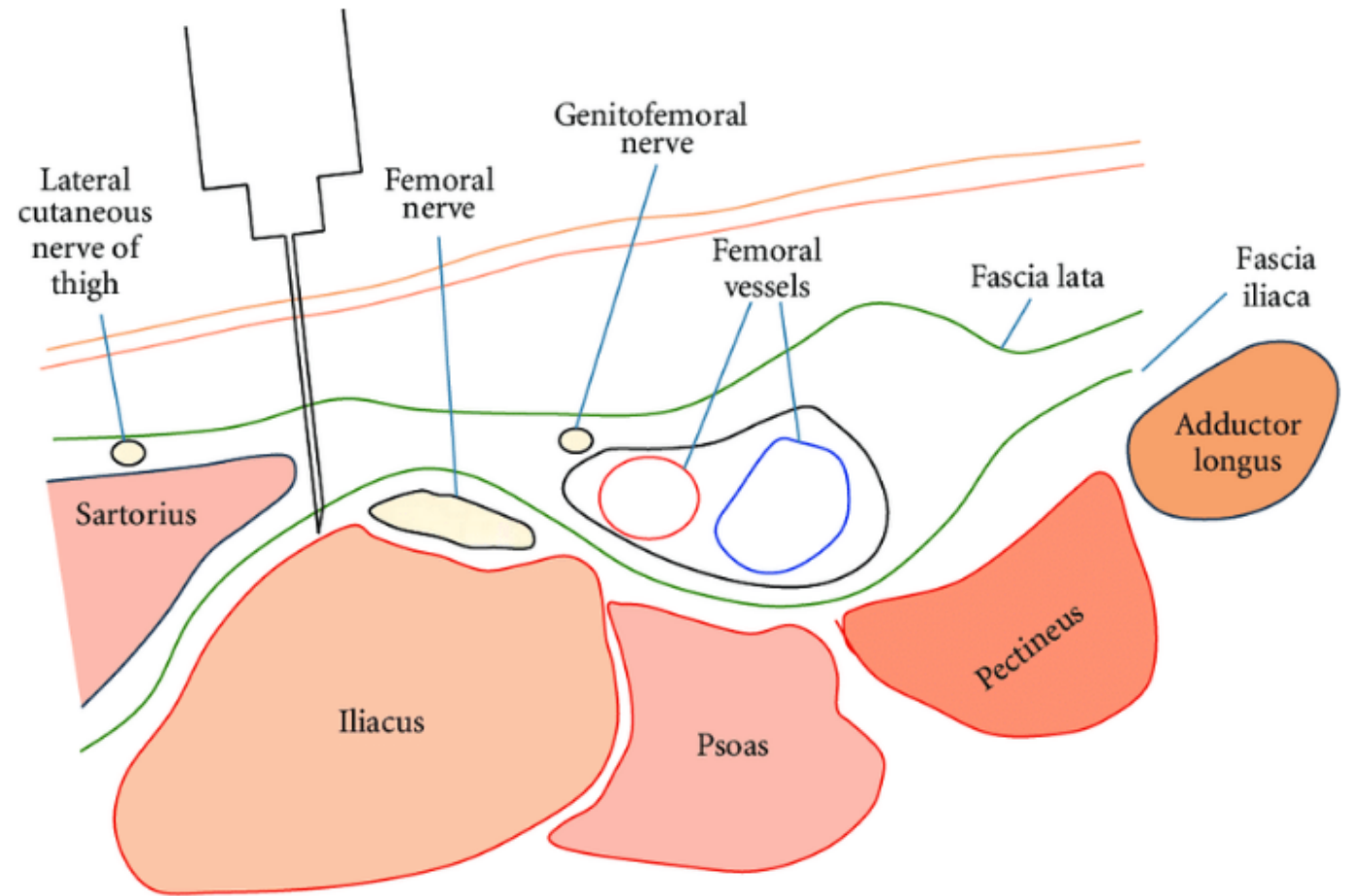
## Our Goal

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Improve pain management for hip fracture patients between admission to time of surgery without increasing the amount of pre-surgery systemic opioids.

# Fascia Iliaca Blocks for Hip fracture patients

- A fascia iliaca compartment block (FICB) is the injection of anesthetic agents into the fascia iliaca compartment with the effect of blocking the lumbar plexus via an anterior approach.
- FICB targets nerves that are in the fascia iliaca compartment that include the femoral nerve and the lateral cutaneous nerve.
- The analgesic effect of fascia iliac compartment blocks has been found to be superior to that of opioids during movement and to result in lower opioid consumption.\*
- The American Academy of Orthopedic Surgeons Recommends the use of preoperative nerve blocks to treat Pain after hip fracture in the 2021 Clinical Practice Guidelines “Management of Hip Fractures in Older Adults”



Anatomy of the fascia iliaca compartment block.

