

## **Nurses and Physician Assistants Make a Difference in Inpatient Pain Management**

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## Disclosures

Maureen F. Cooney is on the Speakers' Bureau for Heron Pharmaceuticals.

THE OPINIONS EXPRESSED IN THIS PRESENTATION (AND/OR SLIDES) ARE SOLELY THOSE OF THE PRESENTER AND NOT NECESSARILY OF THE AMERICAN HEART ASSOCIATION / AMERICAN STROKE ASSOCIATION (AHA/ASA). THE AHA/ASA DOES NOT ENDORSE ANY SPECIFIC PRODUCTS OR DEVICES.



## Objectives

- Recognize the importance of obtaining a medical history on admission to identify the role of medications that place patients at-risk for hypertension and/or CVD.
- Describe opportunities for interprofessional collaboration when performing medication reconciliation during transitions of care for patients with pain who are at risk for hypertension and/or CVD.
- Compare and contrast validated tools used in assessing the type and level of pain throughout the course of a patient's hospitalization.
- Recognize opportunities for communication among multidisciplinary team members related to pain and hypertension management.

# Meet Mrs. Pine

*76 y.o. woman brought to the ED by son for severe thoracic region spinal pain that started with a cough 6 hours earlier.*





## Roles

### *The Nurse, Advanced Practice Nurse, And Physician Assistants*

- Patient assessment
  - History
  - Physical exam
- Medication reconciliation
- Problem/risk identification
- Ordering/interpretation of diagnostic workup
- Development/Implementation of treatment Plan
- Ongoing patient assessments
- Assessment of response to treatment plan
- Patient advocacy
- Patient/family education



## History

**Sources:** Patient, Family, EMR, PCP, Pharmacy, PDMP

CC: Severe thoracic region pain, increases with any movement.

HPI: noted sudden thoracic back pain with cough this morning. Pain increases with deep breath; limits movement

PMH: HTN, CAD, DM Type 2, NSTEMI 2021, GERD, Osteoarthritis, Chronic Low Back Pain

PSH: s/p PCI with placement of 2 stents 2/2021, R THA 2020

Family hx: father ↓ MI 70yo; mother ↓lung CA age 78; no sibs; 2 adult children A/W

Soc: widowed X 12 years; lives in 1<sup>st</sup> floor condo; two supportive adult children live locally

Smoked 1ppd cigarettes for 32 years, quit 20 years ago; Alcohol, 4 oz wine twice weekly

Medications: Amlodipine 10mg po daily , Glyburide 5mg po daily

Lisinopril 10mg po daily , Pantoprazole 20mg po daily

Hydrochlorothiazide 12.5mg po daily, Tramadol 50mg po q8h prn

Allergies: NKDA



## Physical Exam

Physical Exam:

v/s 156/88, 102, 22, 99.1, O<sub>2</sub> sat 95%

Awake, alert, oriented x 3

*Grimacing*

HEENT: WNL, no adenopathy

Pulm.: *resp shallow, non-labored, lungs clear*

CV: S1 S2, no m/r/g

Abd: soft, nontender, + BS, all pulses palp, trace pedal edema

GU: no flank tenderness, no suprapubic tenderness

M/S: Spine with sl kyphosis; + *closed fist test over T 10, ROM decreased bilat hips and knees*

Neuro: CN II-XIII WNL, no sensory or deficits; strength 5/5

Skin: intact, no lumps or lesions



## What are the Priorities?

- Assessment: History and Physical
- Admission process and Workup
- Assure treatment of co-morbidities
- Assess risks
- Pain Management
- Assure communication of the patient's status throughout all transitions of care





## Pain is...

"An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage."

Raja, S. N. et al. (2020). The revised International Association for the Study of Pain definition of pain: concepts, challenges, and compromises. *Pain*, 161(9), 1976–1982.



## Consequences of Unrelieved Pain

- **Pulmonary complications**
  - Atelectasis
  - Shunting
  - Hypoxemia
  - Infection
- **Cardiovascular complications**
  - Increased Heart rate (HR), peripheral vascular resistance (PVR), workload, B/P
  - Increased myocardial oxygen consumption
  - Hypercoagulation
  - DVT
- **GI**
  - Decreased absorption
  - Decreased motility
- **Catabolic metabolic activity**
  - Hyperglycemia
  - Muscle wasting
  - Poor wound healing
- **Genitourinary (GU)**
  - Decreased renal perfusion
  - Urinary retention
  - Fluid overload
  - F/E imbalances
- **Musculoskeletal (M/S)**
  - Decreased mobility
  - Spasm
  - Fatigue
  - Wasting
- **Neuro**
  - Reduced cognitive function
    - Memory
    - Concentration
    - Confusion
- **Immune compromise**
- **Psychological:**
  - Anxiety
  - Depression
  - Suicidal thoughts
  - Hopelessness
- **Quality of life:**
  - Poor sleep quality
  - Impact on relationships
  - Impact on function: work, social activities, exercise
- **Future pain:**
  - Untreated acute pain may alter Peripheral nervous system (PNS) and Central nervous system (CNS) leading to chronic (persistent) pain.

Cooney, M.F. & Quinlan-Colwell, A. (2021). Assessment and Multimodal Management of Pain: An Integrative Approach. Missouri: Elsevier, Inc.



## Assessing Pain: The Interview

### Address sensitive topics:

- Alcohol
- Drugs
- Abuse
- Sexual History
- Tools:
  - CAGE questionnaire-4 question acronym for alcohol use disorder assessment
  - Opioid risk tool (ORT)
  - Screener and opioid assessment for patients with pain (SOAPP)
  
- Older adults – assess function, home safety, include family/caregiver
- Provide time for questions or additional information
- Be aware of HIPAA rules and updates





## Important Considerations in Assessing Pain

- Developmental level
- Language barriers
- Cultural barriers
- Cognitive barriers
- Sensory deficits

Cooney, M.F. & Quinlan-Colwell, A. (2021). Assessment and Multimodal Management of Pain: An Integrative Approach. Missouri: Elsevier, Inc.



## Components of a Comprehensive Pain Assessment

- Pertinent medical history
- Physiologic/sensory
- Psychological
- Cognitive
- Sociocultural
- Spiritual
- Environmental
- Patient goal
- Functional status

Cooney, M.F. & Quinlan-Colwell, A. (2021). Assessment and Multimodal Management of Pain: An Integrative Approach. Missouri: Elsevier, Inc.





## Pertinent History

### *History is important in identifying risks*

- Past experiences of pain
- Traumatic injuries and surgeries
- Disease processes and chronic conditions.
- Aging changes
- **Medication-related Risks**
- Mental health conditions:
  - Anxiety, Depression
  - Current or past substance use
- Analgesic history (medication, intervention, non-pharm)
  - What was effective?
  - What was not effective?





## Hierarchy of Pain Assessment Techniques

- Consider level of pain for procedure or condition
- Self report
- Observation of non-verbal behaviors
- Proxy report
- Physiologic measure (least sensitive)
- Conduct an analgesic trial

Herr, K. et al. (2019). ASPMN 2019 position statement: pain assessment in the patient unable to self-report. *Pain Management Nursing*, 20(5), 402-403.





## Mnemonics to Guide Pain Assessment

### WILDA

Words to describe pain  
(quality of the pain)

Intensity

Location

Duration

Aggravating/Alleviating  
factors

### PQRST

Provocation/Palliation

Quality/Quantity

Region/Radiation

Severity

Timing

### OLD CARTS

Onset

Location

Duration

Characteristics

Aggravating-alleviating

Radiation

Timing

Severity (intensity)

Cooney, M.F. & Quinlan-Colwell, A. (2021). Assessment and Multimodal Management of Pain: An Integrative Approach. Missouri: Elsevier, Inc. Pearce, P. F., Ferguson, L. A. et al. (2016). The essential SOAP note in an EHR age. The Nurse Practitioner, 41(2), 29-36.