\* British Journal of Medicine. Doi:<https://doi.org/10.1016/j.bja.2017.12.042>

# First Steps

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- A multi-disciplinary quality improvement committee composed of executive level, managerial level and front line staff from the orthopedic service line set a strategic objective to utilize pain blocks in the ED for our hip fracture patients.
- Initially began with anesthesia department.
- Switched to our ED providers.
  - ED providers involved our ED residency program.



Dr. Mantoosh

Ortho Team-2019

Dr. Cody



# Next Steps

- Outcome and performance measures determined;
- Identify physician champions to work with ED staff to perform hip fracture ED blocks
  - Set up competency and training.
- Several residents also used the ED pain blocks as their residency project which boosted the performance of this measure. The team realized we needed to increase accountability and awareness of results.
- We determined the best way to do this was by using the ED provider score cards. Our MIDAS/STATIT quality improvement system calculates a provider score card for each individual ED provider.
  - The score card has their current results, shows whether their current results are improved or diminished compared to the prior period and also ranks their performance in comparison to the overall system average.

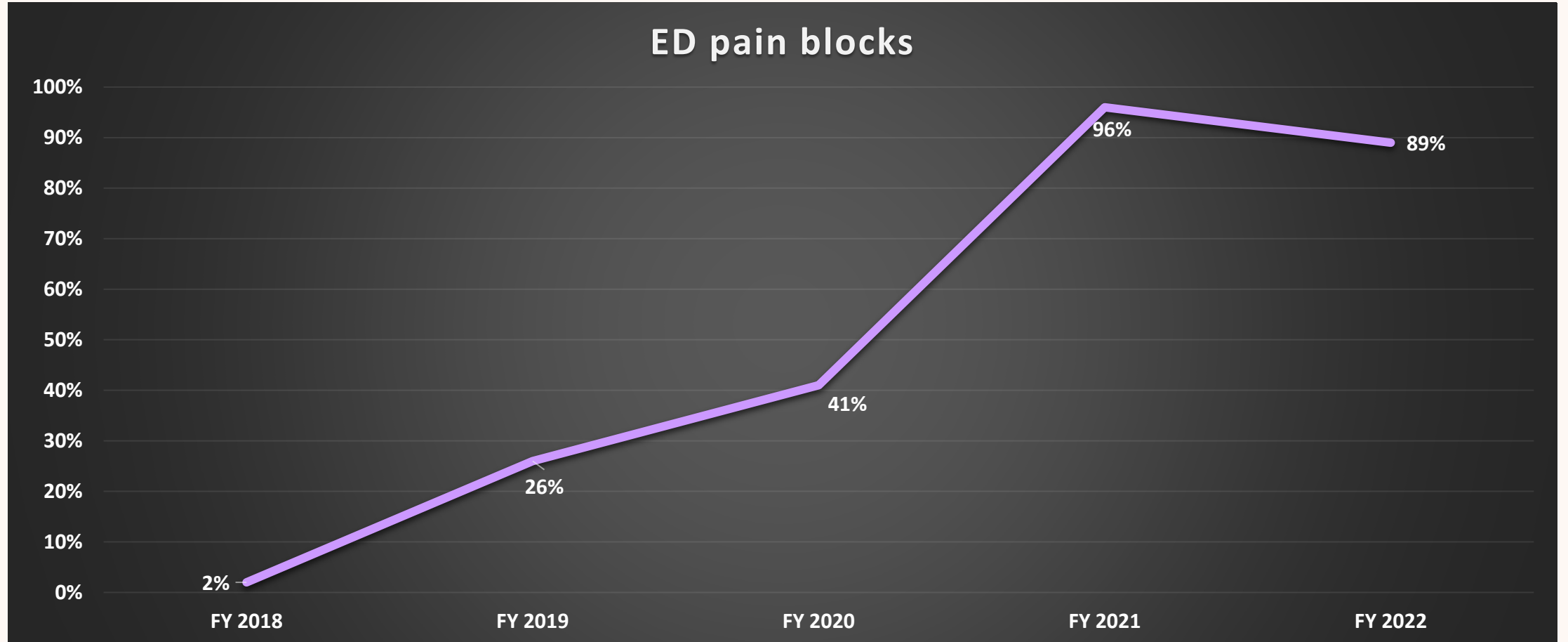
# Outcomes and Ongoing

- Once the score cards were initiated and maintained, the performance of ED pain blocks has consistently been in the high 80<sup>th</sup> to mid 90<sup>th</sup> percentile.
- ED pain blocks in our hip fracture population remains an ongoing performance initiative.