## Descriptors: Help in Identifying Type of Pain

- **Nociceptive Pain:** pain caused by an injury, physical pressure, or inflammation of some part of the body. Descriptors: throbbing, aching, sharp, dull, cramping
- **Neuropathic Pain:** A group of diseases resulting from damaged or malfunctioning of nerves that causes weakness, numbness and pain in hands and feet. Descriptors: burning, electrical, tingling
- **Mixed Type Pain:** Mixed pain is a complex overlap of the different known pain types (nociceptive, neuropathic, and nociplastic) in any combination, acting simultaneously and/or concurrently to cause pain in the same body area. Either mechanism may be more clinically predominant at any point of time. Descriptors: combination of nociceptive and neuropathic descriptors

Mulvey, M. R. et al. (2014). The role of screening tools in diagnosing neuropathic pain. *Pain management*, 4(3), 233-243.

Freyenhagen, R. et al. (2020). When to consider "mixed pain"? The right questions can make a difference!. *Current Medical Research and Opinion*, 36(12), 2037-2046.



## Using Tools to Assess Pain

*CAN PATIENT PROVIDE A SELF-REPORT?*





## Assessment Tools Are Limited

- Intended to recognize that pain is subjective and only the patient can tell if pain exists and to what degree
- Most tools are “uni-modal” and measure only pain intensity
- Unimodal tools do not address all components of a comprehensive pain assessment previously discussed

Cooney, M.F. & Quinlan-Colwell, A. (2021). Assessment and Multimodal Management of Pain: An Integrative Approach. Missouri: Elsevier, Inc.





## **Pain Assessment requires more than an intensity number**

### *Dosing to a number is a dangerous practice*

- Pain intensity ratings are subjective and cannot be measured objectively.
- No research to show a specific pain intensity rating requires a specific medication or medication dose.
- Many factors, other than intensity, influence opioid risks as well as non-analgesic risks.
  - Age
  - Pain quality
  - Sedation level
  - Respiratory status
  - Functional status
  - Opioid tolerance
  - Drug-drug interactions
  - Prior responses to treatment
  - Comorbidities: cardiovascular, renal, and hepatic

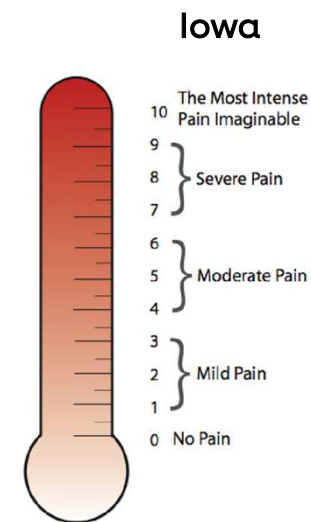
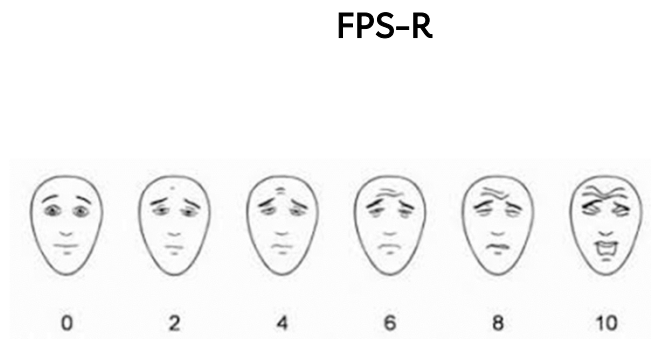
Quinlan-Colwell, A., Rae, D., & Drew, D. (2022). Prescribing and Administering Opioid Doses Based Solely on Pain Intensity: Update of A Position Statement by the American Society for Pain Management Nursing. *Pain Management Nursing*, 23(1), 68-75.