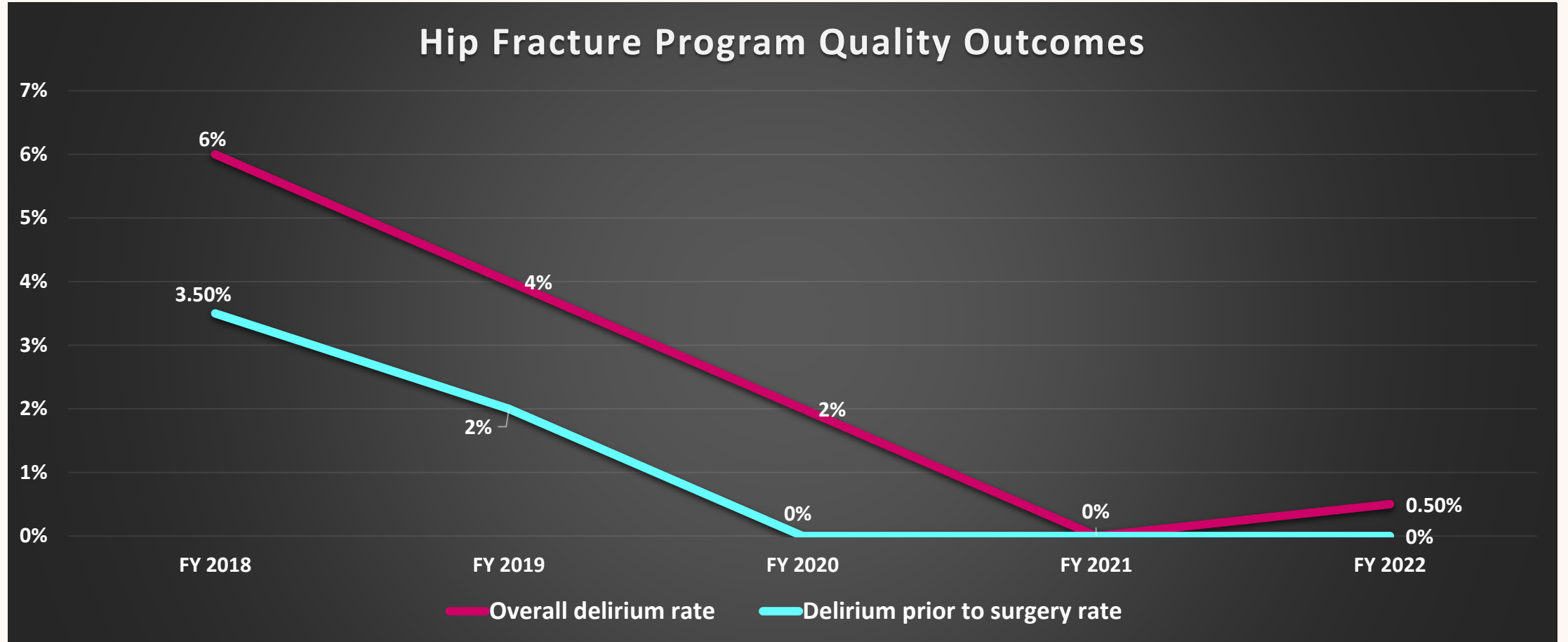


# Outcomes

## ED pain blocks



# Outcomes





# Outcome Data

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MME given prior to surgery 2018	Daily MME prior to surgery 2018	MME given prior to surgery 2022	Daily MME prior to surgery 2022
38	34	16.9	12.1

# Conclusions

- No adverse events have been recorded after the administration of a fascia iliaca block in the ED.
- We have had no incidences of patients developing delirium prior to surgery since FY 2019.
- We have maintained consistent results over the last several years.
- Fascia iliaca blocks can be safely administered in the ED and result in diminished opioid use prior to surgery as well as decreasing the overall delirium rate.



# 2022 Excellence in Quality Award – Innovation

## Norman Regional Health System

### Reducing Hip Fracture Delirium Complications by Utilizing ED Pain Blocks

#### Team Members



#### Goals

- Reduce hospital acquired delirium in the hip fracture population to <5% by FY 2019, < 2% in FY 2020, and <1% in FY 2021.
- Reduce hospital acquired delirium in the hip fracture population to <2% in FY 2020 and < 1% in FY 2021 and FY 2022.
- Eliminate hospital acquired delirium prior to surgery in the hip fracture population by FY 2020, and maintain thereafter.
- At least 25% of appropriate hip fracture patients will receive an ED pain block by FY 2019.
- At least 50% of appropriate hip fracture patients will receive an ED pain block by FY 2020.
- At least 90% of appropriate hip fracture patients will receive an ED pain block by FY 2021, and maintain this in FY 2022.