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## Tools for Patients Who Are Able to Self-Report Pain

- Scales  
Pain**
- Numeric Rating Scale (NRS) 0-10
  - Verbal Descriptor Scale
  - Visual Analogue Scale
  - Faces Pain Scale-Revised
  - Iowa Pain Thermometer



Cooney, M.F. & Quinlan-Colwell, A. (2021). Assessment and Multimodal Management of Pain: An Integrative Approach. Missouri: Elsevier, Inc.

Hicks CL et al. (2001) The Faces Pain Scale - Revised: Toward a common metric in pediatric pain measurement. Pain;93:173-183.

Herr, K. et al. (2007). Evaluation of the Iowa pain thermometer and other selected pain intensity scales in younger and older adult cohorts using controlled clinical pain: A preliminary study. Pain Medicine, 8(7), 585-600.





## Tools Evolving and Expanding

- Pain assessment involves a dialogue, rather than simply a number on a tool.
- Unidimensional tools measure only pain intensity and not the complexity of the pain experience.
- Function, including participation in activities, may provide more indication of pain relief than pain intensity report.

Cooney, M.F. & Quinlan-Colwell, A. (2021). *Assessment and Multimodal Management of Pain: An Integrative Approach*. Missouri: Elsevier, Inc.



## Clinically Aligned Pain Assessment (CAPA<sup>®</sup>) Tool

Question	Response
1. Comfort	<ul style="list-style-type: none"> <li>• Intolerable</li> <li>• Tolerable with discomfort</li> <li>• Comfortably manageable</li> <li>• Negligible pain</li> </ul>
2. Change in pain	<ul style="list-style-type: none"> <li>• Getting worse</li> <li>• About the same</li> <li>• Getting better</li> </ul>
3. Pain control	<ul style="list-style-type: none"> <li>• Inadequate pain control</li> <li>• Effective, just about right</li> <li>• Would like to reduce medication</li> </ul>
4. Functioning	<ul style="list-style-type: none"> <li>• Can't do anything because of pain</li> <li>• Pain keeps me from doing most of what I need to do</li> <li>• Can do most things but pain gets in the way of some</li> <li>• Can do everything I need to do</li> </ul>
5. Sleep	<ul style="list-style-type: none"> <li>• Awake with pain most of the night</li> <li>• Awake with occasional pain</li> <li>• Normal sleep</li> </ul>

Topham, D., & Drew, D. (2017)  
 Quality improvement project:  
 Replacing the numeric rating  
 scale with a clinically aligned  
 pain assessment (CAPA<sup>®</sup>)  
 tool. *Pain Management  
 Nursing*, 18 (6), 363-371.



## Clinically Aligned Pain Assessment (CAPA<sup>®</sup>) Tool

- **Advantages:**
  - Can be used to assess acute & chronic pain
  - Focus on functional ability & sleep
  - Guides clinical decision making
  - Validated for clinical use
- **Disadvantages:**
  - Not validated for research
  - Lacks scoring "rules"
  - May not be appropriate for those with minimal pain





## Functional Pain Scale

0 = No Pain

1 = Tolerable (and doesn't prevent any activities)

2 = Tolerable (but does prevent some activities)

3 = Intolerable (but can use telephone, watch TV, or read)

4 = Intolerable (but can't use telephone, watch TV or read)

5 = Intolerable (and unable to verbally communicate because of pain)

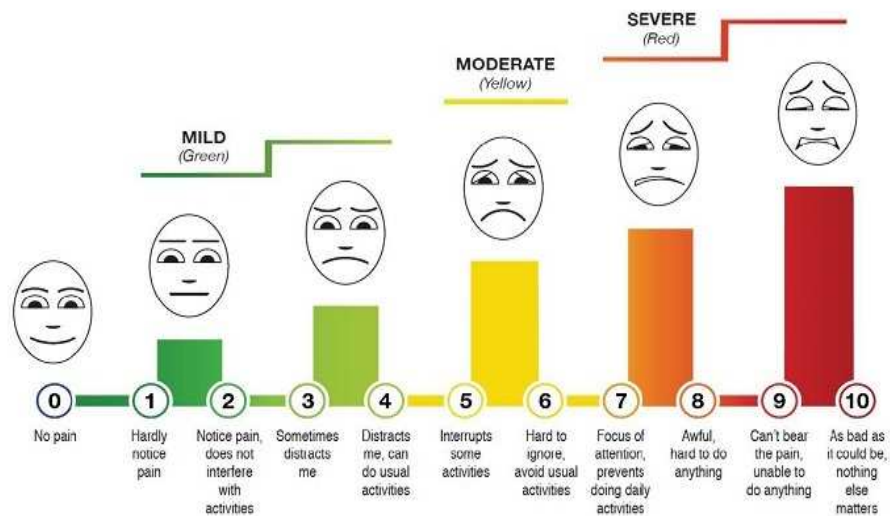
Gloth III, F. M. et al. (2001). The Functional Pain Scale: reliability, validity, and responsiveness in an elderly population. *Journal of the American Medical Directors Association*, 2(3), 110-114.





## DOD & Veterans Pain Rating Scale

### Defense and Veterans Pain Rating Scale



Includes additional questions that address activity, sleep, mood, stress

Polomano, R. C. et al. (2016). Psychometric testing of the Defense and Veterans Pain Rating Scale (DVPRS): A new pain scale for military population. *Pain Medicine*, 17(8), 1505-1519.



## Tools for Assessment of Persistent Pain

### Examples of tools:

- *McGill Pain Questionnaire*
- *Chronic Pain Grade Scale*
- *Brief Pain Inventory*
- *PEG Scale*

**Advantages:** Measures impact of pain on daily, social, and work activities

**Disadvantages:** Takes time. Patients need rich vocabulary and ability to understand instructions

Cooney, M.F. & Quinlan-Colwell, A. (2021). *Assessment and Multimodal Management of Pain: An Integrative Approach*. Missouri: Elsevier, Inc.





## PEG SCALE

“Pain average,” “interference with Enjoyment of life,” and “interference with General activity.”

Validated for use in ambulatory settings

1. What number best describes your pain on average in the past week:

0 1 2 3 4 5 6 7 8 9 10

No pain

Pain as bad as  
you can imagine

2. What number best describes how, during the past week, pain has interfered with your enjoyment of life?

0 1 2 3 4 5 6 7 8 9 10

Does not  
interfere

Completely  
interferes

3. What number best describes how, during the past week, pain has interfered with your general activity?

0 1 2 3 4 5 6 7 8 9 10

Does not  
interfere

Completely  
interferes

Krebs EE et al. (2009) Development and initial validation of the PEG, a 3-item scale assessing pain intensity and interference. *Journal of General Internal Medicine*;24:733-738.



## **Observational tools: for those who cannot self-report**

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*Observational scales do not measure intensity, only suggest the likelihood that pain is present*





## Observational Tools

### *Elderly with Dementia*

- Checklist of Nonverbal Pain Indicators (CNPI)
- Pain in Advanced Dementia Scale (PAINAD)
- Pain Assessment Checklist for Seniors with Limited Ability to Communicate (PACSLAC)

### *Critically Ill, Non-verbal*

#### **BPS: Behavioral Pain Scale**

- Evaluates 3 behavioral domains: facial expression, movements of upper limbs, compliance with ventilation

#### **CPOT: Critical-Care Pain Observation Tool**

- Evaluates 4 behavioral domains: facial expressions, movements, muscle tension, ventilator compliance. (0-8)

Cooney, M.F. & Quinlan-Colwell, A. (2021). Assessment and Multimodal Management of Pain: An Integrative Approach. Missouri: Elsevier, Inc.  
 Herr, K. et al. (2007). Evaluation of the Iowa pain thermometer and other selected pain intensity scales in younger and older adult cohorts using controlled clinical pain: A preliminary study. Pain Medicine, 8(7), 585-600.