#### Interventions

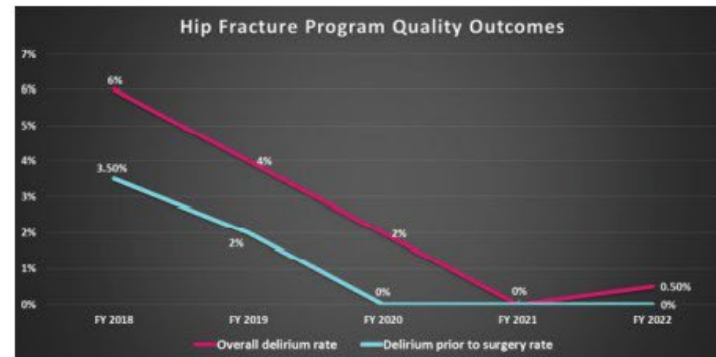
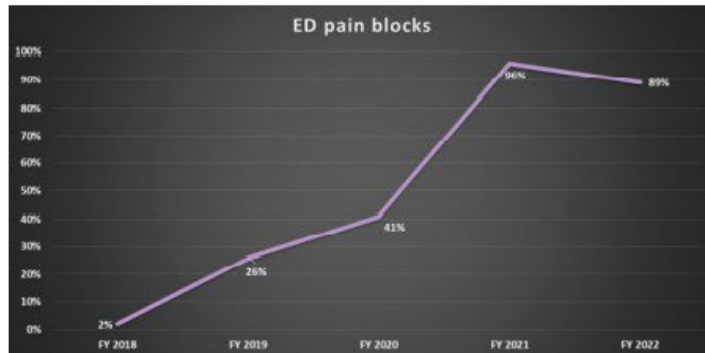
- Created a multi-specialty team.
- Analyzed data utilizing IT performance information, eliminating manual data analysis.
- Trained ED providers and residents to administer ultrasound guided fascia iliac blocks.
- Created a provider scorecard to increase awareness and accountability.

#### Challenges

- At the end of FY 2018, hip fracture complications had increased to a 6 year high of 17%.
- Healthgrades star rating for our hip fracture program dropped 5 to 3 stars.
- 25% of hip fracture patient complications were hospital acquired delirium.
- 45% of the patients with delirium developed delirium prior to their surgery.
- During the time between admission and surgery, a high incidence of opioids was noted.

#### Outcomes

- ED pain blocks administered to 96% of hip fracture patients in FY 2021.
- 0% of hip fracture patients who received a pain block in the ED developed delirium prior to surgery or during hospitalization in FY 2021.





Thank you!

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> Questions?

# Contact Us



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# Upcoming Events



For all other events, visit our website:  
<https://www.telligenqiconnect.com/calendar>

Don't miss out on these upcoming events:



**HQIC Community of Practice Call (TOPIC TBD)**

12 – 1 p.m. CST

[Registration link](#)



**Transitions in Care: Preventing Sepsis-Related Readmissions**

12 – 1 p.m. CST

Registration link coming soon

THANK YOU

Other languages included:

- DZIĘKUJĘ CI
- NGIYABONGA
- TEŞEKKÜR EDERİM
- DANKIE
- TERIMA KASIH
- KÖSZÖNÖM
- СПАСИБО
- GRAZIE
- MATUR NUWUN
- ХВАЛА ВАМ
- MULTŪMESC
- РАКМЕТ СІЗГЕ
- 고맙습니다
- GRAZIE
- شكرا
- HVALA
- FAAFETAI
- GO RAIBH MAITH AGAT
- БЛАГОДАРЯ
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- MAHADSANID
- TI БЛАГОДАРАМ
- TEŞEKKÜR EDERİM
- TAK DANKE
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- DANKJE
- ΕΥΧΑΡΙΣΤΩ
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- AČIŪ
- SALAMAT
- MAHALO IĀ 'ŌE
- TAKK SKAL DU HA
- MERCI
- РАΗΜΑΤ
- MERCI
- GRAZZI
- PAKKA PÉR
- ДИЯКУЙ
- DI OU MÈSI
- HATUR NUHUN
- PAXMAT CAĠA
- ДЯКУЙ
- ĐAKUJEM
- CẢM ƠN BẠN
- FALEMINDERIT
- ありがとうございました
- SIPAS JI WERE
- TERIMA KASIH
- UA TSAUG RAU KOJ
- TI БЛАГОДАРАМ
- СИПОС
- WAZVIITA
- 謝謝
- TAPADH LEIBH
- KEA LEBOHA
- БАЯРЛАЛАА
- MISAOTRA ANAO
- WHAKAWHETAU KOE
- DANKON
- TANK
- TAPADH LEAT
- SALAMAT

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