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## Joint Commission

### *Screening vs. assessing pain*

- A 'screening' is a process for evaluating the possible presence of a problem.
- An 'assessment' gathers more detailed information through collection of data, observation, and physical examination.
- Pain assessment tools are generally evidence-based and often include, at a minimum, an evaluation of pain intensity, location, quality, and associated symptoms.
- An accurate pain screening and assessment is the foundation on which an individualized, effective pain management plan is developed.

The Joint Commission (2021). Standards FAQs. Pain assessment and management-understanding the requirements. Retrieved April 1, 2022 from Pain Assessment and Management – Understanding the Requirements | Hospital and Hospital Clinics | Leadership LD | The Joint Commission



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## Who will screen for pain?

### *The multidisciplinary team*

#### **Physicians**

Emergency Room physicians  
Hospitalists  
Cardiologists  
Neurosurgeons  
Pain Specialists  
Interventional Radiologists

#### **APNs/PAs**

#### **Registered Nurses**

#### **LPNs/LVNs**

#### **Pharmacists**

#### **Patient Care Assistants**

#### **Radiology Techs**

#### **Physical Therapists**

#### **Dietitians**

#### **Dietary Assistants**

#### **Laboratory techs**

#### **Respiratory therapists**

#### **Couriers**





## Frequency of Pain Assessment

- Admission
- Every shift?
- When screening or patient report indicates presence of pain
- Following an analgesic intervention: timing depends on the intervention
- Before, during, and following pain producing procedures (Dressing changes, Dx procedures)
- With increased activity (Mobility Changes)

Cooney, M.F. & Quinlan-Colwell, A. (2021). Assessment and Multimodal Management of Pain: An Integrative Approach. Missouri: Elsevier, Inc.

**Back to our patient...**

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## Pain Assessment:

**Mrs. Pine Can Provide a Self-Report of Pain..**

OLD CARTS: onset, location, duration, characteristics, aggravating/alleviating, radiation, timing, severity (intensity).

**Acute Pain:** began with strong cough, thoracic spine, constant sharp and stabbing, worsens with movement and cough, alleviated by staying motionless, took acetaminophen 1000mg with some relief 6 hours ago, constant, severity 10/10 before meds, 6/10 after medication but now increasing.

**Chronic/Persistent Pain:** 5 years +, bilat. knees/hips, low back, dull, stiff aching, increased by activity, worse in morning, alleviated with rest, heat, meds, no radiation, 6/10 to 4/10 with meds.



## **Mrs. Pine's Workup Results:**

CT scan shows Acute T 10 vertebral Compression Fracture

### Cardiac Causes Ruled Out:

- MI
- Aneurysm
- Tamponade

### Pulmonary Causes Rules Out:

- Infection
- Pulmonary Embolism
- Tumor
- Pneumothorax





## Let's focus on the Pain

### *Patient Medical History:*

- Medical Conditions: HTN, CAD, NSTEMI, DM II, OA, Chronic low back pain, GERD
- Allergies: NKDA
- Social History: Smoking hx, alcohol
- Review of Systems: chronic bilat. knee pain

**Medications:** Amlodipine 10mg po daily, Glyburide 5mg po daily  
Lisinopril 10mg po daily, Pantoprazole 20mg po daily  
Hydrochlorothiazide 12.5mg po daily, Tramadol 50mg po q8h prn

*What more do we need to know?*



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## **What about Medication Reconciliation?**

**When was the tramadol last taken?**

*What does the chart show?*

- *The Prescription Drug Monitoring Program (PDMP)?*
- *What does the patient say?*
- *When does she take the tramadol?*

*How often?*

*What indication?*

*How effective?*

*Any adverse effects?*

*Have you considered:*

*Contraindications?*

*Drug-Drug Interactions?*





# Medication Reconciliation

## Why is it important?

- The Joint Commission: Medication Reconciliation is a 2022 National Patient Safety Goal.
- 2020 published study of 904 records showed unintended medication discrepancies related to hospital admissions and discharges are common and may result in medication errors. Over-the-counter omissions are among discrepancies.
- 2016 Systematic review and meta-analysis found pharmacy-led medication reconciliation intervention usually revealed a trend towards reduction in medication discrepancies, compared with usual care.

The Joint Commission (2022) Hospital: 2022 National Patient Safety Goals. Retrieved March 25, 2022 from [https://www.jointcommission.org/-/media/tjc/documents/standards/national-patient-safety-goals/2022/npsg\\_chapter\\_hap\\_jan2022.pdf](https://www.jointcommission.org/-/media/tjc/documents/standards/national-patient-safety-goals/2022/npsg_chapter_hap_jan2022.pdf)

Breuker, C. et al. (2021). Medication errors at hospital admission and discharge: risk factors and impact of medication reconciliation process to improve healthcare. *Journal of Patient Safety*, 17(7), e645-e652.

Mekonnen, A. B. et al. (2016). Pharmacy-led medication reconciliation programmes at hospital transitions: a systematic review and meta-analysis. *Journal of clinical pharmacy and therapeutics*, 41(2), 128-144.



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## Medication Reconciliation

### Significance

- As of 2020, the FDA reports there were over 300,000 over-the-counter drug products.
- Older adults: the biggest consumers of prescription and over-the counter medications and dietary supplements.
- Study of 88 older adults living in senior citizen community, high percentage of self-reported OTC self-medication, inappropriate use, and experiences of adverse effects.
- In a 2008 study, 68% of older adults using prescription drugs were also using OTC medications and/or dietary supplements.
- Of 46 major drug interactions found, over 1/2 were due to OTC drugs.

Food & Drug Administration (2020). Drug applications for over-the-counter drugs. Retrieved March 27, 2022 from Drug Applications for Over-the-Counter (OTC) Drugs | FDA  
Paliwal, Y. et al. (2021). Over-the-counter medication use in residents of senior living communities: A survey study. *Journal of the American Pharmacists Association*, 61(6), 736-744.  
Qato, D. M. et al. (2008). Use of prescription and over-the-counter medications and dietary supplements among older adults in the United States. *Jama*, 300(24), 2867-2878.





## Mrs. Pine's OTC meds

- Ibuprofen 400mg po taken at least three times/day
  - 600mg taken early today
- Loratadine 10mg taken daily
  - Last taken early today
- Senna 2 tabs taken every night



## **CV and Renal Function Risks related to:**

- *Aging*
- *Pain*
- *Regular NSAID use*
- *Diabetes*
- *Hypertension and coronary artery disease*



## OTC medication risks and Cardiovascular Risks

### *Regular Use of NSAIDs*

- NSAID related Prostaglandin inhibition may increase blood pressure and blunt the effects of anti-hypertensive drugs: **ACE inhibitors**, angiotensin II receptor 1 blockers and **thiazide diuretics**.
- Those with altered hepatic or renal function are at increased risk for adverse effects.
- NSAID-induced Acute Kidney Injury (AKI) may result from absolute volume depletion and dehydration, reduced effective arterial volume or severe hypercalcemia.
- Elderly patients are at greatest risks of NSAID complications

Cabassi, A. et al. (2020). Non-steroidal anti-inflammatory drug effects on renal and cardiovascular function: from physiology to clinical practice. *European journal of preventive cardiology*, 27(8), 850-867



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## Beers Criteria-2019

### *American Geriatrics Society list of inappropriate medications for use in older adults.*

- COX Nonselective NSAIDS should be avoided for chronic use, unless other alternatives are not effective, and patient can take gastroprotective agent
- COX Nonselective NSAIDS are associated with an increased risk of GI bleeding or peptic ulcer disease in high-risk groups, including those > 75 years or taking oral or parenteral corticosteroids, anticoagulants, or antiplatelet agents.
- COX Nonselective NSAIDS can increase blood pressure and induce kidney injury
- NSAIDS and COX-2 inhibitors are among the medications that can exacerbate heart failure or promote fluid retention.
- NSAIDs should be avoided in patients with Stage IV renal disease (CrCl <30) as they may increase risk of acute kidney injury and further decline of renal function

Fixen, D. R. (2019). 2019 AGS Beers criteria for older adults. *Pharmacy Today*, 25(11), 42-54.

2019 American Geriatrics Society Beers Criteria® Update Expert Panel, Fick, D. M. et al. (2019). American Geriatrics Society 2019 updated AGS Beers Criteria® for potentially inappropriate medication use in older adults. *Journal of the American Geriatrics Society*, 67(4), 674-694.



## OTC & Other Products and CV Related Risks

- **Sympathomimetic amines:** stimulate  $\alpha$ -adrenergic receptors directly or indirectly causing vasoconstriction. Decongestants: pseudoephedrine, phenylpropanolamine, and ephedrine.
- **Aspirin:** NSAID effect at high doses, Prostaglandin Inhibition and hypertension.
- **Acetaminophen:** Regular daily intake of 4 g acetaminophen found to increase systolic BP in individuals with hypertension by  $\approx 5$  mm Hg when compared with placebo.
- **Dietary:**
  - Caffeine products
- **Herbals and Supplements:**
  - Licorice: may raise BP through its mineralcorticoids effect
  - Ginseng: large doses and prolonged use: hypertension and reduced warfarin effect

Berberi, A. E. et al. (2018). Secondary hypertension: infrequently considered aspects—illicit/recreational substances, herbal remedies, and drug-associated hypertension. In Disorders of Blood Pressure Regulation (pp. 723-759). Springer, Cham.  
MacIntyre, I. M. et al. (2022). Regular Acetaminophen Use and Blood Pressure in People With Hypertension: The PATH-BP Trial. Circulation, 145(6), 416-423.



## Mrs. Pine...Concerns?

*Effect of pain on medical conditions: HTN, CAD, NSTEMI?*

### Complex relationship between pain and HTN:

Acute pain: stress hormones, ↑SNS activity/Endocrine HTN, tachycardia, fluid retention.

Concerns: increased cardiac workload, increased oxygen demand, ischemia

Hypertension in acute pain may have a hypoalgesic effect d/t negative feedback loop

Chronic pain: regulatory dysfunction in pain pathways, often positive correlation between pain and blood pressure.



## **Mrs. Pine is transferred to a medical floor and reports 8/10 sharp, stabbing spine pain.**

- She was given 30mg IV ketorolac 4 hours ago in the ED.
- The hospitalist tells you she should be fine. "She's an older patient and older people don't really feel as much pain as younger people. Besides, a little pain is better than the side effects of medications."
- How do you advocate for the patient?
- What communication strategies can you use?



## Summary

- Uncontrolled pain may have significant biopsychosocial consequences.
- All members of the multidisciplinary team have a role in screening for pain.
- Assessment of pain, risks associated with undertreated pain, and responses to treatment are necessary for effective care and harm reduction.
- Pain is a complex, subjective experience and assessment tools comprise only one component of the assessment process.
- Analgesic selection must be based on consideration of medical history, including cardiovascular, pulmonary, renal, and hepatic function.
- The multidisciplinary team has a role in assuring patient comfort and safety.





Remember, Nurses and Physician Assistants  
Make a Difference in Inpatient Pain Management!

*Thank You.*

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